

Urban Services Planning
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Module: 03
Lecture: 11
Solid Waste Management Rules And Guidelines

Welcome back. In Module 3, we will talk about integrated municipal solid waste management and plan preparation for urban areas. Within that Lecture 11 we will be talking about solid waste management rules and guidelines in general.

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The topics that we will cover are municipal solid waste management system, regulatory framework for municipal solid waste management, then we will go into look into the Swachh Bharat mission, then we will talk about the municipal solid waste management rules, state level guidelines and strategies and other solid waste management rules.

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Municipal solid waste management (MSWM)

- ❑ Inefficient collection, transportation, treatment and scientific disposal
- ❑ Environmental and aesthetic concern
- ❑ Quantity (By 2050, half of India's population will live in cities.)

1990s: Public interest litigations (PILs)
Supreme Court: Committee (status of MSWM)

- ❑ Ministry of Environment, Forests and Climate Change (MoEFCC)
MSW (Management & Handling [M&H]) Rules, 2000
(All ULBs to establish a proper waste management system, including waste processing and disposal by 2003)
- ❑ Ministry of Urban Development (MoUD): MSWM manuals

2005:
Jawaharlal Nehru National Urban Renewal Mission (JNNURM)
Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT)

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So, municipal solid wastes in India the both the scale of operations as well as the quantity that we have to handle both is growing at a very rapid pace. So, you can, we can by 2050 it is estimated that almost half of India's population will live in cities. And if so, many so, much number of people lives in cities.

Obviously, they will generate a huge quantum of waste which has to be also managed. In general waste collection in India or waste management in India has been inefficient, both in terms of in regards to almost all the aspects starting from the collection of the waste from the households at other establishments, the transportation of the waste to different facilities, then treatment of the waste and finally, scientific disposal of the waste.

So, there are a lot of gaps that needs to be addressed in case of urban areas. And primarily we are concerned with the environmental and aesthetic concerns and of course, health concerns as well, which is a result of the environmental deterioration. So, we need to so, there has been growing concern in amongst civil society also in regards to the condition of waste management in our country.

And accordingly we saw during the 1990s there has been several public interest litigations with several key cases at that date the Supreme Court to intervene and Supreme Court directed the Ministry of Environment forests and climate change. That means based on the recommendation of a committee, which the Supreme Court formed to find out about the status of municipal solid

waste management, they directed the Ministry of Environment forests and climate change to come out with a set of rules or set of guidelines. So, that using those guidelines urban areas or ULBs could actually develop or prepare plans and also implement those solid waste management plans in those particular areas.

So, accordingly, MoEFCC that is Ministry of Environment forests and climate change, they have initially issued a municipal MSW, municipal solid waste management and handling rules in the year of 2000. So, this was the first rule that came out for the government, which actually gave a set of directions that what the state governments and the urban local bodies should eventually follows.

And this has to be adhered to by everybody. So, all ULBs as per this particular rule, all ULBs need to establish a proper waste management system. And not only the Waste Management System which involves collection, transportation, disposal and so on. But also they have to look into waste processing, and more efficient disposal processes.

They also give a timeline of the year 2003 by which this has to be completed. But anyway, so as we know, all that this has, even though that is the intent was good, but there was several issues that were not addressed in this particular rule. And eventually this has to be modified and it cannot be done overnight, it takes certain time.

So, ULBs have prepared their own plans according to this particular set of rules, but it takes time to implement and get the results. So, the MSW, handling management and handling rules, these are a set of rules that has been formed, but how to make these rules implementable or how to execute these rules in urban area.

For that there has to be another set of guidelines or certain procedures that needs to be explained, which would be, which would enable this ULBs to actually execute these kind of projects or execute certain steps in improving the solid waste management system in urban areas. So, accordingly Ministry of urban development also came up with a MSWM manual.

So, this is a manual which actually gives detailed instruction on how to do different stages of the waste collection management process, how to go about these processes, how to make the projects happen and what and so these are much more detailed steps than given in the rules that are

provided in MSW management and handling rules 2000. So, after that, once the rules have been framed, then of course, it is not only the rules that is required we also require finance or availability of in capital, so that we can execute those particular projects which should adhere to those rules or which should transform those cities.

