Sustainable and Affordable Sanitation Solutions for Small Towns
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Lecture - 08
Environmental Governance – Challenges and Alternatives

You know Neelam talked about policy, I will be talked about Governance the Challenges of Governance.

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And this is basically a challenge of centralized imagination of policy and what are the; what are those challenges and you know how can we overcome it. So, our understanding is that you know the centralized governance actually imposes problems. So, we will have some case studies with illustrate that those governance in practice and then kind of come to our understanding you know how participatory governance can actually overcoming.

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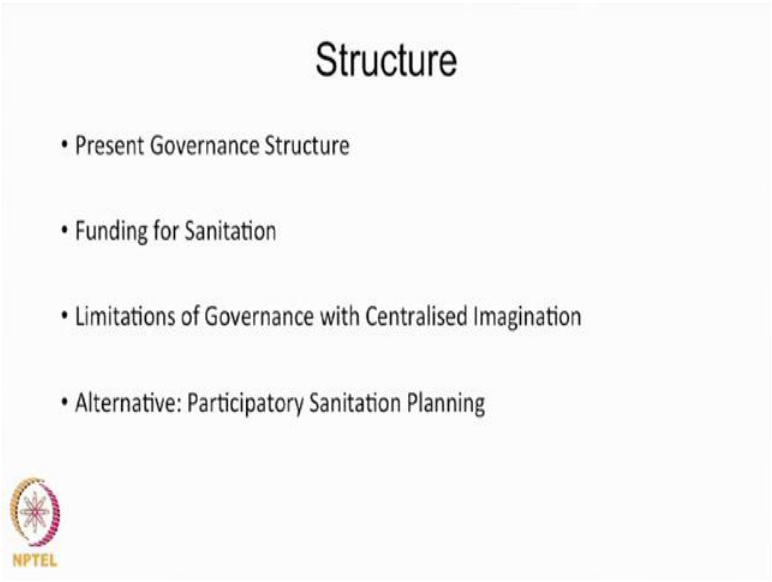

So, this is the structural representation; we will talk about the present governance structure, the present funding and sanitation how it encourages centralized imagination, then the limitations of governance we will illustrate through two case studies. And then we will tell and talk about you know how our outlet paradigm can work.

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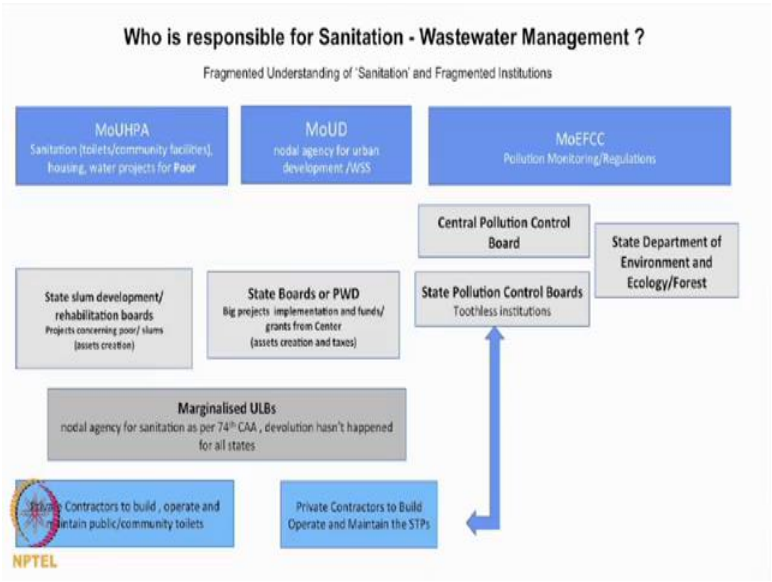

So, this is the kind of you know policy and governance architecture of Indian sanitation sector. So, one is you know we have the Ministry of Urban Housing and Poverty Elevation. So, that is more of the kind of slum development; you know marginalized

sections you know; so they deal with that. And then we have Ministry of Urban Development which is the nodal agency of urban development, where they kind of take a bit infrastructure projects funding of that JNNURM like you know big infrastructure projects that is the second one.

And the third one is Ministry of Environment and Forest and Climate Change which actually looks at the entirely different thing of environmental regulations, environmental protection. But they have a huge influence in sanitation sector Because they are against, you know, kind of effluence coming into the water bodies and things like that. So, they also have a major influence in urban development.

So, these are the three major ministries that we have; let us see what is under that. So, under these two we have this state slum development board, rehabilitation boards, projects concerning, poor at slums that comes under a MoUHPAA. And then MoUD has state boards like the Kerala Water Authority or the Bangalore Water and Sewerage Board you know; so then those come under here. And then the public works department sometimes kind of work with them and the big project. So, it is basically implementation of big water supply and sewerage projects are coming under them. And then when you come here there is the central pollution control board which is supposed be in the kind of you know central agency for pollution control.

And under that there are State Pollution Control Boards as Neelam was mentioning. they have, you know, kind of mandate, but we see,, you know, they are bit toothless also; so, we will understand why it is so.One of the things that we saw is that, you know, is their imagination is, pollution controlled by policing.

