Sustainable and Affordable Sanitation Solutions for Small Towns
Prof. N C Narayanan
Department of Centre for Technology Alternatives for Rural Areas
Indian Institute of Technology, Bombay

Lecture -13
Municipal Solid Waste Management in Alappuzha

Good evening everyone, we will continue the session Solid Waste Management discuss and the previous session was mainly we left and we have completed so far.

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I mean these are the different things which we have completed so far and in the next session, we will be looking it from the Alappuzha context. So, she has, Neelam has said it from an Indian or in Indian or in a general perspective and now we are coming into the context of Alappuzha where you are already now.

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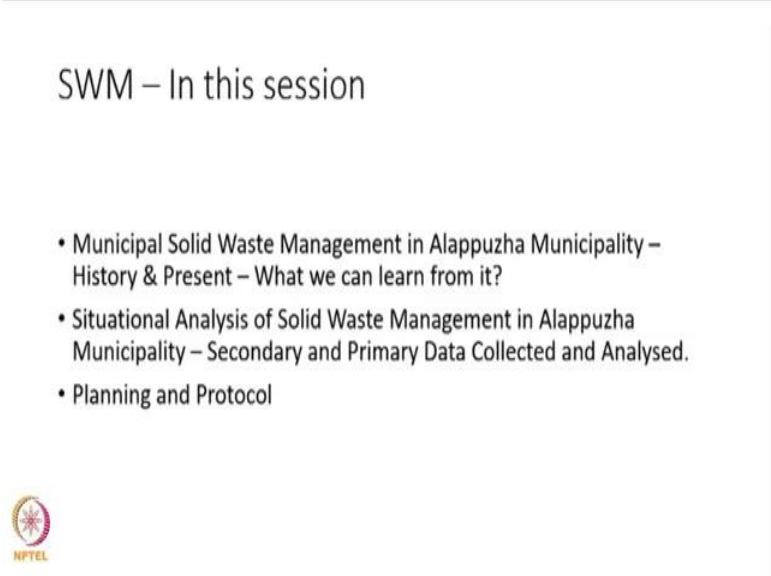

So, in the session we will be covering what is happening in Alappuzha municipality with municipal solid waste management. Then situational analysis of solid waste management in Alappuzha Municipality that is the work which we did through our project canal rejuvenation project and then we will go to how we planned it and then through the project. So, just giving a brief about Alappuzha, I think sir had sir had given a general introduction of what Alappuzha is and the canal network here etcetera. This is in so, this is more specific to solid waste management.

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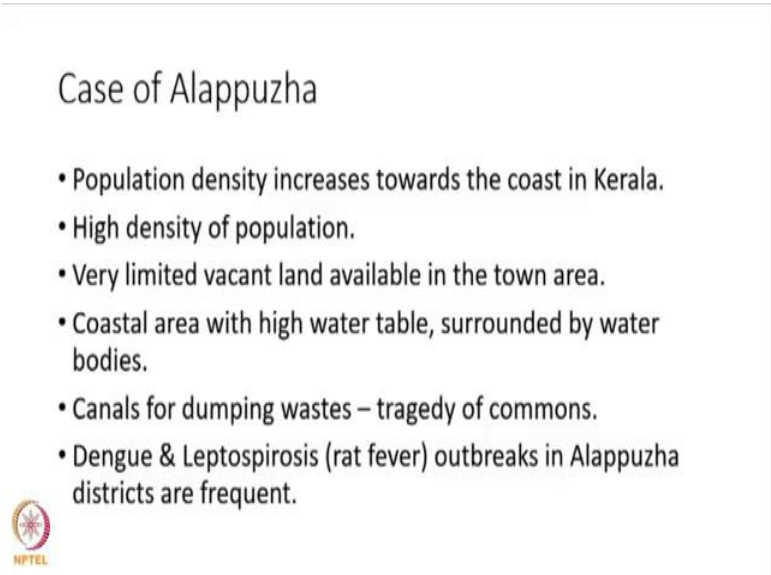

So, population density in Kerala in general increases towards the coast and Alappuzha is the district which is predominantly in the coast and it in general there is high density of population in Kerala and Alappuzha district is the densest district.