So, initial investment come via the JNNURM mission, that is Jawaharlal Nehru National Urban Renewal Mission and the urban infrastructure development scheme for small and medium towns. So, lot of investment were made in the solid waste management sector during the years 2005 and later using these two particular schemes.

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The slide, titled "Regulatory framework for MSWM", outlines the National Urban Sanitation Policy (2008). It features a central graphic of a tree with icons representing various sanitation goals. A small inset video shows a man speaking. The slide includes the following text:

Regulatory framework for MSWM

National Urban Sanitation Policy(2008)

"All Indian cities and towns become totally sanitized, healthy and livable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women."

Goals

- Awareness Generation and Behavior Change
- Open Defecation Free Cities
- Integrated City-Wide Sanitation

Concept of Totally Sanitized Cities

- Open defecation free
- No manual scavenging and safety equipment for sanitation workers
- Municipal sewage and storm water drainage
- Recycling and reuse of treated sewage for non-potable applications
- Solid waste management
- Services to the poor
- Improved public health outcomes and environmental standards

Logos for the Ministry of Urban Affairs and Government of India are visible at the bottom left.

Then, in the year of 2008, Government of India came out with the National Urban Sanitation Policy, which really focused into improving the sanitation situation in our country. So, the goal of this particular policy is that that all Indian cities and towns to become totally sanitized, healthy and livable, and to ensure and sustain good public health and environmental outcomes for all citizens, and with special focus on hygiene and affordable sanitation facilities for the urban, poor and women.

So, that means now, we are not only talking about improving the environment, improving the health, but also we are talking about the communities or the sections of the population, which are actually vulnerable or the sections which are usually ignored in other plans. So, there has to be particular focus on the urban poor as well as women.

So, some of the major goals of this national urban sanitation policy is to generate awareness among the people in regards to good sanitation practices, and how to change the behavior of people. Why behavior is important, because behavior is, the most of the sanitation issues particularly some of it may be technical issues.

That means what methods to apply, how to do the collection system, how to do the disposal, design or engineering design of the disposal sets, but these designs are available, but at the, but to make these designs work. Like for example, if I want segregation of waste into different kinds of ways, so that I can recycle or I can generate some amount of fertilizer from the organic part. So, in that case, we need to segregate the waste.

Now for segregation, there needs to be a change in the way people behave. That means how they deal with waste. Because some people do not want to deal with waste once waste is generated, they throw it away without any further consideration. So, there is a (())(8:17) changing behavior. So, how do we go about that what sort of awareness compensation should be generated that is part of this particular policy.

Then the other major focus is to make our cities free of open defecation practices, because open defecation it is not only it is a issue, it is a big health issue because it needs to spread of diseases in urban areas. And also it is it deteriorates the environment as well as aesthetic concerns are also a major issue when you have open defecation in your urban areas.

So, in addition to that, this policy also focused on integrated city wide sanitation that means we have to integrate the different steps of the sanitation process. So, that each there are a lot of steps which are dependent on each other. So, if we do not do this integration, then probably the or if we do the integration then probably we can do it in a much economic way or much more economically in a more much more efficient way.

So, that is why integrated citywide sanitation policies has been suggested. Now along with came the concept of totally sanitized cities, which is part of this urban sanitation policy. And what it says is in the sanitized cities of future there would be no open defecation, there will be no manual scavenging and every sanitation worker should be provided with safety equipment, so that when they go inside the sewage or when they clean certain pit, toilets or septic tanks, they should be saved as well as they should be given the proper equipment.

So, that, that does not also does not hamper their dignity. So, along with this municipal sewage and storm water drainage, this is another major part of totally sanitized cities. And in the domain of solid waste, overall solid waste management of the city and recycling and reuse of treated both solid waste and sewage for different purposes are also targeted in this particular concept.

