

**District Environment Plan: Tonk District**

**(As Per Hon'ble NGT in O.A. No. 710 – 713 / 2017 Dated  
15.07.2019)**

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## Abbreviations

<b>Abbreviations</b>	<b>Details</b>
<b>BMC</b>	<b>Biodiversity Management Committee</b>
<b>BMW</b>	<b>Bio-Medical Waste</b>
<b>BS-VI</b>	<b>Bharat Stage VI Standards</b>
<b>C&amp;D</b>	<b>Construction and Demolition</b>
<b>CAAQMS</b>	<b>Continuous Ambient Air Quality Monitoring Stations</b>
<b>CAPEX</b>	<b>Capital Expenditure</b>
<b>CBMWTF</b>	<b>Common Bio-Medical Waste Treatment Facility</b>
<b>CEPI</b>	<b>Comprehensive Environment Pollution Index</b>
<b>CETP</b>	<b>Common Effluent Treatment Plants</b>
<b>CGWA</b>	<b>Central Ground Water Authority</b>
<b>COP</b>	<b>Conference of Parties</b>
<b>CPCB</b>	<b>Central Pollution Control Board</b>
<b>CS</b>	<b>Chief Secretary</b>
<b>CTO</b>	<b>Chief Technical Officer</b>
<b>DC</b>	<b>District Collector</b>
<b>DEC</b>	<b>District Environment Committee</b>
<b>DEP</b>	<b>District Environment Plan</b>
<b>DFO</b>	<b>District Forest Officer</b>
<b>DM</b>	<b>District Magistrate</b>

<b>DPR</b>	<b>Detailed Project Report</b>
<b>EC</b>	<b>Environmental Compensation</b>
<b>ENV</b>	<b>Environment</b>
<b>EPR</b>	<b>Extended producers Responsibility</b>
<b>ETP</b>	<b>Effluent Treatment Plan</b>
<b>EWM</b>	<b>Electronics Waste Management</b>
<b>FI</b>	<b>Financial Institution</b>
<b>GHG</b>	<b>Green House Gas</b>
<b>GP</b>	<b>Gram Panchayat</b>
<b>GPS</b>	<b>Global Positioning System</b>
<b>GRAP</b>	<b>Graded Response Action Plan</b>
<b>HCF</b>	<b>Health Care Facility</b>
<b>HW</b>	<b>Hazardous Waste</b>
<b>ICDS</b>	<b>Integrated Child Development Services</b>
<b>IEC</b>	<b>Information Education and Communication</b>
<b>IMD</b>	<b>Indian Meteorological Department</b>
<b>ISFR</b>	<b>India State of Forest Report</b>
<b>IWMP</b>	<b>Integrated watershed Management Programme</b>
<b>IWW</b>	<b>Integrated Waste Water</b>
<b>LPG</b>	<b>Liquefied Petroleum Gas</b>
<b>MLD</b>	<b>Million Liter Per Day</b>
<b>MoEF &amp; CC</b>	<b>Ministry of Environment, Forest and Climate Change</b>

<b>MSME</b>	<b>Micros, Small and Medium Enterprises</b>
<b>MSW</b>	<b>Municipal Solid Waste</b>
<b>MT</b>	<b>Metric Tone</b>
<b>NCEPC</b>	<b>National Committee on Environmental Planning and Co-ordination</b>
<b>NGO</b>	<b>Non-Governmental Organization</b>
<b>NGT</b>	<b>National Green Tribunal</b>
<b>NHAI</b>	<b>National Highways Authority of India</b>
<b>NLCP</b>	<b>National Lake Conservation Plan</b>
<b>NPCA</b>	<b>National Plan for Conservation of Aquatic Eco-system</b>
<b>NRDWP</b>	<b>National Rural Drinking Water Programme</b>
<b>NURM</b>	<b>National Urban Renewal Mission</b>
<b>NWC</b>	<b>National Wetland Committee</b>
<b>NWCP</b>	<b>National Wetlands Conservation Programme</b>
<b>OCEMS</b>	<b>Online Continuous Emission Monitoring System</b>
<b>OCEEMS</b>	<b>Online Continuous Effluent &amp; Emission Monitoring System</b>
<b>OPEX</b>	<b>Operating Expenses</b>
<b>PBR</b>	<b>People Biodiversity Register</b>
<b>PCC</b>	<b>Pollution Control Committee</b>
<b>PDS</b>	<b>Public Distribution System</b>
<b>PM</b>	<b>Particulate Matter</b>
<b>PPP</b>	<b>Polluter Pays Principle or Pollution Prevention Pays</b>

<b>PRI</b>	<b>Panchayati Raj Institution</b>
<b>PWD</b>	<b>Public Works Department</b>
<b>PWM</b>	<b>Plastic Waste Management</b>
<b>PW</b>	<b>Plastic Waste</b>
<b>RTO</b>	<b>Regional Transport Officer</b>
<b>RDF</b>	<b>Refuse-derived Fuel</b>
<b>RPCB</b>	<b>Rajasthan Pollution Control Board</b>
<b>RWH</b>	<b>Rain Water Harvesting</b>
<b>SDGs</b>	<b>Sustainable Development Goals</b>
<b>SPCB</b>	<b>State Pollution Control Board</b>
<b>SPVs</b>	<b>Special Purpose Vehicles</b>
<b>STP</b>	<b>Sewage Treatment Plant</b>
<b>SWA</b>	<b>State Wetlands Authority</b>
<b>SWOT</b>	<b>Strengths, Weaknesses, Opportunities and Threats</b>
<b>SW</b>	<b>Solid Waste</b>
<b>TK</b>	<b>Traditional Knowledge</b>
<b>TSDF</b>	<b>Treatment Storage and Disposal Facilities</b>
<b>ULB</b>	<b>Urban Local Body</b>
<b>WEEE</b>	<b>Waste Electrical and Electronic Equipment</b>
<b>WQMP</b>	<b>Water Quality Management Plan</b>
<b>ZLD</b>	<b>Zero Liquid Discharge</b>

## **Foreword**

As per the directions of the Hon'ble National Green Tribunal (NGT), the work on the preparation of the District Environment Plan (DEP) was initiated. The Maharshi Dayanand Saraswati University, Ajmer was given the responsibility of becoming the Knowledge Partner for the preparation of District Environment Plans for four districts namely- Ajmer, Bhilwara, Tonk and Nagaur. The University then assigned the responsibility of the DEP to the undersigned as the Nodal Officer. The work of the DEP started with meetings and visits to the four districts and collecting and compiling data with the help of the respective Collectors. The task was cumbersome and time consuming as there was a large volume of data which was to be collected and interpreted.

The idea behind bringing up District Environment Plans is to prepare a unique composite plan covering all issues related to micro level environment management.

DEP deals with environmental conservation planning, pollution mitigation, management of wastes, conservation of natural resources including wetlands and ground water and necessary measures for ecological balance with the Principles of Sustainable Development. Hence the purpose is to restore the ecological balance of all the cities/ districts through smart planning for waste minimization, control of different types of pollution and intense drive for tree plantation.

Developing countries have to give environmental planning importance and priority if they want a future for their people. Development and environmental planning are intertwined. We can't deal with one without dealing with the other. And we have to change the current mindset of people which is, to put economic development and sustainable development in different boxes. We have to change this thinking that protecting the environment impedes development. But rather think the environment in terms of the natural services it provides, then that mindset can change. We can comprehend and understand its worth and see the environment as a series of assets that development depends upon.

India is a vast country and an emerging economy. It faces enormous challenges with its ever rising population and widespread poverty, in meeting its various other significant commitments. India has been going through a phase of accelerated industrial activities for the past three decades. The associated growth in terms of industrialization and urbanization has led to manifold increase in pollution issues. Over consumption of resources is going to be a very challenging problem of our times & is a major imminent threat. There is a huge disparity

between various income groups in India and this problem needs to be addressed by policy makers and citizens alike.

India is committed to create a clean environment and pollution free air and water. It is mandated in our Constitution. India's commitment and obligations to environmental conservation and protection within the ambit of the targeted goals on environmental sustainability under the Sustainable Development Goals (SDGs) is manifested in the fact that several administrative and regulatory measures, in terms of enhancement of human well being are an integral part of India's development philosophy.

Our State Rajasthan is working hard; there is a long way to go. Pollution, degradation of land, depleting natural resources, and loss of biodiversity are the main issues of concern. Poor management of waste, growing water scarcity, falling groundwater tables, water pollution, lack of preservation forests, biodiversity loss, and land/soil degradation are some of the major environmental issues that Rajasthan faces today.

Hon'ble National Green Tribunal vide order dated 26/09/2019 in O.A. No. 360 of 2018 filed by Shree Nath Sharma Vs Union of India and Others directed that CPCB shall facilitate the District Magistrates in preparation of District Environmental Plan by placing Model plan on its website.

This model plan may be adopted as per the local requirements by all Districts under the supervision of District Magistrate.

The said Order also directs that Department of Environment in respective States / UTs should collect district plans to prepare State Environment Plan, which shall be monitored by the respective Chief Secretaries of State/UT by 15/12/2019.

In compliance of the above directions, the CPCB had prepared a model District Environment Plan (DEP) that covered the following thematic areas

#### 1.0 Waste Management Plan

- (i) Solid Waste Management Plan (for each ULB).
- (ii) Plastic Waste Management (for each ULB)
- (iii) C&D Waste Management.
- (iv) Biomedical Waste Management (for each ULB)
- (v) Hazardous Waste Management
- (vi) E-Waste Waste Management

#### 2.0 Water Quality Management Plan

- 3.0 Domestic Sewage Management Plan
- 4.0 Industrial Wastewater Management Plan
- 5.0 Air Quality Management Plan
- 6.0 Mining Activity Management plan
- 7.0 Noise Pollution Management Plan

It was felt that one of the most important components namely Ecology and Biodiversity was left out. So the forest Department was approached and we could gather information on the forest cover, information related to Flora and Fauna of the District. Hence Ecology and Biodiversity was also added in the DEP.

Most of the information gathered however was from Urban Local bodies (ULB's) and according to me lacked data from the Villages where almost 70% of the population lives. Protecting the pristine nature of the village ecosystem is very important. This is in line with Mahatma Gandhi's ideology on the environment and rural life. He extensively wrote several times that "India lives in her villages". We must keep these beautiful words in mind before framing environmental policies. It is of utmost importance that the data of villages pertaining to their environment is important. While preparing the District Environmental Plan we felt the paucity of data available to us from the villages of the district. May be we'll see some similar work and incorporate data from villages as well in future.

This work got full support from the District administration and Regional Pollution Control Boards of Kishangarh and Bhilwara. The completion of this work would have been more difficult in the absence of the four interns who worked as a team and were assigned responsibilities of one district each. I express my gratitude & appreciation for them.

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## **1. Introduction:**

Environment planning in India began in the early 1970s, after the Human Environment Conference at Stockholm was held by the United Nations. It was after attending this Conference that the Government of India took steps to safeguard its Environment. The outcome of this was the formation of the National Committee on Environmental Planning and Co-ordination (NCEPC) which was set up by the Government of India. As a result of uncontrolled urbanization and the increase in deforestation, the Government felt an urgent need for environmental planning. Environment planning in India includes surveys, conservation of fauna and flora, afforesting and control and prevention of pollution.

The environment is unfortunately considered as a sink for the waste products of economic activity - A place to dispose of the unwanted by-products of production and consumption. Here we as planners have a role to play. We have to ensure that the waste (whether in solid, liquid or gaseous form) does not cause harm or inconvenience to human beings. The environment has the physical capacity to assimilate certain quantities of waste in ways that meet these requirements.

The ecological systems that constitute the environment operate through the perpetual recycling of outputs from natural processes to produce each new generation of living organisms and each consecutive stage in the cyclical transformation of inorganic matter, such as in the nitrogen cycle or the hydrological cycle. Waste products from the human economy can be absorbed by these processes, toxic wastes can be filtered or diluted to render them harmless to human health, wastes that are slow to decay or decompose can be buried in places where they will cause little harm.

How well the environment fulfils this waste sink function depends upon the quantity and quality of waste that is produced and the methods of disposal. The environment's assimilative capacity is not limitless. Too much waste of the wrong sort and in the wrong place can reduce the environment's assimilative capacity, damaging not only natural ecosystems but also the protection they afford to humans against the pollution caused by their own waste.

The environmental aspects are to be induced into each of the developmental activities at the planning stage itself and are to be well coordinated and balanced.

Presently, the environmental aspects are not usually considered while preparing master plans or regional plans and the process is skewed towards developmental needs. For all

developmental activities, a crucial input is land and depending on the activity a specific land use is decided. The environmentally related land use such as trade and industry, housing construction, mining etc. is likely to have some impact on the environment. These land uses need proper planning and integration as some of the activities have interdependencies such as industry with transport, housing etc. Besides this Climate change is now affecting every country on every continent. It is disrupting national economies and affecting lives, costing people, communities and countries dearly today and even more tomorrow. Weather patterns are changing, sea levels are rising, weather events are becoming more extreme and greenhouse gas emissions are now at their highest levels in history. Without action, the world's average surface temperature is likely to surpass 3 degrees centigrade this century. The poorest and most vulnerable people are being affected the most.

Affordable, scalable solutions are now available to enable countries to leapfrog to cleaner, more resilient economies. The pace of change is quickening as more people are turning to renewable energy and a range of other measures that will reduce emissions and increase adaptation efforts. Climate change, however, is a global challenge that does not respect national borders. It is an issue that requires solutions that need to be coordinated at the international level to help developing countries move toward a low-carbon economy.

To strengthen the global response to the threat of climate change, countries adopted the Paris Agreement at the Paris Agreement at the COP21 in Paris, which went into force in November of 2016. In the agreement, all countries agreed to work to limit global temperature rise to well below 2 degrees centigrade. As of November 2020, 194 parties had ratified the Paris Agreement. In this light the decentralized Climate Change Mitigation and Adaptation planning is required. Conservation of Bio-diversity and wetlands are an integral part of environment planning. The rationale for the biological diversity planning is basically it underpins ecosystem functioning and the provision of ecosystem services essential for human well-being.

It provides for food security, human health, the provision of clean air and water; it contributes to local livelihoods, and economic development, and is essential for the achievement of the Millennium Development Goals, including poverty reduction.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs Sustainability defines the models necessary to ensure the survival of the human race and planet

Earth. This includes ways to slow or reverse pollution, conserve natural resources and protect our environment. The principle of 7R is essential strategy for achieving the sustainability. It reduces the load and over exploitation on the natural resources and is a key for resource efficiency.

### **1.1 SWOT ANALYSIS (Strength, Weakness, Opportunities and Threats)**

SWOT Analysis is a strategic planning technique used to help a person or organization to identify strengths, weakness, opportunities and threats related to project planning.

This technique designed for use in the preliminary stage of decision making processes and can be used as a tool for evaluation of the strategic position of organization of many kinds including the governmental setups too.

Strengths and weaknesses are internal issues and things that can be controlled easily by working patten or strategies.

Opportunities and threats are external thing mainly influenced by external ever-changing environment or condition.

**Strengths:** are things that organization does particularly well, or in a way that distinguishes from challenges. These are an integral part of organization.

**Weakness:** It reflects the requirements which yet not mitigated. These are also inherent features of organization and mainly focus on manpower, resources, systems and procedures.

**Opportunities:** These are openings or chances for something positive to happen and usually arise from situations outside the organization, and also considered the future conditions.

**Threats:** These include all possible negative effects that creates hurdles to achieve the strategic goals of the projects. Evolving technologies are ever present threat, as well as an opportunity



#### 01 RETHINK

- Stop and Think: Do we really need that box of individually wrapped snacks?
- Talk to companies that supply our favorite products about rethinking their packaging



#### 02 REFUSE

- Refuse single-use plastics
- Refuse non-recyclable packaging



#### 03 REDUCE

- Reduce consumption
- Become conscious of our choices and question whether or not we really need something



#### 04 REPURPOSE

- Transform stuff we'd normally throw away into something cool and useful
- Repurpose packaging into arts and crafts



#### 05 REUSE

- Be creative
- How can we reuse packaging such as glass, cardboard and some plastics for other uses?



#### 06 RECYCLE

- Use city curbside pickup or find drop-off locations
- Ask about recycling options at work
- Place a recycling container in our car



#### 07 ROT

- Transform organic waste (food scraps + yard clippings) into nutrient rich soil amendment
- Start composting simply + cleanly with the AeromatiCo

# SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



**1** NO POVERTY

**2** ZERO HUNGER

**3** GOOD HEALTH AND WELL-BEING

**4** QUALITY EDUCATION

**5** GENDER EQUALITY

**6** CLEAN WATER AND SANITATION

**7** AFFORDABLE AND CLEAN ENERGY

**8** DECENT WORK AND ECONOMIC GROWTH

**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE

**10** REDUCED INEQUALITIES

**11** SUSTAINABLE CITIES AND COMMUNITIES

**12** RESPONSIBLE CONSUMPTION AND PRODUCTION

**13** CLIMATE ACTION

**14** LIFE BELOW WATER

**15** LIFE ON LAND

**16** PEACE, JUSTICE AND STRONG INSTITUTIONS

**17** PARTNERSHIPS FOR THE GOALS

SUSTAINABLE DEVELOPMENT GOALS

## **1.2 NGT Directions:**

- a. Hon'ble NGT in last one year has issued several directions in various matters which have been based on status brought out by the CPCB on their website and status reports filed before the Tribunal
- b. The directions issued by the Tribunal which are to be executed on pan-India basis
- c. Hon'ble National Green Tribunal (NGT) has ordered Pan-India Directions on various issues relating to environment management and these are to be executed by the Central and State Governments and concerned institutions.

Further, the Directions are required to be executed at District Level covering all cities, towns and villages. The role and responsibilities of enforcement are with District Collectors/Magistrates, Pollution Control Boards, Municipal Bodies, Public Health Engineering Departments and others. The present state level execution and monitoring mechanism on various State and Central Government's Schemes are monitored by Chief Ministers/ Chief Secretaries with DMs/DCs.

### **Monitoring Execution of District Environment Plan**

#### **Protocol/Mechanism of monitoring**

Hon'ble Tribunal has directed District Magistrates (in Order dated 15.07.2019 in O.A No. 713/2017) to monitor the progress of execution of the mentioned issues on monthly basis and provide feed-back to the Chief Secretary on monthly basis. It was also directed to set up Special Task Forces represented by Legal Services Authority and other Departments to be involved in monitoring.

### **1.3 Mechanism / Steps Involved in execution of District Environment Plan**

On each issue, concerned Departments are required to consolidate information on actions taken so far and actions required to be taken to meet them as per time-lines in accordance with the orders of the Tribunal.

- I. Secretariat of DM/SPCB may get the consolidated and place on the web-site of District Magistrate as DMP and regularly uploading progress of actions taken on monthly basis.
- II. Proceedings of monthly interaction of DM with CS may also be placed on the web-site.
- III. Involve District Publicity/Media Department, Education, Health and Government/Non-Government Institutions to take up awareness programmers at appropriate level on day-to-day basis.
- IV. Associate Technical/Scientific Institutions or individual Experts on need-basis for consultation.
- V. Allocate EC funds accrued with SPCBs/PCCs for each District.
- VI. Order of the Tribunal dated 26.9.2019 in O.A No. 360 of 2018 has further clarified in Para 7 of the said Order on the activities covered by the States/UTs and State to prepare State Plan accordingly.

#### **1.4. Objectives of District Environment Plan**

1. To ensure conservation of environment and natural resources at district level.
2. Restore ecological balance.
3. To achieve the Sustainable Development Goals and district level targets within the prescribed timeline.
4. To ensure sustainability at district level following the principles of resource efficiency.
5. To ensure decentralized micro level planning, execution and monitoring regarding environment conservation.
6. To incorporate all facets of environmental conservation in micro level planning.
7. To harness active participation of all stakeholders in planned environment conservation actions.
8. Assess, Mitigate and monitor adverse impacts of various pollution sources at district level.
9. Capacity building of stakeholder, department, agencies, organizations and individuals at district level to understand and implement micro level environmental conservation actions.
10. To harness inter-departmental coordination for implementation of action plans.
11. To develop local knowledge centers and expertise for developing environmental conservation strategies at district level.
12. To develop and implement micro monitoring system at district level.

## **2. District Profile: Tonk at a Glance**

### **Historical background**

Nawabi Nagari 'Tonk' is famous not only in Rajasthan but also all over India for its historical legends. As per the history, Jaipur's King Man Singh conquered Tari & Tokra Janpad in the regime of Akbar. In 1643, twelve villages of Tokra janpad given to Bhola Brahmin. Later Bhola gave a name to these twelve villages as 'Tonk'.

The history of Tonk is very old as it is connected with Bairath culture & civilization. Tonk has been called Rajasthan ka Lucknow, Adabka Gulshan, Romantic poet Akhtar Shreerani ki Nagri, Meethe Kharboojoo ka Chaman, Hindu Muslim Ektaka Maskan and as result of which Tonk could keep an isolated status in Rajasthan.

It is known as Samwad Lakshya in Mahabharat period. In the regime of Mouryas, it is under mouryas then it was merged in to Malvas. Most of the part was under Harsh Vardhan. As per Hevan Sang, tourist of China, it was under Bairath State. In the regime of Rajputs, the parts of this state are under Chavras, Solankis, Kachvahs, Sisodiyas and Chouhans. Later, it was under the regime of King Holkar and Sindhia.

In 1806, Amir Khan conquered it from Balvant Rao Holkar. Later, British government gained it from Amir Khan. As per the treaty of 1817, British government returned it to Amir Khan.

ON 25th March 1948, when Nawab Mohd. Ismile Ali Khan was the ruler; Tonk was merged in to Rajasthan including an area of Tonk and Aligarh Tehsils of old Tonk State Newai. Malpura, Toda Raisingh and Uniara of Jaipur State, Deoli of Ajmer, Marwar and 27 villages of Bundi.

### **Location & Geographical Area**

The District Tonk is situated on National Highway No. 12 at distance of 100 kms from Jaipur. It is located between longitudes 75<sup>0</sup>07 to 76<sup>0</sup>19 and latitude 25<sup>0</sup>41 to 26<sup>0</sup>34. It is bounded in the north by Jaipur district, in the east by Swai Madhopur districts and in the west by the Ajmer district. The total geographical area of Tonk district is 7.16 lac hectares, but for land utilization purpose the area is reported to be 7.19 lacs hectares in 2002-03 as per land record papers. Tonk district occupies 20th position among the existing 33 districts of the state; so far its area is concerned. The total area of the District is 7194 sq kms.

## **Topography**

It is surrounded by 5 districts i.e. in north Jaipur, in South Bundi & Bhilwara, in East Ajmer and in West Sawai Madhopur districts. Average rain fall is 62 mm. Agriculture and animal husbandry is the main occupation of the people.

## **Physiography**

Tonk district has the shape of kite or rhombus with its eastern and western sides bending somewhat inward and the south-eastern portion protruding between Sawai Madhopur and Bundi districts. The district is flat at a general elevation of about 214.32 meters above sea level with rocky but scrubby hills. The soils are fertile but somewhat sandy and the subsoil water too is limited. The distinguishing feature of Tonk district is the Aravalli system, which starts from Bhilwara district and running along the boundaries of Bhilwara and Bundi districts, enters Tonk district in the south near Rajkot and continues in a north-eastern direction until it leaves the district near Banetha, A second chain lies in Tehsil Todaraisingh between the head quarter of the Tehsil Rajmahal where the Banas river flow through this hill. Another important hill is near Malpura and a small hillock near the border of Tehsil Sarwar of district Ajmer.

The rivers and streams of this district belong to the Banas system, which is more or less non perennial. During Monsoon and for a few months thereafter new streams appear and retain water in hollows at some places. Though is not of much use direct irrigation but help irrigation by raising the sub-soil water level of wells. Banas River enters Tonk district at Negdia in Deoli Tehsil and from this place it takes serpentine course, diving the district in roughly two third to its west and north and one third to its east and south. Its total length is 400 Kms. It is fordable during winter and summer but during the rains becomes a swift and angry torrent. Negdia, Bisalpur, Rajmahal, Deopura, Mahendwas and Shopuri are the important villages on the bank of this river. Manshi the principal tributary of Banas travels along the borders of Jaipur and Tonk district between the Tehsils of Malpura and Phagiunitl it turns south to join the Banas at Galod village. The Sohadra is another important river as it feeds the Tordisagar Tank, the biggest irrigation tank in Rajasthan. It joins Mashhi near village Dundia and thereafter meets, Banas River near village Galod. Other small rivers are khari, Daian, Bandi and Galwa which join Banas and Mashiriver at Negdia, Bisalpur, Chaturpura and Chouth-ka-Barwara respectively.

There is no natural lake in the in the district. However, several tanks formed by harnessing the feeders of the Mashri and the Banas are available. The biggest of such tanks is Tordi Sagar in Tehsil Malpura irrigating an area of more than 5 thousands hectares, followed by Bhairon Sagar irrigating an area of about 1295 hectares. Others are very small tanks which are individually a very small area.

Bisalpur Dam 17 Km. from Deoli. The water storage capacity of this dam is 115.50 meter. Besides providing water to Jaipur, Ajmer, Nasirabad, Beawar, Kishangarh etc. this dam will provide irrigation facilities to Deoli, Tonk, & Uniara Tehsils. Due to dam subsoil water level also rise in Deoli,

### **Climate and Rainfall**

The climate of Tonk district is generally dry in short south-west monsoon season which starts from the month of June and continues till the middle of September to November is the post-monsoon season commences and between December and February is winter. In March, summer commences and extends till middle of June. A metrological observatory was established very late at Tonk and according to the observation, the maximum temperature of 22<sup>0</sup> C and minimum temperature of 8<sup>0</sup>C remains in winter, whereas in summer the maximum and minimum temperature 45<sup>0</sup>C and respectively. After monsoon, the temperature falls but the relief heat is not marked because of the added discomfort from the increase in humidity. In summer months humidity remains relatively very low as compared to average humidity of 59.30 C.

The average annual rainfall in the whole of the district is 61.36 cm, but is generally decrease from the south-east to north–west. About 93% of annual is during June to September, of which July and August are the rainiest months. The rainfall data is available from six stations, which show the large variation in rainfall from year.

### **Availability of Minerals**

Aravali system and the Deoli system are main geological formation in the region. Aravali system running from north east to south west and is made of schist's lying over reddish, jointed and altered quartzite's at Bonli, highly crystalline with large Pink garnets at Duni and alteration of Mica schist's and thin rusty quartzite's runs through Tonk city . Several detached hills between Tonk and Jaipur belong to Deoli system. Besides, Newai, Renwal and Chaksu there is a large hill of compact quartzite, resembling in colour and quality with the

Alwar series. Garnites are the important intrusive rocks of igneous origin in the Aravali system of this area and the variety available is genesis granite and coarsely prophyllitic.

Tonk district is endowed with a number of non-metallic of which garnet, Silica sand, quartz and soap are found in abundance. Besides these minerals, feldspar, mica and corundum are also found but in small quantities. In addition to these major minerals, the minor minerals viz. bricks clay masonry stone, Patti-Katla etc. are also mined in Tonk district.

### **Forest: Flora and Fauna**

About 4.61 % of the total area of the district is forest, mostly located near Tonk city, Sohela, Kakor, Benetha, Nagar, Toda Raisingh, Rajmahal and Newai. The main species are Dhonk, Khair, Chills, Khejra, Shisham, Siris, Tendu, Babul and Ber. In the former Tonk state, Antelope, Deer and Nilgai were common in the plains and Leopard, Sambhar and Wild Hog were found in the hills, Tiger could be met occasionally within the south east areas of the district. At present the fauna is considerably reduced and only Deer, Hare, Grey partridges and small sand grouse are generally found. Because of dwindling, wild life shooting is generally not given.

