

# CITY SANITATION POLICY FOR GREATER NOIDA INDUSTRIAL DEVELOPMENT AUTHORITY (GNIDA)



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# 1. NEED FOR CITY SANITATION POLICY

## 1.1 Introduction

Inadequate sanitation causes India considerable economic losses, equivalent to 6.4 per cent of India's GDP in 2006 at US\$53.8 billion (Rs.2.4 trillion), according to The Economic Impacts of Inadequate Sanitation in India, a report from the Water and Sanitation Program. The study analyzed the evidence on the adverse economic impacts of inadequate sanitation, which include costs associated with death and disease, accessing and treating water, and losses in education, productivity, time, and tourism. The findings are based on 2006 figures, although a similar magnitude of losses is likely in later years.

On a national level, in terms of total cost, India suffers the most, with US \$ 106.7 billion wiped off the GDP in 2015. It is almost half of the total global losses and 5.2 per cent of the nation's GDP.

### Steps by Indian Government

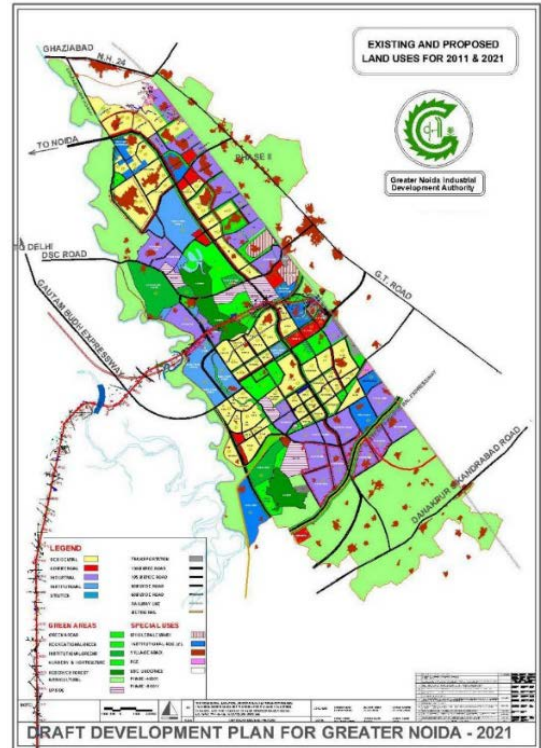
The importance of the City Sanitation Policy may be understood with the few of the steps taken by the National level government for the last 10 years.

- a. The first step taken by the national government in 2011 and the Census of India released household level sanitation data for the country.
- b. The second major step was taken on 2<sup>nd</sup> October 2014, when the Government of India launched the Swachh Bharat Mission (SBM) in urban and rural areas of India with a vision to ensure hygiene, waste management and sanitation across the nation and to achieve a Clean and Open Defecation Free India and scientifically managed municipal solid waste by October 2019".
- c. The third step by the government was when in September 2015, India became signatory to the Sustainable Development Goals (SDGs). Goal 6 demands universal access to clean water and sanitation. Within this, Target 6.2 aims at achieving **access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations**. The SDGs are a follow-up to the Millennium Development Goals (MDGs), which aimed at extending improved sanitation coverage to the un-served households.

## 1.2 Uneven spread of Urbanization in the state

The Greater Noida Notified Area comprises of around 124 villages, spreading over 38,000 hectare of land. The city has been envisaged to be a Metro Center providing a

quality urban environment, to attract economic activities and population to decongest the capital city Delhi. The First Master Plan for the city (Master Plan-2011) was prepared in 1992. Following which, the Outline Development Plan-2001 was approved by NCR Planning Board in 1996, covering 5,075 Ha of land. The Master Plan for 2021 is prepared on 22,255 Ha of land area with designed population of 0.7 Million by year 2011 and 1.2 million by year 2021. With this projected population, the city is expected to face various issues of sanitation and waste management, until policies and management system are developed to cater these issues.



### 1.3 Service level In Greater Noida

Service levels in urban areas. With rapidly increasing population, Greater Noida faces vast challenges in managing urbanization to meet the growing demands for infrastructure and services. A summary of the status of basic infrastructure in ULBs is as follows:

- (i) **Sewerage/Sanitation:** Sewerage network coverage in the urban area is more than 80% and in the remaining area of the villages are being covered. The urban villages at present are depending on septic tanks,
- (ii) **Faecal Sludge & Septage Management:** Presently the faecal sludge management is very limited in Greater Noida. The Faecal Sludge & Septage Management policy has been made and the same is under implementation.
- (iii) **Waste Water Use:** Presently the waste water reuse is very limited in Greater Noida. The current policy is focusing on the recycle, reuse and proper utilization of water resources.
- (iv) **Solid Waste Management (SWM):** Greater Noida has drafted the decentralized composting policy to take café of the collection, segregation and the processing of the waste at the local level so that the burden of the dumpsite is reduced and the solid waste is managed scientifically.

### 1.5 A clear policy for FSM / Septage management in addition to conventional underground sewerage systems is needed

The policy gives importance in going beyond traditional sewerage solutions, and moving towards faecal sludge management (FSM) / septage management. Keeping

the above in mind the GNIDA came out the Faecal Waste and Septage Management Policy to address the issue of sanitation.