You know can we go ahead, kind of you know, issue orders and, you know, and we had a case study of the Alleppey office; they have four engineers environmental engineers. And then they have to, kind of, regulate something like 1000 units, like from a floor mill to big industries, you know; so what they do is that, you know, every, I think, every 2 years or so, they have to renew their license.

How can anybody, kind of you know, go and physically inspect 1000 units and do that, you know. So, they have to, kind of, issue those licenses otherwise. Added to that they have these houseboats also which are also regulated by them; so it is a, you know so, its very difficult for them to police and do that.

And that is why we will be talk about participatory governance where social regulation can also come. How can citizens, kind of, participate in analyzing what is pollution,and, kind of you know, helping them to, kind of, generate data and helping them regulate that also, you know, so that is why the shift has to come.

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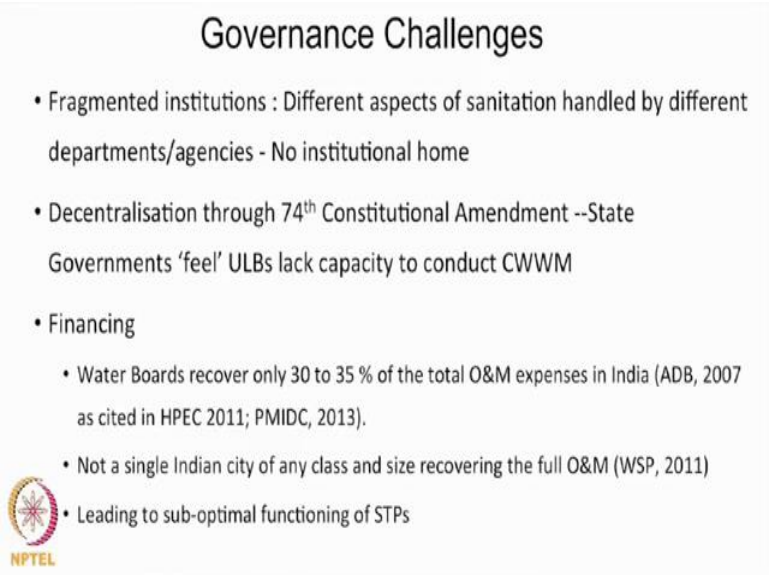

Another major thing that happened in the 1960 Constitutional Amendment for decentralization. We have heard about panchayat raj in nagar palika according to 74th Amendment of the Constitution; many of the powers have come to urban local bodies. So, that is the major shift that has happened here, but the problem is that, you know, they do not have capacity. And in a state like Kerala you know in 1996; almost 40 percent of the budget was transferred to this three tier institutions and nagar palika institutions, which now reduced to 28 percent or so because of the centralization that is happening.

But in other states, we do not know how much of that has happened and despite this; no devolution of staff has happened to dwell this. So, we have this big water boards like Kerala Water Authority or Bangalore Water and Sewerage Board which have a lot of engineers; you know like we have some take 5000 engineers, but if you go to a municipality; there will be a few engineers. So, that devolution will not happened because it is a pride to be you know kind of engineer of a Kerala Water Authority or PWD and not a municipality or panchayat. So, people actually will not go there to kind

of work there because you have big infrastructure, you are doing in the other one and you know.

So, devolution becomes a major problem; so these institutions are completely understaffed and under capacitated I think; that is one of the major problem. And that is one of the things that we are trying to filling also; can be crowd source capacity is the question that we are asking in this project also. There are frank method institutions, if you come to Kerala, the sewerage projects are done by Kerala Water Authority and sometimes it is done by municipalities also; they do not have the capacity.

So, if you go to a that, I will tell, you know, what is the kind of fragmentation that is happening. Then we have two missions one is Suchitwa Mission that is clean Kerala Mission. The other one is Haritha mission that is green Kerala mission which is actually done by this government. So, these four structures actually work in sanitation. So, as Neelam was mentioning national urban sanitation policy wanted one institutional home for sanitation, but when it is four; we do not know how it happens. So, it is a fragmented decision making structure in there.

And then I told you about the decentralization; the state governments and the public utilities does not feel that municipalities are capacitated and you have to give them back the funds. So, they are all that there is a problem and then financing if you see the these are actually kind of you know big committee reports and; and partly it is kind of World Bank and adb kind of understanding also. Then water boards recover only 30 to 35 percent of the total operational management; you know expenditure that is needed and not a single Indian city of any class or size recover the full O and M charges.

And leading to sub optimal functioning of STPs; I am not going into the debate, but you know this; this whole what we called as the new liberal turn in policy, where everything the markets have to take care you know that perspective actually sees every activity should be profitable. But water supply to a level can attain that; sanitation has to be a public thing; it is very difficult for markets to work in sanitation.

So, these are one of the public goods that state should provide because if you have a good sanitation; if there is no waste water, no pollution; it actually saves public health and even private expenditure on healthcare. So, the; these are public goods that has to be taken care by the state also.