### **Soil, Land Use & Irrigation Practices**

The soil in the district varies from sandy loam to loam in Niwai block and parts of Tonk block and from clayey loam to loam in the remaining area. The National Council of Applied Economic Research regards the district as having undifferentiated soil.

Total reporting area for land utilization purpose is 717958 hectares. Net sown area of the district is 484964 hectares which is 67.84% of the total cropped area (714832 hectares). In the district, 26805 hectares area is covered under for forests, 74946 hectares land is not available for cultivation and 131243 hectares land is uncultivated including fallow land.

Wells and tube-wells are the main sources of irrigation in the district. The total net area irrigated in the district is 191126 hectares out of which 157947 hectares is irrigated by wells and tube wells. Kharif and Rabi crops are the main crops in the district. The important crops in the district in order of area coverage are rapeseed and mustard, wheat, jowar, bajra, gram and maize. Bisalpur project is one of the major projects in Rajasthan constructed on river Banas by the Irrigation Department, Govt. of Rajasthan, for water supply for domestic and irrigation purposes.

**Administrative Setup:**

The District Tonk has 7 subdivisions. There are 7 Sub divisional officers working at sub Divisions. There are 7 Tehsil Headquarters in Tonk District and each one has a Tehsildar as an administrative officer who works in accordance with the Land Records System. Two Sub tehsils are headed by a Naib tehsildar. There are Six Panchayat samitis and each one is headed by a Block Development Officer (BDO). There are One Nagar parishad and Five Nagar Palikas in Tonk District. The Tonk District at present have seven sub-division viz. Tonk, Malpura , Peeplu, Newai, Deoli, Toda, Raisingh and Uniara comprising seven Tehsils and six panchayat samities.



### 3. Issues Requiring Actions:

As per the directions of the Hon'ble NGT, DMs/DCs through District Level Committees are required to act on the following issues:

a) **Waste Management**

- a. Municipal Solid Waste (MSW) including remediation of legacy waste dumpsites.
  - b. Plastic waste management
  - c. Bio-medical waste management
  - d. Construction and demolition waste
  - e. Hazardous Waste Management
  - f. E-waste Management
- b) Restoration polluted water bodies including the river stretches and also those which are not presently included in the polluted stretches.
- c) Maintaining **ambient air quality in 102** (now 122) **non-attainment cities** and in other non-identified areas where levels of PM10 and PM2.5 are exceeding.
- d) **Industries to comply with Water (Prevention and Control of Pollution) Act, 1974** ensuring proper functioning of common effluent treatment plants (CETPs). Environment Compensation (EC) on "**Polluter Pays**" Principle is required to be imposed to utilize for restoration of environment.
- e) Ensure cities, towns and villages provide **proper sewage management facilities** in a time-bound manner or else will be liable to pay EC in case of default and further required to ensure **utilization of treated sewage for non-potable purpose**.
- f) Regulation of **sand mining** to check illegal sand mining and recover compensation. Proper strategic restoration of exhausted mining sites as per District Environment Plan.
- g) For conservation and protection of water sources, undertake **Rejuvenation of water bodies, conserving ground water** and promote **rain water harvesting**.

- h) Setting up of monitoring mechanism by SPCB/PCC on;
  - i. **Hazardous Waste Management**/un-authorized disposal, etc;
  - ii. **E-waste Management** particularly prohibiting un-authorized dismantling / reprocessing of E-waste etc.
- i) Performance audit of State Pollution Control Boards/Committees and issues relating to their functioning including filing up of vacant positions and recognition of laboratories.
- j) Disposal of carcasses.
- k) Environmental Management at **Railway siding locations**.
- l) Environmental Management in **Dairies**.

## **4. Actions to be taken**

The Tribunal has issued detailed directions on each issue for enforcement which are to be executed in accordance with the Acts/Rules. However, for ensuring visible impactful changes and taking immediate actions on certain issues, following actions are suggested below:

### **Solid Waste Management**

- i.** Actions-on model city/town/villages to be taken on priority.
- ii.** Strengthen waste collection, storage and transportation system. Set up surveillance squads/ Task Forces at Ward/Circle level. Attend vulnerable sites/locations and clean them.
- iii.** Special attention on slums and settlements near Railway tracks to maintain hygienic conditions.
- iv.** Install bio-mining activities for clearing legacy waste dump-sites.
- v.** Prohibiting burning of garbage.

### **Plastic Waste**

- i.** Prohibition on use plastic carry bags, plastic cutlery and other decorative items made of Styrofoam (Thermocol) etc.

### **Bio-medical Waste**

- i.** Hospitals, Clinics and individual practitioners may be served with notices to prohibit disposal of bio-medical waste in the community dustbins. In case of non-compliance, EC may be imposed on them.
- ii.** Cities, towns and villages may tie-up individually or collectively to transport bio-medical waste to the common treatment plants.

### **Construction and Demolition Waste**

- I.** Public notices may be issued that construction and demolition waste should only be disposed at pre-identified/notified sites.
- II.** Set up construction and demolition waste processing facilities.

## **Restoration of Polluted River Stretches**

- i.** A river whether seasonal or perennial, should not be misused for disposal of sewage, garbage or any other waste into it.
- ii.** Identify the specifically drains discharging sewage/industrial effluents into the river and intercept them through poundage and divert to the sewage treatment plant.
- iii.** The identified drains till STP are setup, intermediate/interim low cost remediation steps such as ponding, bio-remediation may be taken up for reducing pollution load.
- iv.** Public awareness and awareness at the level of schools and colleges may be taken up.
- v.** Encroachment on the banks is regulated.
- vi.** Capacity building of the ULBs/PRI's residing near state bodies.
- vii.** Citizen's participation in checking quality should be done.

## **Maintaining Air Quality in Cities, Towns, and Villages**

- i.** SPCB/PCCs may undertake snapshot monitoring of ambient air quality in a phased manner covering all cities and towns for wider coverage. GRAP action should be initiated in case of deviations.
- ii.** Surveillance squads/ task forces may be set up at Ward and Circle level to prohibit burning of garbage and other waste.
- iii.** Open parks, dilapidated roads and other sources of dust pollution should be identified and actions be taken to prevent the suspension of dust from such sources.

## **Industrial Pollution Control**

- i.** State Pollution Control Board should post the information (district wise on its website) indicating industries projects granted with consents ameliorative steps and their compliance status.
- ii.** Industries discharging waste water and not having effluent treatment plant are closed down as per Water and Air Act till compliance is achieved.
- iii.** Public access for informing that if any industry is discharging unauthorized liquid effluent or gaseous emissions, may be provided on the website of SPCB and such complaints be acted expeditiously.

## **Sewage Treatment and Utilization**

- i.** Every city, town and village should have time-bound plan to set up sewage/Septage management facility.
- ii.** Intermediate remedial methods may be employed till sewage drains are intercepted and diverted to STP.
- iii.** Treated sewage may be utilized for sprinkling on dust emitting sources for gardening and other non-potable purposes.

## **Regulation of Sand Mining**

- i.** Special Task Forces/Police Forces may be deployed for patrolling sand mining areas, sand mining/stone quarrying to check illegal mining/quarrying.
- ii.** Closed mining's rehabilitation & restoration plans.

## **Rejuvenation of water bodies/rain water harvesting and ground water conservation**

Ponds/water bodies may be identified at each city, town and village level and cleaned and not allowing sewage and solid waste disposal in such ponds.

- i.** State Ground Water Board to ensure ground water quality testing particularly shallow hand pumps, and deep bore wells to check fitness for consumption.
- ii.** Public notices may be issued for installation of bore wells without permission.
- iii.** Government and non-government buildings should install rain water harvesting systems in a time-bound manner.

## **Hazardous and Other Waste Management**

- i.** Illegal transportation of hazardous and E-waste may be monitored.
- ii.** Unauthorized processing of hazardous and e-waste must be checked.

## **E-Waste**

- i.** Setting up of collection centers for e-waste.
- ii.** Setting up of dismantling and recycling plants either at State level or District level.

## **Noise Pollution Control**

- i.** Every city, town and village should have tools to identify the Noise Pollution levels so as actions may be taken accordingly.
- ii.** Identification and demarcation with suitable Signage's for the No-Honking zones.

## **Ecology and Biodiversity**

- i.** To prepare extensive database for the biological resources (Flora and Fauna) and to identify & mitigate the threats facing by such components (with the help of Peoples Biodiversity Registers).
- ii.** Special Task Forces/ Forest Department / Police Forces may be deployed for patrolling trust areas of illegal hunting, poaching and to check illegal trading.
- iii.** Dried water bodies and wetlands restoration plans along with removal of encroachments from the catchment areas.
- iv.** To develop and maintaining the desirable forest cover and area according to Biodiversity and Forest acts of Government of India and State Government.

## **4.1 Immediate Actions**

**On urgent basis, to bring visible impactful changes in public, following actions may be considered:**

- i.** Work expeditiously to focus cleanliness with enforcement of waste management rules including thrust on Air and Water Quality Management.
- ii.** In cities and towns identify garbage littered areas/localities and clean them and publicize them.
- iii.** Focus on slums and settlement located along railway tracks and either rehabilitate them/ or provide proper living conditions.
- iv.** Set up at least one plastic waste, bio-medical waste and construction and demolition waste processing centre according to the population pressure of the ULBs.
- v.** Clear encroachment from, river banks/lake /pond and beautify them.
- vi.** Vigilance and stop burning of waste and cover dusty areas/activities.
- vii.** Immediately sensitize locals, schools, colleges and other voluntary organizations for creating awareness.
- viii.** Capacity building of staff of ULBs/PRI

## 5. Segments of District Environment Plan (DEP)

### “The Proposed Model Action Plan for 8 Thematic Areas”

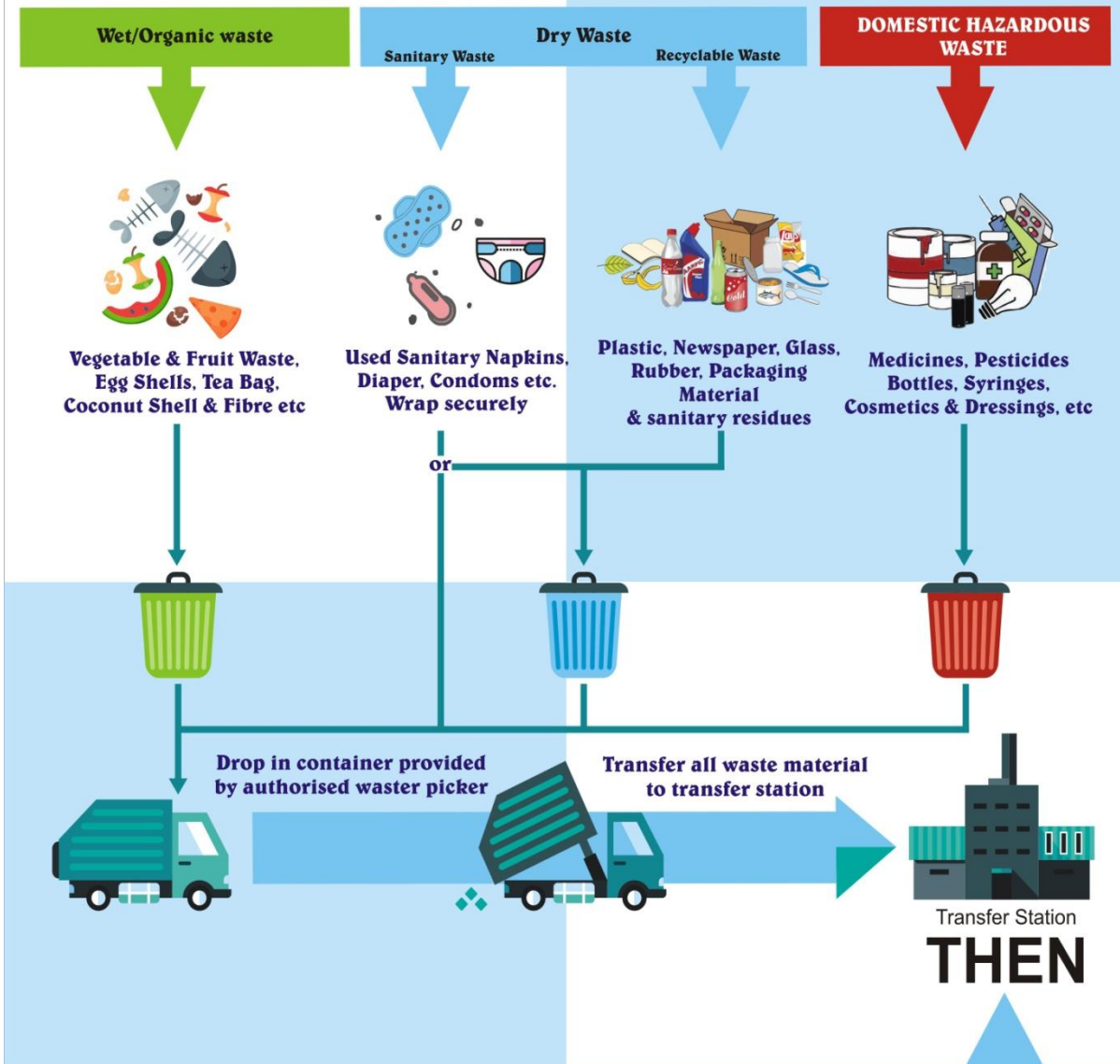
#### 5.1 Waste Management Plan



#### 5.1.1. Solid Waste Management Plan (for each ULB)

Municipal Solid Wastes (Management & Handling) Rules, 2016 (MSW Rules) are applicable to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid waste.

# SEGREGATED SOLID WASTE COLLECTION AT DOORSTEP



**Wet Waste**

**Composting / Bio-Methanation**

**Dry Waste**

↓

**MRF**

↓

- Recyclable to authority recyclers
- Combustible to RDF/Plant
- Inert to landfill

**Sanitary Waste**

**Common biomedical waste treatment Facility**



# Do's And Dont's Under Solid Waste Management Rules 2016

## Do's

- 


Handover the segregated solid waste Only to authorized waste pickers.
- 


Always wrap securely the sanitary Waste before disposal
- 


Avoid generation of solid waste as far as possible Reuse bottles, clothes, paper before disposing.
- 


Segregate waste source into wet, dry, Sanitary and domestic hazardous waste.
- 


Encourage community based composting plant for Waste management of wet/organic waste
- 


Store wet waste in covered containers

## Don'ts

- 


Don't litter or burn solid waste on road/ in surroundings.
- 


Don't mix C&D waste with dry waste store separately and transfer it to designated location centers by the local body
- 


Don't store wet waste to beyond 24 hours in home to avoid fermentation of waste.
- 


Don't Discard commodities which can be reused multiple times/ways

# Clean India, Green India

## Baseline Data for Solid Waste Management

1.0 Waste Management Plan				
(i) Solid Waste Management Plan (for each ULB)				
No.	Action Areas	Details of Data Requirement	Units of Measurable Outcome	Please enter Measurable Outcome for District
	No of ULBs in the District		[Nos]	6
	Population		[Nos as per 2011 census]	297252
SW1	Report on inventory of total solid waste Generation			
SW1a		Total solid waste Generation	[in MT/Day] or [Not estimated]	96
SW1b		Qty. of Dry Waste segregated	[in MT/Day] or [Collection Not initiated]	5.25
SW1c		Qty. of Wet Waste segregated	[in MT/Day] or [Collection Not initiated]	Collection Not initiated
SW1d		Qty. of C&D Waste segregated	[in MT/Day] or [Collection Not initiated]	Collection Not initiated
SW1e		Qty. of Street Sweeping	[in MT/Day] or [Not estimated]	1.15
SW1f		Qty. of Drain Silt	[in MT/Day] or [Not estimated]	1.05
SW1g		Qty. of Domestic Hazardous Waste(DHW) collected	[in MT/Day] or [No Facility]	No Facility
SW1h		Qty. of Other Waste (Horticulture, sanitary waste, etc.)	[in MT/Day] or [Qty not estimated]	Qty not estimated
SW1i		No of Old dump sites	[Nos] or [None]	8
SW1j		Qty stored in dumpsites	[MT] or [Not estimated]	111561 MT
SW1k		No of Sanitary landfills	[Nos] or [None]	None
SW1l		No of wards	[nos]	200
SW2	Compliance by Bulk Waste Generators			
SW2a		No of BW Generators	[numbers] or [inventory not done]	Inventory not done
SW2b		No of on-site facilities for Wet Waste	[numbers] or [No data]	No data
SW3	Compliance in segregated waste Collection SW Collection			
SW3a		Total generation	[Automatic] from SW1a	96
SW3b		Wet Waste	[in MT/Day] or [Collection Not initiated]	Collection Not initiated
SW3c		Dry Waste	[in MT/Day] or [Collection Not	6.1

			initiated]	
SW3d		C&D Waste	[in MT/Day] or [Collection Not initiated]	Collection Not initiated
SW4	Waste Management Operations			
SW4a		Door to Door Collection	[100%] / [partial %] / [not initiated]	100%
SW4b		Mechanical Road Sweeping	[100%] / [partial%] / [not initiated]	Not Initiated
SW4c		Manual Sweeping	[100%] / [partial%]	89.50%
SW4d		Segregated Waste Transport	[100%] / [partial %] / [not initiated]	Not Initiated
SW4e		Digesters (Bio- methanation)	[% of WW] / [not initiated]	Not Initiated
SW4f		Composting operation	[% of WW] / [not initiated]	9.16%
SW4g		MRF Operation	[MRF used] / [not installed]	Not Installed
SW4h		Use of Sanitary Landfill	[% of SW collected] / [no SLF]	no SLF
SW4i		Reclamation of old dumpsites	[initiated] / [not initiated]	Not Initiated
SW4j		Linkage with Waste to Energy Boilers / Cement Plants	[initiated] / [not initiated]	Not Initiated
SW4k		Linkage with Recyclers	[initiated] / [not initiated]	Not Initiated
SW4l		Authorization of waste pickers	[initiated] / [not initiated]	Not Initiated
SW4m		Linkage with TSDF / CBMWTF	[initiated] / [not initiated]	Not Initiated
SW4n		Involvement of NGOs	[initiated] / [not initiated]	Not Initiated
SW4o		Linkage with Producers / Brand Owners	[initiated] / [not initiated]	Not Initiated
SW4p		Authorisation of Waste Pickers		32
SW4q		Issuance of ID Cards	[initiated] / [not initiated]	Initiated
SW5				
SW5a		Waste Collection Trolleys	[Nos. Required] / [Nos. Available]	200/200
SW5b		Mini Collection Trucks	[Nos. Required] / [Nos. Available]	55/55
SW5c		Segregated Transport	[yes] / [no] / [% area covered]	No
SW5d		Bulk Waste Trucks	[Nos. Required] / [Nos. Available]	0
SW5e		Waste Transfer station	[Nos. Required] / [Nos. Available] / [Not available]	0
SW5f		Bio-methanation units	[Nos. Required] / [Nos. Available]	0
SW5h		Composting units	[Nos. Required] / [Nos. Available]	6/00

SW5i		Material Recovery Facilities	[used or installed] / [not available]	Installed
SW5k		Waste to Energy (if applicable)	[Required] / [Nos. Available]	Required
SW5l		Waste to RDF	[Required] / [Nos. Available]	Required
SW5m		Sanitary Land fills	[Nos] / [Nos. Available]	0
SW5n		Capacity of sanitary landfills	[MT] // [Nos. Available]	Nil
SW5o		Waste Deposit Centers (DHW)	[Nos] / [Nos. Available]	6
SW5p		Other facilities	[give or select from list]	Not Available
SW6	Notification and Implementation of By-Laws			
SW6a		Notification of By-laws	[done] / [in progress] / [not initiated]	Done
SW6b		Implementation of by-laws	[done] / [in progress] / [not initiated]	In Progress
SW7	Adequacy of Financial Status of ULB			
SW7a		CAPEX Required	[INR] / [Not required]	8.00cr
SW7b		OPEX	[INR per Year] / [% of requirement]	4.10cr
SW7c		Adequacy of OPEX	[Yes] / [No]	No

## SWOT Analysis for Solid Waste Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (attributes of the Organization)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>• Door to Door collection (100%)</li> <li>• Manual Sweeping (100%)</li> <li>• Implementation of Solid Waste Management Bylaws</li> </ul>	<b>Weakness</b>
		<ul style="list-style-type: none"> <li>• Manual street sweeping (for limited period)</li> <li>• No sanitary landfill</li> <li>• Either MRF (Metal Recovery Function) Operation not installed or if installed in ULBs then not yet functional</li> <li>• No Proper Waste Segregation</li> <li>• Not Initiated linkage with TSDF (Treatment, Storage and Disposal facilities)</li> <li>• Not Initiated linkage with Recyclers</li> </ul>	
External Origin (attributes of the Environment)	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>• Mechanical Road Sweeping, Street sweeping can be upgraded to mechanical suckers</li> <li>• waste segregation (Dry waste- Wet waste-C&amp;D Waste- Domestic hazard waste)</li> <li>• Identification of area for landfills (Open and Sanitary)</li> <li>• Development of compost sites</li> </ul>	<b>Threats</b>
		<p>&amp; Bio-methanation Unit</p> <ul style="list-style-type: none"> <li>• Reclaimanation of old dump sites</li> </ul> <p>Implement TSDF (Treatment, Storage and Disposal facilities)</p> <ul style="list-style-type: none"> <li>• Identification and involvement of NGOs/SHGs</li> <li>• On Site Source Segregation</li> </ul>	<ul style="list-style-type: none"> <li>• No Classification &amp; Segregation Domestic Hazardous waste</li> <li>• Not proper implementation of Environmental Laws</li> <li>• Pressure of Tourists</li> </ul>

## Action Plan for Solid Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1.	Door to Door collection of municipal solid waste as per SWM Rules-2016 Segregation at source of solid waste Regular pest control system	Regular activity	ULBs
2.	Collection, Segregation, Transport and Disposal of Solid Waste in city	Regular activity	ULBs
3.	Segregation at source of solid waste	Regular activity	ULBs / Individual (At source)
4.	Plantation of area specific types of plants to mitigate pollution, Regular cleaning of drains and disposal of sludge, In-house disposal of Solid waste. <ul style="list-style-type: none"> <li>In industrial areas as per SWM Rules-2016</li> <li>In areas of human settlement as per SWM Rules-2016</li> </ul>	Regular activity	Department of Industries/ULBs
5.	Development of new SWM facility Establishment of Bio-compost RDF and waste to energy plant	Immediate	ULBs
6.	Construction of appropriate number of Sentry Landfills in district with respect to population and development of leachate collection and treatment centre at same site.	Immediate	ULBs
7.	Preventing solid waste entering into water bodies – installation of bar mesh in Nallahs & Drains	Immediate	ULBs
8.	GPS enabled vehicles for waste transportation & user-friendly mobile app	Immediate	ULBs
9.	Installation of Litter bins & waste storage bins at appropriate locations.	Immediate	ULBs
10.	Redressal of complaints	Regular activity	ULBs
11.	Actions against defaulters of Solid Waste Management Rules- 2016	Immediate	ULBs
12.	Information, Education and Communication (IEC) activities for source segregation	Regular activity	ULBs/ RPCB/ Education Department/ NGOs
13.	Authorization of solid waste processing facilities from RPCB	Immediate	ULBs/ RPCB

## **5.1.2 Plastic Waste Management**

Plastic products become an integral part of our daily life. That's why Plastic became menace worldwide as plastic polymer is produced at a massive scale worldwide. On an average, production of plastic crosses 150 Million tones globally per year. It has wide application in packaging, films, wrapping materials, shopping and garbage bags, fluid containers, clothing, toys, household and industrial products and building materials.

According to a report of Central Pollution Control Board CPCB (2017-18) has estimated that India generates approximately 9.4 Million tons per annum plastic waste, (which amounts to 26,000 tons of waste per day), and out of this approximately 5.6 Million tons per annum plastic waste is recycled (i.e. 15,600 tons of waste per day) and 3.8 Million tons per annum plastic waste is left uncollected or littered (9,400 tons of waste per day). The Government of India notified Plastic Waste Management (PWM) Rules, 2016 and was further amended and named as 'Plastic Waste Management (Amendment) Rules, 2018. These rules shall apply to every Waste Generator, Local Body, Gram Panchayat, Manufacturer, Importer, Producer and Brand Owner.

# PLASTIC WASTE MANAGEMENT

Collection From Unorganized sector/authorized waste pickers



Collection of Segregated waste (Household/Commercial sector)



**RECYCLING STRENGTHENS  
CIRCULAR ECONOMY .... !!!**



# CATEGORIES OF PLASTICS, SYMBOL OF IDENTIFICATION AND USAGE



## PET



### POLYETHYLENE TEREPHTHALATE

Soft drink bottles, packaged water bottles, cooking oil container etc.

### HIGH-DENSITY POLYETHYLENE

Shampoo bottles, recycling bins, agricultural pipe, base cups, playground equipment etc.



## HDPE



## PVC



### POLYVINYL CHLORIDE

Pipe, Window profile, fencing, flooring, shower curtains, lawn chairs, non-food bottles and children's toys etc.

### LOW-DENSITY POLYETHYLENE

Plastic carry bags, most of the wrappings, plastic shopping bags etc.



## LDPE



## PP



### POLYPROPYLENE

Auto parts, industrial fibers, food containers, dishware etc

### POLYSTYRENE

Cafeteria trays, plastic utensils, toys, video cassettes and cases, clamshell containers, insulation board etc.



## PS



## 0



### OTHER

Thermoset Plastics, Multilayer and Laminates, Bakelite, Polycarbonate, Nylon SMC, FRP etc.

# TECHNOLOGIES FOR PLASTIC WASTE DISPOSAL



## Utilization of Plastic waste in road Construction:

Segregated plastic waste  
(except chlorinated/brominated Plastic Waste)  
from mixed municipal solid waste (MSW)

## Co-processing of Plastic waste in Cement Kilns:

Plastic waste is used as Alternate Fuel and  
Raw-material (AFR), subjected to higher temperature  
around 1400°C-1500°C from mixed  
Municipal Solid Waste (MSW)



## Conversion of Plastic Waste into Fuel-oil: Refused-derived Fuel (RDF)

HD, LD, PP and multilayer packaging except PVC

## Disposal of plastic waste through Plasma Pyrolysis Technology (PPT)

Different types of Plastic waste Such as polyethylene bags,  
Solid Plastic, Metalized plastic, Multi-layered Plastic and PVC Plastic  
can be disposed through PPT.