## **1.6 As urban growth in city increases, Municipal Solid Waste Management (MSWM) must form part of the core policy for sanitation in the state**

The MSW Rules 2016 designates the local bodies as solely responsible for managing solid waste in their area and states that “within the territorial area of the municipality, [ULBs are] responsible for the implementation of the provisions of these rules, and for any infrastructure development for collection, storage, segregation, transportation, processing and disposal of municipal solid wastes”. GNIDA is taking steps to comply with the SWM rules 2016.

## **1.7 Site Authorization for SWM Projects**

The authority has initiated various steps for implementation of integrated Solid Waste Management projects. As a first step towards it, land has been earmarked to gradually implement the SWM projects involving processing of bio-degradable waste and scientific disposal of processed and inert non-recyclable waste. The authority has earmarked 167 acres for the landfill sites where the construction and demolition waste plant will also be put up.

## **1.8 The water resources pollution abatement policy**

A sizeable percent of urban areas in GNIDA directly affect river and the water body in the city with the open discharge of raw sewage into the river and water body through the drains. Therefore, the sanitation policy to also takes into consideration the river basins passing through the city.

## **1.9 Capacities of Officers to manage an expanding need for sanitation and FSM**

There is an issues related to a lack of adequate data for better planning and management, across the sanitation cycle. What is needed is ensuring access to the unserved urban poor and to the floating population to increase the awareness amongst communities, service providers and city managers on the consequence of poor sanitation and enhanced community participation and the behavior change mechanism. Adequate capacities of all stakeholders, especially the local authority and there is the need for an integrated city-wide approach and adequate and sustained investments for both asset and facility creation as well as O&M is needed.

## 2. VISION, GOALS & PRINCIPLES OF THE POLICY

### 2.1 Vision

To make Greater Noida totally clean, sanitized, healthy (safe), pollution free, having zero waste, good quality of life and ensuring good public health and healthy environment to all its citizens in line with the National Urban Sanitation Policy.

### 2.2 Goals

To ensure Greater Noida become totally clean, sanitized, healthy (safe), pollution free, having zero waste, having good quality of life and ensuring good public health and healthy environment to all its citizens.

### 2.3 Principles of the policy

The policy will be based on the following principles:

1. **Sanitation will be treated as a basic service:** The city government shall create basic infrastructure and opportunities and provide necessary support through which, all citizens can have access to sanitation services as their basic entitlement.

**Equity and safety of access and use, particularly to the vulnerable and un-served populations:** The city shall endeavour to ensure that no urban citizen, irrespective of socio-economic status, caste, gender, age, or legal status of land/status of migration is denied access to and the use of sanitation services in the city. However, the sanitation services is being provided to the poor people by way of construction of toilets in their premises. In addition to this, the local authority will ensure that access to such facilities (especially community and public) are maintained with an adequate level of cleanliness, and safety of access, especially for women. Adequate arrangements for access for the differently abled will also be made at these facilities (new / upgraded facilities).

2. **Recycle and reuse of waste water, checking water bodies' pollution by following proper discharge standards and scientifically managed municipal solid waste. This to be ensured through stricter guidelines as per the rules and increased awareness and ensuring better participation of the citizens for achieving the collective goal of sanitised cities/towns.** The causal linkages of sanitation and solid waste with public and environmental health need to be made more explicit to citizens, communities and institutions. In addition to the provision of facilities, sustained improvements in the quality of life are possible when supplemented by hygiene and behaviour change. The city will aim to generate demand for safe sanitation, and scientifically managed solid waste especially among

the un-served households. Citizens, communities, institutions, and cities as a whole will be encouraged to play an active role in both behaviour change towards safe sanitation, and ensuring the adoption and use of safe technology to protect the environment. To achieve the goal the government will make all efforts to increase the participation of the citizens for better sanitation facilities.

- 3. Emphasis on operations and maintenance of sanitation and solid waste management infrastructure:** One of the key reasons for poor sanitation infrastructure as well as high capital expenditure on sanitation is the lack of operations and maintenance of existing sanitation infrastructure. Authority to be responsible to ensure that existing sanitation infrastructure is maintained at adequate operational levels, either through official funds, or in partnership with the private sector. The applicable user charges to be collected from the people using the services for collection, transportation and collection. Penalty to be imposed in the cities and towns where households, establishment, institutions etc. don't adhere to the norms. The operation and the maintenance will be done to achieve the target of ODF++.

**Integrating broader environmental concerns in the provision of urban sanitation and solid waste management service delivery:** The environment (land, air, and water resources) must be considered in all development activities for sanitation provision and management. All planning and implementation will seek to ensure that adverse risks to public health and the environment are adequately minimized at all stages in the sanitation chain and solid waste management. In sanitation the containment, collection, transportation or conveyance, treatment and re-use or disposal of septage/sewerage and waste water will be worked on and in solid waste management the entire chain of collection, transportation, processing and disposal will scientifically managed. Appropriate protection of the environment shall be applied, including prosecution under the law as required. The city government will prioritize to control pollution in those areas that directly or indirectly affect water bodies in the city due to discharge of untreated domestic wastewater for setting up pollution abatement systems.

- 4. Choosing technology and solutions appropriate to the context:** Under the policy, the choice of technology and solutions will be contingent upon the needs of that context. For example, if, in the course of evaluation, decentralized and on-site technologies and solutions are context appropriate, then those should be chosen as opposed to blindly applying the choice of networked sewerage systems or a decentralized model of the waste composting may be chosen over centralized composting system.