Then, very limited vacant land is available in town area that is another issue, then coastal area with high water table and surrounded by water bodies. So, I think sir had covered that as well that this side is the Vembanad lake system and this side is the sea. So, it is surrounded; it is say thin land between various water bodies and there are canals which are flowing through the city as well town as well and canals for dumping waste, it is a tragedy of commons I think sir had covered that as well.

And one more important thing here is rather alarming thing is that dengue and leptospirosis outbreaks are very frequently. So, I think Neelam had covered in her one of her slides, that solid waste has linkages with 22 different diseases and these two have directly gauges with solid waste management solid and liquid waste management.

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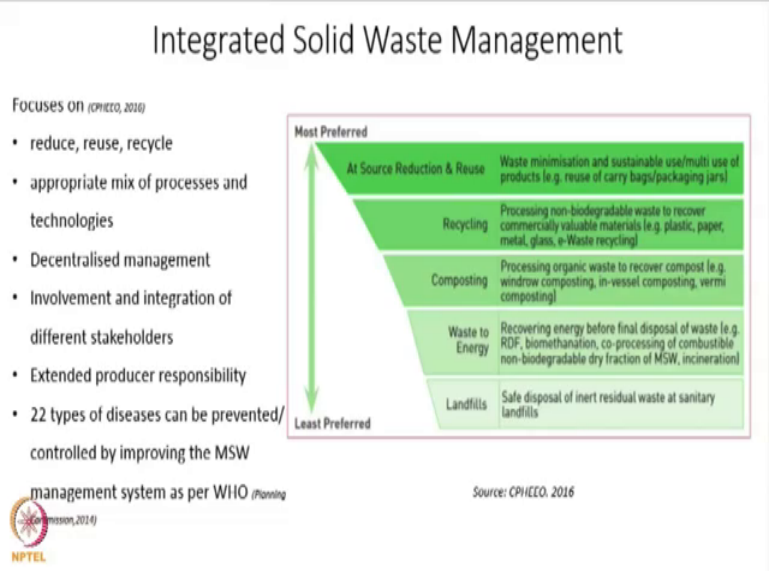

I will start from here which Neelam had covering. So, as she had mentioned I mean, you can see that landfills are the least preferred right and it goes up to at source reduction and use.

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So, we will see how Alappuzha history has been regarding solid waste management. So, Alappuzha, I mean Alappuzha municipality also was following the same called solid waste management practice of dumping the waste into a dumping ground. So, that is quite near to who are all from SUF who all are staying in SUF, yeah that is quite close to your place. In fact, so that is a place where the dumping ground was in 2012 and that is part of Mararikulam Panchayat and it started functioning from the 1950 and due to public health issues and as well as environmental issues people started protesting in from 2012.

Around 5000 protestors localized; they formed human chains and began to stop the garbage trucks that are plying from Alappuzha carrying the waste and their slogan was waste should not be dumped in our backyard. So, because of that I mean, they the thing is that so Alappuzha municipality had to come up with some other way out of this and I think some of you are from Trivandrum right and there and also, during the discussions vilappilsala (a dumpsite in trivandrum) also came into came into discussion. So, there what happened was I mean the there was a kind of tussle between the locals and the government right.

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But here things were a bit different. So, the protest started and you can see I mean if you go to Google earth and see your and I mean this place this is SUF by the way and how it has transformed from 2013 February to 2015 and this was the time when they started to stop the garbage trucks. So, yeah so now coming to what paved way to for the authorities to kind of change their mindset and go to a decentralized solid waste management we will just see.

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So, Alappuzha and Mararikulam were governed by the left democratic front government. So, both local bodies were governed by the same government and because of that they were under the pressure that it should be resolved amicably ok. So, there comes the importance of politics in this, then they tried I mean. So, after this issue came up, so they tried there itself they tried for windrow composting at first and then door to door collection through Kudumbasree units, but it was unsegregated waste.