So, we cannot completely, kind of you know, tell that, you know, you have to recover your (Refer Time: 08:40) operation management and things like that; that is a debate we do not get into. But please take in mind that this has to be a public good also; whatever pollution control and, you know, things like that.

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Then let us look at the allocations; allocations by big you know government funding.

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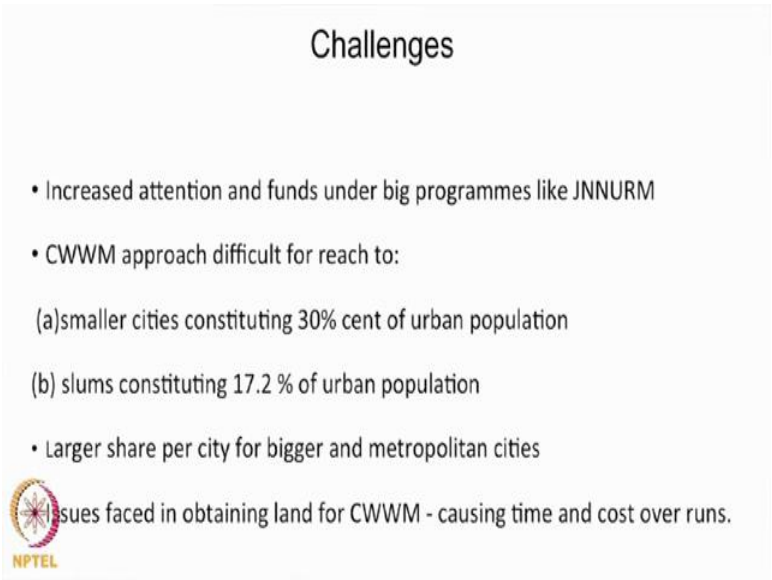

We see that, you know, there is this big programs like Jawaharlal Nehru Urban Renewal Mission which actually then gives funding for actually big infrastructure like centralized

wastewater management infrastructure. Small cities constituting 30 percent of the urban population; they will not, kind of, get much.

Student: Yeah.

Then slums are constituting 17.2 percent of the urban population. And these cities and these sections of population are systematically marginalized from these, kinds of, allocations and so larger share per city goes to bigger cities and metropolitan cities. So, I think the five major cities get 70 percent this say yeah. So, the five major cities in India gets 70 percent of the allocations of JNNURM; ,you know, it is actually in a way justifiable also because they cannot actually think about participation or decentralization or anything.

And that is the need why, you know, smaller cities like this have to and smaller cities and we have 7,000 you know kind of towns in India including census towns and all. So, if you make a model for this 1 lakh, 2 lakh kind of cities; it is going to give a, kind of, representation of 80 percent or 90 percent of the cities. But all policies or thinking all research you have been studies is going to these big cities. So, that is why we are; we have brought you to here. I did not bring you to Bombay because Bombay can survive on its story that is big researchers; it is you know many other things to kind is a that is comes to small cities and, kind of, try to understand what is happening there.

And then yeah one of the major other things is that in the big projects have time cost over runs that you already know; that means, one it takes if you plan for 5 years, it may take 10 to 15 years to complete that is a time overrun. Cost overruns is that, you know, your first estimate will be 100 crores and at the end, it will become 250 crores. So, you know these all we say let us look at two illustrations of that that is what I am trying to do.

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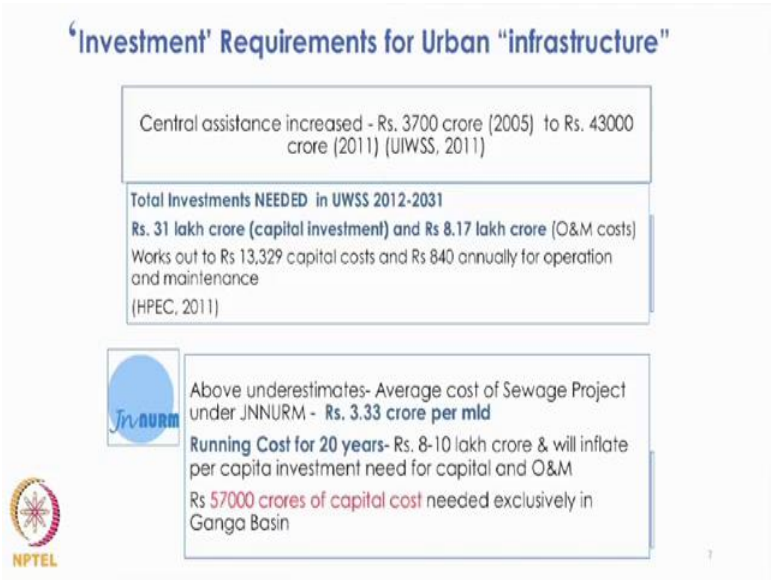

You know the central assistance for example, increased from 3700 crores in 2005; the 43000 crores in 2011; it is partly because there were a lot of Central Government here; foreign funded Central Government programs like Jawaharlal Nehru Urban Renewal Mission and all. Second there is this MTG goals in this millennium development goals which actually gave a lot of trust to sanitation; you know public health and things like that. So, all these actually brought an; a lot of allocations into the sector.