## Baseline Data for Plastic Waste Management

1.0 Waste Management Plan				
(ii) Plastic Waste Management (for each ULB)				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
	Population		[Nos as per 2011 census]	297252
PW1	Inventory of plastic waste generation			
PW1a		Estimated Quantity of plastic waste generated in District	[MT/day] / [Not Estimated]	26.05
PW2	Implementation of Collection			
PW2a		Door to Door collection	[100%] / [partial %] / [not initiated]	100%
PW2b		Segregated Waste collection	[100%] / [partial %]	0%
PW2c		Plastic waste collection at Material Recovery Facility	[MRF used] / [not installed]	MRF constructed for operation tender to be floated
PW2d		Authorization of PW pickers	[Nos] / [not initiated]	32
PW2e		PW collection Centers	[Nos] / [not established]	not established
PW3	Establishment of linkage with Stakeholders			
PW3a		Established linkage with PROs of Producers	[Nos] / [not established]	Not Established
PW3b		Established linkage with NGOs	[Nos] / [not established]	Not Established
PW4	Availability of facilities for Recycling or utilization of PW			
PW4a		No. of PW recyclers	[Nos]	0
PW4b		No Manufacturers	[Nos]	0
PW4c		No of pyrolysis oil plants	[Nos]	0

PW4d		Plastic pyrolysis	[Quantity in MT sent per Month]	0
PW4e		Use in road making	[Quantity MT used per Month]	0
PW4f		Co-processing in Cement Kiln	[Quantity in MT sent per Month]	2.335 MT
W5	Implementation of PW Management Rules, 2016			
W5a		Sealing of units producing < 50-micron plastic	[All sealed] / [Partial] / [no action]	Partial
PW5b		Prohibiting sale of carry bags < 50 micron	[Prohibited] / [Partial] / [no action]	Partial
PW5c		Ban on Carry bags and other single use plastics as notified by State Government	[Implemented] / [Partial] / [no action] / [No Ban]	Partial
PW6	Implementation of Extended Producers Responsibility (EPR) through Producers / Brand-owners			
PW6a		No of Producers associated with ULBs	[Nos] / [None]	None
PW6b		Financial support by Producers / Brand owners to ULBs	[Nos] / [None]	None
PW6c		Amount of PRO Support	[Rs...]	None
PW6d		Infrastructure support by Producers / Brand owners to ULBs	[Nos of Producers] / [None]	None
PW6e		No of collection centers established by Producers / Brand owners to ULBs	[Nos] / [None]	None

## SWOT Analysis for Plastic Waste Management

		Helpful to achieving the objectives	Harmful to achieving the objectives	
Internal Origin (attributes of the Organization)	Strengths	<ul style="list-style-type: none"> <li>Use of plastic waste in co-processing in Cement Kiln</li> </ul>	Weakness	<ul style="list-style-type: none"> <li>No proper estimation of total plastic waste generated per day</li> <li>Less number of authorised plastic waste pickers with reference to overall population</li> <li>Either MRF (Metal Recovery Function) Operation not installed or if installed in ULBs then not yet functional</li> <li>No / partial Sealing of Units producing less than 50 micron plastic</li> </ul>
	External Origin (attributes of the Environment)	Opportunities	<ul style="list-style-type: none"> <li>Segregation of Plastic waste should be in proper manner and onsite Segregation</li> <li>Material recovery facility should be initiated in proper manner</li> <li>NGOs/SHGs should be involved</li> <li>Establishment of plastic waste recycle centre</li> <li>Establishment of Pyrolysis oil plant</li> <li>Use of plastic in road making</li> </ul>	Threats

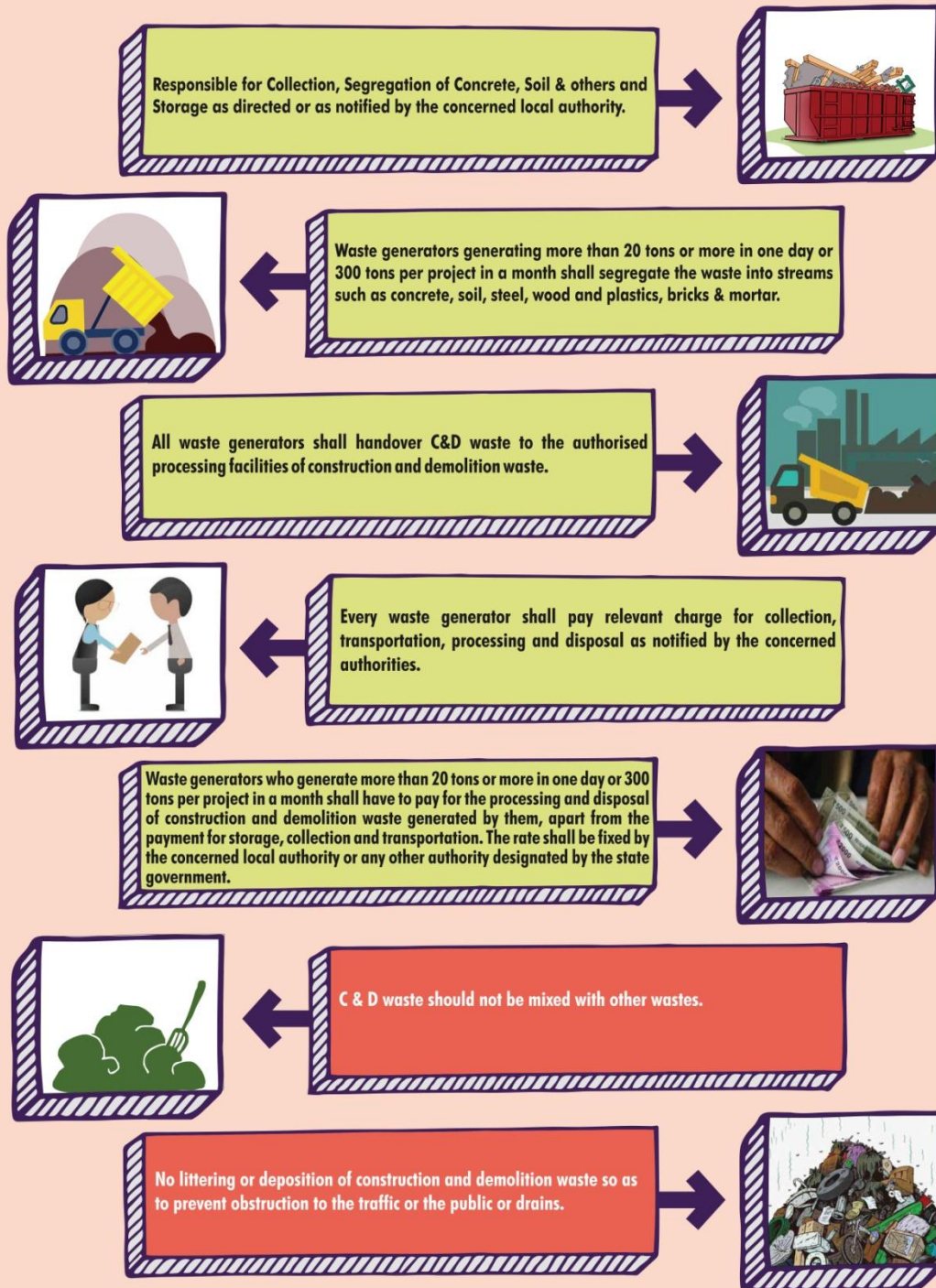
## Action Plan for Plastic Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1.	Door to Door plastic waste collection	Regular activity	ULBs
2.	Setting up of decentralized waste processing facilities by bulk waste generators	Immediate	ULBs/ Mandi Parishad/ Bus Stand/ Hotels/Institutions etc.
3.	Plastic waste segregation at Source	Regular activity	ULBs / Waste Generator
4.	Development and Setting up of Infrastructure for Segregation, Collection, Storage, Transportation , Processing and Disposal of Plastic Waste	Regular activity	ULBs/ Panchayat
5.	Management by Waste Generator (Use of Plastic Carry Bags, Plastic Sheets, extended product life cycle, Cover Made of Plastic Sheets and Multi Layered Packaging)	Immediate	ULBs/ Panchayat / Waste Generator
6.	Utilization of Non-recyclable plastic waste (Road Construction, Waste to Fuel, Waste to energy, alternative uses identification etc)	As per requirement	ULBs/ PWD
7.	Engaging Civil Societies/NGOs/Agencies working with Waste Picker	Immediate	ULBs
8.	Channelization of Plastic Waste to Recyclers	Immediate	ULBs
9.	Ban on Carry bags and other single use plastics as notified by State Government	Immediate	ULBs
10.	Prohibiting sale of plastic carry bags, thermocol and cutlery etc.	Immediate	ULBs
11.	Ensuring no open burning and littering of Plastic Waste	Immediate	ULBs/ Panchayat
12.	Submission of Annual Report to CPCB	Annually	RPCB
13.	Preventing plastic waste entering into water bodies – installation of bar mesh in Nallahs & Drains	Immediate	ULBs
14.	Information, Education & Communication (IEC) for plastic waste management.	Regular Activity	ULBs/ RPCB/ Development Authority/ NGOs/Education Department

### **5.1.3. Construction and Demolition Waste Management**

Safe and cost-effective management of construction & demolition wastes is a significant environmental challenge for modern society. Due to rapid urbanization is changing the nature of construction & demolition wastes management from a low priority, localized issue to a pervasive social and environmental problem with risks to public health and environment. Inadequately managed waste disposal has the potential to affect the health and environment. Construction and demolition waste" means waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure".

## Duties of Waste Generator, Under “The Construction & Demolition Waste Management Rules, 2016”



Waste Is not Waste until it's Wasted..!!

# C&D WASTE MANAGEMENT

## MIXED C&D WASTE



Wood, Bricks,  
Concrete and Other Masonry Products,  
Metals (Ferrous and Non-Ferrous),  
Roofing Shingles, Cardboard, Plastic, soil etc.

## C&D WASTE PROCESSING PLANT



## VARIOUS TYPES OF RECOVERED AGGREGATES



## PRODUCTS MANUFACTURED



Kerb Stone

Pavement Block

Drain Covers

Hollow Blocks

## Baseline Data for Construction and Demolition Waste Management

1.0 Waste Management Plan				
(iii) C&D Waste Management				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
	Population		[Nos as per 2011 census]	297252
CD1	Inventory of C&D waste generation			
CD1a		Estimated Quantity	[Kg/Day] / [Not estimated]	Not estimated
CD2	Implement scheme for permitting bulk waste generators			
CD2a		Issuance of Permissions by ULBs	[Initiated] / [Not initiated]	No Bulk Waste Generator
CD3	Establishment of C&D Waste Deposition centers			
CD3a		Establishment of Deposition Points	[Yes] / [No]	Yes
CD3b		C&D Deposition point identified	[Yes] / [No]	Yes
CD4	Implementation of By-Laws for CD Waste Management			
CD4a		Implementation of By-laws	[notified] / [not notified]	Notified
CD4b		Collection of Deposition / disposal Charges	[Initiated] / [Not initiated]	Notified
CD5	Establishment of C&D Waste recycling plant or linkage with such facility			
CD5a		Establishment CD Waste Recycling Plant	[Established] / [Sent to shared Facility] / [No facility exists]	No facility exists
CD5b		Capacity of CD Waste Recycling Plant	[MT/Day] / [Not available]	Not Available

## SWOT Analysis for Construction and Demolition Waste Management

		<b>Helpful</b> to achieving the objectives	<b>Harmful</b> to achieving the objectives	
<b>Internal origin</b> (attributes of the Organization)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>Deposition points for C&amp;D Waste identified &amp; established</li> </ul>	<b>Weakness</b>	<ul style="list-style-type: none"> <li>Inventory of C&amp;D Waste generation not estimated</li> </ul>
	<b>External Origin</b> (attributes of the Environment)	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>Proper implementation of C&amp;D waste management rules 2016</li> <li>Establishment of C&amp;D waste recycling plant</li> <li>Proper segregation and recovery of C&amp;D waste</li> <li></li> </ul>	<b>Threats</b>

## Action Plan for Construction and Demolition Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1	Approval of Waste Management Plan submitted by Waste Generators before Construction starts.	Immediate	ULBs
2	Proper collection, transportation, processing and disposal of C&D Waste	Immediate	ULBs/ Waste Generator with the help of concerned ULBs
3	Setting up of C& D Waste processing facility.	Immediate	Urban Development & Housing and Town Planning Department / RPCB
4	Identification of sites for collection and processing facility	Immediate	ULBs
5	Provisions for using materials made by C&D Waste in Construction Activity like paving blocks, lower layers of road pavements, colony and rural roads etc.	Immediate	Urban Development & Housing and Town Planning Department / RPCB/ ULBs/ Panchyat
6	Information, Education & Communication (IEC) for C&D waste management.	Regular Activity	ULBs/ RPCB/ Development Authority/ NGOs/Education Department
7	Fix rates to be paid by Waste Generators for Collection, Storage & Transportation of Waste.	Immediate	ULBs
8	Authorization & Monitoring of C& D waste processing plant	Immediate	RPCB
9	Preparation & Submission of Annual Report to CPCB.	Annually	RPCB
10	Policy for management of C&D waste	Immediate	ULBs

#### **5.1.4. Bio-Medical Waste Management**

Biomedical waste is defined as “any waste, which is generated during the diagnosis, treatment or immunization of human beings or animals or in research activities pertaining thereto or in the production or testing of biological”. The biomedical waste management and handling has been assuming increasing significance for the past few years. The responsibility of medical administrators as regards proper handling and disposal of this category of waste has now become a statutory requirement with the promulgation of Government of India.

**Categories of Biomedical Waste** There are ten defined categories (category code Nos. 1 to 10) as follows:

- a) Human anatomical waste: (tissues, organs, body parts)
- b) Animal waste: (including animals used in research and waste originating from veterinary hospitals and animal houses).
- c) Microbiological and biotechnology waste: (including waste from lab cultures, stocks or specimens of microorganisms, live or attenuated vaccines, wastes from production of biological etc.)
- d) Waste sharps: (used/unused needles, syringes, lancets, scalpels, blades, glass etc.)
- e) Discarded medicines and cytotoxic drugs.
- f) Soiled wastes: (items contaminated with blood and body fluids, including cotton dressings, Linen, plaster casts, bedding etc.)
- g) Solid wastes: (wastes generated from disposable items other than waste sharps such as tubing, catheters, I.V. sets, etc.)
- h) Liquid waste: (waste generated from washing, cleaning, housekeeping and disinfection activities including these activities in labs).
- i) Incineration ash: (from incineration of any biomedical waste)
- j) Chemical waste: (chemicals used in production of biological and disinfection).



## BIO MEDICAL WASTE CATEGORIES, THEIR SEGREGATION AND COLLECTION

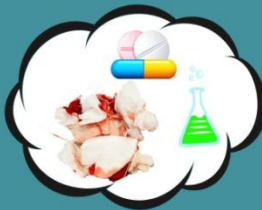


Human Anatomical waste, Animal Anatomical waste, Soiled waste, Expired or discarded medicines, Chemical waste, Chemical Liquid waste and laboratory waste.

Tubing, Bottles, Intravenous tubes, Catheters, Urine Bags, Syringes without needles, Vaccutainers with their needles cut and used gloves.

Needles, Syringes with Fixed Needles, Needles from Needle tip Cutter/ Burner, Scelpels, Blade and other contaminated Sharp Object.

Broken or discarded & Contaminated glass, Medicine Vials, Ampules Except those contaminated with cytotoxic waste and Metallic Body implants.



**Infected waste**



**Infected plastic**



**Sharp waste**



**Glassware**

## Duties of Health Care Facility under BIO MEDICAL WASTE MANAGEMENT RULES, 2016

### Management



- Take necessary measures to handle Bio-medical waste
- Segregation of bio-medical waste in coded bags or containers as per BMW Management Rules, 2016
- Phase out use of chlorinated plastic bags, excluding blood bags and gloves by 27th March 2019
- Review and monitor the activities related to bio-medical waste management
- Report major accidents



### Storage of Waste

Provision within the premises for a safe, ventilated and secured location for temporary storage of biomedical wastes;



### Safety of Healthcare workers

- Immunize everyone, involved in handling of bio-medical waste, for protection against diseases including Hepatitis B and Tetanus
- Ensure occupational safety of all its health care workers and provide requisite personal protective equipment;
- Conduct health check up at the time of induction



### Training

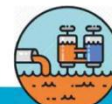
Provide training to all its health care workers and others, involved in handling of biomedical waste at the time of induction and there after at least once every year.

### Bar Coding



Establish a Bar-Code System for bags or containers containing bio-medical waste to be sent out of the premises for the further treatment & disposal in accordance with guidelines issued by CPCB by 27th march 2019.

### Wastewater Management



- Ensure segregation of liquid chemical waste at source and ensure pre-treatment by neutralization or precipitation prior to mixing with other effluent generated from health care facilities; in case city sewage network doesn't have terminal STP
- Treatment of generated liquid effluent in accordance with the Water (Prevention and Control of Pollution) Act, 1974

### Monitoring & Reporting

- All Bedded healthcare facilities make available the annual report on its website by March 2020
- Inform the authority immediately in case the operator of a facility does not collect the waste within the intended time
- Develop a system to review, monitor and maintain the record
- Handover of segregated and pre-treated yellow category waste to CBMWF located within 75 Kms distance for safe treatment and disposal.



### Authorization

- Obtain authorization from SPCBs/PCCs;
- Non-bedded health care facilities (HCFs) like clinics, laboratories, research institutes, dispensaries, blood bank, etc, obtain one time authorization from SPCBs/PCCs;

# DO'S & DON'TS FOR BIO MEDICAL WASTE GENERATORS

## DO'S

1. Segregate the biomedical waste as per color stipulated under BMW Rules, 2016;
2. Carry /Transport the waste in closed trolleys provided with biohazard symbol;
3. Dispose body parts in yellow bin;
4. Dispose the human anatomical, animal anatomical, solid and biotechnological waste within 48 hrs;
5. Waste sharps to be kept in white translucent bin;
6. Ensure that plastic bag/container has bio-hazard symbol and barcode level;
7. Wear personal protective gear like gloves, gum-boots, face-mask, head cap, aprons, etc., while handling wastes.
8. Waste should not be filled beyond 3/4th capacity of collections bags so that it can be handled properly.
9. Liquid Chemical wastes should be pre-treated before mixing with other waste water;
10. Broken/discarded contaminated glass should be kept in the leak proof boxes or containers with blue color marking to avoid the pilferage in vehicle as well as site.
11. Pre-treat the waste generated from microbiology, biotechnology and other clinical laboratories before handing over the same to CBWTF



## DON'TS

1. Do not generate waste unnecessarily
2. Never mix general waste with biomedical waste.
3. Don't use chlorinated plastic bags and gloves;
4. Never store human anatomical, animal anatomical and biotechnological waste beyond 48 hours;
5. Avoid transport of waste through crowded areas.
6. Do not give contaminated plastic waste to authorized recyclers;
7. Never store / collect plastic waste in yellow colored bags/containers;
8. Do not use chlorinated plastic bags for storage of biomedical waste.
9. Don't dispose used linen / bed sheets without disinfection;
10. Do not keep the lid of containers opened.



## Baseline Data for Bio-Medical Waste Management

<b>(iv) Biomedical Waste Management (for each ULB)</b>				
<b>No.</b>	<b>Action Areas</b>	<b>Details of Data Requirement</b>	<b>Measurable Outcome</b>	<b>Please enter Measurable Outcome for District</b>
	Population		[Nos as per 2011 census]	297252
BMW1	Inventory of Biomedical Waste Generation			
BMW1a		Total no. of Bedded Hospitals	[Nos] / [No inventory]	118
BMW1b		Total no. of non-bedded HCF	[Nos] / [No inventory]	4
BMW1c		Total no. Clinics	[Nos] / [No inventory]	4
BMW1d		No of Veterinary Hospitals	[Nos] / [No inventory]	4
BMW1e		Pathlabs	[Nos] / [No inventory]	19
BMW1f		Dental Clinics	[Nos] / [No inventory]	No Inventory
BMW1g		Blood Banks	[Nos] / [No inventory]	No Inventory
BMW1h		Animal Houses	[Nos] / [No inventory]	No Inventory
BMW1i		Bio-research Labs	[Nos] / [No inventory]	No Inventory
BMW1j		Others	[Nos] / [No inventory]	No Inventory
BMW2	Authorization of HCFs by SPCBs / PCCs			123
BMW2a		Bedded HCFs	[Nos Authorized]	118
BMW2b		Non-bedded HCFs	[Nos Authorized]	33

BMW3a	Biomedical Waste Treatment and Disposal Facilities (CBMWTFs)			
BMW3a		No of CBMWTFs	[Nos] / None	None
BMW3b		Linkage with CBMWTFs	[Yes] / [no linkage]	Yes
BMW3c		Capacity of CBMWTFs	[Adequate] / [Not adequate]	Adequate
BMW3d		Requirements of CBMWTFs	[Require] / [not required]	Require
BMW3e		Captive Disposal Facilities of HCFs	[Nos] / [None]	None
BMW4	Compliance by CBMWTFs			
BMW4a		Compliance to standards	[Meeting] / [Not meeting] / [NA]	Meeting
BMW4b		Barcode tracking by HCFs / CBMWTFs	[100%] / [Partly %] / [None]	Partly (98%)
BMW4c		Daily BMW lifting by CBMWTFs	[Kg / day]	80 Kg/day
BMW5	Status of Compliance by Healthcare Facilities			
BMW5a		Pre-segregation	[100%] / [partly %] / [None]	100%
BMW5b		Linkage with CBMWTFs	[100%] / [partly %] / [None]	98%

## SWOT Analysis for Bio-Medical Waste Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (attributes of the Organization)	Strengths	<ul style="list-style-type: none"> <li>Linkage with Common Bio-medical Waste Treatment Facility (CBMWTFs)</li> </ul>	<ul style="list-style-type: none"> <li>No Centralized system for Bio-medical waste generators (Private hospitals, Veterinary Hospitals and clinics )</li> <li>Barcode tracking by HCF (Health Care Facilities) partially Initiated</li> <li>No proper Pre-Segregation of Bio-medical Waste</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>Common Bio-medical Waste Treatment Facility (CBMWTFs) within 75km</li> <li>Authorization of Private HCFs (Health Care Facilities) by SPCB</li> </ul>	<ul style="list-style-type: none"> <li>Expired and Discarded Medicines from households not properly discarded</li> </ul> <p>Biomedical waste if not handled properly, can have very serious consequences</p>
External Origin (attributes of the Environment)			

## Action Plan for Bio-Medical Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1	Segregation of Bio Medical Waste (BMW) at source of generation in specified Color-Coded bags as per Biomedical Waste Management Rule, 2016	Regular Activities	Health Department / HCFs
2	GPS enabled vehicles for Biomedical wastes transportation	Immediate	Health Department / RPCB / CBWTFs
3	Publication of List of Registered HCFs	Immediate	Health Department
4	Cancellation of Licenses of HCFs violating Authorization of RPCB.	Immediate	Health Department / RPCB
5	Actions against defaulters of Bio-Medical Waste Management Rules, 2016	Immediate	RPCB / Health Department
6	<ul style="list-style-type: none"> <li>• Implementation of Rules in HCFs &amp; Occupiers.</li> <li>• Grant of License to HCFs</li> <li>• Constitute District Level Advisory Committee</li> <li>• Fund Allocation to Government HCFs</li> <li>• Publish List of Registered HCFs</li> </ul>	Immediate	Health Department
7	<ul style="list-style-type: none"> <li>• Allocate Land for CBWTFs</li> <li>• Collection of Solid Waste other than BMW from HCFs</li> </ul>	Immediate	ULBs/ Village Panchayat
8	Grant of License to Veterinary Establishments	Immediate	Animal Husbandry/ Veterinary Dept.
9	<ul style="list-style-type: none"> <li>• Authorization to HCFs and Occupiers</li> <li>• Action Against HCFs and CBWTFs</li> <li>• Inventorisation of Occupiers, Data on BMW generation, treatment</li> <li>• Submission of Annual report to CPCB.</li> </ul>	Immediate	RPCB
10	Mass awareness campaigns and extensive training programs.	Regular Activity	Health Department / RPCB / NGOs / Education Department / CBWTFs

11	<ul style="list-style-type: none"> <li>• BMW from HCFs Transported, Treated &amp; disposed of in accordance with Rules.</li> <li>• Establish Bar coding &amp; Global Positioning system for handling of BMW.</li> <li>• Training to all workers. Assist Occupier in Training.</li> <li>• Supply Non-Chlorinated coloured Plastic Bags to Occupiers.</li> </ul>	Immediate	CBWTFs
12	<ul style="list-style-type: none"> <li>• Ensure BMW handling as per Rule.</li> <li>• Safe, Ventilated &amp; Secured In house Storage of BMW.</li> <li>• No mixing of BMW with MSW.</li> <li>• Bar code system for Bio-medical waste-collection Bags.</li> </ul>	Regular Activity	Occupiers/ HCFs
13	Information, Education & Communication (IEC) for Bio-medical waste management.	Regular Activity	ULBs/ RPCB/ Development Authority/ NGOs/Education Department

### **5.1.5. Hazardous Waste Management**

Hazardous waste is those that may contain toxic substance generated from industrial, hospital, some type of household waste. The improper handling, collection, treatment and disposal of hazardous waste material may cause substantial harm to human health or environment. Hazardous wastes can take the form of solids, liquids, sludges or contained gases and they are generated primarily by chemical production, manufacturing, and other industrial activities.

They may cause damage during inadequate storage, transportation, treatment or disposal operations. Improper hazardous-waste storage or disposal frequently contaminates surface and groundwater supplies. People living in homes built near old and abandoned waste disposal sites may be in a particularly vulnerable position. Hazardous wastes are classified on the basis of their biological, chemical, and physical properties. These properties generate materials that are toxic, reactive, ignitable, corrosive, infectious, or radioactive.

# CHARACTERISTICS OF HAZARDOUS WASTE

<h2>Flammability</h2>		<ul style="list-style-type: none"> <li>• can create fire under certain condition</li> <li>• flash point <math>&lt;60^{\circ}\text{C}</math></li> <li>eg- Waste solvent</li> </ul>
<ul style="list-style-type: none"> <li>• substances that are unstable under normal condition</li> <li>• can cause explosion, produce toxic fumes, vapours</li> <li>eg- cyanide/sulphide, batteries etc.</li> </ul>		<h2>Reactivity</h2>
<h2>Corrosivity</h2>	 <p>CORROSIVE 8</p>	<ul style="list-style-type: none"> <li>• strong acids or bases</li> <li>• <math>\text{pH} &lt; 2</math> or <math>\text{pH} &gt; 2.5</math></li> <li>• Corrode steel at temperature of <math>55^{\circ}\text{C}</math></li> <li>e.g. spent acid bath</li> </ul>
<ul style="list-style-type: none"> <li>• harmful when inhaled/ ingested/ absorbed</li> <li>• also if leached from waste pollutes ground water</li> <li>e.g. - lead, mercury etc.</li> </ul>		<h2>Toxicity</h2>
<h2>Explosivity</h2>		<ul style="list-style-type: none"> <li>• capable of producing gas by chemical reaction</li> <li>• along with tremendous amount of energy</li> <li>e.g. - waste of explosive manufacturing industry</li> </ul>
<ul style="list-style-type: none"> <li>• themselves not necessarily combustible</li> <li>• yields oxygen</li> <li>• cause, or contribute to, the combustion of other materials</li> </ul>		<h2>Oxidising</h2>
<h2>Infectious substance</h2>		<ul style="list-style-type: none"> <li>• containing viable micro-organisms or their toxins</li> <li>• that can cause disease in animals or human</li> </ul>
<ul style="list-style-type: none"> <li>• Immediate or delayed adverse impacts to environment through bio-accumulation</li> <li>• toxic effects upon biotic systems</li> </ul>		<h2>Eco-toxic</h2>

# TREATMENT, STORAGE AND DISPOSAL FACILITY (FOR HAZARDOUS AND OTHER WASTE)



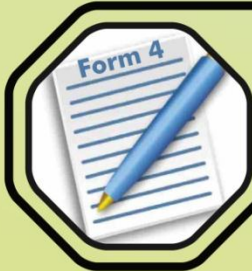
1. Approval of design and layout by State Pollution Control Board (SPCB) followed by setting up the treatment, storage and disposal facility by operator of facility as per technical guidelines of Central Pollution Control Board (CPCB).