So, similarly, service the other aspects are the poor needs to be serviced as we just discussed earlier, and improved health outcomes and environmental standards for the overall urban area. So, this is the concept of totally sanitized cities. So, what it means is, we should target that all our cities should adhere to this basic outcomes at the end of the day as per the National Urban Sanitation Policy.

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The slide features a blue header with the text 'Swachh Bharat Mission' and a decorative graphic of a stylized atom. Below the header, it lists the period '2014-2015' and provides two statistics: '1,43,449 tonnes MSW per day (TPD)' and '(0.11 kilogram (kg)/capita/day)'. A red line is drawn under the second statistic. To the right, it identifies the 'Central Pollution Control Board (CPCB)'. Below this, another red line is drawn under the text '80% of MSW is collected, 22% is only processed or treated'. A quote from the President of India is included: 'We must not tolerate the indignity of homes without toilets and public spaces littered with garbage. For ensuring hygiene, waste management and sanitation across the nation, a "Swachh Bharat Mission" will be launched. This will be our tribute to Mahatma Gandhi on his 150th birth anniversary to be celebrated in the year 2019'. Below the quote, it mentions 'The President of India in his address to the Joint Session of Parliament 2014'. At the bottom left, there is a section titled 'Swachh Bharat Mission (2014)' with two bullet points: 'Household toilets & Community and public toilet provision' and 'Solid waste management (IEC (Information Education Communication) and capacity building for citizens and workers)'. A small video inset on the right shows a man in a white shirt speaking. The slide concludes with the APTEL logo at the bottom left.

Now, even though work has been going on to improve the solid waste management and sanitation in our country, there is significantly the progress was slow. And in the year 2014 and 15, there was a study by the central pollution control board, which say, which determined that the total amount of solid waste that is generated per day in our country is almost 1.5 lakh metric tons.

So, it is a huge amount that is being generated every day. And it comes to around in average 0.11 kilogram per kg per capita per day. So, even the 0.11 is not a big amount, but if I consider only urban areas, and also certain groups of people, then this value would be much higher. And if you multiply with the total population of a country, this is a massive amount that has to be

considered. So, what it means every day, if so much amount of waste is generated, automatically, we require a lot of site where we have to dispose this waste. So, that is a big concern, we do not have so much amount of land area where we can safely dispose this waste in this particular volumes.

So, there is a need for reducing this particular volume. So, that is one of the goals of subsequent missions. So, we it was also found that around 80 percent of the solid waste was collected, that means the rest 20 percent goes to unauthorized places, for example, people throw it in the streets, people throw it in the adjoining parks, people throw it in the drains, clogging the drains leading to flooding in urban areas.

So, this 80 percent of MSW and if you can consider the huge quantity that is being generated 20 percent is left without being collected. So, that is a huge amount that makes inter urban areas look aesthetically bad people feel the urban areas overall, it seems like cleanliness is lacking in those urban areas. So, out of this 80 percent 22 percent is only processed or treated.

So, you can understand that is only 1/5th of the waste out of this is either processed or treated. All the rest, the another 80 percent of it goes into the landfill sites. So, that is why we would require a huge amount of landfill sites if we do nothing. So, this is a big concern. So, that is why the I mean, even though there was some work done as per the MSW rules 2000, there was certain improvements done in certain ULBs, but still there is a long way to go.

And president of India, in his address to the joint session of parliament in 2014 also talked about this and that is when the Swachh Bharat Mission was launched. What he said was, we must not tolerate the indignity of homes without toilets and public spaces littered with garbage for ensuring hygiene, waste management and sanitation across the nation a Swachh Bharat Mission will be launched. So, this is what the president said and accordingly the Swachh Bharat Mission was launched in the year 2014.

And the primary goals of this particular mission is to provision of household toilets and community toilets and public toilets. So, that first of all, the city should be made open defecation free, and then solid waste management also should be taken up and it has to be done through first of all, awareness generation to do that information, education and communication these three aspects needs to be taken care of, IEC campaigns has to be conducted. And overall we have to

build capacity of the institutions, the citizens, the solid waste workers and so on, so that they are able to deliver this kind of services.