So, these things also they tr but it kind of failed, so there you can see gender technology and society were coming. Then Kerala municipality act was also made much more stringent in 2014 and everywhere in Kerala there was this drive to treat solid and I mean segregate solid and liquid waste and that was made mandatory so that also helped.

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So, there was no other way there, but to go into segregation and try for another alternative, which again there were kind of looking into and then they tried to collaborate with various agencies ANERT was one and IRTC was one. So, they tried to collaborate and come up with a solution there, then that is how it came up, the campaign cum project of Nirmala Bhavanam, Nirmala Nagaram which is, which translates to clean house clean city project came up in around that time around 2013 that period.

And that is the why it was a campaign is because it was for creating public awareness and in the first few years they gave a pipe compost portable and fixed biogas units to be installed in households for treating organic waste at source. And the philosophy that was

followed for this project was that as Neelam had mentioned, my waste is my responsibility. So, that you can even if you go around the city you can see those campaign taglines in many of the posts I mean posts.

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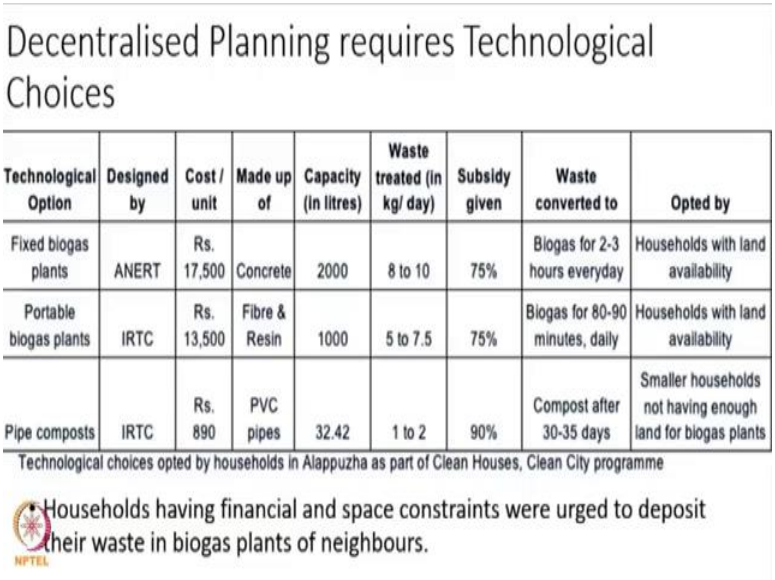

So, for that what they did was I mean, so these are these were the three technological options which they had come up with at first and you can see that see for centralized it is one technology fits all. That technology is nothing but dumping the wastes into the a land, but here because it is decentralized kind of a planning we need different technological choices based on the requirements from ground. So, here if you see you can see who for whom it is made

So, these two fixed biogas plants and portable biogas plants are for households with land availability and for smaller households it was pipe compost and you can also see the cost of each of these. So, this is how socioeconomic plays an important role when it comes to decentralized planning as well and also you can see for households having financial and space constraints they were urged to deposit their wastes in biogas plants of neighbor's.

So, these considerations were taken up when they were kind of coming up with the solutions. So, after that this again I mean they adopted this it started and it continued for around 1 year and within few months what happened was although, because of this campaign mode more people started to use it many of them faced many issues and few of their issues faced were this that was not enough waste available for the biogas unit.