So, the imagination of this also has increased. So, we have a big commission called you know a high power expert committee. It was chaired by Mrs. Isher Judge Ahluwalia, who is a very famous economist. And then they calculated that you will need something like 31 lakh crore of capital investment and 8.17 lakh crore of operation and management expenses to make Indian city is clean.

So, that works out to be per capita 13329 capital costs and 840 annual operation maintenance costs do can we afford in India? We have 1.4 billion, per capita is 13000 that they are asking and that is also because of this big centralized imagination that is working in their minds. And she is very active in this, she actually goes to this big ADB funded projects in some cities you know like Udaipur and you know. And then actually writes; writes in news papers; how well the city has actually manage this and all, but in imagination is this; so that is one.

Second, then we calculated the estimation or so; the average cost of a sewage project under JNNURM is 3.33 crores; 1 MLD; that is 1 million liters per day if you want a project if the even the capital cost is something like 3.33 crore per MLD running cost for 20 years is 8.10 lakh crore. So, when I was the coordinator of the policy group of the inter IIT consortium; who looked at the Ganga basin management plan. So, 7 whole 7 IIT's came together and we had seven groups we work; so policy group I coordinated.

So, just looking at this allocation we calculated just for class 1 and 2 cities the per day effluent is 11000 MLDs; you may just coming around. And we found that we need 57000 crore just for the capital investments; for Ganga basin alone and that also for class 1 and 2 cities.

So, I want you to kind of just think about whether this is a feasible option; this kind of centralized imagination you know; so that is all calculations. Now, let us come to a specific projects because case studies are very good; you know case study, is a microcosmwhich actually gives you indication of the macrocosm.

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So, it is like, you know, you can it is; so case study actually gives you a good picture of what is happening. So, this is a study that we did from 2007 to 11, 2006 to 11; we have a; we have part of a South Asian from big South Asian project, where four South Asian Universities came together and did kind of research together. So, we had 20 PhD's and 150 M Tech's that came; came out of that project.

So, what we decide because that you know we will kind of we know cross supervise PhD's also. So, the; this is the PhD that I supervised and when we started this project in 2007; there was a, there is a proposal for a sewerage treatment plan in Kandy city in Sri Lanka. So, we just kind of just diagnose that proposal and after 4 years; when the project is over in 2011 still the projectors are started, but the budget has increased and then it is still not started and the proposal amount is still going up.

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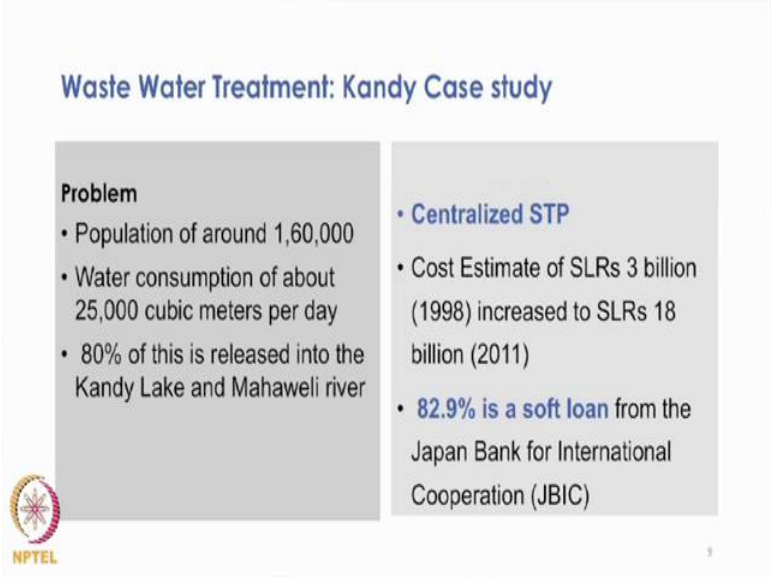

So, one is you know the we are very it is like actually it is comparable to Alleppey; we have 160000 population in Kandy and Kandy as many of you know; it is a very cultural capital of Sri Lanka because you have the Buddhas new temple there.

So, you so, then the Mahaweli river and the Mahaweli lake both are very precious for the Buddhist all over the world. So, JICA that is Japan International Cooperation Agency; they came out with these proposal that you know they will fund this. So, it is population is 160000, water consumption is 25000 cubic meters per day and 80 percent of this released into Kandy lake and Mahaweli river.

Proposed for a centralized STP the estimate was 3 billion in 1998 and when we start and in 2011; when the, when it was finishing became 18 billion and so that was something like you know in 13 years another 7 years is gone. Then 83 percent of this has to come as a soft loan from Japan.

So, what is a technology choice that they had; the technology choice is that you know you can have different levels of purification.