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So, accordingly, the after this Swachh Bharat campaign was launched, the Ministry of Environment forests and climate change they revamped the earlier rules, they revise the rules and they came out with solid waste management rules 2016. This was a significant development over the previous rules, why because now integrated waste management approach was considered the three R's reduce, recycle and reuse and reduce all three were considered.

Then it also considered not only about just the technical aspects, but also about how to make it happen, how do I utilize the communities how do I utilize the different self help groups or the citizens into the waste management process, then we talked about how to incorporate different kinds of management financial measures, how to make sure this kind of projects can be executed on ground.

So, we talked about many, many aspects, which is beyond the technical measures that was proposed earlier. So, and also we talked about how to integrate informal workers in the process to make the entire process more efficient. So, we will go into that in more details in the next lecture. But this rule was a significant change from the previous set of rules.

And along with these rules came the municipal solid waste management manual, which was also prepared under the Ministry of urban development and it was prepared by CPIGO. So, this manual is a support document, where detailed instruction is given following which urban areas can actually implement the municipal solid waste management rules for 2016.

In addition to that, all the details about the different technical procedures and all is also given in this particular manual. Now, the other thing that this particular rules also came out with is while these rules are only concerned with the solid waste that is generated in urban areas, there are other kinds of waste which has to be dealt with in a different way as per the environmental guidelines or the environmental laws there is a need to deal with construction and demolition waste separately from the normal municipal waste stream because their characters vary considerably. Demolition and construction waste is higher density. It is a, it is a solid, it has got a lot of weight and it cannot be collect with the normal municipal garbage.

So, a several, a separate set of handling of waste resulting from construction, remodeling, repair, demolition, this was actually has to be taken up. So, according to these new guidelines came up. And for this also CPCB provided an environmental management of C and D waste some other guidelines also came up to support these kind of laws. And then there other laws has been created, rules has been created for special waste.

So, what are special waste? These are toxic substances in the municipal waste stream that means even within our house, when we generate garbage, there are batteries, there are tube lights, CFLs, which should not be mixed with the normal municipal garbage why, because in that case, they will actually contaminate the rest of the garbage and it cannot be reutilized or it would actually the recycling and all these processes could become difficult.

So, it is better to deal with this kind of hazardous substances or this kind of substances in a different way. So, accordingly for this kind of special waste, other rules came out like plastic waste management rules in the year 2011. And subsequently, it was revised in the year 2016. Then biomedical waste handling rules, this is rules, these are waste coming from the different medical facilities and all so, it was, it first came out in 1998 then 2011 some amendments were there and finally biomedical waste management rules in 2016. So, it was a full up gradation of

that, modification of that rule. Then E-Waste management rules, again revised in 2016 and battery management and handling rules from 2001.

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State level guidelines and strategy

Andhra Pradesh Integrated Municipal Solid Waste Management Strategy 2014

Appropriate strategy framework for guiding ULBs to comply with the MSW (Management & Handling) Rules 2000.

Vision
"to equip the AP cities with efficient, environmentally friendly and sustainable waste management system with complete safe collection, transportation, treatment & disposal facilities and achieve the service benchmarks"

Strategic Interventions

- Waste minimization and promotion of recycling of waste
- Door to Door Collection of Waste generated
- Engaging stakeholders in implementation
- Processing, Treatment and Disposal of Waste
- Strengthening the capacities of the ULBs
- State Level Institutional arrangements & Program support

The slide features a blue header and footer with logos. A small video inset in the bottom right corner shows a man in a white shirt speaking. The background has faint icons of a gear, a person, and a recycling symbol.

Now, while these are the different set of rules that we have been talking about these have been prepared by the central government. Now, at the end of the day solid waste management is the responsibility of the state government, that means the actual power to execute solid waste management comes from the state government, that means it is be done at the ULB level, but at the instruction of the guidance of the state government.

So, every state government should come up with some sort of guidelines or policies or strategies using which we have to actually or some state level guidelines and strategies has to be formulated using which the ULB should prepare their own manuals or own by laws using which they will conduct the solid waste management process in urban areas.