2. Monitoring the setting up and operation of the facility by SPCB.



3. Safe and environmentally sound operations of the facility by the operator of the facility and addressing its closure and post closure phase.

4. Maintenance of records of hazardous and other wastes by the operator.



5. Submission of annual returns by the operator on or before the 30th day of June to SPCB.



## Baseline Data for Hazardous Waste Management

(v) Hazardous Waste Management				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
HW1	Inventory of Hazardous Waste			
HW1a		No of HW Generating Industry	[Nos.]	5
HW1b		Quantity of HW	[MT/Annum]	426.516
HW1c		Quantity of Incinerable HW	[MT/Annum]	277.895
HW1d		Quantity of land-fillable HW	[MT/Annum]	27.979
HW1e		Quantity of Recyclable / utilizable HW	[MT/Annum]	120.642
HW2	Contaminated Sites and illegal industrial hazardous waste dumpsites			
HW2a		No of HW dumpsites	[Nos] / [None]	None
HW2c		Probable Contaminated Sites	[Nos] (provide list)	Nil
HW3	Authorization by SPCBs/PCCs			
HW3a		No of industries authorized	[Nos]	5
HW3b		Display Board of HW Generation in front of Gate	[Nos]	5
HW3	Availability of Common Hazardous Waste TSDF			
HW3a		Common TSDF	[Exists] / [No] / [Sent to Other District within State]	Sent to other districts within state
HW3b		Industries linkage with TSDF	[Nos.]	3
HW4	Linkage of ULBs in District with Common TSDF			
HW4a		ULBs linked to Common TSDFs for Domestic Hazardous Waste	[Yes] / [No]	No

## SWOT Analysis for Hazardous Waste Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (attributes of the Organization)	Strengths	<ul style="list-style-type: none"> <li>• Proper segregation of Hazardous waste (generated from Industries)</li> </ul>	<ul style="list-style-type: none"> <li>• No Hazardous Waste Dump Site</li> <li>• No Identified Probable Contaminated Site</li> <li>• to Common TSDF for Domestic Hazardous Waste</li> </ul>
	External Origin (attributes of the Environment)	Opportunities	Threats
	<ul style="list-style-type: none"> <li>• Common TSDF (Treatment Storage and Disposal Facilities) should be established within district</li> </ul>	<ul style="list-style-type: none"> <li>• Improper Hazardous waste (Industrial / Domestic) is prone to contaminate water and toxic for human, animal and plant health</li> </ul>	

## Action Plan for Hazardous Waste Management

### Short Term Action Plan for Hazardous Waste Management:

S. No.	Action Points	Timelines	Department/ Agencies
1	Capacity building of SPCB.	90 Days	State Government/ RPCB
2	<ul style="list-style-type: none"> <li>• Enforcement Mechanism in SPCB:</li> <li>• Use of technology, Strengthening and effective Public Grievance redressal System.</li> <li>• Software development for tracking hazardous waste</li> <li>• Performance Audit for TSDFs</li> </ul>	60 Days	Department of Environment/ RPCB
3	<ul style="list-style-type: none"> <li>• Constitution of in-house “Hazardous Waste Incident Response Team”</li> <li>• Compulsory Emergency Response Plan for industries</li> <li>• Implement immediate response, assessment and remediation by the responsible party.</li> </ul>	90 Days	District Administration/ Director of Factories/ Labor Department / Fire Department / RPCB
4	Imposition of Environmental Compensation on default	Regular activity	RPCB
5	Finalize Remediation Objectives as per report submitted by Responsible Party.	90 Days	Department of Environment/ RPCB
6	In-situ treatment or any other treatment of legacy waste where DPR is already prepared.	Up to 1 year or case to case basis	Department of Environment/ RPCB/ CPCB
7	Identification of legacy waste and preparation of DPR for its treatment.	6 Month after release of fund and acquisition of land	Department of Environment/RPCB/ CPCB
8	Installation of TSDF facility if common TSDF is not available within 75 km radius	180 days after allocation of land	District Administration/ Department of Environment/ RPCB
9	Expansion of existing TSDF if required	180 days after allocation of land	District Administration/ Department of Environment, /RPCB

### Long Term Action Plan for Hazardous Waste Management:

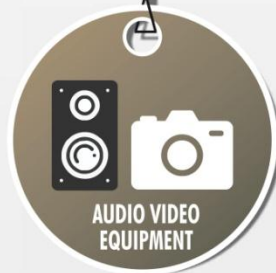
S. No.	Action Points	Timelines	Department/ Agencies
1	Hazardous waste recovery, recycling & disposal facility in upcoming industrial estate/Area Submit annual report/Plan for sound disposal of waste to MOEFCC	360 Days	State Government/ District Administration/ Development authorities/ Department of Environment/ RPCB
2	Labour Department to register, impart safe waste handling training and monitor health of workers engaged in waste handling	360 Days	Labour Department/ Director of Factories
3	Impetus for promotion of low cost innovative re-use, reduce techniques, methods.	360 Days	CPCB/RPCB
4	Notification for buffer zone around TSDF facilities	360 days	District Administration/ Development Authorities
5	Land Allocation for Establishment of new TSDFs Fund Allocation for TSDF. Or utilisation of closed/abandoned mills, factories in the districts.	360 days	District Administration/ Department of Environment/ Department of Industries/ RPCB
6	Remediation of contaminated sites	2-5 Years	Department of Environment/ District Administration/ RPCB/ CPCB
7	Compliance of recommendations pertaining to the State as per NGT Orders in OA No. 804/2017 on 12-04-2019	Regular Activity	State Government/ Department of Environment/ RPCB

### **5.1.6. E-Waste Management**

Waste Electrical and Electronic Equipment (WEEE) is becoming major threat to the whole world. Rapid growth of technology, up-gradation of technical innovations and a high rate up-gradation by exchanging old electronic items have led to one of the fastest growing waste in the world. Its toxic emissions mixed with virgin soil and air and causing harmful effects to the entire biota either directly or indirectly. Direct impacts include release of acids, toxic compounds including heavy metals, carcinogenic chemicals and indirect effects such as bio magnification of heavy metals. Many private firms are involved in collecting, dismantling, separation and exporting e-wastes for recyclers. However, strict regulations are currently being followed as on approval of such firms such as e-steward certification by Basel action network in US, they also involved in public awareness programs. E-Waste consists of end of electrical and electronic equipments and products such as: Refrigerator, Washing machines, Computers and Printers, Televisions, Mobiles, I-pods etc.

# E-WASTE

## CATEGORIES





# PROCEDURE FOR EXTENDED PRODUCER RESPONSIBILITY OF E-WASTE UNDER WASTE MANAGEMENT RULES, 2016



## Baseline Data for E-Waste Management

<b>(vi) E-Waste Waste Management</b>				
<b>No.</b>	<b>Action Areas</b>	<b>Details of Data Requirement</b>	<b>Measurable Outcome</b>	<b>Please enter Measurable Outcome for District</b>
EW1		Status of facilitating authorized collection of E-Waste		
EW1a		Does the citizen are able to deposit or provide E-Waste through Toll-free Numbers in the District	[Yes] / [No]	No
EW1c		Collection centers established by ULB in District	[Nos] / [None]	None
EW1d		Collection centers established by Producers or their PROs in the District	[Nos] / [None]	None
EW1e		Does the district has linkage with authorized E-Waste recyclers / Dismantler	[Yes] / [No]	No
EW1f		No authorized E-Waste recyclers / Dismantler	[Nos] / [None]	None
EW2		Status of Collection of E-Waste		
EW2a		Authorizing E-Waste collectors	[Authorized] / [None]	None
EW2b		Involvement of NGOs	[Yes] / [No] / [Nos]	No

EW2c		Does Producers have approached NGOs/ Informal Sector for setting up Collection Centers.	[Yes] / [No] / [Nos]	No
EW2d		Does ULBs have linkage with authorized Recyclers / Dismantlers	[Yes] / [No]	No
EW4	Control E-Waste related pollution			
EW4a		Does informal trading, dismantling, and recycling of e-waste exists in District	[Yes] / [No]	No
EW4b		Does the administration closed illegal E-Waste recycling in the District	[Yes] / [No] / [Nos]	No
EW4c		No of actions taken to close illegal trading or processing of E-Waste	[Nos]	No
EW5	Creation of Awareness on E-Waste handling and disposal			
EW5a		Does PROs / Producers conduct any District level Awareness Campaigns	[Yes] / [No] / [Nos]	No
EW5c		Does District Administration conduct any District level Awareness Campaigns	[Yes] / [No] / [Nos]	No

## SWOT Analysis for E-Waste Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
		Strengths	Weakness
Internal origin (Attributes of the Organization)			<ul style="list-style-type: none"> <li>No facility for E-waste deposition</li> </ul>
	External Origin (Attributes of the Environment)	Opportunities	Threats
		<ul style="list-style-type: none"> <li>Linkage with Producers / Brand owner for collection of E-waste</li> <li>Authorizing E-waste collectors</li> <li>Involvement of NGOs</li> <li>Linkage with authorized Recyclers / Dismantlers</li> <li>Proper implementation of E-waste management Rules -2016</li> <li>Awareness Campaigns regarding E-waste management should be initiated at grassroots level</li> </ul>	<ul style="list-style-type: none"> <li>E-waste generating toxic chemicals impacting environment and human health</li> </ul>

## Action Plan for E-Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1.	Collection, Segregation and Channelization of e-waste pertaining to orphan products to recyclers/dismantlers	Immediate	ULBs
2.	Segregation of E-waste at source from MSW	Regular Activity	ULBs/ Waste Generator
3.	<ul style="list-style-type: none"> <li>• Ensure no illegal e-waste processing</li> <li>• No dumping of e-waste, HW &amp; other wastes on banks of river</li> <li>• No illegal transportation of e-waste.</li> </ul>	Immediate	District Administration / ULBs / RPCB / RTO
4.	Monitoring & Compliance of Extended Producers Responsibility (EPR) - Authorization issue by CPCB.	Immediate	RPCB
5.	Information, Education & Communication (IEC) for E-waste Management.	Regular Activity	ULBs/ RPCB/ Development Authority/ NGOs/Education Department
6.	Authorization to Manufacturers, Dismantlers, Recyclers, Refurbishes and Action against defaulters.	Immediate	RPCB
7.	Integrated plan for implementation of EWM Rules, 2016.	Immediate	RPCB
8.	Earmarking or allocation of industrial space or shed, abandoned mills/factories for e-waste dismantling/recycling units in industrial clusters	Immediate	Department of Industries.
9.	Recognition and Registration of workers of dismantling and recycling units.	Immediate	Labor Department
10.	Implementation of EPR from producers	Immediate	Department of Industries/RPCB

## 5.2. Water Quality Management

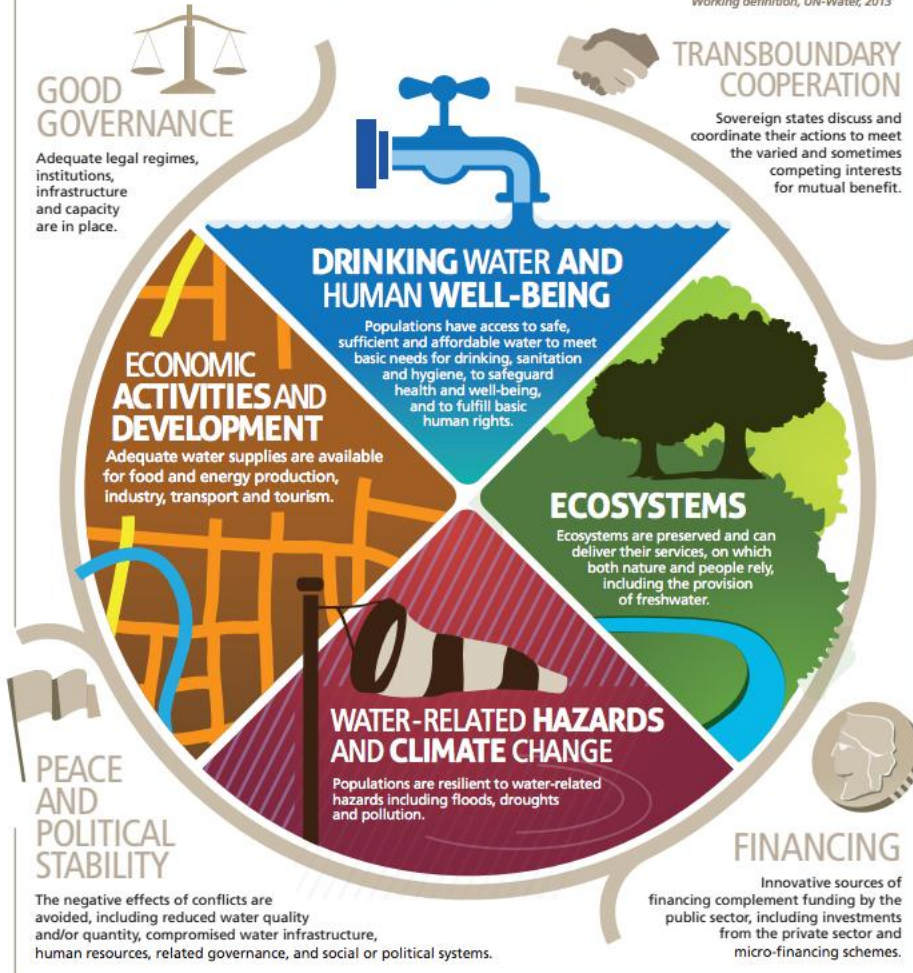


Systematic management of water resources is necessary to ensure the required balance between development pressures and the safeguarding of the natural and built environment for future generations. The purpose of Water Quality Management Plan (WQMP) is to reduce discharge of pollutants into urban runoff from development projects by reducing or eliminating sources of pollutants, and managing site runoff volumes and flow rates through best Management Practices.

# What is Water Security?

"The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability."

*Working definition, UN-Water, 2013*



Water is central to achieving a larger sense of security, sustainability, development and human well-being. UN-water supports the inclusion of water security in the post-2015 development agenda as part of the Sustainable Development Goals.



Achieving water security requires collaboration across sectors, communities, disciplines and political borders, to reduce the risk of potential conflicts over water resources, between sectors and between water users or states.



[www.watercooperation2013.org](http://www.watercooperation2013.org)

[www.unwater.org](http://www.unwater.org)

version October 2013

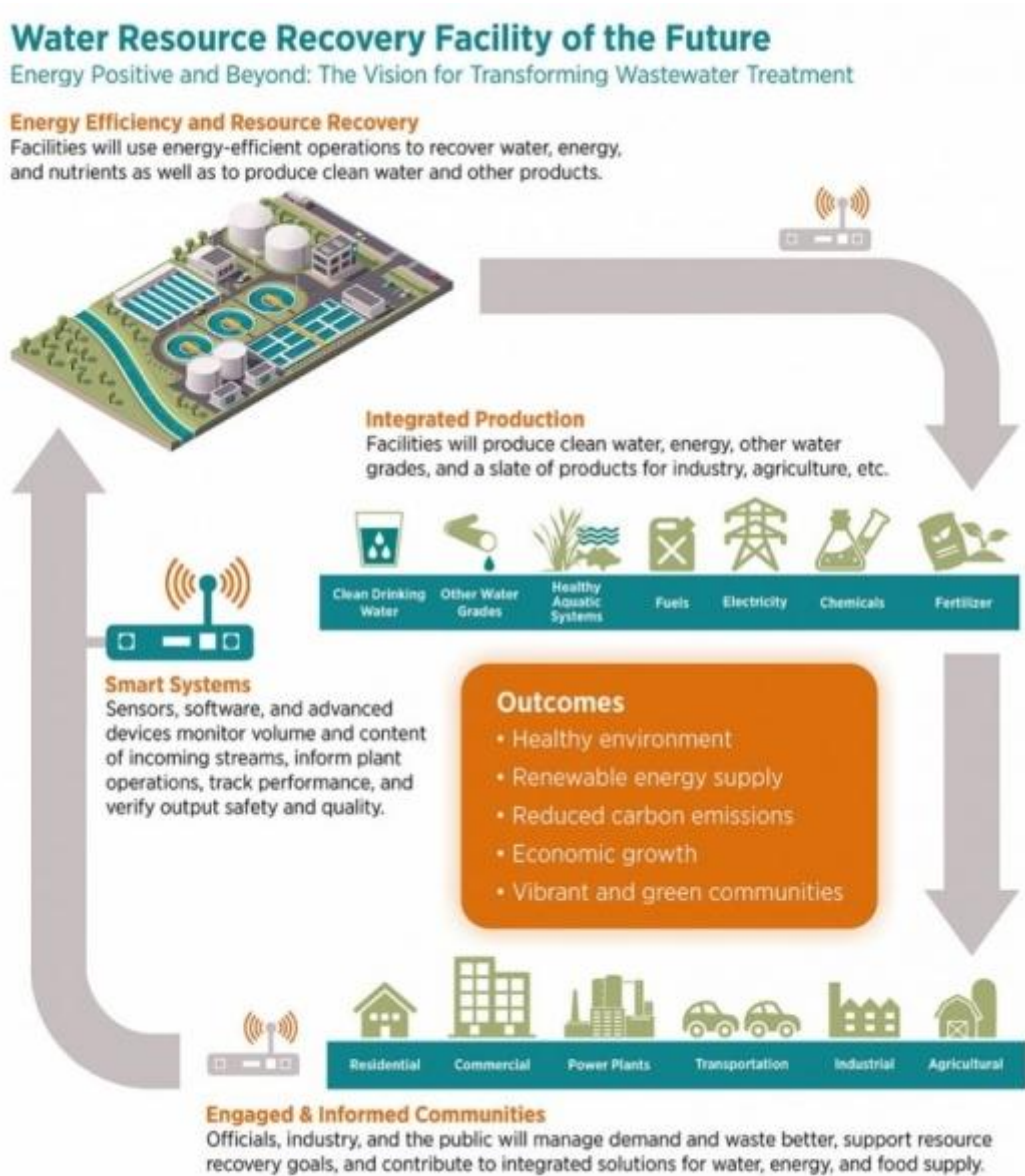
## Baseline Data for Water Quality Management

2.0 Water Quality Management Plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
WQ1	Inventory of water resources in District			
WQ1a		Rivers	[Nos] and [Length in Km]	NA
WQ1b		Length of Coastline	[in Km]	119.8
WQ1c		Nalas/Drains meeting Rivers	[Nos]	0
WQ1d		Lakes / Ponds	[Nos] and [Area in Hectares]	34
WQ1e		Total Quantity of sewage and industrial discharge in District	[Automatic] (SW1a+IW1b)	NA
	Control of Groundwater Water Quality			
WQ2a		Estimated number of bore-wells	[Nos]	65264
WQ2b		No of permissions given for extraction of groundwater	[Nos]	NA
WQ2c		Number of groundwater polluted areas	[Nos]	NA
WQ2d		Groundwater Availability	[adequate] / [not adequate]	Adequate
WQ3	Availability of Water Quality Data			
WQ3a		Creation of monitoring cell	[Yes] / [No]	Yes
WQ3b		Access to Surface water and groundwater quality data at DM office	[Available] or [Not available]	Available
WQ4	Control of River side Activities			
WQ4a	Control of River side Activities	River Side open defecation	[Fully Controlled] / [Partly controlled] / [no Measures taken]	No Measures taken

WQ4b		Dumping of SW on river banks	[Fully Controlled] / [Partly controlled] / [no Measures taken]	No Measures taken
WQ4c		Control measures for idol immersion	[Measures taken] / [Measures taken post immersion] / [No Measures taken]	No Measures taken
WQ5	Control of Water Pollution in Rivers			
WQ5a		Percentage of untreated sewage	[%] (automatic SM1g/SM1a)	NA
WQ5b		Monitoring of Action Plans for Rejuvenation of Rivers	[Monitored] / [Not monitored] [not applicable]	[Not monitored]
WQ5c		No of directions given to industries for Discharge of Untreated industrial wastewater in last 12 months	[Nos]	NA
WQ6	Awareness Activities			
WQ6a		District level campaigns on protection of water quality	[Nos in previous year]	NA
WQ6b	Oil Spill Disaster Contingency Plan			
WQ6a		Creation of District Oil Spill Crisis Management Group	[Created] / [Not Created]	Not Created
WQ6b		Preparation District Oil Spill Disaster Contingency Plan	[Prepared] / [Not Prepared]	Not Prepared
WQ7	Protection of Flood plains			
WQ7a		Encroachment of flood plains is regulated.	[Yes] / [No]	Yes
	Rainwater Harvesting			
WQ8a		Action plan for Rain water harvesting	[Implemented] / [Not implemented]	No

### 5.2.1. Domestic Sewage Management

Domestic sewage is generated by domestic activities including toilet, bathroom, clothes washing and kitchen cleaning activities. This sewage water contains high levels of micro-organisms, chemicals (nutrients) and other contaminants capable of causing human illness and adversely impacting on the local environment.



## Baseline Data for Domestic Sewage Management

3.0 Domestic Sewage Management Plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
SM1	Inventory of Sewage Management			
SM1a		Total Quantity of Sewage generated in District from Class II cities and above	[MLD]	NA
SM1b		No of Class-II towns and above	[Nos]	NA
SM1c		No of Class-I towns and above	[Nos]	NA
SM1d		No of Towns needing STPs	[Nos]	NA
SM1e		No of Towns STPs installed	[Nos]	1 under construction
SM1f		Quantity of treated sewage flowing into Rivers (directly or indirectly)	[MLD]	NA
SM1g		Quantity of untreated or partially treated sewage (directly or indirectly)	[Automatic]	Automatic
SM1h		Quantity of sewage flowing into lakes	[MLD]	NA
SM1i		No of industrial townships	[Nos]	7
SW2	Adequacy of Available Infrastructure for Sewage Treatment			
SM2a		% sewage treated in STPs	[Automatic]	Automatic
SM2b		Total available Treatment Capacity	[MLD]	NA
SM2c		Additional treatment capacity required	[MLD]	NA
SM3	Adequacy of Sewerage Network			
SM3a		No of ULBs having partial underground sewerage network	[Nos]	NA
SM3b		No of towns not having sewerage network	[Nos]	NA
SM3c		% Population covered under sewerage network	[Automatic]	NA

## SWOT Analysis for Domestic Sewage Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
<b>Internal origin</b> (Attributes of the Organization)	<b>Strengths</b>	<ul style="list-style-type: none"> <li>• NA</li> </ul>	<b>Weakness</b>
			<ul style="list-style-type: none"> <li>• Insufficient Sewage Treatment Network and Sewage Treatment Plant with reference to Population</li> <li>• Cleaning of open drains not properly done</li> </ul>
<b>External Origin</b> (Attributes of the Environment)	<b>Opportunities</b>	<ul style="list-style-type: none"> <li>• Proper sewage treatment is needed</li> <li>• Size of sewerage pipeline should be reevaluated with respect to population trend for next 30 years at least.</li> <li>• Public awareness to be created with Participation of NGOs/SHGs/Academic Institutions</li> <li>• Leaflets / Brochures explaining environmental laws related to Water pollution</li> <li>• Time to time monitoring of performance of district with respect to sewage production and treatment</li> <li>• Mechanised Process for cleaning should be initiated</li> <li>• Personal Protective Equipment's for Workers dealing with sewage waste.</li> </ul>	<b>Threats</b>
			<ul style="list-style-type: none"> <li>• Untreated sewage waste contaminates the water bodies which lead to eutrophication and decline in dissolved oxygen content.</li> <li>• The wet sludge after cleaning the drains is left for certain periods and then lifted for disposal creating nuisance to passerby and create visual pollution.</li> </ul>

## Action Plan for Domestic Sewage Management

### Short Term Action Points for Sewage Management

S. No.	Action Points	Timelines	Department/ Agencies
1	Estimation of total sewage generation from City/Towns where sewage treatment facility does not exist and preparation of DPR for treatment of sewage	Immediate	ULBs
2	Measurement of flow & load of all the drains contributing pollution load in Rivers	Immediate	ULBs
3	Installation of Bar-meshes in the drains & regular cleaning & disposal of Solid Waste from them	Immediate	ULBs
4	Untapped drains to be provided with modular treatment facilities/ In-Situ bio-remediation.	Immediate	ULBs
5	Completion and commissioning of under construction STPs	Immediate	ULBs
6	Formulation of Action Plan for long term use of treated water discharged from STPs	Immediate	ULBs / RPCB / CPCB
10	Preparation of DPR for channelization including diversion of sewage generated from household / township / villages to sewer lines and interception of all drains (excluding drains carrying industrial wastewater) for ensuring proper treatment through upcoming STPs.	Immediate	ULBs
11	Septage Management in the areas where sewerage network does not exist	Immediate	ULBs

## Long Term Action Point for Sewage Management

S. No.	Action Points	Timelines	Department/ Agencies
1	Laying of Sewerage Network & Connection of households to the sewer line in order to utilize the installed capacity of existing STPs	Immediate	ULBs
2	Establishment of Sewage Treatment Plants of adequate capacity	Immediate	ULBs
3	Tapping & diversion of the drains having high sewage load to STPs to be constructed on I&D model	Immediate	ULBs
4	Infrastructure Development in Irrigation/Horticulture/ Sprinkling/Industrial use etc. and ensuring use of treated water	Immediate	ULBs
6	Installation of supplementary/tertiary treatment system in existing STPs which are not able to achieve discharge norms in the present system	Immediate	ULBs
7	Treatment of waste water in Rural areas flowing into the river or water bodies by Bio-remediation / Phyto-remediation / Oxidation Pond etc.	Immediate	Gram Panchayat, Panchayati Raj, Rural Development Departments, Rastriya Swachta Mission-Gramin
8	Ensuring Open Defecation Free in all the villages situated along the river / water bodies	Immediate	Gram Panchayat, Panchayati Raj, Rural Development Departments, Rastriya Swachta Mission-Gramin
9	Specific methods of >2.5 ha development plans to be developed and implemented for purposes of carbon segmentation.	Regular Activity	RPCB

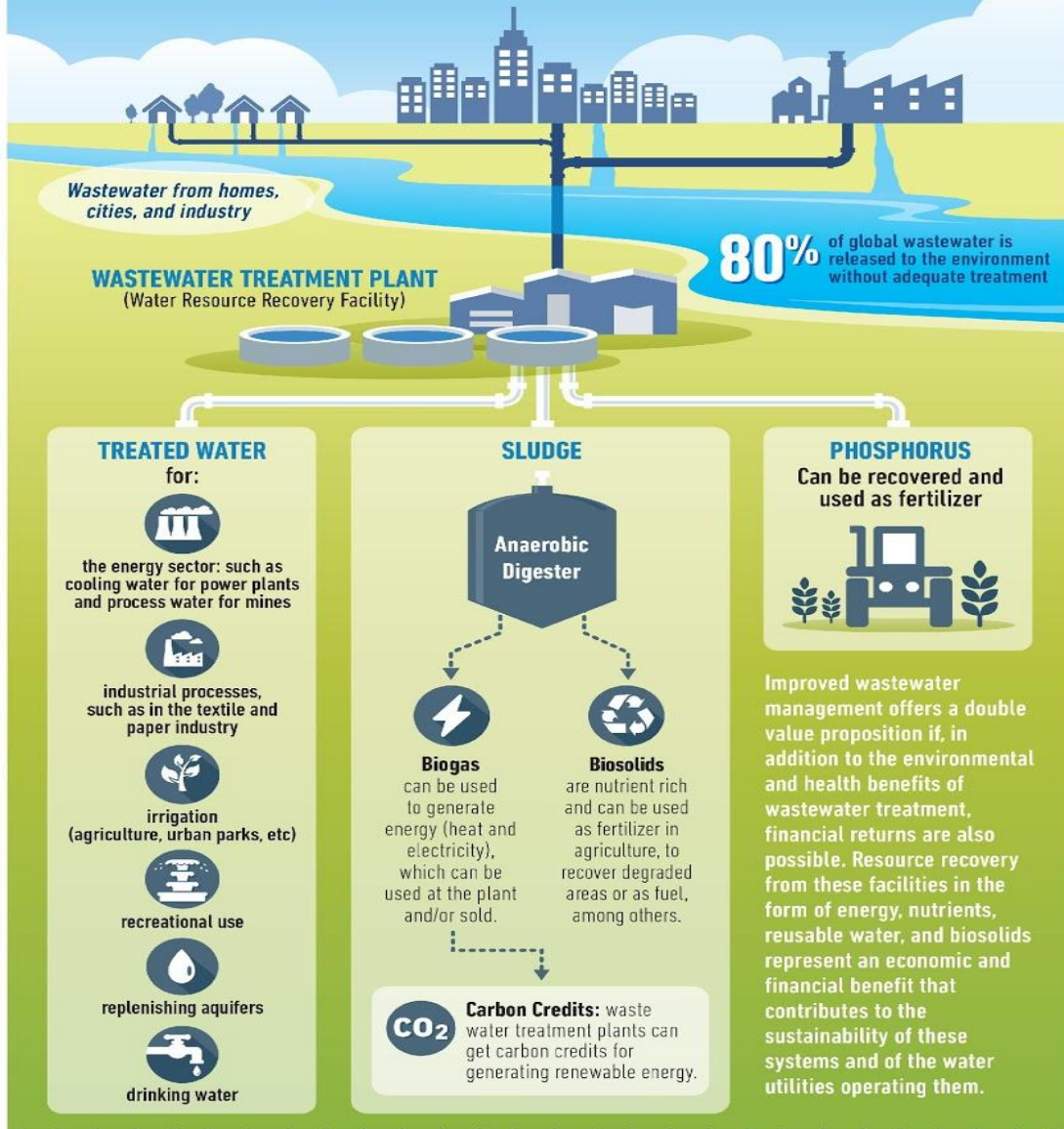
### **5.2.2. Industrial Waste Water Management**

Industrial waste water is one of the important and major pollution sources of Water. A huge amount of industrial waste water was discharged into rivers, lake & sand coastal areas. This resulted in serious pollution problems in the water environment and causes negative effects to the eco-system and human's life. There are many types of industrial waste water based on different industries and contaminants. Each sector produces its own particular combination of pollutants.