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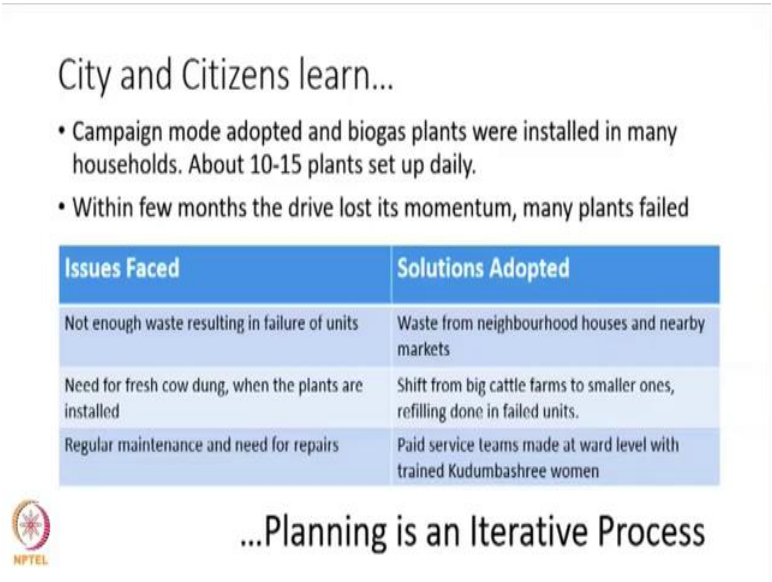

There was a need for fresh cow dung and regular maintenance and need for repairs over there and for those the municipality as well as the people involved came up with solutions. So, this also play played an important role to sustain this project and that is why I have I mentioned here city and the citizens learned from this initiative and planning by itself is an iterative process. It is not like I mean one is a success model as such there will be issues and it need to be solved.

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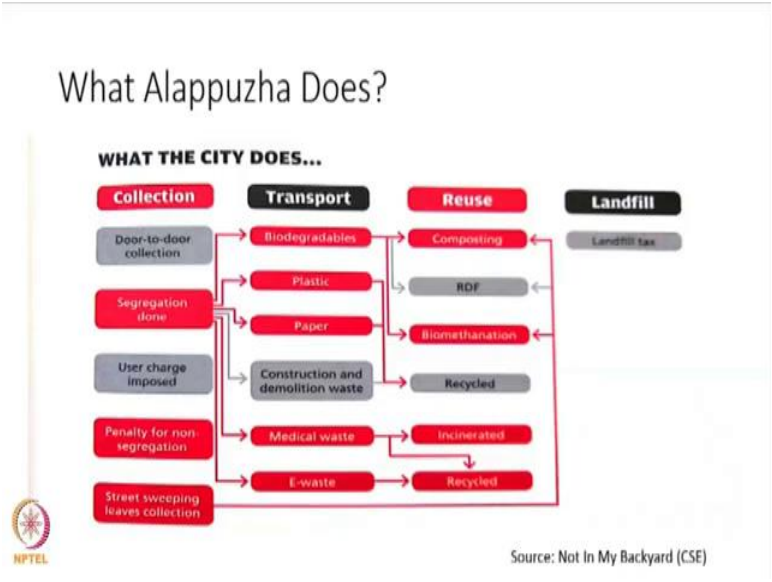

So, what Alappuzha did was or is doing is so this is from CSE there is one book called Not.in my backyard, it is based on their analysis of solid waste management practices across 77 cities in India and they rated the solid waste management model of Alappuzha is one of the top most.

So, in that they have mentioned that this is there kind of framework which they have used. So, in collection we can see the segregation is being done, then bio it is been segregated into these many things, construction and demolition waste is not being segregated. Then there is penalty for non segregation from the mandated block and then street sweeping leaves are going into composting. So, it will come to, so after this what happened was so these are household level units for treating household waste. Now, many of the households still did not had the any unit. So, they had to come up with another kind of a technological option which is aerobic unit.

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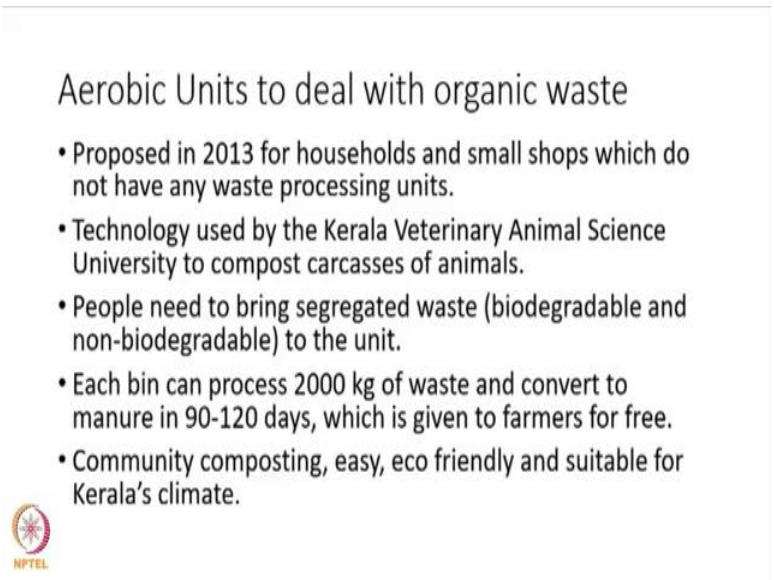