## 2.4 OBJECTIVE

Under the policy, over the next 10 years, the policy will concentrate on achieving the following 9 outcomes based on the objective:

1. Urban areas are Open-defecation free (ODF) and open discharge free (ODF+/++)
2. Solid waste is safely managed, processed & scientifically treated
3. Use the principal of 5 R, reduce, reuse, recycle, refurbish and recover in waste management
4. Scientific handling, processing and management of Hazardous waste, hospital waste, plastic waste and e-waste
5. Proper handling, processing and use of construction and demolition waste
6. Safety standards and guidelines are followed in the physical handling and management of waste
7. Sewage, septage / faecal sludge and liquid waste is safely managed, treated, recycled and disposed
8. GNIDA do not discharge untreated waste, waste water, contaminated water into the water bodies and follow the standards prescribed.
9. Recycle, reuse of the waste water in the city for drinking and non drinking purposes

## 2.5 OUTCOMES OF THE POLICY

### **Urban areas are open-defecation free and discharge free:**

This shall be a key outcome of the sanitation policy. In addition to infrastructure provision, this outcome requires behavior change at the individual, household, community, institutional and city levels. It is therefore the most crucial and challenging to achieve.

Open defecation free under this policy is understood as the termination of faecal- oral transmission determined by:

- A. No observed open defecation;
- B. All city residents have access to and use of household, community, and/or public latrines;
- C. There is adequate access and use of latrines in all institutions, offices, academic institutes, religious bodies etc;

- D. All insanitary latrines (including single pit latrines) are converted to sanitary latrines, and no incidence of Manual Scavenging observed
- E. All city residents are engaged in safe hygiene practices, including hand washing;
- F. All the latrines have access to piped water
- G. The faecal sludge and the septage is treated properly and then discharged

In addition, open discharge free, under this policy shall be understood to mean an environment free from human waste which shall be determined as follows:

- A. There is no open discharge of faecal and liquid waste, or raw sewage into the open drains or environment
- B. There is safe containment, collection, transportation, treatment, recycle and disposal of sewage, septage, and waste water.

### **3. LIQUID WASTE MANAGEMENT**

#### **3.1 Fecal Sludge and Septage Management**

GNIDA has already drafted the policy on Faecal Sludge and Septage Management and the same will be implemented. The outcome aims to ensure that wherever faecal waste is generated in the urban environment, it is safely confined, regularly collected, safely transported, and disposed after adequate treatment; with due care being taken of persons, machinery, materials and surroundings involved in the process. In Jharkhand, where the majority of households and institutions have access to on-site sanitation, the focus in the coming years of the policy will be on septage/ faecal sludge management (FSM).

#### **3.2 Waste Water Recycling and Reuse**

##### **On Resource Development:**

Wastewater is a perennial water source and shall form an integral part of renewable water resources and the city water budget. GNIDA will make city wastewater reuse plan (CWP) for a period of 20 years considering future urbanization and city development in line with city Master plan to avoid any conflicts in developing the city in the future.

Treatment of wastewater shall be targeted towards producing an effluent fit for reuse in irrigation, horticulture or in other use in accordance with the national and state guidelines. Reuse of treated wastewater for other purposes shall be subject to appropriate specifications laid out. Coordination shall be maintained with the official bodies in charge of services to account for the treatment and disposal of their liquid wastes. Specifications and minimum standards as stipulated by Central Public Health and Engineering

Department (CPHEEO) shall be applicable. Particular attention shall be paid to the protection of underlying aquifers.

### **On Resource Management**

It is highly imperative that GNIDA shall develop and manage wastewater systems as well as the treatment and reuse of the effluent.

A basin management approach shall be adopted where possible. The use of treated wastewater from sewerage, households, commercial and from industrial application shall be given the highest priority and shall be pursued with care. Effluent quality standards shall be defined based on the best attainable treatment technologies, and calibrated to support or improve ambient receiving conditions, and to meet public health standards for end users. Key factors will include the location of the discharge, its proximity to wells, the type of receiving water, and the nature and extent of end uses. Industries shall be encouraged to recycle part of its wastewater and to treat the remainder to meet standards set for ultimate wastewater reuse or to meet the regulations set for its disposal through the collection systems and/or into the receiving environment. Wastewater from industries with significant pollution should be treated separately to standards allowing its reuse for purposes identified by the city or to allow its safe disposal or water recharging. Consideration shall be given to isolating treated wastewater from surface and ground waters used for drinking purposes, and to the blending of treated effluent with relatively fresher water for suitable reuse. GNIDA will engage Experts from Government Engineering Colleges, IITs / NITs/Engineering colleges.

### **On Wastewater Collection and Treatment**

**City Plan** A proper and updated city plan is an essential pre-requisite for proper planning and design of all utilities and more so for the Sewerage Systems and water recycled from houses. The city shall endeavor to have proper digital city maps showing the levels prepared through modern available technology. The digital city maps should clearly show the city feature over ground and underground including all utilities. Geographical Information System (GIS), Ground Penetrating Radar (GPR), Total station etc. tools may be used for preparation of city map. The city maps should be updated for every 5 years. An effective and comprehensive GIS based data base and Management Information System correctly mapping the assets, user base and status of operations shall be established.