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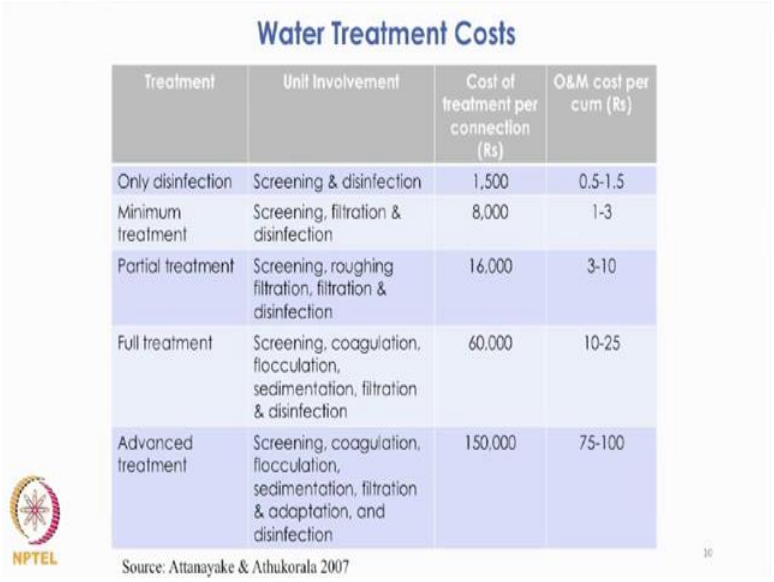

So, if it is just disinfection; it will be like cost will be 0.5 to 1.5; you know cubic meters you know rupees per cubic meter partial treatment full treatment advanced treatment; it becomes 75 to 100. The cost of treatment will be something like 150000. So, the point is they chose the highest the average technology.

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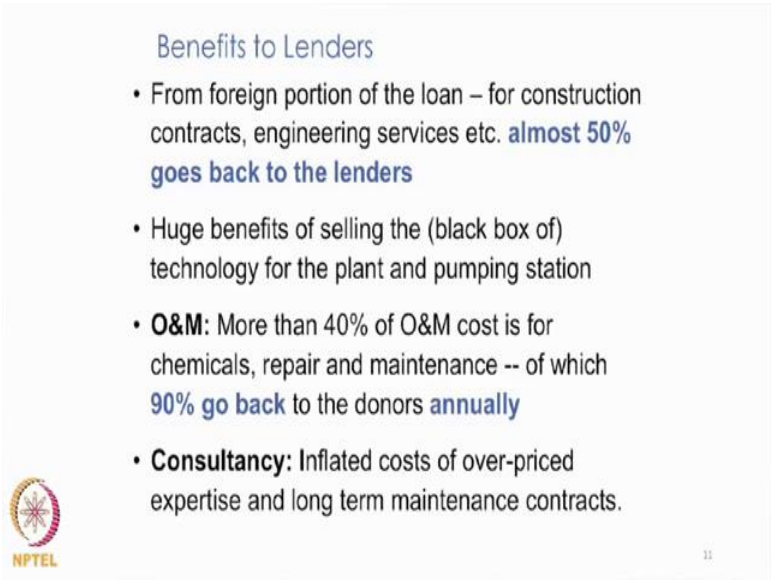

Because that is the for a; for a lender it is very good, isn't it; as the scale of the loan goes up is good for the lender. So, from foreign portion of the loan, for construction contracts, engineering services almost 50 percent goes back to the lenders.

Huge benefits of sending the black box of technology for the plant in pumping station; the technology is not kind of you know it comes as a black box, it is not explain what it is so that your expertise also can come along with that. And then huge benefits then the operation and maintenance more than 40 percent of the O and M costs for chemicals repair and maintenance, 90 percent goes back to the donors annually; so, if a very dependent kind of a technology where chemicals and all have to come from there.

Consultancy, we found that it is a very inflated you know consultancy expertise that is being charged in the project which we will come in the next project also.

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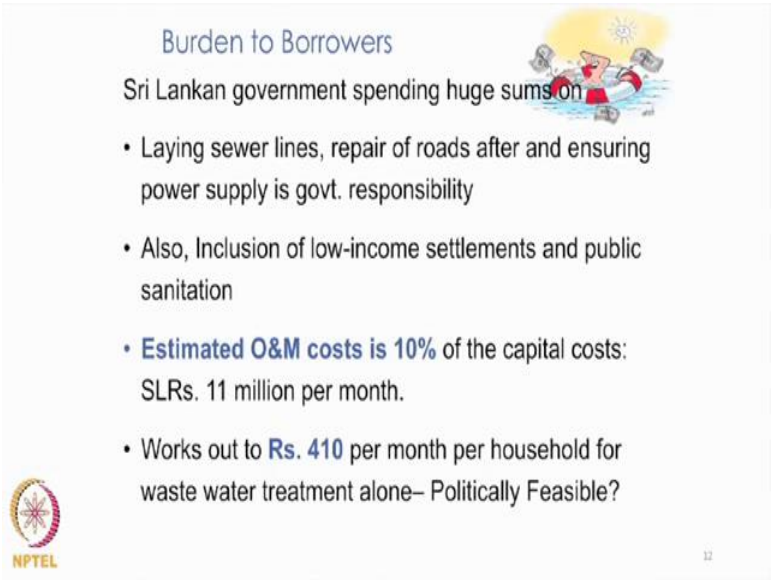

And then what are the burden to the borrowers, when you look at the burden the laying a sewer lines repair of roads and you know kind of ensuring power supply; all these comes into the government. And Kandy this like any of our city, narrow roads and you know not planned it is all haphazard roads and things like that. You know normally in the original imagination of European industrial city; it is a very planned city; so your sewer lines, your water lines all these can be planned; so here that is a problem.