# WASTE? WATER

## FROM WASTE TO RESOURCE

Worldwide, the majority of wastewater is neither collected nor treated. Wastewater is a valuable resource, but it is often seen as a burden to be disposed of. This perception needs to change.



These resources can generate additional revenue streams for the operator, paying part or all of the operation costs, thereby contributing to the sustainability of the water system.

## Baseline Data for Industrial Waste Water Management

4.0 Industrial Wastewater Management Plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
IWW1	Inventory of industrial wastewater Generation in District			
IWW1a		No of Industries discharging wastewater	[Nos]	9
IWW1b		Total Quantity of industrial wastewater generated	[MLD]	406.5 KLD
IWW1c		Quantity of treated IWW discharged into Nalas / Rivers	[MLD]	Nil
IWW1d		Quantity of un-treated or partially treated IWW discharged into lakes	[MLD]	Nil
IWW1e		Prominent Type of Industries	[Agro based] / [Chemical – Dye etc.] / [Metallurgical] / [Pharma] / [Pesticide] / [Power Plants] / [Mining] / [Automobile] : Multiple selection based on size of operation and number	Stone Crusher-16, Mineral Grinding-41, Brick Kiln-22, Stone Cutting-10, Oil Mil (Kacchi Ghani)-30, Milh Chilling-04 etc.
IWW1f		Common Effluent Treatment Facilities	[Nos] / [No CETPs]	Nil
IWW2	Status of compliance by Industries in treating wastewater			
IWW2a		No of Industries meeting Standards	[Nos]	7

IWW2b		No of Industries not meeting discharge Standards	[Automatic]	2
IWW2c		No of complaints received or number of recurring complaints against industrial pollution in last 3 months	[Nos]	Nil
AWW4	Status of Action taken for not meeting discharge standards			02
IWW4a		No industries closed for exceeding standards in last 3 months	[Nos]	Nil
IWW4b		No of industries where Environmental Compensation was imposed By SPCBs	[Nos]	Nil

## SWOT Analysis for Industrial Waste Water Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (Attributes of the Organization)	Strengths		<ul style="list-style-type: none"> <li>Data on the generation of Industrial Waste Water by Small and Micro Scale Industries not available</li> </ul>
	Weakness		
External Origin (Attributes of the Environment)	Opportunities	<ul style="list-style-type: none"> <li>Common Effluent treatment plant (CETP) facilities needed</li> <li>Zero Liquid Discharge (ZLD) strategy should be adopted to minimize the Industrial Effluents</li> <li>Time to time monitoring with respect to Industrial Waste Water generation and management</li> </ul>	Threats
			<ul style="list-style-type: none"> <li>Untreated Industrial Waste Water may lead to severe Environmental Issues</li> </ul>

## Action Plan for Industrial Waste Water Management

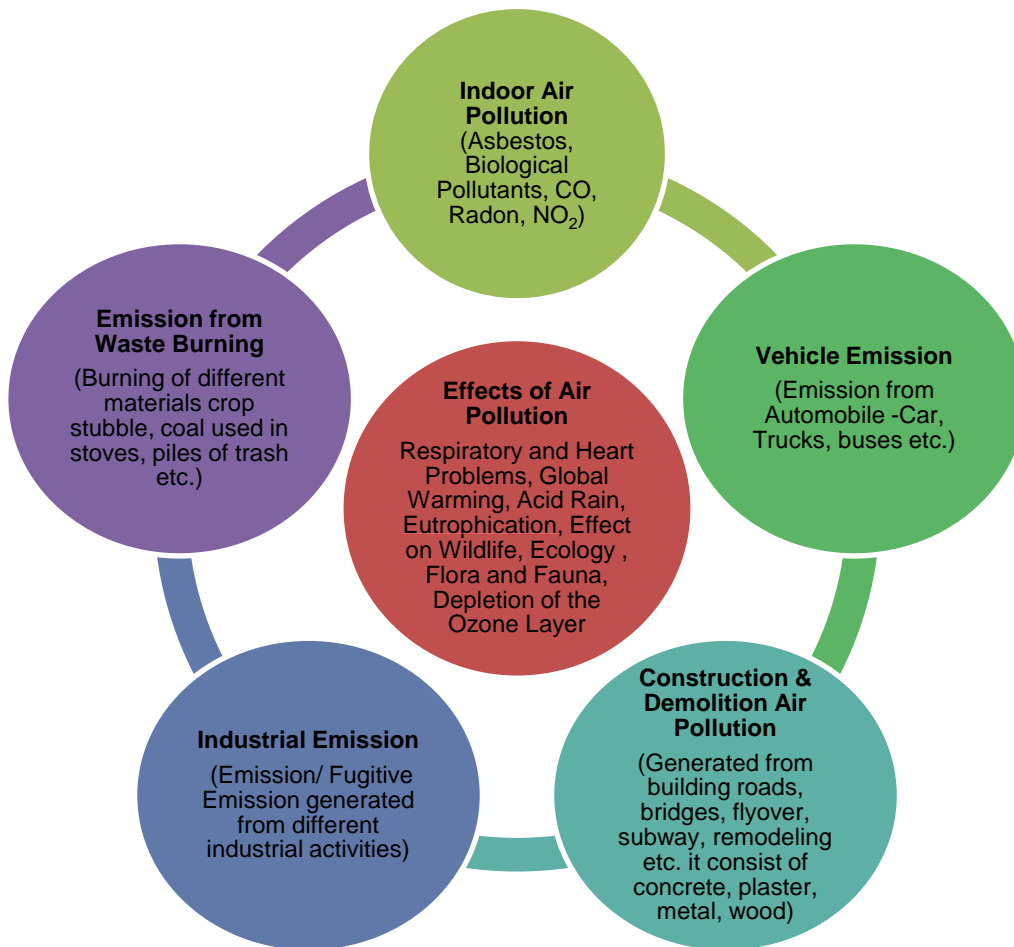
### Short Term Action Points for Industrial Waste Management

S. No.	Action Points	Timelines	Department/ Agencies
1	Re-inventorization of Water Polluting Industries in the catchment area of the drains and their status with respect to consent, installation of ETP, adequacy of ETP and final discharge point	Immediate	RPCB / ULBs & Department of Industries
2	Monitoring of water polluting industries and ensuring closure of industries which are operating without consent or non-compliant	Quarterly	RPCB & CPCB
3	Installation of OCEEMS, Flow Meter & Web Cams in large and medium category of GPIs with connectivity to the server of CPCB and RPCB	Immediate	RPCB
4	Closure and legal action against the illegal water polluting industries operating in non-confirming /residential areas	Regular activity	District Level Inter-Departmental Enforcement Committee having representatives of Administration, Police, RPCB, ULBs, Development Authority, Power Corporation, Department of Industries etc.

### Long Term Action Point for Sewage Management

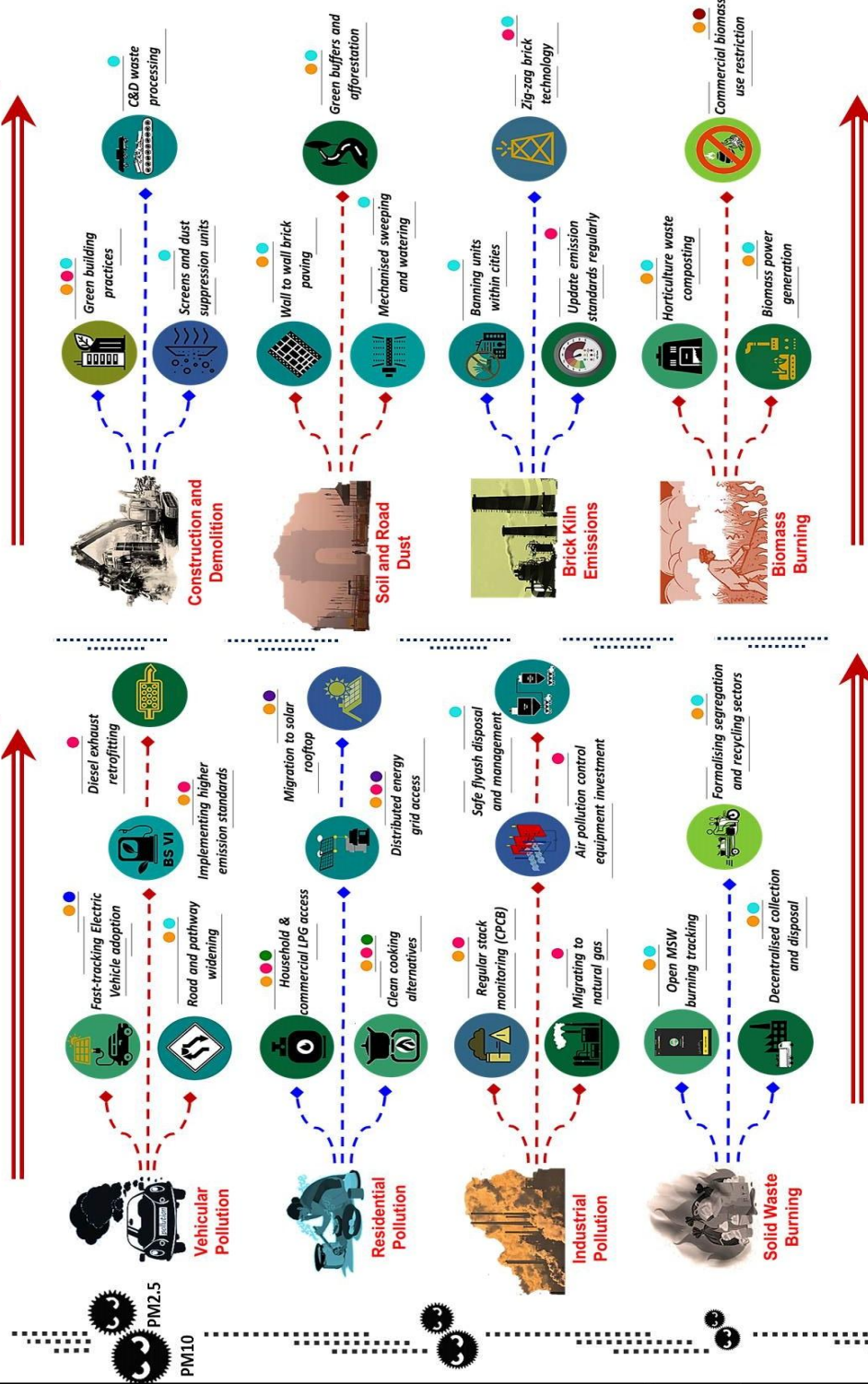
S. No.	Action Points	Timelines	Department/ Agencies
1	Reducing abstraction of ground water by reuse/recycle of treated effluent by installation of additional treatment facilities & process improvement	12 Months	CGWA, CPCB, Department of Industries &RPCB
2	Use of treated effluent from CETPs for industrial and irrigation purposes	12 Months	Department of Industries, SPVs, Operating Agencies, RPCB & CPCB
3	Up gradation of existing ETPs by installation of Auto-Chemical Dosing System for Physico-Chemical Treatment in Textile, Electroplating, Chrome Recovery System etc. & Mechanical Sludge watering System	12 Months	Department of Industries, RPCB & CPCB

### 5.3. Air Quality Management



Air quality affects our health, the livability of our cities and towns, and our environment. Air pollution, particularly from human activity, can cause health problems that affect the heart and lungs, and can cause cancer. Even short-term exposure to air pollution can cause health problems. Children, the elderly and people with existing heart and lung conditions are especially affected by air pollution. Air quality management refers to all the activities a regulatory authority undertakes to help protect human health and the environment from the harmful effects of air pollution. There is a continuous review and assessment of goals and strategies based on their effectiveness. All parts of this process are informed by scientific research that provides air quality managers with essential understanding of how pollutants are emitted, transported and transformed in the air and their effects on human health and the environment.

# Action Plan for Combating Air Pollution in India



National Clean Air Programme (2019) is designed to implement interventions and achieve targets in alignment with existing national missions and government schemes. Each intervention listed above is mapped to these missions/schemes:

- Smart Cities Mission
- Pradhan Mantri Ujjwala Yojana
- Unnat Jyoti by Affordable LEDs for All (UJALA)
- Atal Mission for Rejuvenation and Urban Transformation
- National Solar Mission
- National Electric Mobility Mission Plan
- National Mission for Enhanced Energy Efficiency

## Baseline Data for Air Quality Management

5.0 Air Quality Management Plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
AQ1	Availability of Air Quality Monitoring Network in District			
AQ1a		Manual Air Quality monitoring stations of SPCBs /CPCB	[Nos] / [None]	None
AQ1c		Automatic monitoring stations Operated by SPCBs / CPCB	[Nos] / [None]	Proposed 01
AQ2	Inventory of Air Pollution Sources			
AQ2a		Identification of prominent air polluting sources	[Large Industry] / [Small Industry] / [Unpaved Roads] / [Burning of Waste Stubble] / [Brick Kiln] / [Industrial Estate] / [Others] (Multiple selection)	Burning of Waste Stubble/Brick Kiln/Stone Crusher
AQ2b		No of Non-Attainment Cities	[Nos] / [None]	None
AQ2c		Action Plans for non-attainment cities	[Prepared] / [Not yet prepared]	Not yet prepared
AQ3	Availability of Air Quality Monitoring Data at DMs Office			
AQ3a		Access to air quality data from SPCBs & CPCB through Dashboard	[Available] / [Not yet Available]	Available
AQ4	Control of Industrial Air Pollution			
AQ4a		No of Industries meeting Standards	[Nos]	NA
AQ4b		No of Industries not meeting discharge	[Nos]	1

		Standards		
AQ5	Control of Non-industrial Air Pollution sources			
AQ5a		Control open burning of Stubble –during winter	[Nos of fire incidents]	NA
AQ5b		Control Open burning of Waste – Nos of actions Taken	[Nos]	NA
AQ5c		Control of forest fires	[SOP available] / [No SoP]	No SoP
AQ5d		Vehicle pollution check centers	[% ULBs covered]	NA
AQ5e		Dust Suppression Vehicles	[% ULBs covered]	NA
AQ6	Development of Air Pollution complaint redressal system			
AQ6a		Mobile App / Online based air pollution complaint redressing system of SPCBs.	[Available] / [Not available]	Available

## SWOT Analysis for Air Quality Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (attributes of the Organization)	Strengths	<ul style="list-style-type: none"> <li>Prominent air polluting sources Identified by SPCBs</li> <li>Mobile App / Online based air pollution complaint redressing system of SPCBs associated with Rajasthan Sampark Portal</li> </ul>	<ul style="list-style-type: none"> <li>Insufficient Monitoring Stations of Air Quality of Districts</li> <li>Access to air quality data from SPCBs &amp; CPCB through Dashboard not available</li> <li>Insufficient Data regarding Number of Industries meeting the standards</li> </ul>
	Opportunities	<ul style="list-style-type: none"> <li>Public Awareness to be created with participation of NGOs /SHGs /Academic institutions regarding Air pollution</li> <li>Leaflets / Broachers explaining Air Pollution and Health Problems related to Air Pollution should be exhibited</li> <li>Time to time monitoring of Performance of district regarding the Air quality and its management</li> <li>Use of instruments to combat industrial air pollution</li> <li>Vehicle Pollution Check centres with respect to population pressure</li> <li>Dust Suppression Vehicles with respect to population pressure</li> </ul>	Threats
External Origin (attributes of the Environment)			

## Action Plan for Air Quality Management

### Long Term Action Plan: Reduce Congestion

S. No.	Action Points	Timelines	Department/ Agencies
i	Plying of electric buses, e-rickshaws for public transport including establishment of sufficient charging stations.	Immediate	Transport Department
ii	Prepare plan for construction of expressways/bypasses to avoid congestion due to non-destined vehicles.	Immediate	N.H.A.I. /PWD
iii	Arrangement of Multi-level Parking Facilities	Immediate	ULBs /Development Authorities
iv	Development/Strengthening of Bike zone/Cycle zone at metro/railways/bus stations from where travelers hire bi-cycle to reach the destination.	Immediate	ULBs /Development Authorities
vi	Initiate steps for retrofitting of particulate filters in diesel vehicles, when BS-VI fuels are available	Immediate	Vehicle Manufacturing Companies/Ministry of Road Transport & Highways
vii	Use of Bio-Ethanol in the urban transport system/waste to energy.	Immediate	Transport Department

## Short Term Action Plan

S. No.	Action Points	Timelines	Department/ Agencies
i	Launch extensive drive against polluting vehicles for ensuring strict compliance	As regular activity	R.T.O/Traffic Police
ii	Launch public awareness campaign for air pollution control, vehicle maintenance, minimizing use of personal vehicles, lane discipline, etc.	As regular activity	R.T.O/ Traffic Police / NGOs / Education Department
iii	Prevent parking of vehicles in the non-designated areas	As regular activity	Traffic Police/ ULBs
iv	Prepare & implement action plan to check fuel adulteration and random monitoring of fuel quality data	As regular activity	District Supply Officer/Oil companies
v	Prepare & implement plan for widening of roads and improvement of infrastructure for decongestion of road	Immediate	ULBs
vi	Steps for promoting battery operated vehicles including establishment of charging stations.	Immediate	Transport Department/ULBs / Development Authorities
vii	Synchronize traffic movements/Introduce intelligent traffic systems for lane-driving	Immediate	Traffic Police
viii	Installation of remote sensor based PUC system	Immediate	Traffic Police

## Other Steps to Control Air Pollution

### Long Term Action Plan

S. No.	Action Points	Timelines	Department/ Agencies
i)	Dead Bodies of Animals should be disposed through proper treatment facility like rendering plant etc.	Immediate	ULBs
ii)	Installation of CAAQMS by polluting units/institutions etc. under 3Ps ("Polluters Pay Principles" and "Pollution Prevention Pays")	Immediate	RPCB
iii)	Tree Plantation for mitigation of air pollution based on location of pollution sources and Wind rose data	Immediate	Forest department / Development Authority / RPCB / NGOs etc.

### Short Term Action Plan

S. No.	Action Points	Timelines	Department/ Agencies
i)	Air Quality Index to be calculated and disseminated to the people through website and other media (on maximum fortnightly basis for manually operated monitoring stations and real time basis for continuous monitoring stations)	Immediate and then As regular activity	RPCB
ii)	Set-up and publicize helpline in the city/town as well as SPCB/PCC HQ for complaints against reported non-compliance	Immediate	RPCB
iii)	Engage with concerned authorities on continual basis for maximizing coverage of LPG/PNG for domestic and commercial cooking with target of 100% coverage ( <i>Under Pradhan Mantri Ujjwala+ Yojana in urban areas</i> )	Immediate	District Supply Officer
iv)	Monitoring of DG sets and action against violations. Fine should be imposed on defaulters.	Immediate	RPCB
v)	If Air Quality Index found severe or above grade, ensure availability of masks to public for protection.	Immediate	RPCB / ULBs

## Control of air pollution from constructions and demolition activities

S. No.	Action Points	Timelines	Department/ Agencies
i)	Enforcement of Construction & Demolition Rules 2016. Fine should be imposed on defaulting units.	Immediate and thereafter, continue as regular activity	ULBs / Urban Development/Development Authorities
ii)	Ensure carriage of construction material in closed/covered vessels		ULBs / Development authorities/ Regional Transport Department
iii)	Environmental aspects should be included during preparation of master plan for development of city.	Immediate	ULBs / Urban Development/Development Authorities
iv)	Builders should leave 33% area for green belt in residential colonies and Plantation should be done accordingly.	Within a reasonable timeframe	ULBs / Urban Development/Development Authorities/ housing companies
v)	All construction areas must be covered to avoid dispersion of particulate matter	30 days	ULBs /Development Authorities

**Control of Emissions from Biomass / Crop Residue / Garbage / Municipal Solid Waste Burning / Forest Fires**

<b>S. No.</b>	<b>Action Points</b>	<b>Timelines</b>	<b>Department/ Agencies</b>
<b>i)</b>	Launch extensive drive against open burning of bio-mass, crop residue, garbage, leaves, etc.	Immediate	ULBs / NGOs / Education Department
<b>ii)</b>	Regular check and control of burning of municipal solid wastes and use of fire extinguisher for control of fire in municipal solid waste and bio mass.		ULBs
<b>iii)</b>	Proper collection of horticulture waste (bio-mass) and its disposal following composting-cum-gardening approach as material for plantations.		ULBs
<b>iv)</b>	Ensure ban on burning of agriculture waste and crop residues and its implementation	Immediate	Agriculture Department / RPCB
<b>v)</b>	Door to Door collection of segregated waste by agency and then its disposal directly in plant without dumping it on land.	Immediate	ULBs
<b>vi)</b>	Establishment of composting pits in Parks/ residential societies etc. for management of biodegradable waste.	Immediate	ULBs

## Action Points for Control of Industrial Emissions

### Long Term Action Plan

S. No.	Action Points	Timelines	Department/ Agencies
i)	Installation of appropriate air pollution control devices in factory units/industries.	Immediate	RPCB / Department of Industries
ii)	Development of mobile facility/van for continuous ambient air quality monitoring for different localities.	Immediate	ULBs / RPCB
iii)	Fly ash bricks use for protective tree guards	Immediate	ULBs /PWD/Forest Dept./ Irrigation Dept.

### Short Term Action Plan

S. No.	Action Points	Timelines	Department/ Agencies
I.	Identification of brick kilns and their regular monitoring including use of designated fuel, and closure of unauthorized units	Immediate	ULBs / RPCB
II.	Monitoring of industrial emission including real time online monitoring through OCEMS (Online Continuous Emission Monitoring System) and live camera feed and to take action against non-complying industrial units	Immediate, and thereafter, regular activity	RPCB
III.	Bank guarantee should be taken for the compliance of conditions imposed in CTO/CTE for control of Environmental Pollution from industries. The bank guarantee shall be forfeited in case of any violation. Verification of these conditions to be carried out by RPCB/selected Third Party Institutions/Quality Control Agencies etc.	Immediate, and thereafter, regular activity	RPCB
IV.	Installation of webcams and OCEMS in Grossly Polluting Industries.	Immediate	RPCB
V.	Power plant controls -implement stricter NO <sub>x</sub> and SO <sub>2</sub> standards with continuous monitoring	Immediate	RPCB
VI.	Stricter dust control on stone crushers	Immediate	RPCB
VII.	Introduce and implement stringent PM <sub>10</sub> and PM <sub>2.5</sub> norms in industries through installations of wet scrubbers	Immediate	RPCB

## 5.4. Mining Activity Management



Mining is a major economic activity in India and accounted for 2.3% of the country's gross value added (GVA) for the first quarter of 2017-2018. The sector provides the basic raw materials required by several manufacturing and infrastructure industries in the country. Government has framed the Mines & Minerals (Development and Regulation) Act 1957 (MMDR Act), which is the principal legislation governing the mineral sector (other than petroleum and natural gas) in India. The MMDR Act sets out the legal framework for the development of all minerals and for the regulation of mines. Under the MMDR Act, minerals are classified into minor minerals and major minerals. Minor minerals include building stones, gravel, ordinary clay, ordinary sand and other minerals that the central government

declares to be a minor mineral. Minerals that cannot be categorized as minor minerals are considered to be major minerals and include coal, manganese ore and iron ore, as well as other minerals used for industrial purposes. The MMDR Act underwent significant changes under the Mines and Minerals (Development and Regulation) Amendment Act 2015. These changes were brought about primarily to establish a transparent and non-discretionary regime for the grant of mineral concessions. The MMDR Act was further amended in 2016 to allow the transfer of mining leases that are granted other than through auction and used for captive consumption purposes.

**ICMM**  
International Council  
on Mining & Metals

## MINING WITH PRINCIPLES

Metals and minerals are essential to almost every aspect of modern living: enabling, among other things: farming, healthcare, communications, water and energy supply, transport, and construction. The cultivation of resources also provides a great many economic and social development opportunities for host communities when mined with principles.

At ICMM, we advocate the universal adoption of ethical business practices across the mining and metals industry. We collaborate with industry, governments, NGOs, and civil society partners to strengthen social and environmental performance, and champion the responsible production of the materials. Our Sustainable Development Framework complements the UN's global development agenda, and we encourage all mining and metals companies to implement comparable business practices.

We believe that only by **MINING WITH PRINCIPLES** can the mining and metals industry fully achieve its potential of delivering real and sustainable progress for people and the planet.

### ICMM 10 PRINCIPLES

<ul style="list-style-type: none"> <li>1 Ethical business &amp; sound governance</li> <li>2 Sustainable development in decision-making</li> <li>3 Respect for human rights</li> <li>4 Effective risk management</li> <li>5 Health &amp; safety performance</li> </ul>	<ul style="list-style-type: none"> <li>6 Environmental performance</li> <li>7 Conservation of biodiversity &amp; land-use planning</li> <li>8 Responsible use &amp; supply of materials</li> <li>9 Social contribution</li> <li>10 Engagement &amp; transparent reporting</li> </ul>
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ICMM is an agent of change. Bringing together 25 of the world's largest mining and metals companies, and over 30 regional and commodities associations, we exist to enhance the social and environmental performance of the mining and metals industry.