**Design Period:** GNIDA will prepare a City Wastewater Recycling Plan (CWP) for next 20 years along with 5 year short term plan. The CWP for the city should take into account the likely changes in the city in next 20 years and plan for them and will be according to city Master plan. The Detailed Project Report (DPR) for recycling should be in accordance to CWP. The design of the sewers and planning of space should be for the 30 year projection requirements and for recycling from households and commercial

establishments. However, the units which can be developed in modules (e.g. Sewage Treatment Facility, sewerage Pumping machinery, on site treatment facilities, etc.) can be designed for appropriate shorter period. Earmark of land for Sewage Pumping Station (SPS) and Sewage Treatment Plant (STP) should be done for all Urban Local Bodies (ULBs) and appropriate land allotment shall be done by Development Authority/Urban Improvement Trust/State Govt. on priority.

### **On Reuse of Treated Effluent and Sludge**

- i. Treated wastewater effluent is considered a water resource and is added to the water stock for reuse.
- ii. Blending of treated wastewater with fresh water shall be made to improve quality where possible.
- iii. Accumulation of heavy metals and salinity shall be monitored, managed and mitigated. Leaching of soils shall be advocated by the irrigation authorities.
- iv. Treated effluent quality should be monitored and users alerted to any emergency causing deterioration of the quality so that they will not use such water unless corrective measures are taken.
- v. The treated water should adhere to the criteria of Chemical Oxygen Demand (EOD), Biological Oxygen Demand (BOD) and suspended solids, failing to do so will attract severe penalties as decided by the authority.
- vi. Studies should be conducted and projects designed and implemented to store the excess treated wastewater in surface reservoirs but artificial recharge is not permitted. Due attention shall be given to the quality of treated and groundwater and the characteristics of the strata.

**Industry:** Industrial reuse of reclaimed wastewater to be mandated. Reclaimed wastewater is ideal for many industrial purposes and the same need to be specified by the industries. Where effluent is to be used in the industrial processes, it should be the responsibility of the industry to treat it to the quality standards required or waste water reuse to achieve adequate quality for reuse as cooling water.

The membrane filtration system can remove all suspended solids, fecal coliforms, and giardia cysts. It could also significantly reduce human enteric viruses such as *reovirus* and *enterovirus* and the same may be tried.

**Industrial uses for reclaimed water include:** (i) Evaporative cooling water: (a) once-Through cooling system (b) Re-circulating cooling system (C) cooling water quality requirements (ii) Boiler –Feed water- The use of reclaimed water differs little from use of conventional public supplies for boiler-feed water, as both require extensive additional treatment quality requirement for boiler feed make up water are dependent upon pressure at which boiler is operated (iii) Industrial process water- Suitability of reclaimed water for use in industrial process depends upon particular use like- (a) Pulp and paper (b) chemical industry. (c) Textile industry (d) Petroleum and coal

**Re-use Options:** The following options or re–use of effluent have been identified: In general, public health concern is the major issue in any type of reuse of wastewater, be it for irrigation or non-irrigation utilization, especially long term impact of reuse practices.

- i. Irrigation (a) Agriculture, horticulture and forestry (b) Landscaping
- ii. Fish – farming
- iii. Industry
- iv. Non-potable Domestic Reuse etc.

The detailed project report should clearly define the best reuse option particular to GNIDA and strategy to obtain it. Action plan with clarity should be the part of Detailed Project Report (DPR), while preparing sewerage Projects. Before deciding the reuse of treated waste water authority must full fill the water quality norms and its legal implications.

Governing local body can sell the treated waste water and digested sludge to generate the revenue.

### **3.3 The river basin pollution abatement policy**

A sizeable percent of services in the urban area of Greater Noida directly affects the water bodies and the river basin in the city with the open discharge of raw sewage into the water bodies and river through the drains. Therefore, the sanitation policy to also take into consideration the water bodies and the river basins passing through the city.

#### **Objective of the abatement policy**

- i. To set up the limit on levels of contaminants within a water body based on the discharge going to the river or any water body based on the prescribed norms.
- ii. To fix up the water quality discharge parameters based on the norms fixed by the Pollution Control Board
- iii. To control and reduce the water pollution in inland surface water by regular monitoring on quality and quantity and imposing strict penalties wherever the deviation is found based on the norms.
- iv. Treated wastewater effluent is considered a water resource and is added to the water stock for reuse.
- v. Accumulation of heavy metals and salinity shall be monitored, managed and mitigated as per the norms.
- vi. Treated effluent quality should be monitored and users alerted for any emergency causing deterioration of the quality so that they will not use such water unless corrective measures are taken.

- vii. The treated water should adhere to the criteria of Chemical Oxygen Demand (EOD), Biological Oxygen Demand (BOD) and suspended solids, failing to do so will attract severe penalties as decided by the authority.
- viii. Studies should be conducted and projects designed and implemented to store the excess treated wastewater in surface reservoirs but artificial recharge is not permitted. Due attention shall be Penal given to the quality of treated and groundwater and the characteristics of the strata.

### **Penalties to be imposed**

All the builder society, cooperative society which has got their plan approved with onsite STP facility has to maintain the water quality and the quantity discharge parameters based on the norms fixed by the relevant department/agencies. In case for the monitoring of the water quality and quantity any appliances, machines or IT enabled services is put on the STP the cost has to be borne by the builder and the cooperative societies.

In case the norms set by the relevant authorities for water discharge standards for the quantity and the quality are not adhered to then the authority will levy heavy penalty on them which will be payable by them. The penalties will be based on dynamic basis and will keep on increasing with every penalties being imposed.