Then inclusion of low income settlements which is actually comes to 40 percent in the case of Kandy; that is the responsibility of the government. Because the project funds the assignment take care of that and 10 percent of the capital cost is O and M cost; that is kind of 11 million per month, that is also the responsibility of the government. And these all works out to be 410 per month; even water supply we want kind of look at that.

So, my student worked on this in this aspect actually you know what is the kind of you know a tariff that should be then fixed for this. And then actually found that you know it is not politically feasible, then the government is to subsidize that also. Then we found that you know there is a overpriced foreign expertise that is going to manage the project. And we have a you know like Nehru you know; they also have you know kind of tall leaders at a time. And it was all kind of you know we were all trying from 50s and 60s to develop these public sector; you know we our own expertise for design, implementation everything.

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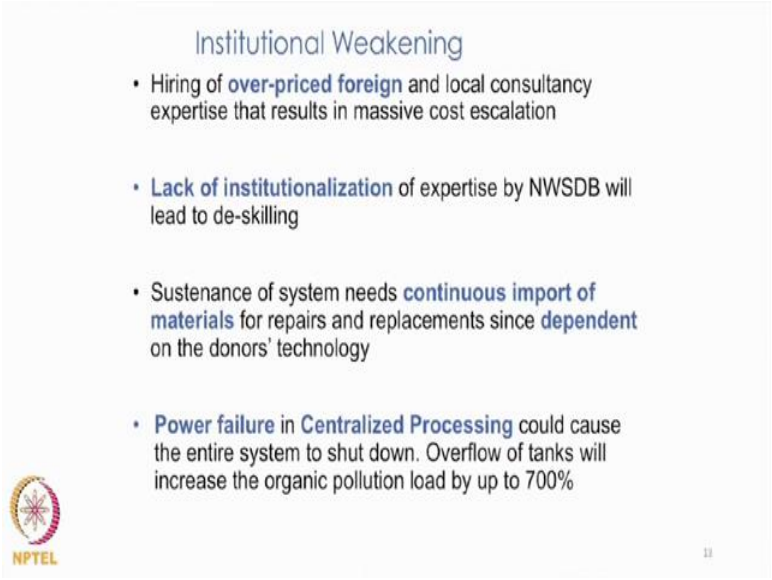

But you know this; so then there is a lack of institutionalization of expertise in this project; that means, whatever the engineers that we have they; they will not have much to do these kinds of big projects come in. Then continuous import of materials and expertise dependence on the donors and then the most curious thing is that the end of the pipe solution; you actually bring all the pollution in Kandy to one point.

So, and then there should be continuous you know running of this whole machinery and Sri Lanka is like us where we have 8 to 10 hours of power cut maybe. And in that case the pollution in the Mahaweli river increase as 700 percent because otherwise it is going to different streams and you know ground water and wetlands and things like that. Now you centralize that into Kandy river in the Mahaweli river which is actually; so you know, so whatever you kind of originally imagine is going in the opposite direction. So, this is the problem with the end of the pipe solution that I was telling yesterday, where you centralized your everything together.

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Now, let us come in Trivandrum; so after this we had the Ganga basin project where I looked at many of the kind of UP, Bihar class 1 and class 2 cities; same kind of story. And then I found them in my own city Trivandrum there was a something happening from 2014-15; you know an STPK; so we did the case study of that.

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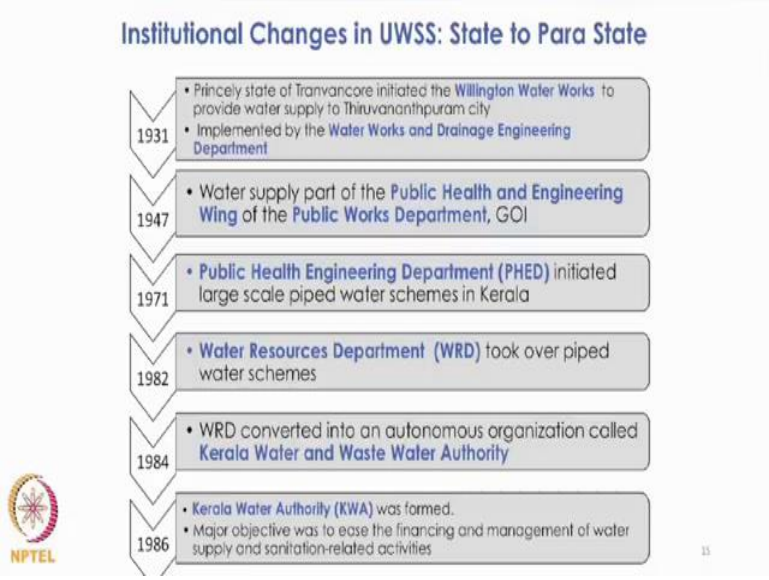