So, using the central law that is the municipal solid waste management rule 2016 different states have come out with different sorts of guidelines and strategies, which focuses on or certain aspects of those particular rules more or less all everything is followed as per the rules, but with certain stresses on certain aspects that could be as per particular states, whatever is the vision or whatever way they wish to manage based on their context, based on their resource availability, they can actually focus on certain things. So, according the state level guidelines came up.

Now, state level guidelines came up both before MSW rules 2016 as well. Following the MSW rules 2000, Andhra Pradesh came out with integrated municipal solid waste management strategy in the year of 2014. So, it is a strategy framework for guiding ULBs to comply with the MSW rules 2000.

So, the vision of this particular of this of Andhra Pradesh was to equip all the cities in the state with efficient environmentally friendly and sustainable waste management system with complete safe collection, transportation, treatment, disposal facilities and achieve these service level benchmarks. Because by that time, the service level benchmarks were also introduced.

So, this is a general vision. Now, based on that the brooded strategic interventions which this particular Andhra Pradesh was focusing on was waste minimization and promotion of recycling of waste. So, they gave a lot of focus, they gave a lot of stress on that, door to door collection, which is made mandatory now via 2016 guidelines, engaging stakeholders, stakeholders in implementation, processing and treatment and disposal of waste, strengthening the capabilities of ULBs, state level institutional arrangements and program support.

Actually, all these things you see this where, this came up in 2014. And in the 2000 rules, there was not too much of stress on these aspects. But in the 2016 rules, all these aspects which you see over here became part of the rules as well. So, you can say that based on this feedback coming from the states, based on feedbacks by different states and all actually 2016 rules was modified. And some of these aspects also were, also incorporate there.

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State level guidelines and strategy
State policy and strategy on solid waste management for urban areas of West Bengal

Solid waste management rule 2016: Section 23 (1):

- ❑ State level Advisory body for formulation of state policy and strategy on SWM
- ❑ ULBs to prepare plan as per State policy and strategy

State level strategy:

- ❑ Reinforcement of 3 'R's (Reduce, Reuse and Recycle)
- ❑ Clustering of ULBs for grouping of different SWM functions so that resources could be shared leading to reduced cost and increased scale of economy
- ❑ Different models of management. Need for professional management of MSWM service through private sector and community based organizations.
- ❑ 'Polluters pays' principle must apply

Other policy and strategies are aligned with the SWM rules and the Municipal Solid Waste Management Manual(CPHEEO) with suitable modifications and technology choice as per the local context.

Now coming to the state level policy and strategy on solid waste management for urban areas in West Bengal, this was prepared after the 2016 rules came out. So, as per the 2016 rules, Section 23 within by 1 states that state level advisory body has to be formulated for state policy and strategy determination on solid waste management.

So, that is as per rule the state has to formulate advisory body and ULB has to prepare a plan as per the state policy and strategy. So, this is as per the solid waste management rules 2016. Now, what is the focus or the state level strategy in this regard, so there has to be certain focus as per the local context as per the state's directions or as per the way the leadership in the state thinks.

So, for that, and of course, you can, the leadership represents the people and it also does stakeholder consultations based on that it formulates this particular strategy, what are these? Reinforcement of the 3 R's, reduce, reuse and recycle. Then the second thing is very unique that is clustering of ULBs even though it was mentioned in the 2016 rule, but this was really one of the focus areas.

In case of West Bengal where clustering of ULBs for grouping of different solid waste management functions. So, that resources could be shared leading to reduce cost and increased scale of economy. So, what it means is one ULB, every ULB should have their independent collection, transportation, treatment, processing systems.

But sometimes what happened because of the scale, because of the number of people, because of the nearness of these particular urban centers, there is a need to actually combine some of the functions. For example, I can have a combined composed facility or I can have a combined solid waste disposal site. So, this clustering approach is also important.