For checking the ground water aquifers pollution caused by the builder society and the cooperative societies a specialized agency like Central Pollution Control Board or any other relevant agency

For restoration of the water bodies, river and the underground aquifers applicable fee and charges has to paid by them after all the necessary formalities have been done. In case third party evaluation is done the cost has to be borne by the societies.

## **4. SOLID WASTE MANAGEMENT IN THE CITY**

### **4.1 Municipal Solid Waste is safely managed and treated**

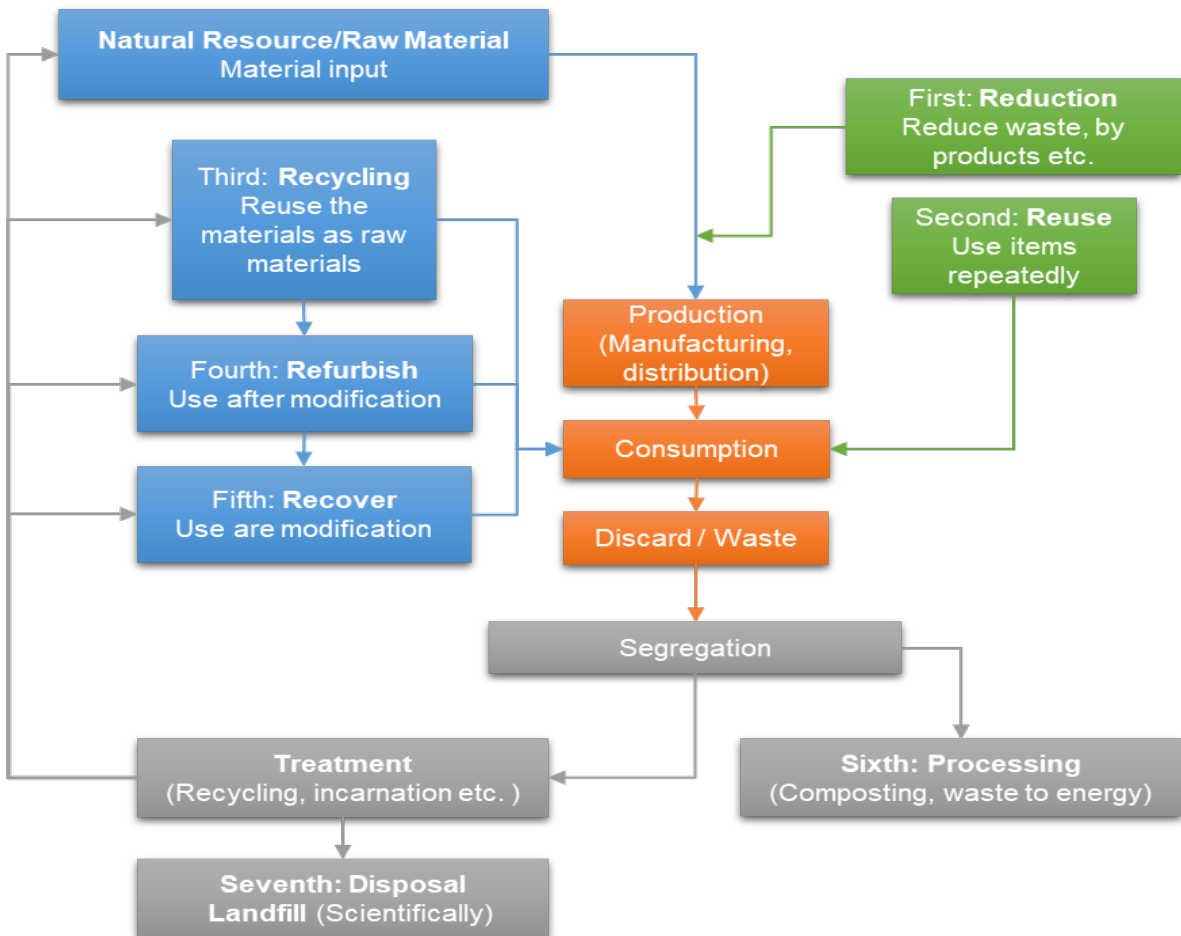
Between March and April 2016, the Ministry of Environment, Forest and Climate Change, Government of India notified the following rules:

- i. Solid Waste Management Rules, 2016;
- ii. E- Waste (Management) Rules, 2016;
- iii. Plastic Waste Management Rules, 2016;
- iv. Construction and Demolition Waste Management Rules, 2016;
- v. Bio-Medical Waste Management Rules, 2016; and
- vi. Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.

According to the SWM Rules 2016, solid waste includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste, and other non-residential waste, street sweeping, silt removed or collected from surface drains, horticultural waste, agriculture and dairy waste, treated bio-medical waste. This excludes industrial hazardous waste, untreated bio-medical waste and e-waste, battery waste, and radio-active waste. Municipal Solid Waste Management (MSWM) refers to a systematic process that comprises of waste segregation and storage at source, primary collection, secondary storage, transportation, resource recovery, processing, treatment, and final disposal of solid waste.

GNIDA has already drafted the policy of decentralized composting and the integrated approach will take care of the collection, segregation, recycling and the processing of the waste based on the policy guidelines.