So, this was proposed again in 2013 for households and small shops which do not have waste processing units. So, this was used in Kerala agricultural university in Thrissur, where they were using it for dealing with the carcasses of animals and from that they came up with this particular technology and these are just various characteristics of that particular technology. So, it will takes 2000 kilogram which we can go in detail later on.

But only thing is so this technological option was taken up taking into consideration suitability of Kerala's climate as well as climate, also is a is a thing which we used to

taken into account when it comes to composting. So, being a tropical climate this composting kind of a technology suits well.

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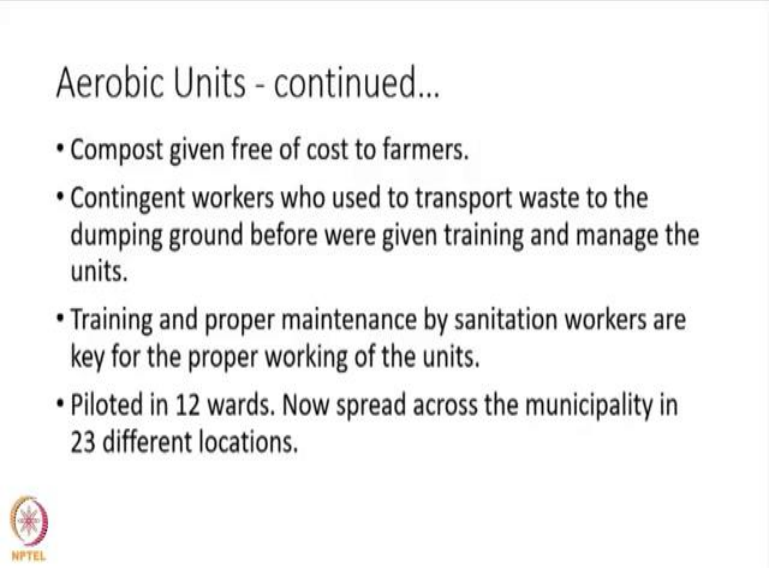

So, it was so what happens to the compost, it was given to given free of cost to farmers even now that that is what they have doing it was piloted in 12 wards. Now it is spread across 23 different locations and contingent workers who used to transport the waste before they actually are were given training and manage the units.

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So, this is how the unit looks like.

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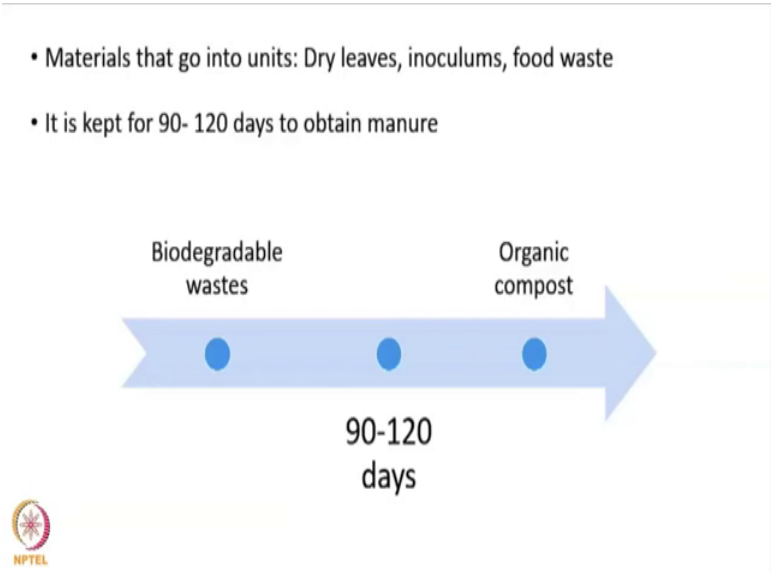