There is also interesting transition you know from. So, this is city which actually got water supply in 1931; one of the earlier cities you know like one of the first 8 cities, which got water supply during the British period. And then there was a sewerage farm also like in 1930's; when water supply came sewerage farm also came. So, all the all the waste water used to come to a farm, where they use to, kind of, grow fodderthere.

And then 1947 Public Health Engineering Department or the Public Works Department began became PHED in 1971. And this is also Neelam's thesis has very well brought that out; you know the how the kind of imagination of sanitation changed by the Government of India over a period of time. So, in 1970s, 1950 to 70s; it is what public health and slowly by 1980s; it became water resources development and infrastructure building after 1990s.

So, it become an infrastructure sector which has to get loan and infrastructure has to be developed and the earlier one was more social and public here. So, that shift also it is one of the major shifts that happened in policy. 82 water resources department, 84 it was turn into Kerala Water and Waste Water Authority. And then in 1986 Kerala Water Authority; that means, you know from government to para-state. So, that can attract more loans with one World Bank loan, it became a parastate agency so that can attract a lot of foreign funding.

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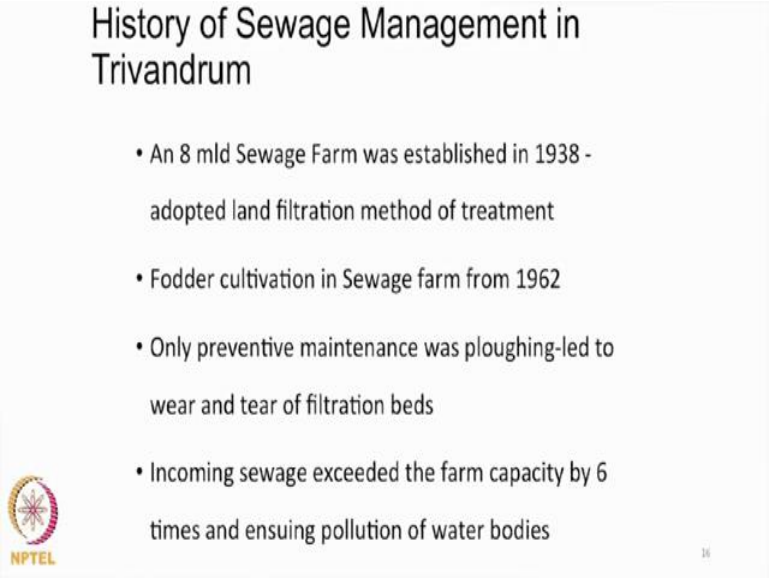

I told you about this an 8 MLD sewage farm was there. So, it is actually sustainable utilization of the waste water of the city where fodder was made. And the entire you know kind of fodder needs of the cattle population was met by this people use to come there collect the fodder and give it to and even Kerala agricultural university farm was being kind of fed through this one.

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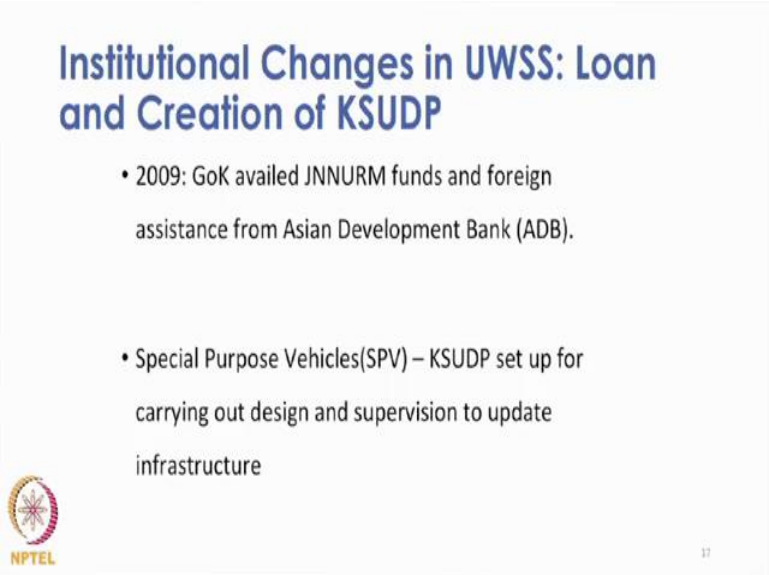

And in, but slowly the system deteriorated also because the supply increase. So, by 2009 the Government of Kerala went for a ADB loan and a JNNURM loan. So, when those

loans come in you what you says that you know; you ring fence that funding. You build a fence over that funding that that fund will never be utilized for anything any other purpose because otherwise it goes into the kind of black hole of the government machinery.