For more information on our **10 PRINCIPLES** visit [www.icmm.com](http://www.icmm.com)

## Baseline Data for Mining Activity Management

6.0 Mining Activity Management plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
MI1a	Inventory of Mining in District			
MI1a		Type of Mining Activity	[Sand Mining] / [Iron Ore] / [Bauxite] / [Coal] / Other [specify]	Garnet, Quartz, Felspar, Mica, Silica Sand, Granite, Masonary Stone, Phylite Shist & Slate Stone
			Multiple selection in order of magnitude of operations	Sand Mining
MI1b		No of Mining licenses given in the District	[Nos]	197
MI1c		Area covered under mining	[Sq Km]	585.41Hct.
MI1d		Area of District	[Sq Km]	7194 Sq KM
MI1e		Sand Mining	[Yes] / [No]	Yes
MI1f		Area of sand Mining	[River bed] / [Estuary] / [Non -river deposit]	River bed
MI2	Compliance to Environmental Conditions			
MI2a		No of Mining areas meeting Environmental Clearance Conditions	[Nos]	133
MI2b		No of Mining areas meeting Consent Conditions of SPCBs / PCCs	[Nos]	133

MI3a	Mining related environmental Complaints			
MI3b		No of pollution related complaints against Mining Operations in last 1 year	[Nos]	0
MI4	Action against non-complying mining activity			
MI4a		No of Mining operations suspended for violations to environmental norms	[Nos]	0
MI4b		No of directions issued by SPCBs	[Nos]	0

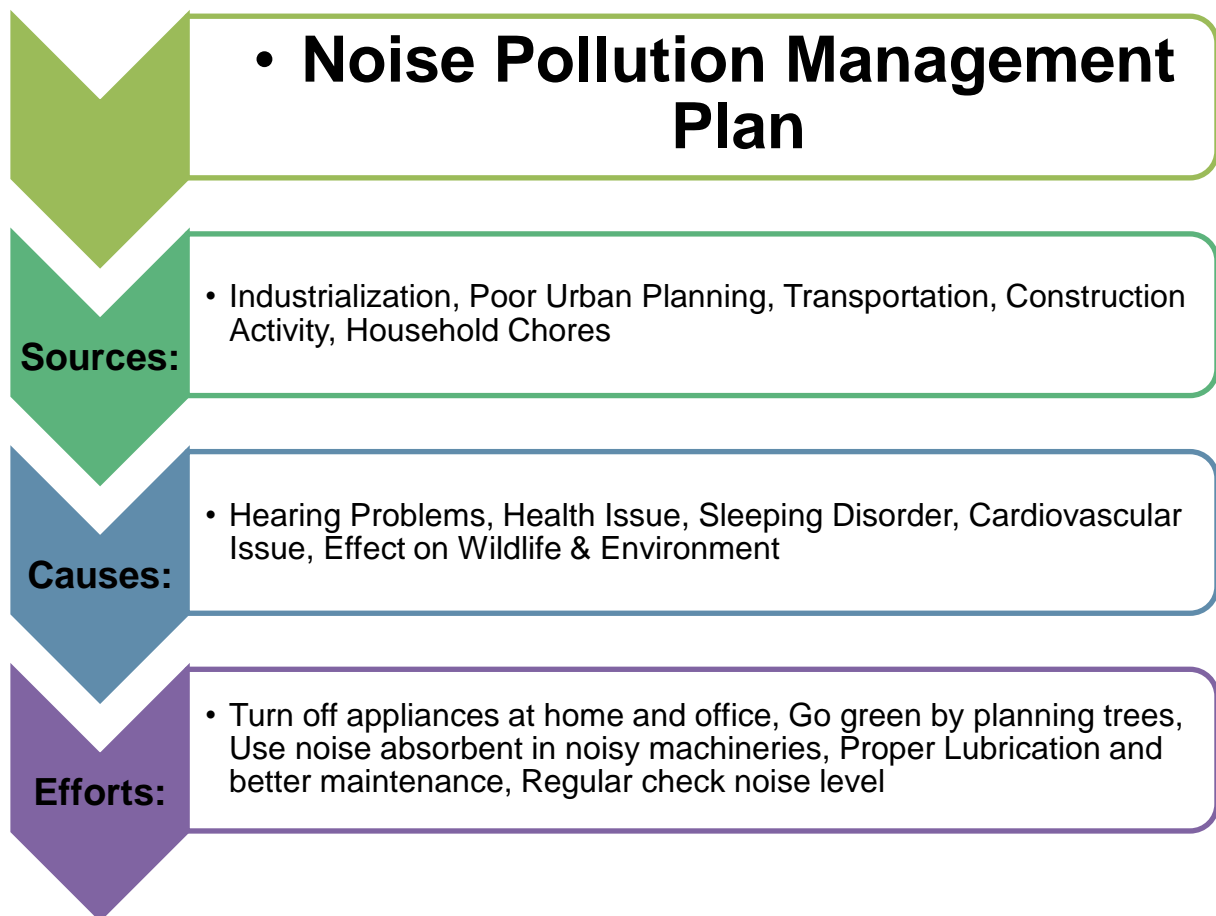
## SWOT Analysis for Mining Activity Management

		Helpful to achieving the objectives	Harmful to achieving the objectives
Internal origin (Attributes of the Organization)	Strengths		Weakness
			<ul style="list-style-type: none"> <li>No complaint redressal system for illegal mining</li> </ul>
External Origin (Attributes of the Environment)	Opportunities	<ul style="list-style-type: none"> <li>Reclamation of abundant mines with proper strategies</li> <li>Time to time monitoring of illegal mining and its management</li> <li>GPS enabled task force for Sand mining or other illegal mining</li> </ul>	Threats
			<ul style="list-style-type: none"> <li>Illegal mining in district</li> </ul>

## Action Plan for Mining Activity Management

S. No.	Action Points	Timelines	Department/ Agencies
1.	Adoption of sustainable and systematic mining practices	Regular Activities	Mining Dept.
2.	Enforcing strict control measures against air pollution.	Immediate then after Regular Activity	RPCB
3.	Enforcing strict control measures against water pollution	Immediate then after Regular Activity	RPCB
4.	Enforcing strict control measures against noise pollution	Immediate then after Regular Activity	RPCB
5.	Establishment of green belt in and around mining lease areas and planting of rows of trees along roadsides to hold the spread of dust over larger areas	Regular Activities	Mine Department / Forest Dept. / NGOs / Lease Owner or Concerned Mines
6.	Adoption of appropriate soil and moisture conservation measures in the mining lease area to hold run-off and increase infiltration.	Regular Activities	Concerned Mines /Mining Dept.
7.	Stabilization and consolidation of inactive dumps through engineering and vegetative measures	1 Year	Concerned Mines /Mining Dept.
8.	Strict implementation of reclamation and rehabilitation measures both within and outside the mining lease areas	Regular Activities	Concerned Mines /Mining Dept.
9.	Alternative uses of fly ash for purposes so as to reduce red bricks demand	Regular Activities	ULBs / PWD / Development Authority

## 5.5. Noise Pollution Management



Noise causes health effects, as also socio-cultural and economic effects. Most of the time, its effects cannot be evaluated objectively.

Noise is generated from a variety of sources such as industries, transport vehicles, construction activities, generator sets, fire-crackers and a variety of indoor and outdoor sources. A number of acts and rules have been framed in our country for control of noise pollution.

# 10 ways to combat NOISE POLLUTION

In the EU, more than 100 million citizens are affected by noise levels harmful to their health.

Road traffic is the major source of noise pollution, followed by railway and aircraft noise.

Noise pollution is associated with health effects, such as cardiovascular disease, sleep disturbance, stress, reduced cognitive performance, and psychological effects.

**Implementation:** Over 5,000 km of noise barriers have been installed alongside European rail networks. They are even more widely used alongside roads, including in Austria, Denmark, France, Germany, Italy, Poland, Spain & the Netherlands.

**Implementation:** Traffic management strategies are widely used across Europe. In Paris & Valencia there is restricted access for heavy goods vehicles, while Aeneas & Parma have implemented shuttle bus services to reduce private car use.

**Implementation:** Electric cars have the potential to reduce noise.

**Implementation:** Computer models can predict noise exposure & identify areas unsuitable for development. No houses should be allowed under landing and take-off, for instance.

**Implementation:** Several have been developed & are on sale on the European market.

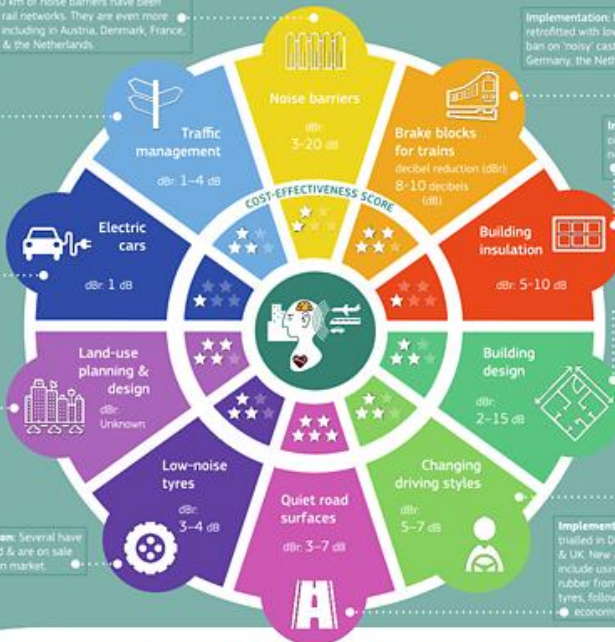
**Implementation:** European freight trains are being retrofitted with low noise brake blocks. A complete ban on 'noisy' cast iron blocks is due to take place in Germany, the Netherlands & Switzerland in 2020.

**Implementation:** A Norwegian study of façade insulation found an average noise reduction of 7 dB inside buildings & a 30% reduction in annoyance.

**Implementation:** It is unclear how widely acoustical architectural planning is used. Administrative action is needed for large-scale use.

**Implementation:** Quieter driving could be incorporated into existing campaigns promoting 'eco-driving' to save fuel & reduce air pollution (e.g. <http://www.ecodriver.org>).

**Implementation:** Low noise surfaces have been trialled in Denmark, France, Italy, the Netherlands & UK. New applications include using crumb rubber from end-of-life tyres, following a circular economy approach.



For more information, see the SFEP Future Brief, 'Noise abatement approaches', or sign up for the Science for Environment Policy News Alert at <http://ec.europa.eu/science-environment-policy>

## Baseline Data for Noise Pollution Management

7.0 Noise Pollution Management Plan				
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District
NP1	Availability Monitoring equipment			
NP1a		No. of noise measuring devices with district administration	[Nos] / [None]	None]
NP1b		No. of noise measuring devices with SPCBs	[Nos] / [None]	1
NP2	Capability to conduct noise level monitoring by State agency / District authorities			
NP2a		capability to conduct noise level monitoring by State agency / District authorities	[Available] / [Not available]	Available
NP2	Management of Noise related complaints			
NP2a		No of complaints received on noise pollution in last 1 year		NA
			[Nos]	NA
				NA
NP2b		No of complaints redressed	[Nos]	NA
NP3	Compliance to ambient noise standards			
NP3a		Implementation of Ambient noise standards in residential and silent zones	[Regular Activity] / [Occasional] / [Never]	Regular Activity
NP3b		Noise monitoring study in district	[carried out] / [not carried out]	Carried Out
NP3c		Sign boards in towns and cities in silent zones	[Installed] / [Partial] / [Not Installed]	Not Installed

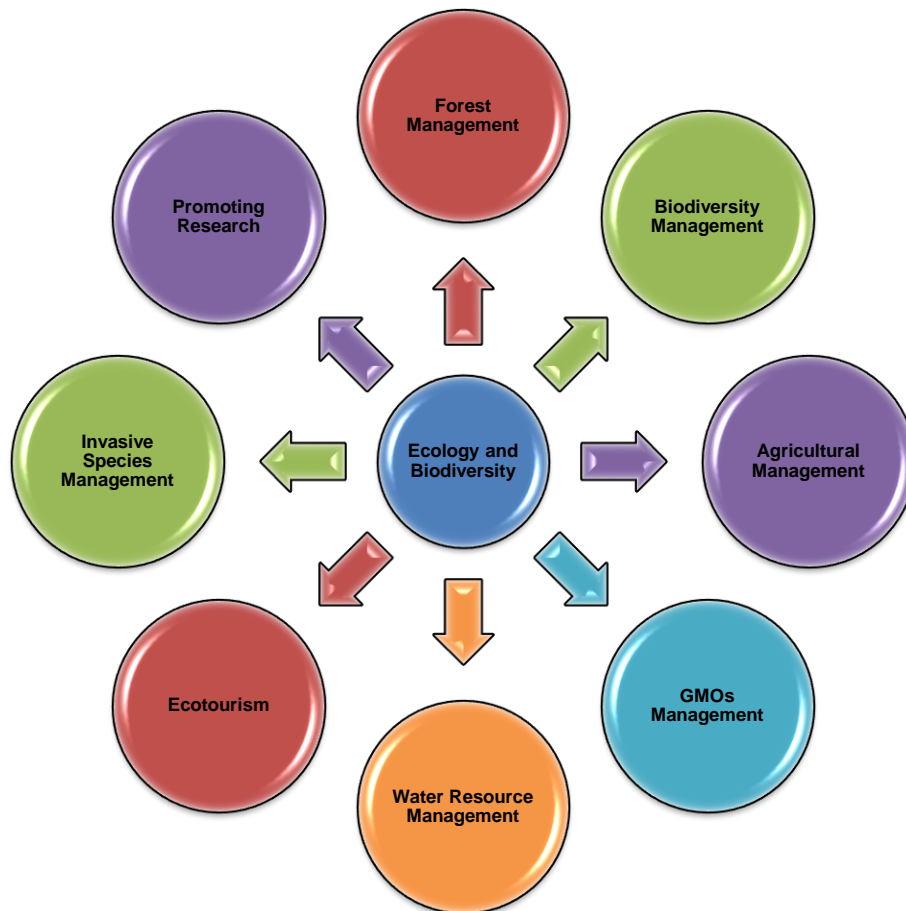
## SWOT Analysis for Noise Pollution Management

		Helpful to achieving the objectives	Harmful to achieving the objectives	
Internal origin (Attributes of the Organization)	Strengths	<ul style="list-style-type: none"> <li></li> </ul>	Weakness	<ul style="list-style-type: none"> <li>Sound Level Measuring Devices Not Available</li> </ul>
	External Origin (Attributes of the Environment)	Opportunities	<ul style="list-style-type: none"> <li>Sign boards in towns and cities in silent zones</li> <li>Public awareness to be created with participation of NGOs / SHGs / Academic institutions</li> <li>Leaflets / Brochures explaining Noise pollution and related issues should be exhibited</li> <li>Time to time monitoring of performance of district with respect to Noise pollution</li> </ul>	Threats

## Action Plan for Noise Pollution Management

S. No.	Action Points	Timelines	Department/ Agencies
1.	Impose restrictions in traffic hours	Regular Activities	RTO /Traffic Police
2.	To restrict the vehicular honking	Regular Activities	RTO /Traffic Police
3.	Impose restrictions of operating hours for various urban functional zones	Regular Activities	RTO /Traffic Police
4.	Establish suitable buffer zones around residential areas in order to insulate from noise emanating areas such as commercial, industrial, road, railway traffic, etc.	Immediate	Development Authority / RTO /Traffic Police
5.	Impose restriction on any sound creating activities in the silent zone	Regular Activities	Dist. Admin. / ULBs
6.	Enforce the Noise Pollution (Regulation and Control) Rules. 2000	Immediate	Department of Home / Dist. Admin. / ULBs / Police Department
7.	A loud speaker or a public address system shall not be used except after obtaining written permission from the authority	Regular Activities	Department of Home / Dist. Admin. / ULBs / Police Department
8.	A loudspeaker/ any other musical instrument or a public address system shall not be used at night (between 10.00 p.m. to 6.00 a.m.)	Regular Activities	Department of Home / Dist. Admin. / ULBs / Police Department
9.	No person shall use, operate or permit the use or operation of a loud speaker in any public places or within distance of 200 meters from any public places or in any place of public entertainment.	Regular Activities	Department of Home / Dist. Admin. / ULBs / Police Department

## 5.6. Ecology and Biodiversity Management



Biodiversity encompasses the variety of all life on earth including terrestrial, marine and aquatic ecosystems. It includes diversity at three levels: Genetic Diversity (within species), Species Diversity (between species) and Ecosystem Diversity (between ecosystems). Biodiversity is essential for human survival and wellbeing. It forms the core of all development actions since it provides food, fodder, medicines, water, clean air and other goods and services.

# BIO DIVERSITY

## SHARING IS CARING

We share our world, our forests, our homes (even our bedrooms!) with thousands of visible and invisible living beings that help run our planet. Take a handful of soil from a nearby garden and you will be holding millions of invisible bacteria in your fist. The trees that grow in that soil, the oxygen they produce, the birds that nest on their branches, the squiggly worms they feed on, the sticky bird poop that comes after, are all part of a complex system that works to keep the Earth, and us, alive.

## WHAT IS BIODIVERSITY?

**Biodiversity** (biology + diversity) is the sum total of the VARIETIES of life forms, the environments they live in (forests, landscapes, seascapes, cities), and the relationships they build to survive. Think of the earth like a human body—our organs work together to keep our bodies running. Our planet functions like our body. We depend on worms, bees, trees, animals, birds for our well-being, and they depend on us.

TEXT: RADHAKRISHNAN SIVAN, DIVYA MEHRA

## INDIA, A MEGA-DIVERSE COUNTRY

India is one of 18 mega-biodiverse countries in the world, according to the United Nations. This means that the number of life forms in our country is much higher than in others, and there are certain species which are **endemic** or are found only in our country. For example, according to the Zoological Survey of India, the Andaman and Nicobar Islands are home to 1,032 endemic species—including a variety of owls, geckos, macaques and hornbills—that are found nowhere else in the world.

**HOW MANY OF US ARE ON THIS PLANET?**  
11.3 MILLION SPECIES EXIST ON EARTH  
1.9 MILLION HAVE BEEN DESCRIBED  
BY SCIENTISTS SO FAR

46,000 species of plants have been recorded in India

7-8% of the world's recorded species are found in India

22 MAY INTERNATIONAL DAY FOR BIOLOGICAL DIVERSITY

91,000 species of animals have been recorded in India

2011-2020

The UN declared 2011-2020 as the United Nations Decade on Biodiversity to push us and our governments to think of better ways of preserving the natural world around us.

## IS OUR BIODIVERSITY IN DANGER?

**YES. IN GRAVE DANGER. 16,956 SPECIES ARE THREATENED**

Every day, the world over, forests are flattened, plastic clogs our seas, and animals are killed for money. We have destroyed the habitats of many species, and put our biodiversity at unbearable risk. A World Wide Fund (WWF) report (2018) says in the last 48 years, human beings have wiped out 60% of the mammals, birds, fish and reptiles on Earth.

# Economic benefits of invasive species management



**Invasive species are plant, animal and other species that have been introduced to new environments and are having negative ecological, economic or social impacts, including:**



## Example

The bush-tailed possum is much loved in its native Australia, where there are active efforts to create more habitat for it. Just next door in New Zealand, however, the possum has caused damage to native trees and rare birds since being introduced, and is considered a possible vector of bovine TB.



The rate of new species introductions has increased since the 1950s due to factors like climate change and expansion of global trade.

Controlling invasive species can be expensive, but in many cases, not controlling them may be even more costly. So how can we estimate the benefits of control?



This paper explains how to measure the **economic costs** of the impacts of invasive species on ecosystems.

First, it's important to consider what kind of impact the invasive species might have. This depends on factors like:



how fast the species is spreading



how much damage it's causing per unit of land



how many people are affected by these damages

Then consider the value of the ecosystem or resource that is threatened by the invasive species. This is where things get tricky.

If it's a market good, like wood from a commercial forest that is threatened by insects, then you can estimate its value based on market prices.



This makes it possible to estimate how much money would be lost if the forest were destroyed by insects.

But what about values that exist outside of the market, like biodiversity?

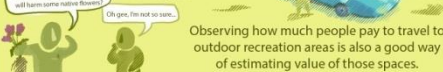


Through surveying people and observing their behaviour, it is possible to estimate how much they are willing to spend to maintain certain things like clean air or some biodiversity.

To measure the costs of invasive species on non-market resources like biodiversity, economists rely on a concept called "willingness to pay": how much people are willing to spend to prevent an invasive species or to protect other ecological resources.



They can add in complicating factors to determine what is most important to people when developing management strategies.



By estimating people's willingness to pay, economists can estimate economic value of ecosystems and resources, which allows them to measure how much economic damages invasive species might incur; understanding people's preferences also helps ecologists to develop management strategies that are acceptable to as many people as possible.

**Challenges include:**

- Survey participants' potential lack of knowledge about the topic
- Scientific uncertainty
- Instances where invasive species have become culturally important
- Climate change and accelerated migration
- In many cases, species have moved to new ranges because their old habitat is no longer suitable. Should these be treated as invasive?

Despite the challenges, economic valuation is very important for assessing the impact of invasive species. Knowing the numbers can help ecologists work together with policy makers and practitioners to enact management solutions.

Illustrated by Holly McKevey

# Wetland biodiversity in crisis

Healthy wetlands play an essential role as a habitat for biodiversity that can help to adapt to climate change. Mediterranean wetlands are a particularly important habitats for migratory birds. However, they are threatened by human pressures, thus reducing their capacity to preserve biodiversity. Find out more at [offyourmap.org](http://offyourmap.org)



**Mediterranean wetland species**  
threatened with extinction



**Coastal wetland sites**

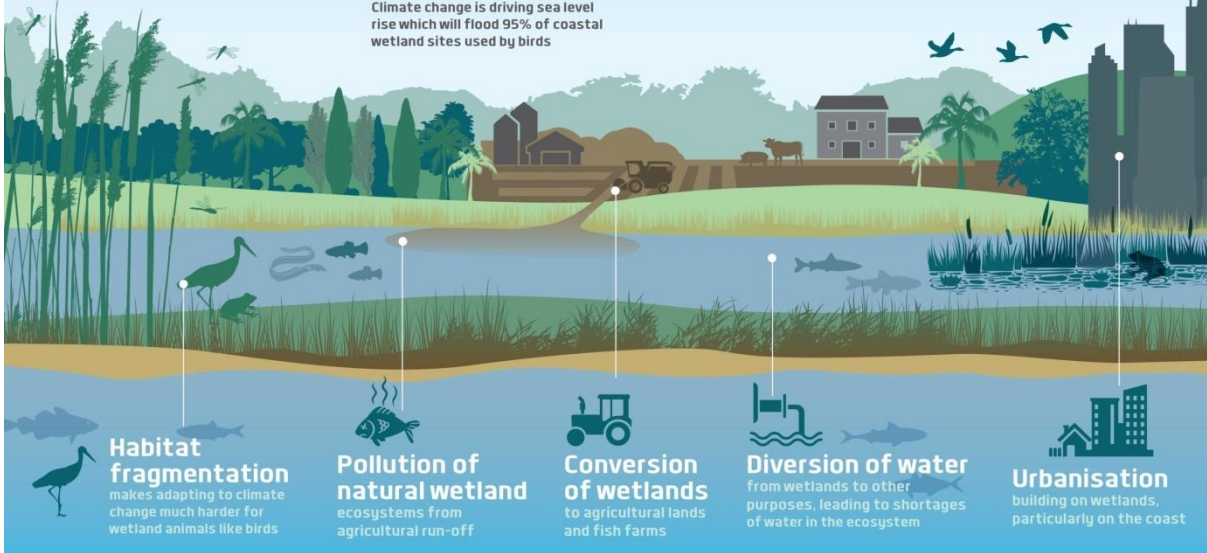
Climate change is driving sea level rise which will flood 95% of coastal wetland sites used by birds



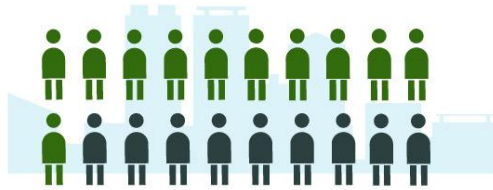
Between 1970-2015, we lost 48% of **Mediterranean wetlands**



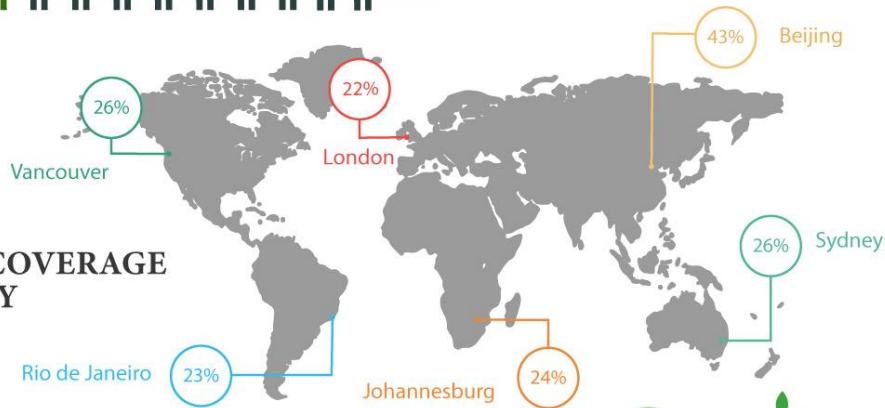
**Wetland species**  
(vertebrate) abundance has halved since 1990



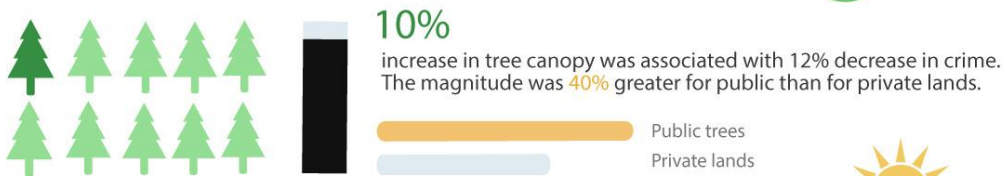
# URBAN FORESTRY INFOGRAPHIC



**54%**  
of the world's population lives in urban areas. It is expected to increase to 66 per cent by 2050.



## TREE COVERAGE BY CITY



**5'**  
**GREEN EXERCISE**  
Just 5 minutes of walking close to green spaces during lunchbreaks is enough to improve worker's mental health and mood.

**23%**  
**LESS SICK DAYS**  
Desk workers who can see nature from their desks experience 23% less sick time off than those who can not see any nature.