And 90 to 120 days once it is there the biodegradable waste and gets converted into organic composts ideally and MRF units are also part of this particular unit but not in all. But out of the twenty three ten units have MRF units, where they use I mean separate bins for plastics bottles and e-waste which later is given for either shredding or for baling and then for some other use it is released.

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And as I said plastic and plastic that is what they do and also there was one one company that was made under local self LSGD department which was made responsible for plastic

waste collection as well. It was segregated to various segregated and then shredded and pellets were made of this.

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And other wastes so wastes from hotel shops what is happening in Alappuzha is that they are contracted to private agencies, then hazardous waste and e waste, they are periodic there is periodic collection by the municipality and the hospital wastes it is being done by another group called IMAGE. So, it is part of the Indian medical association and they have a biomedical treatment and disposal facility in Palakkad and for plastic wastes actually is being transported from here to Tamilnadu, Erode in Tamilnadu. And this is the current situation, so right now we will see what the municipality has given in their DPR, and what they this is the latest DPR which they have come up with.

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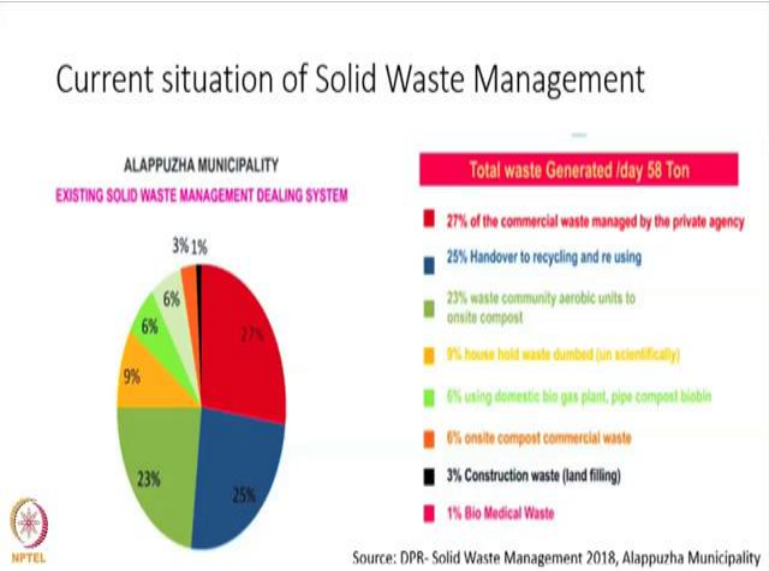

So, this is average I mean the generated waste average per day is 58 tones and this is the segregation I mean the percentage of each of these waste which is being generated. So, you can see the only twenty three percentage of the waste is going into community aerobic units and 9 percentage is being dumped. So, from our kind of experience what we have found out is that these things get segregated at source.

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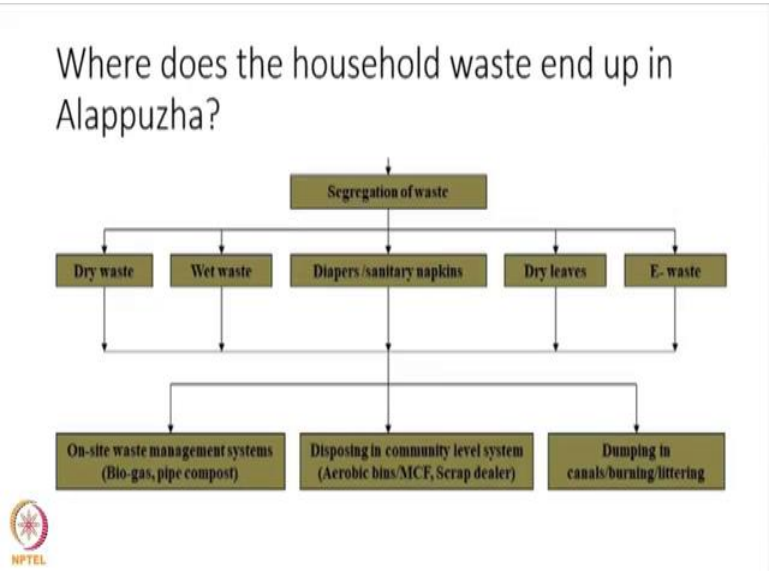