And this could actually reduce overall cost and improve the economy or increase the scale of economy and so on. So, this actually is one of the focus areas in West Bengal plan. Different models of management. So, the other part, what this (())(24:56) talk is to explore different models of management and to make it more efficient and need for, and accordingly there is a need for professional management of municipal services through private sector and community based organizations.

And so, the other party's that whoever is actually conducting the resulting in pollution they should be. So, that means polluters pay's principle must also apply. So, these are some of the unique aspects that West Bengal actually focused on but it does not mean that the other things are not done everything else is there.

But these are some of the focus areas which the state actually based on which the state will formulate the overall plans or the different technical plans and so on. So, other policies and strategies of course, are aligned with the solid waste management rules 2016 and or as per the solid waste management manual that has been prepared and but there can be obviously suitable modifications or certain technology choices could be taken as per the local context. So, these kind of suggestions could be given by the state level guidelines and strategy documents on solid waste management for those particular areas or those particular states.

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Other solid waste management rules

Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2008 (2009 amended)
Industrial Hazardous Wastes and different from MSWM
Involves ignitability, corrosivity, reactivity, and toxicity

Task Forces:
Integrated Plant and Nutrient Management using City Compost, 2005
Fertilizer Control Order (FCO), 2009
Waste to Energy (Planning Commission, 2014)

The Water (Prevention and Control of Pollution) Act and its Amendments (1974):
(Prevent and control water pollution and ensure wholesomeness of water)

The Environment (Protection) Act (1886)
(Protection and improvement of the environment)

The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (2013)
(sewers, septic tanks, insanitary latrines)

So, finally, coming to the other solid waste management rules in a, so, for handling municipal solid waste, we have state level policy documents, strategy documents, we have the municipal the central government manuals, and the laws or the rules that has been set, but there are other rules also. For example, beyond municipal waste, there is also other kinds of waste.

For example, there are industrial hazardous waste, which is totally different from the municipal solid waste and obviously, because they are different they have to be handled separately. So, there is a separate set of rules which goes for hazardous waste management handling waste management, handling and transboundary movement rule, that is, if the waste is transported from one area to another, what has to be done.

So, this has been formulated in the year 2008 and amended in 2009. So, there is a set of rules on that, we will talk about these rules in detail later on when we talk about this kind of waste, then some task forces has been also implemented that is government has created some committees based on certain requirements or certain direction in which the country should go and they have also prepared reports on some of those aspects.

So, some of this is integrated plant and nutritional management using city compost. So, how to utilize city compost and what is the best way to do that. Fertilizer control order that means something how to control the use of chemical fertilizers so, that compost could be used also as a

supplemental material, supplemental fertilizer and waste to energy that means how waste can be also converted into energy.

So, these are the different task forces that has been set up from time to time which has also given their report and in addition to that, in along with all the rules that has been framed just for solid waste management, there are other rules also framed by the central government which somehow or other influences the solid waste management process.

So, some of these are the water prevention and control of pollution acts and its amendment, so, prevent and control water pollution and ensure wholesomeness of water. That is what it ensures the Environmental Protection Act of 1886, this is the basis on which many of the solid waste management rules have been framed, and the prohibition of employment as manual scavengers and the Rehabilitation Act, that means, people cannot be utilized as manual scavengers and they has to be, so, this kind of earlier practices has to be changed. So, these are some of the other rules and guidelines which actually influences the solid waste management process.

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So, these are some of the references that you can study.

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CONCLUSIONS

- MSWM in urban areas in India is guided by the different rules and manuals prepared by the central government and is implemented as per the different strategies and policies decided by the state government.

The slide features a dark blue header with the word 'CONCLUSIONS' in yellow. Below the header, a white area contains a blue bullet point. In the bottom right corner, there is a small video inset of a man in a white shirt. At the bottom left, there are two circular logos, one of which is labeled 'NPTEL'.

And to conclude, MSWM, municipal solid waste management in urban areas in India is guided by the different rules and manuals prepared by the central government and is implemented as per the different strategies and policies decided by the state government. So, implementation is as per the state strategy and policies that are decided by the state government. Thank you.