GNIDA will follow a policy whereby minimal amount of waste is sent to landfills by following the five Rs, namely reduce, reuse, refurbish, recycle and recover. The ultimate goal will be to create value out of waste and produce a paradigm shift from garbage as 'disposable' to 'renewable resource'.



The aim of this policy is to ensure cleaner streets and neighborhoods, improved quality of life by reducing health risks (such as vector-borne diseases like dengue and malaria) associated with garbage piles, and ensure segregation of waste and doorstep collection at affordable rates. In order to effect this, the state will, in the next 10 years aim to drastically improve the efficiency of waste processed, and eventually move to a decentralized system for processing waste. The different categories of waste will be managed efficiently at the ULB level, these are, e-waste, hazardous waste, health care waste, plastic waste and construction and demolition waste.

## **4.2 E-Waste**

Disposal of e-wastes is a particular problem faced in many cities. Computer wastes that are landfilled produces contaminated leachates which eventually pollute the groundwater. The most dangerous form of burning e-waste is the open-air burning of plastics in order to recover copper and other metals. The toxic fall-out from open air burning affects both the local environment and broader global air currents, depositing highly toxic by products in many places throughout the world.

### **Recovery and Reuse**

e- Waste has to be disposed on site and the authorized collector will collect the waste from the societies but the segregation of the same has to be done by the societies themselves in case of the builders society, cooperative society for the societies developed by GNIDA the collection will be done by the authorized representative appointed by the authority and the user charges is to be paid by the residents as fixed by the authority.

### **Responsibilities of the Government**

(i) Authority will authorize a department to set up regulatory mechanism, which will be vested with the responsibility of co-ordinating and consolidating the regulatory functions of the various government authorities regarding e-waste management at the city level.

(ii) Authority will be responsible for providing an adequate system of regulations, controls and administrative procedures for e- waste and hazardous waste management. Existing laws concerning e-waste disposal be reviewed and revamped. A comprehensive regulations that provides e-waste regulation and management and proper disposal of hazardous wastes will be laid out with the concerned agencies.

Under this policy the concerned department will do the following functions.

- Develop guidelines for the manufacturers, processors and importers to deposit basic information on the e- materials handled by them from and to maintain an inventory of these materials. The information should include toxicity and potential harmful effects.



- Identify potentially harmful substances and ask the manufacturers, processors and importers to test them for adverse health and environmental effects.
- Manufacture, processing units, distributors and other agencies using these kind of product give an action plan for recycling, proper handling and disposal of electronic wastes at the city level.
- Encourage beneficial reuse of "e-waste" and encouraging business activities that use waste". Set up programs so as to promote recycling among citizens and businesses.
- Educate e-waste generators on reuse/recycling options
  - a. GNIDA to enforce strict regulations against dumping e-waste in the city. Where the laws are flouted, stringent penalties to be imposed in consultation with IT department.
  - b. GNIDA to enforce strict regulations and heavy fines levied on industries, which do not practice waste prevention and recovery in the production facilities in consultation with IT department.
  - c. Polluter pays principle and extended producer responsibility to be adopted.
  - d. GNIDA to encourage and support the authorized collectors to involve themselves actively in recycling, reuse and proper disposal the e-waste problems in the city.
  - e. Uncontrolled dumping is an unsatisfactory method for disposal of e-waste and hazardous waste to be stopped and heavy penalty to be imposed on its violation.
  - f. GNIDA to explore opportunities to partner with manufacturers and retailers to provide recycling services.
  - g. GNIDA to stop the collection of the e-waste from the houses, commercial area, industrial area, institutions etc. and the concerned have to scientifically dispose the waste on their own
  - h. GNIDA to empanel designated agencies for collection and disposal of the e-waste.

### **Responsibility and Role of industries**

1. Generators of wastes will take responsibility to determine the output characteristics of wastes and if hazardous, should provide management options.
2. All personnel involved in handling e-waste in industries including those at the policy, management, control and operational levels, should be properly qualified and trained. Companies can adopt their own policies while handling e-wastes. Some are given below:
  - Use label materials to assist in recycling (particularly plastics).
  - Standardize components for easy disassembly.

- Re-evaluate 'cheap products' use, make product cycle 'cheap' and so that it has no inherent value that would encourage a recycling infrastructure.
- Create computer components and peripherals of biodegradable materials.
- Utilize technology sharing particularly for manufacturing and de manufacturing.
- Encourage / promote / require green procurement for corporate buyers.
- Look at green packaging options.

3. Companies working in the GNIDA to adopt waste minimization techniques, which will make a significant reduction in the quantity of e-waste generated and thereby lessening the impact on the environment. It is a "reverse production" system that designs infrastructure to recover and reuse every material contained within e-wastes metals such as lead, copper, aluminum and gold, and various plastics, glass and wire. Such a "closed loop" manufacturing and recovery system offers a win-win situation for everyone, less of the Earth will be mined for raw materials, and groundwater will be protected, researchers explain.

4. Manufacturers, distributors, and retailers will have to undertake the responsibility of recycling/disposal of their own products.

5. Manufacturers and sellers of computer monitors, television sets and other electronic devices containing hazardous materials to be held responsible for educating consumers and the general public regarding the potential threat to public health and the environment posed by their products. At minimum, all computer monitors, television sets and other electronic devices containing hazardous materials must be clearly labeled to identify environmental hazards and proper materials management.

### **4.3 Hazardous Waste**

As per Hazardous Waste Management rules 2016 Greater Noida will follow the rules as stated in that. GNIDA will follow the rules and all the establishment under its jurisdiction will follow the rules specified in HWM 2016.