But after that what is happening is these being dumped into canals and these two are also being followed by a by a not by all in the city. So, that is the kind of situational analysis of the waste segregation and where it is going.

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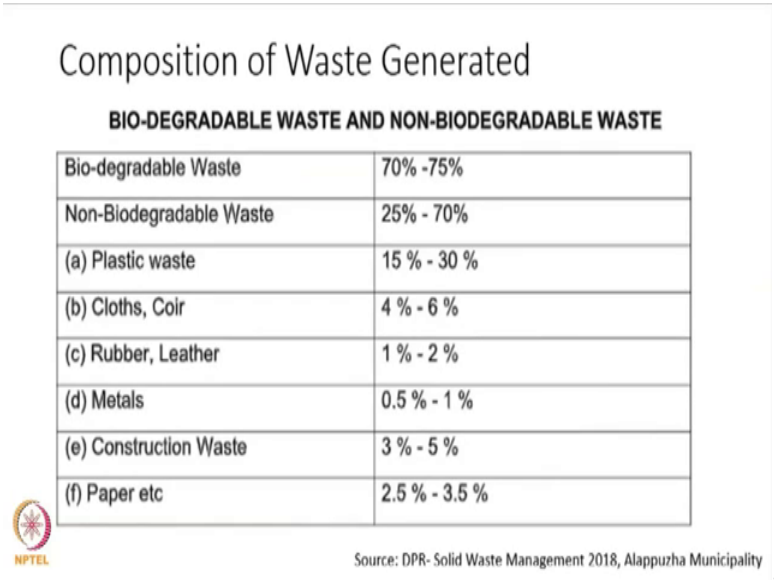

And this the composition of the waste generated and we can see biodegradable waste is almost three-fourth.

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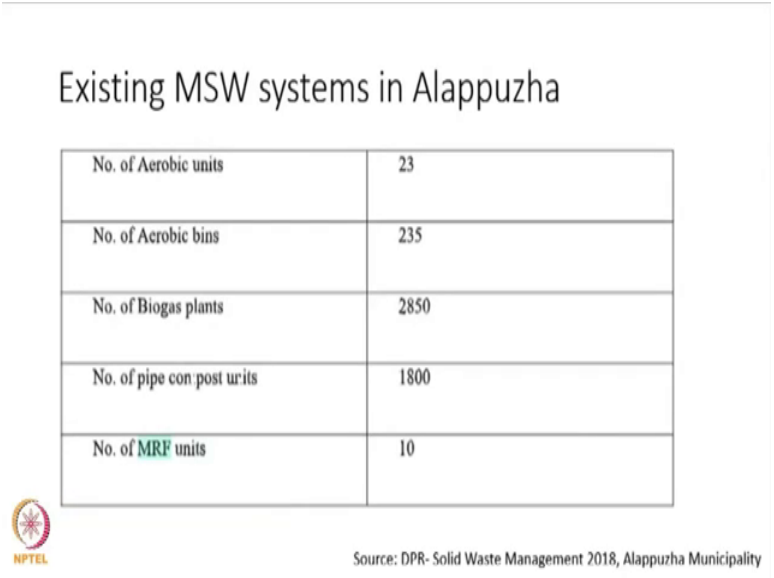

Then existing, so we talked about aerobic units, then biogas plants and pipe composts. So, you can see the number is not so high, but there is a kind of drive where they are also planning to have more biogas plants and pipe composting units.