SOURCES:  
<http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html>  
<https://medium.com/thrive-global/get-outside-how-nature-enhances-work-productivity-25e26386c348>  
[https://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs\\_2012\\_troy\\_001.pdf](https://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs_2012_troy_001.pdf)  
<https://www.businessinsider.com/cities-with-most-trees-2017-2#4-vancouver-canada-259-16>  
<https://www.yourleaf.org/blog/jaclyn-cornell/jul-14-2015/international-influences-tijuca-forest-%E2%80%93-lungs-rio>  
<http://www.urbanreecover.org/location/london/>  
<http://www.efr.org/benefits-taking-work-breaks-outside/>

## Baseline Data for Ecology and Biodiversity Management

No.	Details of Data Requirement		Please enter Measurable Outcome for District
EB1	District Name		Tonk
EB2	Population		1211671
EB3	Geographical Coordinates of the District		75.19' and 76.16 East Longitude and 25.41' and 26.24' North Latitude.
EB4	Geographical Area in Sq. Km		7194
EB5	Forest Area in Sq. Km. till 31.3.2007		335.97
EB5a	Percent Forest Area w.r.t. Geographical Area		4.67
EB5b	Per Capita Forest Area in Ha		0.13
EB5c	Land of District used for Human Habitation (in % w.r.t. geographical area of district)		Not Estimated
EB5d	Hill / Mountain area (in % w.r.t. geographical area of district)		Not Estimated
EB6	District Wise Forest Area According to Legal Status in Rajasthan as on 31.03.2007		Not Estimated
EB6a		Reserved Forest	101.42
EB6b		Protected Forest	230.75
EB6c		Unclassified Forest	3.8
EB6d		Total Forest	335.97
EB7	Forest Types in district (Deciduous / Evergreen / Dry, etc.)		Northern tropical dry deciduous forests / Northern dry mixed deciduous forests
EB8	Type of Soils in Districts		Sandy- Loam Soil
EB9	Biogeographic Division of District		Geologically, the district belongs to Bhilwara Super Group of rocks
EB10	Number of Ranges in Forest Division of District		5
EB10a	Ranges of District		Deoli, Uniyara, Tonk, Maalpura, Niwai
EB11	Registered Nurseries in district (number/none) (List to be enclosed)		17

EB12	Joint Forest Management Committees		
EB12a		Number	68
EB12b		Area Managed (Ha)	9746.5
EB13	Status of PBRs in district (No of PBRs in district -specified with name of area/none)		Not Estimated
EB14	Sacred Groves in district important for biodiversity (Location/Area/History/Salient features)		Not Identified
EB15	Identified Eco-tourism spots in District (Identified/None)		Not Identified
EB16	Identified Important Bird and Biodiversity Areas in District (Name: IBA Site Code) if yes, list to be enclosed.		Not Identified
EB17	Identified Sites for Restoration (eg: Abounded Mines)		Not Identified
EB18	Listed NGOs / Institution / Agencies / Individual Experts of District working in field of Ecology / Environment / Biodiversity		Not Identified
EB19	Recorded Human-Wildlife Conflict in District (Place, Wild animal species involved, Year, Causalities if any)		Not Estimated
EB19a	Wildlife Rescue and Rehabilitation Centers (none / number, location, contact details)		Not Estimated
EB19b	Organization Responsible for Wildlife Rescue in District		Forest Department
EB19c	Toll-free Number for Wildlife Rescue (Provide - If Initiated)		Office Number of Forest Department
EB20	List of Identified Invasive species in District (If yes, list to be enclosed)		Not Estimated
EB20a		Flora	<i>Lantana, Parthenium, Juliflora</i>
EB20b		Fauna	Not Estimated
EB20c	Control measures taken for Invasive Species		Initiated
EB21	Genetically Modified Crops in the District		Not Estimated

EB22	Sustainable Agricultural Practices for Biodiversity Conservation and Environment Protection		Not Initiated
EB23	Seasonal River / Canals / Creeks in District and Conservation of Water from them		Banas, Dai, Mashi, Sahodara, Dheel
EB23a	No. of Waterbodies in Districts		Not Estimated
EB23b	Status of Waterbodies in Districts (Name / Location / Ownership / Area / Current use)- List to be enclosed		Not Estimated
EB23c	Ongoing Commercial Activities in Waterbodies		Fishing, Boating, Agricultural Practices
EB23d	Products of Waterbodies (Fishes / Vegetables etc.)		Not Estimated
EB23e	Encroachment Level at Catchment Areas of Waterbodies		Not Estimated
EB23f	Control measures taken for Encroachment		Initiated
EB24	Status of Flora and Fauna in District		
EB24a		Flora	Grasses (8); Herbes (24); Climbers (7); Shrubes (28);Trees (40)
EB24b		Fauna	Amphibians (5); Reptiles (12); Birds (182); Mammals (22)
EB24c	Publications related to Ecology and Diversity of District (Enclosed the List References)		Not Estimated

## SWOT Analysis for Ecology and Biodiversity Management

<b>Internal origin</b> (Attributes of the Organization)	<b>Strengths</b>	<b>Weakness</b> <ul style="list-style-type: none"> <li>• Rescue and rehabilitation centre for wild animals</li> <li>• Untrained field staff</li> <li>• Not proper management of protected areas or urban green spaces</li> <li>• No proper implementation of Wildlife and biodiversity acts</li> <li>• Insufficient ground staff and lacking of modern tools</li> <li>• Information regarding GMOs not available</li> </ul>
<b>External Origin</b> (Attributes of the Environment)	<b>Opportunities</b> <ul style="list-style-type: none"> <li>• Proper assessment of forest cover and land use pattern (Latest/recent)</li> <li>• Rescue &amp; rehabilitation facilities/ centers</li> <li>• Training programmes for local field staff</li> <li>• Promotion of ecotourism activities</li> <li>• Development of urban green spaces.</li> <li>• Biodiversity and Butterfly Park</li> <li>• Identification of IBAs (Important bird areas)</li> <li>• Mitigation of human wildlife conflict</li> <li>• Public awareness to be created with participation of NGOs / SHGs, Academic Institutions</li> <li>• GPS enabled task force to mitigate the Human Wildlife conflict issues and Poaching cases</li> </ul>	<b>Threats</b> <ul style="list-style-type: none"> <li>• Illegal mining and poaching</li> <li>• Encroachment in catchment areas of wetlands and waterbodies</li> <li>• Pet practice (wild animals)</li> <li>• Identification and control of Invasive species (Floral and Faunal)</li> </ul>

## Action Plan for Ecology and Biodiversity Management

### Short Term Action Point:

S. No.	Action Points	Timelines	Department/ Agencies
1	Every local body shall constitute a Biodiversity Management Committee within its area.	Immediate	Dist. Administration / ULBs
2	The Biodiversity Management Committee will also be involved in documentation of biodiversity (PBR, People's Biodiversity Register) and associated traditional knowledge (TK).	Immediate	Dist. Administration / ULBs / Forest Dept. / NGOs / Academic Institutions / Individual Experts (if any)
3	Maintain data about local Vaid and practitioners using biological resources.	Immediate	AYUSH
4	Gram Panchayat Adhikari/Nagar Vikas Adhikari will organize regular meetings within a village setting.	Immediate	Panchayati Raj
5	Organize training of members in identification and collection of data on biological resources and traditional knowledge programmes for capacity building.	Immediate	Forest Dept. / NGOs / Academic Institutions / Individual Experts (if any)
6	It is also important to involve the experts and students of school/colleges in the process of preparing PBRs.	Immediate	Forest Dept. / NGOs / Academic Institutions / Individual Experts (if any) / Dept. of Education
7	Mapping of key wetlands / Water bodies (including urban, rural and floodplain wetlands) based on a valuation of their roles in hydrological, morphological, ecological significance.	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District Environmental Committee
8	Field validation and ground truthing of wetland / Water bodies information and developing a matrix of priority	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District

	wetlands / Water bodies.		Environmental Committee / NGOs / Academic Institutions / Individual Expert
9	Preparation of 'Brief documents' for all the prioritized wetlands	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District Environmental Committee / NGOs / Academic Institutions / Individual Expert
10	Training on wetland health assessments	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District Environmental Committee / NGOs / Academic Institutions / Individual Expert
11	Develop policy on protection of Catchment Areas of wetlands / water bodies.	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District Environmental Committee / NGOs / Academic Institutions / Individual Expert
12	Prepare detailed documents for species (flora and fauna) in wetlands / water bodies.	Immediate, then after regular activity	Water Resource Department / Forest Department / Revenue Department / State Wetland Authority / District Environmental Committee / NGOs / Academic Institutions / Individual Expert
13	Regular monitoring of the pollution status and water quality of wetlands	Immediate, then after regular activity	RPCB

### Long Term Action Points:

S. No.	Action Points	Timelines	Department/ Agencies
1	The Biodiversity Management Committee will also be involved in revalidating of People's Biodiversity Register and associated traditional knowledge	Continuous	Dist. Administration / Forest Dept. / NGOs / Academic Institutions / Individual Experts (if any)
2	Maintain register containing information about details of access of biological resources and traditional knowledge granted.	Continuous	Forest Dept.
3	Levying charges by way of collection fees for accessing/ collecting bio-resources for commercial purpose within its area of jurisdiction, as per the Act.	Continuous	Dist. Administration /Forest Dept.
4	Documenting PBRs will also help to stop illegal access of bio-resources within its area of jurisdiction and empower the local communities, making them aware of their rights, as well as conserving biodiversity for their future as well.	Continuous	Forest Dept./ Horticulture / NGOs

## APPENDIX

1.0 Waste Management Plan										
(i) Solid Waste Management Plan (for each ULB)										
No.	Action Areas	Details of Data Requirement	Units of Measurable Outcome	Please enter Measurable Outcome for District	Tonk Zila					
	Name of Urban Local Body (ULB)		[name of ULB]		Tonk	Deoli	Niwai	Malpura	Todaraisingh	Uniyara
			Nagar Parishad Tonk		Nagar Palika Deoli	Nagar Palika Niwai	Nagar Palika Malpura	Nagar Palika Todaraisingh	Nagar Palika Uniyara	
	No of ULBs in the District		[Nos]	6						
	Population		[Nos as per 2011 census]	297252	165284	22065	37765	36028	23559	12551
<b>SW1</b>	<b>Report on inventory of total solid waste Generation</b>									
SW1a		Total solid waste Generation	[in MT/Day] or [Not estimated]	96	60	9	10	7	6	4
SW1b		Qty. of Dry Waste segregated	[in MT/Day] or [Collection Not initiated]	5.25	2	0.75	0.75	0.75	0.5	0.5
SW1c		Qty. of Wet Waste segregated	[in MT/Day] or [Collection Not initiated]	0	0	0	0	0	0	0
SW1d		Qty. of C&D Waste segregated	[in MT/Day] or [Collection Not initiated]	0	0	0	0	0	0	0
SW1e		Qty. of Street Sweeping	[in MT/Day] or [Not estimated]	1.15	0.2	0.3	0.15	0.15	0.25	0.1
SW1f		Qty. of Drain Silt	[in MT/Day] or [Not estimated]	1.05	0.2	0.2	0.1	0.15	0.35	0.05

SW1g		Qty. of Domestic Hazardous Waste(DHW) collected	[in MT/Day] or [No Facility]	No Facility	No Facility	No Facility	No Facility	No Facility	No Facility	No Facility
SW1h		Qty. of Other Waste (Horticulture, sanitary waste, etc.)	[in MT/Day] or [Qty not estimated]	Qty not estimated	Qty not estimated	Qty not estimated	Qty not estimated	Qty not estimated	Qty not estimated	Qty not estimated
SW1i		No of Old dump sites	[Nos] or [None]	8	1	1	3	1	1	1
SW1j		Qty stored in dumpsites	[MT] or [Not estimated]	111561 MT	46830 MT	17190MT	19342 MT	13176 MT	12750 MT	2273 MT
SW1k		No of Sanitary landfills	[Nos] or [None]	None	None	None	None	None	None	None
SW1l		No of wards	[nos]	200	60	25	35	35	25	20
<b>SW2</b>	<b>Compliance by Bulk Waste Generators</b>									
SW2a		No of BW Generators	[numbers] or [inventory not done]	inventory not done	inventory not done	inventory not done	inventory not done	inventory not done	inventory not done	inventory not done
SW2b		No of on-site facilities for Wet Waste	[numbers] or [No data]	No data	No data	No data	No data	No data	No data	No data
<b>SW3</b>	<b>Compliance in segregated waste Collection SW Collection</b>									
SW3a		Total generation	[Automatic] from SW1a	96	60	9	10MTD	7	6	4
SW3b		Wet Waste	[in MT/Day] or [Collection Not initiated]	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated
SW3c		Dry Waste	[in MT/Day] or [Collection Not initiated]	6.1	2	1	1.1	1.5	0.5	0

SW3d		C&D Waste	[in MT/Day] or [Collection Not initiated]	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated	Collection Not initiated
<b>SW4</b>	<b>Waste Management Operations</b>									
SW4a		Door to Door Collection	[100%] / [partial %] / [not initiated]	100%	100%	100%	100%	100%	100%	100%
SW4b	not initiated	Mechanical Road Sweeping	[100%] / [partial%] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4c		Manual Sweeping	[100%] / [partial%]	89.50%	90%	95%	95%	85%	80%	92%
SW4d		Segregated Waste Transport	[100%] / [partial %] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4e		Digesters (Bio-methanation)	[% of WW] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4f		Composting operation	[% of WW] / [not initiated]	9.16%	15%	10%	10%	10%	5%	5%
SW4g		MRF Operation	[MRF used] / [not installed]	Not Installed	Not Installed	MRF Used	Not Installed	Not Installed	Not Installed	Not Installed
SW4h		Use of Sanitary Landfill	[% of SW collected] / [no SLF]	No SLF	No SLF	No SLF	No SLF	No SLF	No SLF	No SLF
SW4i		Reclamation of old dumpsites	[initiated] / [not initiated]	Not Initiated	Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4j		Linkage with Waste to Energy Boilers / Cement Plants	[initiated] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4k		Linkage with Recyclers	[initiated] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4l		Authorization of waste pickers	[initiated] / [not initiated]	Initiated	Initiated	Initiated	Initiated	Initiated	Initiated	Initiated
SW4m		Linkage with TSDF / CBMWTF	[initiated] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated

SW4n		Involvement of NGOs	[initiated] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4o		Linkage with Producers / Brand Owners	[initiated] / [not initiated]	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated	Not Initiated
SW4p		Authorization of Waste Pickers		32	8	6	6	4	6	2
SW4q		Issuance of ID Cards	[initiated] / [not initiated]	Initiated	Initiated	Not Initiated	Initiated	Initiated	Initiated	Initiated
SW5										
SW5a		Waste Collection Trolleys	[Nos. Required] / [Nos. Available]	200/200	60/60	25/25	35/35	35/35	25/25	20/20
SW5b		Mini Collection Trucks	[Nos. Required] / [Nos. Available]	55/55	30/30	006/006	006/006	006/006	004/004	003/003
SW5c		Segregated Transport	[yes] / [no] / [% area covered]	No	No	No	No	No	No	No
SW5d		Bulk Waste Trucks	[Nos. Required] / [Nos. Available]	0	0	0	0	0	0	0
SW5e		Waste Transfer station	[Nos. Required] / [Nos. Available] / [Not available]	0	0	0	0	0	0	0
SW5f		Bio-methanation units	[Nos. Required] / [Nos. Available]	0	0	0	0	0	0	0
SW5h		Composting units	[Nos. Required] / [Nos. Available]	6/00	001/0	001/0	001/0	001/0	001/0	001/0
SW5i		Material Recovery Facilities	[used or installed] / [not available]	Installed	Installed	Installed	Installed	Installed	Installed	Installed
SW5k		Waste to Energy (if applicable)	[Required] / [Nos. Available]	Required	Required	Required	Required	Required	Required	Required
SW5l		Waste to RDF	[Required] / [Nos. Available]	Required	Required	Required	Required	Required	Required	Required
SW5m		Sanitary Land fills	[Nos] / [Nos. Available]	0	0	0	0	0	0	0

SW5n		Capacity of sanitary landfills	[MT] / / [Nos. Available]	Nil	Nil	Nil	Nil	Nil	Nil	Nil
SW5o		Waste Deposit Centers (DHW)	[Nos] / [Nos. Available]	6	1	1	1	1	1	1
SW5p		Other facilities	[give or select from list]	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available
<b>SW6</b>	<b>Notification and Implementation of By-Laws</b>									
SW6a		Notification of By-laws	[done] / [in progress] / [not initiated]	Done	Done	Done	Done	Done	Done	Done
SW6b		Implementation of by-laws	[done] / [in progress] / [not initiated]	In progress	In progress	In progress	In progress	In progress	In progress	In progress
<b>SW7</b>	<b>Adequacy of Financial Status of ULB</b>									
SW7a		CAPEX Required	[INR] / [Not required]	8.00 cr	2.500 Cr.	1.5 Cr.	1.5 Cr.	1.00 Cr.	0.80 Cr.	0.70 Cr.
SW7b		OPEX	[INR per Year] / [% of requirement]	4.10cr	120 Lacs	72 Lacs	72 Lacs	60 Lacs	50 Lacs	36 Lacs
SW7c		Adequacy of OPEX	[Yes] / [No]	No	No	No	No	No	No	No

1.0 Waste Management Plan										
(ii) Plastic Waste Management (for each ULB)										
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District	Tonk Zila					
					Tonk	Deoli	Niwai	Malpura	Todaraisingh	Uniyara
	Name of ULB		[name of ULB]		Nagar Parishad Tonk	Nagar Palika Deoli	Nagar Palika Niwai	Nagar Palika Malpura	Nagar Palika Todaraisingh	Nagar Palika Uniyara
	Population		[Nos as per 2011 census]	297252	165284	22065	37765	36028	23559	12551
PW1	Inventory of plastic waste generation									
PW1a		Estimated Quantity of plastic waste generated in District	[MT/day] / [Not Estimated]	26.05	16	2.5	2.65	1.8	1.6	1.5
PW2	Implementation of Collection									
PW2a		Door to Door collection	[100%] / [partial %] / [not initiated]	100%	100%	100%	100%	100%	100%	100%
PW2b		Segregated Waste collection	[100%] / [partial %]	partial %	0%	0%	0%	0%	0%	0.0%
PW2c		Plastic waste collection at Material Recovery Facility	[MRF used] / [not installed]	not installed	MRF constructed for operation tender to be floated	MRF Partially Operational	MRF constructed for operation tender to be floated	MRF constructed for operation tender to be floated	MRF constructed for operation tender to be floated	MRF constructed for operation tender to be floated
PW2d		Authorization of PW pickers	[Nos] / [not initiated]	32	8	6	6	4	6	2
PW2e		PW collection Centers	[Nos] / [not established]	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established
PW3	Establishment of linkage with Stakeholders									

PW3a		Established linkage with PROs of Producers	[Nos] / [not established]	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established
PW3b		Established linkage with NGOs	[Nos] / [not established]	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established	Not Established
PW4	Availability of facilities for Recycling or utilization of PW									
PW4a		No. of PW recyclers	[Nos]	0	0	0	0	0	0	0
PW4b		No Manufacturers	[Nos]	0	0	0	0	0	0	0
PW4c		No of pyrolysis oil plants	[Nos]	0	0	0	0	0	0	0
PW4d		Plastic pyrolysis	[Quantity in MT sent per Month]	0	0	0	0	0	0	0
PW4e		Use in road making	[Quantity MT used per Month]	0	0	0	0	0	0	0
PW4f		Co-processing in Cement Kiln	[Quantity in MT sent per Month]	2.335 MT	0.550 MT	0.395 MT	0.35 MT	0.755 MT	0.06 MT	0.225 MT
W5	Implementation of PW Management Rules, 2016									
W5a		Sealing of units producing < 50-micron plastic	[All sealed] / [Partial] / [no action]	Partial	Partial	Partial	Partial	Partial	Partial	Partial
PW5b		Prohibiting sale of carry bags < 50 micron	[Prohibited] / [Partial] / [no action]	Partial	Partial	Partial	Partial	Partial	Partial	Partial
PW5c		Ban on Carry bags and other single use plastics as notified by State Government	[Implemented] / [Partial] / [no action] / [No Ban]	Partial	Partial	Partial	Partial	Partial	Partial	Partial
PW6	Implementation of Extended Producers Responsibility (EPR) through Producers/Brand-owners									
PW6a		No of Producers associated with ULBs	[Nos] / [None]	None	None	None	None	None	None	None

PW6b		Financial support by Producers / Brand owners to ULBs	[Nos] / [None]	None	None	None	None	None	None	None
PW6c		Amount of PRO Support	[Rs...]	None	None	None	None	None	None	None
PW6d		Infrastructure support by Producers / Brand owners to ULBs	[Nos of Producers] / [None]	None	None	None	None	None	None	None
PW6e		No of collection centers established by Producers / Brand owners to ULBs	[Nos] / [None]	None	None	None	None	None	None	None

1.0 Waste Management Plan										
(iii) C&D Waste Management										
No.	Action Areas	Details of Data Requirement	Measurable Outcome	Please enter Measurable Outcome for District	Tonk Zila					
					Tonk	Deoli	Niwai	Malpura	Todaraisingh	Uniyara
	Name of ULB		[name of ULB]		Nagar Parishad Tonk	Nagar Palika Deoli	Nagar Palika Niwai	Nagar Palika Malpura	Nagar Palika Todaraisingh	Nagar Palika Uniyara
	Population		[Nos as per 2011 census]	297252	165284	22065	37765	36028	23559	12551
CD1	Inventory of C&D waste generation									
CD1a		Estimated Quantity	[Kg/Day] / [Not estimated]	Not estimated	Not Estimated	Not Estimated	Not Estimated	Not Estimated	Not Estimated	Not Estimated
CD2	Implement scheme for permitting bulk waste generators									
CD2a		Issuance of Permissions by ULBs	[Initiated] / [Not initiated]	No Bulk Waste Generator	Not Initiated	No Bulk Waste Generator	No Bulk Waste Generator	No Bulk Waste Generator	No Bulk Waste Generator	No Bulk Waste Generator
CD3	Establishment of C&D Waste Deposition centers									
CD3a		Establishment of Deposition Points	[Yes] / [No]	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CD3b		C&D Deposition point identified	[Yes] / [No]	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CD4	Implementation of By-Laws for CD Waste Management									
CD4a		Implementation of By-laws	[notified] / [not notified]	Notified	Notified	Notified	Notified	Notified	Notified	Notified
CD4b		Collection of Deposition / disposal Charges	[Initiated] / [Not initiated]	Initiated	Initiated	Initiated	Initiated	Initiated	Initiated	Initiated

CD5	Establishment of C&D Waste recycling plant or linkage with such facility									
CD5a		Establishment CD Waste Recycling Plant	[Established] / [Sent to shared Facility] / [No facility exists]	No facility exists	No facility exists	No facility exists	No facility exists	No facility exists	No facility exists	No facility exists
CD5b		Capacity of CD Waste Recycling Plant	[MT/Day] / [Not available]	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

<b>(iv) Biomedical Waste Management (for each ULB)</b>										
<b>No.</b>	<b>Action Areas</b>	<b>Details of Data Requirement</b>	<b>Measurable Outcome</b>	<b>Please enter Measurable Outcome for District</b>	<b>Tonk</b>	<b>Deoli</b>	<b>Niwai</b>	<b>Malpura</b>	<b>Todaraisingh</b>	<b>Uniyara</b>
	<b>Name of ULB</b>		<b>[name of ULB]</b>		<b>Nagar Parishad Tonk</b>	<b>Nagar Palika Deoli</b>	<b>Nagar Palika Niwai</b>	<b>Nagar Palika Malpura</b>	<b>Nagar Palika Todaraisingh</b>	<b>Nagar Palika Uniyara</b>
	Population		[Nos as per 2011 census]	297252	165284	22065	37765	36028	23559	12551
BMW1	Inventory of Biomedical Waste Generation									
BMW1a		Total no. of Bedded Hospitals	[Nos] / [No inventory]	118	118					
BMW1b		Total no. of non-bedded HCF	[Nos] / [No inventory]	4	4					
BMW1c		Total no. Clinics	[Nos] / [No inventory]	4	1	0	0	2	0	1
BMW1d		No of Veterinary Hospitals	[Nos] / [No inventory]	4	1	1	0	1	0	1
BMW1e		Pathlabs	[Nos] / [No inventory]	19	14	3	0	0	1	1
BMW1f		Dental Clinics	[Nos] / [No inventory]	0	0	0	0	0	0	0
BMW1g		Blood Banks	[Nos] / [No inventory]	No Inventory	0	0	0	0	0	0
BMW1h		Animal Houses	[Nos] / [No inventory]	No Inventory	0	0	0	0	0	0
BMW1i		Bio-research Labs	[Nos] / [No inventory]	No Inventory	0	0	0	0	0	0

BMW1j		Others	[Nos] / [No inventory]	No Inventory	0	0	0	0	0	0
BMW2	Authorization of HCFs by SPCBs / PCCs			123	123					
BMW2a		Bedded HCFs	[Nos Authorized]	118	67	31	11	11	8	6
BMW2b		Non-bedded HCFs	[Nos Authorized]	33	33					
BMW3a	Biomedical Waste Treatment and Disposal Facilities (CBMWTFs)				<b>M/S Hoswin Incinerator, Khasra No. 645/256, Rundhi Dhuninath Tehsil: Alwar, Raj</b>					
BMW3a		No of CBMWTFs	[Nos] / None	None	Nil					
BMW3b		Linkage with CBMWTFs	[Yes] / [no linkage]	Yes	<b>Yes</b> <b>M/S Hoswin Incinerator, Khasra No. 645/256, Rundhi Dhuninath Tehsil: Alwar, Raj</b>					
BMW3c		Capacity of CBMWTFs	[Adequate] / [Not adequate]	Adequate	100 Kg / hr (As per consent to operate)					
BMW3d		Requirements of CBMWTFs	[Require] / [not required]	Require	Yes					
BMW3e		Captive Disposal Facilities of HCFs	[Nos] / [None]	None	Yes (Incinerator Installed)					
BMW4	Compliance by CBMWTFs									
BMW4a		Compliance to standards	[Meeting] / [Not meeting] / [NA]	Meeting	NA					
BMW4b		Barcode tracking by HCFs / CBMWTFs	[100%] / [Partly %] / [None]	Partly (98%)	Connectivity with CBMWTF by HCF = 98%					
BMW4c		Daily BMW lifting by CBMWTFs	[Kg / day]	80 Kg/day	Approx. 80 Kg / Day					

BMW5	Status of Compliance by Healthcare Facilities								
BMW5a		Pre-segregation	[100%] / [partly %] / [None]	<b>100%</b>	<b>100%</b>				
BMW5b		Linkage with CBMWTFs	[100%] / [partly %] / [None]	<b>98%</b>	<b>98%</b>				

A

LIST OF GRASSES IN TONK DISTRICT			
S. No.	Scientific name	Hindi name	Family
1	<i>Cenchrus setigerus</i>	धामण	Poaceae
2	<i>Cynodon dactylon</i>	दूब	Poaceae
3	<i>Dichanthium annulatum</i>	करइ	Poaceae
4	<i>Dichanthium foveolatum</i>	बुहारी	Poaceae
5	<i>Heteropogon contortus</i>	सूखाला ,लांप	Poaceae
6	<i>Imperata cylindrica</i>	दाब	Poaceae
7	<i>Saccharum munja</i>	मूँज	Poaceae
8	<i>Saccharum spontaneum</i>	काँस	Poaceae

LIST OF CLIMBERS IN TONK DISTRICT			
S.No	Scientific name	Hindi name	Family
1	<i>Asparagus racemosus</i>	नाहरकांटा,	Liliaceae
2	<i>Cryptostegia grandiflora</i>	दूधी , रबडबेल	Periplocaceae
3	<i>Cuscuta hylina</i>	अमरबेल	Cuscutaceae
4	<i>Cuscuta reflexa</i>	अमरबेल	Cuscutaceae
5	<i>Mucuna pruriens</i>	केमच , कौंच	Fabaceae
6	<i>Tinospora cordifolia</i>	नीमगिलोय	Menispermaceae
7	<i>Vallisneria spiralis</i>	दूधीबेल	Apocynaceae