#### **Responsibilities of the occupier for management of hazardous and other wastes.-**

(1) For the management of hazardous and other wastes, an occupier shall follow the following steps, namely:-

- (a) Prevention;
- (b) Minimization;
- (c) Reuse,
- (d) Recycling;

- (e) Recovery, utilization including co-processing;
- (f) Safe disposal.

(2) The occupier shall be responsible for safe and environmentally sound management of hazardous and other wastes.

(3) The hazardous and other wastes generated in the establishment of an occupier shall be sent or sold to an authorized actual user or shall be disposed of in an authorized disposal facility.

(4) The hazardous and other wastes shall be transported from an occupier's establishment to an authorized actual user or to an authorized disposal facility in accordance with the provisions of these rules.

(5) The occupier who intends to get its hazardous and other wastes treated and disposed of by the operator of a treatment, storage and disposal facility shall give to the operator of that facility, such specific information as may be needed for safe storage and disposal.

(6) The occupier shall take all the steps while managing hazardous and other wastes to contain contaminants and prevent accidents and limit their consequences on human beings and the environment; and

(7) Provide persons working in the site with appropriate training, equipment and the information necessary to ensure their safety.

**Responsibilities of GNIDA for environmentally sound management of hazardous and other wastes. –**

(1) GNIDA in collaboration with the Department of Industry in the State or any other government agency authorized in this regard by the State Government, will ensure earmarking or allocation of industrial space or shed for recycling, pre-processing and other utilization of hazardous or other waste in the existing and upcoming industrial park, estate and industrial clusters;

(2) GNIDA in collaboration with Department of Labor in the State or any other government agency authorized in this regard by the State Government shall,-

(a) Ensure recognition and registration of workers involved in recycling, preprocessing and other utilization activities;

(b) Assist formation of groups of such workers to facilitate setting up such facilities;

(c) Undertake industrial skill development activities for the workers involved in recycling, pre-processing and other utilization;

(d) Undertake annual monitoring and to ensure safety and health of workers involved in recycling, pre-processing and other utilization.

### **Storage of hazardous and other wastes.-**

(1) The occupiers of facilities may store the hazardous and other wastes for a period not exceeding ninety days and shall maintain a record of sale, transfer, storage, recycling, recovery, pre-processing, co-processing and utilization of such wastes and make these records available for inspection:

Provided that the State Pollution Control Board may extend the said period of ninety days in following cases, namely:-

- (i) Small generators (up to ten tonnes per annum) up to one hundred and eighty days of their annual capacity;
- (ii) Actual users and disposal facility operators up to one hundred and eighty days of their annual capacity,
- (iii) Occupiers who do not have access to any treatment, storage, disposal facility in the concerned State; or
- (iv) The waste which needs to be specifically stored for development of a process for its recycling, recovery, pre-processing, co-processing or utilization;
- (v) In any other case, on justifiable grounds up to one hundred and eighty days.

### **4.4 Health-care waste**

Of the total amount of waste generated by health-care activities, about 85% is general, non-hazardous waste comparable to domestic waste. The remaining 15% is considered hazardous material that may be infectious, chemical or radioactive.

#### **Types of waste**

Waste and by-products cover a diverse range of materials, as the following list illustrates:

- **Infectious waste:** waste contaminated with blood and other bodily fluids (e.g. from discarded diagnostic samples), cultures and stocks of infectious agents from laboratory work (e.g. waste from autopsies and infected animals from laboratories), or waste from patients with infections (e.g. swabs, bandages and disposable medical devices);
- **Pathological waste:** human tissues, organs or fluids, body parts and contaminated animal carcasses;
- **Sharps waste:** syringes, needles, disposable scalpels and blades, etc.;
- **Chemical waste:** for example solvents and reagents used for laboratory preparations, disinfectants, sterilants and heavy metals contained in medical devices (e.g. mercury in broken thermometers) and batteries;

- **Pharmaceutical waste:** expired, unused and contaminated drugs and vaccines;
- **Cytotoxic waste:** waste containing substances with genotoxic properties (i.e. highly hazardous substances that are, mutagenic, teratogenic or carcinogenic), such as cytotoxic drugs used in cancer treatment and their metabolites;
- **Radioactive waste:** such as products contaminated by radionuclides including radioactive diagnostic material or radiotherapeutic materials; and
- **Non-hazardous or general waste:** waste that does not pose any particular biological, chemical, radioactive or physical hazard.

The major sources of health-care waste are:

- hospitals and other health facilities
- laboratories and research centres
- mortuary and autopsy centres
- animal research and testing laboratories
- blood banks and collection services
- nursing homes for the elderly

Key elements in improving health-care waste management will be:

- Promoting practices that reduce the volume of wastes generated and ensure proper waste segregation;
- Developing strategies and systems along with strong oversight and regulation to incrementally improve waste segregation, destruction and disposal practices with the ultimate aim of meeting national and international standards;
- WhereIN feasible, favouring the safe and environmentally sound treatment of hazardous health care wastes (e.g, by autoclaving, microwaving, steam treatment integrated with internal mixing, and chemical treatment) over medical waste incineration;
- Building a comprehensive system, addressing responsibilities, resource allocation, handling and disposal. This is a long-term process, sustained by gradual improvements;
- Raising awareness of the risks related to health-care waste, and of safe practices; and
- Selecting safe and environmentally-friendly management options, to protect people from hazards when collecting, handling, storing, transporting, treating or disposing of waste.

Government commitment and support is needed for universal, long-term improvement, although immediate action can be taken locally.

Based on the policy the GNIDA will addresses aspects such as regulatory framework, planning issues, waste minimization and recycling, handling, storage and transportation, treatment and disposal options, and training.

#### **4.5 Construction and Demolition Waste**

The waste management rules 2016 shall apply to every waste resulting from construction, re-modeling, repair and demolition of any civil structure of individual or organisation or authority who generates construction and demolition waste such as building materials, debris, rubble.

The authority has already developed a policy on construction and demolition waste and based on the policy the implementation will be done keeping the Construction and demolition waste rules 2016 into consideration.

#### **4.6 Plastic Waste Management**

Plastics have made significant contribution in almost every field of human activity today – agriculture, medical, transportation, piping, electrical and heat insulation, packaging, manufacturing of household and electronic goods, furniture and other items of daily or specific use. Plastics in medical products like disposable syringes, blister packing of tablets and capsules, joint replacement prostheses, inter venous (IV) fluid bottles, blood bags, catheters, heart valves, etc., have significantly helped supporting the human life. Medical devices made of plastics are implanted into the human body.

Apart from the conventional recycling, which is popular in India, alternate processes of plastic recycling are also required to be encouraged. Low-end, mixed and comingled plastics waste can be used safely for co-processing in cement kilns. Industrial fuel can be produced from all types of mixed plastics waste. Plastic waste has been used to construct asphalt roads. All these processes have been successfully tried and established in Indian conditions. Adherence for abiding to safe norms while recycling, as stipulated by the regulatory authorities, is a must. Proper education, facility, incentives and awareness can achieve this goal.

##### **4.6.1 Conventional Technology for Plastic Waste Management**

The conventional technology for plastic waste management involves recycling, landfilling and incineration.

#### **4.6.2 What needs to be done for its management in Greater Noida?**

- Plastic waste, which can be recycled, shall be channelized to registered plastic waste recycler and recycling of plastic shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time;
- GNIDA shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil etc. The standards and pollution control norms specified by the prescribed authority for these technologies shall be complied with;
- Thermoset plastic waste will be processed and disposed of as per the guidelines issued from time to time by the Central Pollution Control Board; and
- The inert from recycling or processing facilities of plastic waste shall be disposed of in compliance with the Solid Waste Management Rules, 2016 or as amended from time to time.

#### **4.6.3. Recycling of plastics through environmentally sound methods:**

Recycling of plastics will be carried out in such a manner that it minimizes the pollution level throughout the process and, as a result, increase the efficiency of the process and conserve the energy. Plastic recycling technologies have been divided into four general types-primary, secondary, tertiary and quaternary.

**Primary** recycling will include processing of scrap/waste into a product with features similar to the original product.

**Secondary** recycling will involve processing of waste plastics into products that have characteristics dissimilar from those of original plastic products.

**In Tertiary** recycling, wherever possible basic chemicals and fuels will be produced from plastic scrap as part of the municipal waste stream or as a segregated waste.

#### **4.6.4 Responsibility of GNIDA**

- GNIDA will develop and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste by engaging agencies or producers.
- GNIDA will setting up, operationalisation and co-ordination of the waste management system and for performing the associated functions, namely: -

- Ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste;
- ensuring that no damage is caused to the environment during this process;
- ensuring channelization of recyclable plastic waste fraction to recyclers;
- ensuring processing and disposal on non-recyclable fraction of plastic waste in accordance with the guidelines issued by the Central Pollution Control Board;
- creating awareness among all stake holders about their responsibilities;
- engaging civil societies or groups working with waste pickers; and
- ensuring that open burning of plastic waste does not take place.

#### **4.6.5 Responsibility of waste generator**

- The waste generator shall. –
  - Take steps to minimize generation of plastic waste and segregate plastic waste at source in accordance with the Solid Waste Management Rules, 2016 or as amended from time to time;
  - Not litter the plastic waste and ensure segregated storage of waste at source and handover segregated waste to GNIDA or agencies appointed by GNIDA', registered recyclers or waste collection agencies;
- All institutional generators of plastic waste, shall segregate and store the waste generated by them in accordance with the Municipal Solid Waste (Management and Handling) Rules, 2016 and handover segregated wastes to authorized waste processing or disposal facilities or deposition centres either on its own or through the authorized waste collection agency;
- All waste generators shall pay such user fee or charge as may be specified by GNIDA for plastic waste management such as waste collection or operation of the facility thereof, etc.; and
- Every person responsible for organising an event in open space, which involves service of food stuff in plastic or multi-layered packaging shall segregate and manage the waste generated during such events in accordance with the Municipal Solid Waste Rules.

#### **4.6.6 Responsibility of Retailers and Street Vendors**

- Retailers or street vendors shall not sell or provide commodities to consumer in carry bags or plastic sheet or multi-layered packaging, which are not manufactured and labelled or marked, as per prescribed under this policy;



- Every retailers or street vendors selling or providing commodities in, plastic carry bags or multi-layered packaging or plastic sheets or like or covers made of plastic sheets which are not manufactured or labelled or marked in accordance with the plastic waste management rules-2016 shall be liable to pay such fines as specified by GNIDA.