LIST OF SHRUBS IN TONK DISTRICT			
S. No.	Scientific name	Hindi name	Family
1	<i>Adhatoda vasica</i>	अडूसा	Acanthaceae
2	<i>Annona squamosa</i>	सीताफल	Annonaceae
3	<i>Balanites aegyptiaca</i>	हिंगोट	Simaroubaceae
4	<i>Calligonum polygonides</i>	फोग	Polygonaceae
5	<i>Calotropis gigantea</i>	औकडाशिवआर्क	Asclepiadaceae
6	<i>Calotropis procera</i>	औकडा	Asclepiadaceae
7	<i>Copparis decidua</i>	कैर	Capparaceae
8	<i>Carissa spinarum</i>	करोन्दा	Apocynaceae
9	<i>Commiphora wightii</i>	गुगल	Burseraceae
10	<i>Emblica officinalis</i>	आँवला	Euphorbiaceae
11	<i>Euphorbia nivulia</i>	घोटाथौरथोर	Euphorbiaceae
12	<i>Grewia atenax</i>	गेंगसी, गंगेडन, गगेरन	Tiliaceae
13	<i>Helicteres sisora</i>	मरोडफली	Sterculiaceae
14	<i>Ipomoea fistulosa</i>	बेशर्म, गाडा, रूखडा	Convolvulaceae
15	<i>Jatropha curcas</i>	रतनजोत	Euphorbiaceae
16	<i>Jatropha jatrophagossypifolia</i>	रतनजोती	Euphorbiaceae
17	<i>Leptadenia pyrotechnica</i>	खींपखीम्परा	Asclepiadaceae
18	<i>Nyctanthes arboreristis</i>	टामटहारसिगार	Oleaceae
19	<i>Ocimum gratissimum</i>	वनतुलसी	Lamiaceae
20	<i>Opuntia dillenii</i>	नागफनीथापाथोर	Cactaceae
21	<i>Parkinsonia aculeate</i>	पार्किनसोनिया	Caespinaceae
22	<i>Prosopis juliflora</i>	विलायतीबबूल	Mimosaceae
23	<i>Rhusmays urensis</i>	डासरण, डांसर, डांसरेण	Anacardiaceae
24	<i>Tamarix ericoides</i>	झाउ	Tamaricaceae
25	<i>Tephrosia purpurea</i>	धमासा	Combretaceae
26	<i>Xanthium strumarium</i>	आँधीडाआधाशीशीचिरचिटा	Asteraceae
27	<i>Ziziphus mauritiana</i>	बडाबोरबोर	Rhamnaceae
28	<i>Ziziphus nummularia</i>	चणबौर, झाडीबैर	Rhamnaceae

**LIST OF HERBS IN TONK DISTRICT**

S.No	Scientific name	Hindi name	Family
1	<i>Acanthos permumhispidum</i>	काँटी	Asteraceae
2	<i>Achyranthes aspera</i>	आँधीजाडा, उँगा	Amaranthaceae
3	<i>Aerva javanica</i>	बुइ	Amaranthaceae
4	<i>Alhagimaurorum</i>	जवासा	Fabaceae
5	<i>Aloe vera</i>	खारपाठा	Liliaceae
6	<i>Argemone mexicana</i>	सत्यानासीपीला, धतुरा	Papaveraceae
7	<i>Bougainvila</i>	बोगनविला	Nyctaginaceae
8	<i>Calotropis procera</i>	आक	Apocynaceae
9	<i>Datura fastuosa</i>	काधतुरा	Solanaceae
10	<i>Darura innoxia</i>	धतूरा	Solanaceae
11	<i>Digera muricota</i>	खंजर	Amaranthaceae
12	<i>Dodonea viscosa</i>	रेलिया	Sapindaceae
13	<i>Echinops echinatus</i>	उटंकटेली	Asteraceae
14	<i>Euphorbia chamaesyce</i>	दुधी	Euphorbiaceae
15	<i>Euphorbia granulata</i>	दूधेली	Euphorbiaceae
16	<i>Fagonia indica</i>	धमासा	Zygophyllaceae
17	<i>Hacoustia indica</i>	काकूण	
18	<i>Parthenium hysterophorus</i>	गाजरघास	Asteraceae
19	<i>Solanum nigrum</i>	मकोय ,चिरपोटी	Solanaceae
20	<i>Tribulus terrestris</i>	गोखरू	Zygophyllaceae
21	<i>Tridax procumbens</i>	कुमरू ,रक्तास्तम्भी	Asteraceae
22	<i>Typha angustata</i>	एरा-पटेरा	Typhaceae
23	<i>Typha elephantina</i>	एरा	Typhaceae
24	<i>Withania somnifera</i>	असगन्ध	Solanaceae

LIST OF TREES IN TONK DISTRICT			
S.No	Scientific name	Hindi name	Family
1	<i>Acacia leucophloea</i>	रोंझ, अरूझिया	Mimosaceae
2	<i>Acacia nilotica</i>	बबूल	Mimosaceae
3	<i>Acacia senegal</i>	कुमठा, खैरी	Mimosaceae
4	<i>Acacia tortilis</i>	इजराइलीबबूल	Mimosaceae
5	<i>Aeglemarmelos</i>	बेल	Rutaceae
6	<i>Ailanthus excelsa</i>	अरडू	Simarubaceae
7	<i>Albizialebeck</i>	सिरस	Mimosaceae
8	<i>Anogeissuslatifolia</i>	धावडा	Combretaceae
9	<i>Anogeissuspendula</i>	धोंक	Combretaceae
10	<i>Azadirachtaindica</i>	नीम	Meliaceae
11	<i>Bauhinia racemosa</i>	झींझा	Caesalpiniaceae
12	<i>Bauhinia variegata</i>	कचनार	Caesalpiniaceae
13	<i>Bombaxceiba</i>	सेमल	Bombacaceae
14	<i>Boswelliaserrata</i>	सालर	Bursaceae
15	<i>Buteamonosperma</i>	खाखरा, पलास, छीला, ढाक	Fabaceae
16	<i>Cassia fistula</i>	अमलतास	Caesalpiniaceae
17	<i>Cordiadichotoma</i>	लसोडा	Ehretiaceae
18	<i>Dalbergiasissoo</i>	शीशम	Fabaceae
19	<i>Delonixregia</i>	गुलमोहर	Caesalpiniaceae
20	<i>Eucalyptus species</i>	नीलगिरि, सफेदा	Myrtaceae
21	<i>Ficusbenghalensis</i>	वडलाबड, बरगद	Moraceae
22	<i>Ficusracemosa</i>	गुलर, उमर	Moraceae
23	<i>Ficusreligiosa</i>	पीपल	Moraceae
24	<i>Holopteleaintegrifolia</i>	चुरैलपापडी	Ulmaceae
25	<i>Jacaranda mimosaeifolia</i>	जकरन्डा	Bignoniaceae
26	<i>Mangiferaindica</i>	आम	Anacardiaceae
27	<i>Meliaazarach</i>	बकायन	Meliaceae
28	<i>Moreus alba</i>	शहतूत	Moraceae
29	<i>Moringaconcanensis</i>	हिंगवा, सैंजना	Moringaceae
30	<i>Phoenix sylvestris</i>	खजूर	Arecaceae
31	<i>Phyllanthusemblica</i>	ऑवला	Euphorbiaceae
32	<i>Pongamiapinnata</i>	करंज	Fabaceae
33	<i>Prosopis cineraria</i>	खेजड़ी	Mimosaceae
34	<i>Salvadoraoleoides</i>	पीलु, खाराजाल	Salvadoraceae
35	<i>Salvadorapersica</i>	पीलु, मीठाजाल	Salvadoraceae
36	<i>Syzygiumcumini</i>	जामुन	Myrtaceae
37	<i>Tamarindusindica</i>	इमली	Caesalpiniaceae
38	<i>Tecomellaundulata</i>	रोहिडा	Bignoniaceae
39	<i>Wrightiatinctoria</i>	खिरनी, दूधी	Apocynaceae
40	<i>Ziziphusxylopyrus</i>	घटबोर	Rhamnaceae

### Amphibians of Tonk District

S. No.	English Name	Latin Name
1	Common Indian Toad	<i>Duttaphrynus melanostictus</i>
2	Marbled Toad	<i>Duttaphrynus stomaticus</i>
3	Skittering Frog	<i>Euphlyctis cyanophlyctis</i>
4	Indian Bull Frog	<i>Haplobatrachus tigerinus</i>
5	Indian Cricket Frog	<i>Limnonectes limnocharis</i>

### Reptiles of Tonk District

S. No.	English Name	Scientific Name
1	The Indian Crocodile	<i>Crododylus palustris</i>
2	Indian mud or flap shell turtle	<i>Lissemys punctata</i>
3	Common Garden lizard	<i>Calotes versicolor</i>
4	Common Indian monitor	<i>Varanus bengalensis</i>
5	Common skink	<i>Mabuya carnata</i>
6	Dhaman or rat snake	<i>Ptyas mucosus</i>
7	Blind Snake	<i>Ramphotyphlops braminus</i>
8	Russell's Sand Boa	<i>Eryx cornices</i>
9	Rat snake	<i>Ptyas mucosus</i>
10	Common Indian krait	<i>Bungarus caeruleus</i>
11	Saw-scaled viper	<i>Echis carinata</i>
12	Indian cobra	<i>Naja naja</i>

## Birds of Tonk District

SI No	English Name	Scientific Name	Family	Order
1	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	Anatidae	Anseriformes
2	Bar-headed Goose	<i>Anser indicus</i>	Anatidae	Anseriformes
3	Greylag Goose	<i>Anser anser</i>	Anatidae	Anseriformes
4	Knob-billed Duck	<i>Sarkidiornis melanotos</i>	Anatidae	Anseriformes
5	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Anatidae	Anseriformes
6	Garganey	<i>Spatula querquedula</i>	Anatidae	Anseriformes
7	Northern Shoveler	<i>Spatula clypeata</i>	Anatidae	Anseriformes
8	Gadwall	<i>Mareca strepera</i>	Anatidae	Anseriformes
9	Eurasian Wigeon	<i>Mareca penelope</i>	Anatidae	Anseriformes
10	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	Anatidae	Anseriformes
11	Mallard	<i>Anas platyrhynchos</i>	Anatidae	Anseriformes
12	Northern Pintail	<i>Anas acuta</i>	Anatidae	Anseriformes
13	Common Teal	<i>Anas crecca</i>	Anatidae	Anseriformes
14	Ferruginous Duck	<i>Aythya nyroca</i>	Anatidae	Anseriformes
15	Tufted Duck	<i>Aythya fuligula</i>	Anatidae	Anseriformes
16	Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae	Galliformes
17	Common Quail	<i>Coturnix coturnix</i>	Phasianidae	Galliformes
18	Rock Bush Quail	<i>Perdica argoondah</i>	Phasianidae	Galliformes
19	Grey Francolin	<i>Francolinus pondicerianus</i>	Phasianidae	Galliformes
20	Greater Flamingo	<i>Phoenicopterus roseus</i>	Phoenicopteridae	Phoenicopteriformes
21	Lesser Flamingo	<i>Phoeniconaias minor</i>	Phoenicopteridae	Phoenicopteriformes
22	Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipedidae	Podicipediformes
23	Rock Pigeon	<i>Columba livia</i>	Columbidae	Columbiformes
24	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Columbidae	Columbiformes
25	Red Collared Dove	<i>Streptopelia tranquebarica</i>	Columbidae	Columbiformes
26	Laughing Dove	<i>Streptopelia senegalensis</i>	Columbidae	Columbiformes
27	Yellow-footed Green Pigeon	<i>Treron phoenicopterus</i>	Columbidae	Columbiformes
28	Chestnut-bellied Sand grouse	<i>Pterocles exustus</i>	Pteroclididae	Pteroclidiformes
29	Greater Coucal	<i>Centropus sinensis</i>	Cuculidae	Cuculiformes
30	Pied Cuckoo	<i>Clamator jacobinus</i>	Cuculidae	Cuculiformes
31	Asian Koel	<i>Eudynamis scolopaceus</i>	Cuculidae	Cuculiformes
32	Common Hawk Cuckoo	<i>Hierococyx varius</i>	Cuculidae	Cuculiformes
33	Savanna Nightjar	<i>Caprimulgus affinis</i>	Caprimulgidae	Caprimulgiformes
34	Indian House Swift	<i>Apus affinis</i>	Apodidae	Caprimulgiformes
35	Common Moorhen	<i>Gallinula chloropus</i>	Rallidae	Gruiformes
36	Common Coot	<i>Fulica atra</i>	Rallidae	Gruiformes

SI No	English Name	Scientific Name	Family	Order
37	Grey-headed Swamp hen	<i>Porphyrio poliocephalus</i>	Rallidae	Gruiformes
38	White-breasted Water hen	<i>Amaurornis phoenicurus</i>	Rallidae	Gruiformes
39	Indian Thick-knee	<i>Burhinus indicus</i>	Burhinidae	Charadriiformes
40	Black-winged Stilt	<i>Himantopus himantopus</i>	Recurvirostridae	Charadriiformes
41	Pied Avocet	<i>Recurvirostra avosetta</i>	Recurvirostridae	Charadriiformes
42	River Lapwing	<i>Vanellus duvaucelii</i>	Charadriidae	Charadriiformes
43	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	Charadriidae	Charadriiformes
44	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae	Charadriiformes
45	Kentish Plover	<i>Charadrius alexandrinus</i>	Charadriidae	Charadriiformes
46	Little Ringed Plover	<i>Charadrius dubius</i>	Charadriidae	Charadriiformes
47	Greater Painted-snipe	<i>Rostratula benghalensis</i>	Rostratulidae	Charadriiformes
48	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Jacanidae	Charadriiformes
49	Bronze-winged Jacana	<i>Metopidius indicus</i>	Jacanidae	Charadriiformes
50	Black-tailed Godwit	<i>Limosa limosa</i>	Scolopacidae	Charadriiformes
51	Ruff	<i>Calidris pugnax</i>	Scolopacidae	Charadriiformes
52	Temminck's Stint	<i>Calidris temminckii</i>	Scolopacidae	Charadriiformes
53	Little Stint	<i>Calidris minuta</i>	Scolopacidae	Charadriiformes
54	Common Snipe	<i>Gallinago gallinago</i>	Scolopacidae	Charadriiformes
55	Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	Charadriiformes
56	Green Sandpiper	<i>Tringa ochropus</i>	Scolopacidae	Charadriiformes
57	Marsh Sandpiper	<i>Tringa stagnatilis</i>	Scolopacidae	Charadriiformes
58	Wood Sandpiper	<i>Tringa glareola</i>	Scolopacidae	Charadriiformes
59	Common Redshank	<i>Tringa totanus</i>	Scolopacidae	Charadriiformes
60	Barred Buttonquail	<i>Turnix suscitator</i>	Turnicidae	Charadriiformes
61	Indian Courser	<i>Cursorius coromandelicus</i>	Glareolidae	Charadriiformes
62	Small Pratincole	<i>Glareola lactea</i>	Glareolidae	Charadriiformes
63	Black-headed Gull	<i>Chroicocephalus ridibundus</i>	Laridae	Charadriiformes
64	Brown-headed Gull	<i>Chroicocephalus brunnicephalus</i>	Laridae	Charadriiformes
65	Pallas's Gull	<i>Ichthyaetus ichthyaetus</i>	Laridae	Charadriiformes
66	Gull-billed Tern	<i>Gelochelidon nilotica</i>	Laridae	Charadriiformes
67	Whiskered Tern	<i>Chlidonias hybrida</i>	Laridae	Charadriiformes
68	Black-bellied Tern	<i>Sterna acuticauda</i>	Laridae	Charadriiformes
69	River Tern	<i>Sterna aurantia</i>	Laridae	Charadriiformes
70	Asian Openbill	<i>Anastomus oscitans</i>	Ciconiidae	Ciconiiformes
71	Painted Stork	<i>Mycteria leucocephala</i>	Ciconiidae	Ciconiiformes
72	Oriental Darter	<i>Anhinga melanogaster</i>	Anhingidae	Suliformes
73	Little Cormorant	<i>Microcarbo niger</i>	Phalacrocoracidae	Suliformes

SI No	English Name	Scientific Name	Family	Order
74	Great Cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	Suliformes
75	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	Phalacrocoracidae	Suliformes
76	Great White Pelican	<i>Pelecanus onocrotalus</i>	Pelecanidae	Pelecaniformes
77	Dalmatian Pelican	<i>Pelecanus crispus</i>	Pelecanidae	Pelecaniformes
78	Purple Heron	<i>Ardea purpurea</i>	Ardeidae	Pelecaniformes
79	Great Egret	<i>Ardea alba</i>	Ardeidae	Pelecaniformes
80	Intermediate Egret	<i>Ardea intermedia</i>	Ardeidae	Pelecaniformes
81	Little Egret	<i>Egretta garzetta</i>	Ardeidae	Pelecaniformes
82	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae	Pelecaniformes
83	Indian Pond Heron	<i>Ardeola grayii</i>	Ardeidae	Pelecaniformes
84	Striated Heron	<i>Butorides striata</i>	Ardeidae	Pelecaniformes
85	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Ardeidae	Pelecaniformes
86	Glossy Ibis	<i>Plegadis falcinellus</i>	Threskiornithidae	Pelecaniformes
87	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Threskiornithidae	Pelecaniformes
88	Red-naped Ibis	<i>Pseudibis papillosa</i>	Threskiornithidae	Pelecaniformes
89	Eurasian Spoonbill	<i>Platalea leucorodia</i>	Threskiornithidae	Pelecaniformes
90	Osprey	<i>Pandion haliaetus</i>	Pandionidae	Accipitriformes
91	Black-winged Kite	<i>Elanus caeruleus</i>	Accipitridae	Accipitriformes
92	Egyptian Vulture	<i>Neophron percnopterus</i>	Accipitridae	Accipitriformes
93	Steppe Eagle	<i>Aquila nipalensis</i>	Accipitridae	Accipitriformes
94	Long Legged Buzzard	<i>Buteo rufinus</i>	Accipitridae	Accipitriformes
95	Crested Serpent Eagle	<i>Spilornis cheela</i>	Accipitridae	Accipitriformes
96	Montagu's Harrier	<i>Circus pygargus</i>	Accipitridae	Accipitriformes
97	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i>	Accipitridae	Accipitriformes
98	Short-toed Snake Eagle	<i>Circaetus gallicus</i>	Accipitridae	Accipitriformes
99	Western Marsh Harrier	<i>Circus aeruginosus</i>	Accipitridae	Accipitriformes
100	Shikra	<i>Accipiter badius</i>	Accipitridae	Accipitriformes
101	Black Kite	<i>Milvus migrans</i>	Accipitridae	Accipitriformes
102	Common Buzzard	<i>Buteo buteo</i>	Accipitridae	Accipitriformes
103	Common Barn Owl	<i>Tyto alba</i>	Tytonidae	Strigiformes
104	Indian Scops Owl	<i>Otus bakkamoena</i>	Strigidae	Strigiformes
105	Indian Eagle Owl	<i>Bubo bengalensis</i>	Strigidae	Strigiformes
106	Spotted Owlet	<i>Athene brama</i>	Strigidae	Strigiformes
107	Common Hoopoe	<i>Upupa epops</i>	Upupidae	Bucerotiformes
108	Indian Grey Hornbill	<i>Ocyrceros birostris</i>	Bucerotidae	Bucerotiformes
109	Common Kingfisher	<i>Alcedo atthis</i>	Alcedinidae	Coraciiformes
110	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae	Coraciiformes

SI No	English Name	Scientific Name	Family	Order
111	Pied Kingfisher	<i>Ceryle rudis</i>	Alcedinidae	Coraciiformes
112	Green Bee-eater	<i>Merops orientalis</i>	Meropidae	Coraciiformes
113	European Roller	<i>Coracias garrulus</i>	Coraciidae	Coraciiformes
114	Indian Roller	<i>Coracias benghalensis</i>	Coraciidae	Coraciiformes
115	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	Megalaimidae	Piciformes
116	Eurasian Wryneck	<i>Jynx torquilla</i>	Picidae	Piciformes
117	Black-rumped Flameback	<i>Dinopium benghalense</i>	Picidae	Piciformes
118	Common Kestrel	<i>Falco tinnunculus</i>	Falconidae	Falconiformes
119	Alexandrine Parakeet	<i>Psittacula eupatria</i>	Psittaculidae	Psittaciformes
120	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae	Psittaciformes
121	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	Psittaculidae	Psittaciformes
122	Small Minivet	<i>Pericrocotus cinnamomeus</i>	Campephagidae	Passeriformes
123	Large Cuckooshrike	<i>Coracina macei</i>	Campephagidae	Passeriformes
124	Indian Golden Oriole	<i>Oriolus kundoo</i>	Oriolidae	Passeriformes
125	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	Vangidae	Passeriformes
126	Common Iora	<i>Aegithina tiphia</i>	Aegithinidae	Passeriformes
127	White-browed Fantail	<i>Rhipidura aureola</i>	Rhipiduridae	Passeriformes
128	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae	Passeriformes
129	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	Passeriformes
130	Bay-backed Shrike	<i>Lanius vittatus</i>	Laniidae	Passeriformes
131	Long-tailed Shrike	<i>Lanius schach</i>	Laniidae	Passeriformes
132	Great Grey Shrike	<i>Lanius excubitor</i>	Laniidae	Passeriformes
133	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Corvidae	Passeriformes
134	House Crow	<i>Corvus splendens</i>	Corvidae	Passeriformes
135	Rufous-tailed Lark	<i>Ammomanes phoenicura</i>	Alaudidae	Passeriformes
136	Singing Bushlark	<i>Mirafra cantillans</i>	Alaudidae	Passeriformes
137	Greater Short-toed Lark	<i>Calandrella brachydactyla</i>	Alaudidae	Passeriformes
138	Crested Lark	<i>Galerida cristata</i>	Alaudidae	Passeriformes
139	Common Tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae	Passeriformes
140	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	Cisticolidae	Passeriformes
141	Jungle Prinia	<i>Prinia sylvatica</i>	Cisticolidae	Passeriformes
142	Ashy Prinia	<i>Prinia socialis</i>	Cisticolidae	Passeriformes
143	Plain Prinia	<i>Prinia inornata</i>	Cisticolidae	Passeriformes
144	Dusky Crag Martin	<i>Ptyonoprogne concolor</i>	Hirundinidae	Passeriformes
145	Wire-tailed Swallow	<i>Hirundo smithii</i>	Hirundinidae	Passeriformes
146	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	Passeriformes
147	White-eared Bulbul	<i>Pycnonotus leucotis</i>	Pycnonotidae	Passeriformes

SI No	English Name	Scientific Name	Family	Order
148	Common Chiffchaff	<i>Phylloscopus collybita</i>	Phylloscopidae	Passeriformes
149	Lesser Whitethroat	<i>Sylvia curruca</i>	Sylviidae	Passeriformes
150	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	Paradoxornithidae	Passeriformes
151	Indian White-eye	<i>Zosterops palpebrosus</i>	Zosteropidae	Passeriformes
152	Jungle Babbler	<i>Argya striata</i>	Leiothrichidae	Passeriformes
153	Common Babbler	<i>Argya caudata</i>	Leiothrichidae	Passeriformes
154	Large Grey Babbler	<i>Argya malcolmi</i>	Leiothrichidae	Passeriformes
155	Common Starling	<i>Sturnus vulgaris</i>	Sturnidae	Passeriformes
156	Rosy Starling	<i>Pastor roseus</i>	Sturnidae	Passeriformes
157	Asian Pied Starling	<i>Gracupica contra</i>	Sturnidae	Passeriformes
158	Brahminy Starling	<i>Sturnia pagodarum</i>	Sturnidae	Passeriformes
159	Common Myna	<i>Acridotheres tristis</i>	Sturnidae	Passeriformes
160	Bank Myna	<i>Acridotheres ginginianus</i>	Sturnidae	Passeriformes
161	Indian Robin	<i>Copsychus fulicatus</i>	Muscicapidae	Passeriformes
162	Oriental Magpie Robin	<i>Copsychus saularis</i>	Muscicapidae	Passeriformes
163	Bluethroat	<i>Luscinia svecica</i>	Muscicapidae	Passeriformes
164	Black Redstart	<i>Phoenicurus ochruros</i>	Muscicapidae	Passeriformes
165	Blue Rock Thrush	<i>Monticola solitarius</i>	Muscicapidae	Passeriformes
166	Pied Bushchat	<i>Saxicola caprata</i>	Muscicapidae	Passeriformes
167	Brown Rock Chat	<i>Oenanthe fusca</i>	Muscicapidae	Passeriformes
168	Purple Sunbird	<i>Cinnyris asiaticus</i>	Nectariniidae	Passeriformes
169	Baya Weaver	<i>Ploceus philippinus</i>	Ploceidae	Passeriformes
170	Indian Silverbill	<i>Euodice malabarica</i>	Estrildidae	Passeriformes
171	House Sparrow	<i>Passer domesticus</i>	Passeridae	Passeriformes
172	Yellow-throated Sparrow	<i>Gymnoris xanthocollis</i>	Passeridae	Passeriformes
173	Grey Wagtail	<i>Motacilla cinerea</i>	Motacillidae	Passeriformes
174	Western Yellow Wagtail	<i>Motacilla flava</i>	Motacillidae	Passeriformes
175	Citrine Wagtail	<i>Motacilla citreola</i>	Motacillidae	Passeriformes
176	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	Passeriformes
177	White Wagtail	<i>Motacilla alba</i>	Motacillidae	Passeriformes
178	Paddyfield Pipit	<i>Anthus rufulus</i>	Motacillidae	Passeriformes
179	Tree Pipit	<i>Anthus trivialis</i>	Motacillidae	Passeriformes
180	Olive-backed Pipit	<i>Anthus hodgsoni</i>	Motacillidae	Passeriformes
181	Water Pipit	<i>Anthus spinoletta</i>	Motacillidae	Passeriformes
182	Crested Bunting	<i>Emberiza lathami</i>	Emberizidae	Passeriformes

LIST OF MAMMALS IN TONK DISTRICT			
S.No	Scientific name	Common Hindi Name	Common English Name
1	<i>Gazella gazelle</i>	चिंकारा	Chinkara
2	<i>Antelope cervicapra</i>	कालाहिरण	Indian Black Buck
3	<i>Boselaphus tragocamelus</i>	नीलगाय (राजेड़ा)	Blue Bull or Nilgai
4	<i>Mecaca multta</i>	बन्दर	Rhesus macaque Monkey
5	<i>Presbytis entellus</i>	लंगूर	Langur, Hanuman Monkey
6	<i>Felis chaus</i>	जंगलीबिल्ली	Jungle Cat
7	<i>Felis libyca</i>	रेगिस्तानीबिल्ली	Desert cat
8	<i>Herpestes edwardsi</i>	नेवला	Indian Grey Mongoose
9	<i>Paradoxarus hermaphroditus</i>	बिज्जू	Common Palm Civet
10	<i>Hystrix indica (kerr)</i>	सेही	Indian porcupine
11	<i>Hemiecanus auritus</i>	झाऊचूहा	Long Eared Hedge hog
12	<i>Lepus nigricollis</i>	खरगोश	Indian Hare
13	<i>Canis aureus (Linn)</i>	सियार/ गीदड़	Golden Jackal
14	<i>Vulpes bengalensis</i>	लोमड़ी	Indian Fox
15	<i>Hyaena hyaena (Linn)</i>	जरख	Striped Hyaena
16	<i>Canis lupus</i>	भेड़िया	Indian Wolf
17	<i>Funambulus pennanti</i>	गिलहरी	Five striped palm Squirrel
18	<i>Rattus rattus</i>	चूहा	Common House Rat
19	<i>Megaderma lyra</i>	चमगादड़	Indian False Vampire Bat
20	<i>Pteropus giganteus</i>	चमगादड़	Indian Flying Fox Bat
21	<i>Panthera pardus fusca</i>	तेंदुआ	Panther
22	<i>Sus scrofa</i>	जंगलीसूअर	Wild bore