So, to avoid that what you do is you ring fence and you make a SPV; Special Purpose Vehicle which will actually be done only for this purpose. So, this SPV was called KSUDP; Kerala State Urban Development Project; so they were responsible for this.

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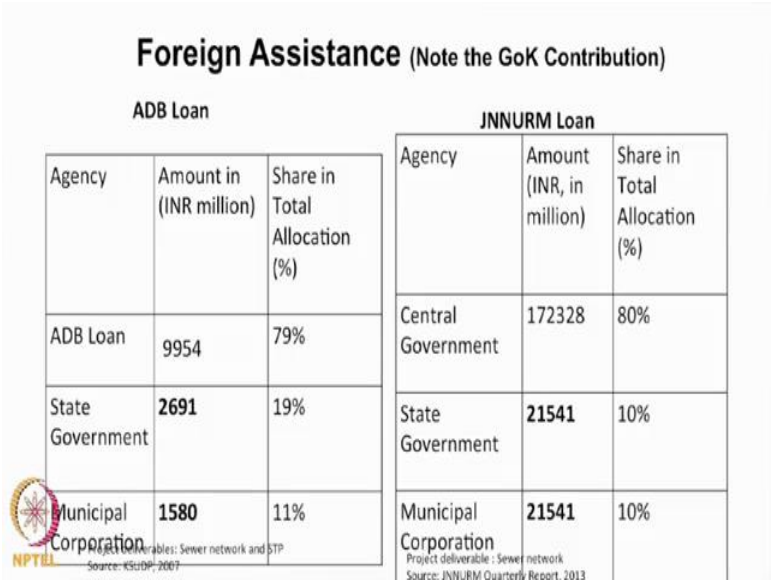

And then we just looked at you know ADP loan was the amount of the loan was 9954 million rupees means 70 nine percent of this. And the state governments share was you know twenty percent of that that is 2691. And the municipal corporation that to give 11 percent that is 1580 million dollars; that means, you know 30 percent of the government funding alone is a huge cost.

And, JNNURM is much words; even the even the 20 percent of the loans come to more than 43 thousand million rupees to get something like 1 lakh 72; 1.72 million means that is you know I do not know the numbers you can kind of look at that you know. But the point is that you know this is a huge amount and this is a huge amount. So, if our government is actually spending it; is there a better way to kind of spend it is the question that we can ask.

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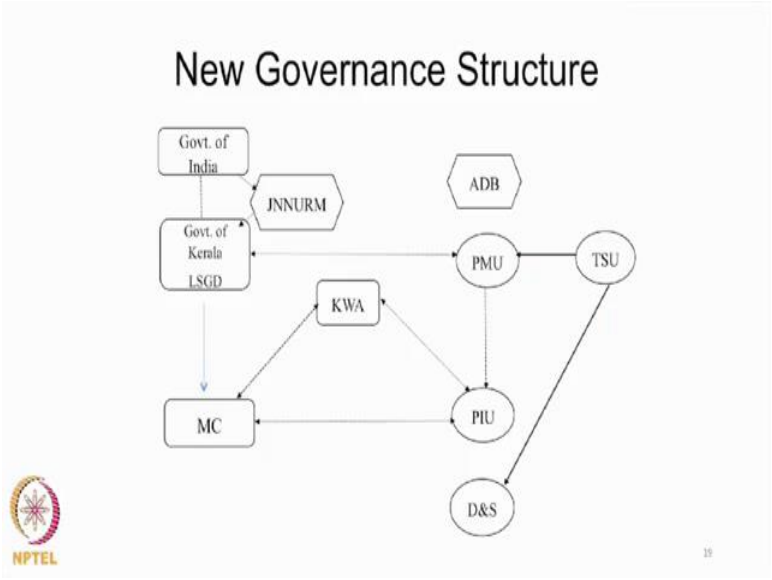

The new governance structure, here Government of India, with gets the JNNURM loan; it comes to the Local Self Government Department of the; of Government of Kerala and then it comes to municipal corporation. Because according to decentralization Municipal Corporation is the nodal agency for sanitation.

ADB loan also its like that and both these come to a project management unit; that is KSUDP. And then there is a technical support unit which is set up by one Japanese company and an American company. So, these two companies you know came together and they were the technical unit, where you know you are an engineers from those.

And then there is something called the project implementation unit which actually; so this was in two corporations and three panchayats. So, each one of them will have a project implementation unit and then you something called the design service unit. We found you know then we found that you know this is actually the poor here; you if you have any can you kind of imagine of who will be here. These are retired engineers of Kerala water authority because you know they know how the system works isn't it?

Student: Yeah.

They are the best people who we know over the last 30 years and they made a complete parallel structure with this. And Kerala water authority which has all the expertise is completely marginalized from this whole team. And the retired engineers are happy

because they get a pension and they get a some kind of a small consultancy and they have recruited you know kind of young engineers also you know kind of run around.

So, then what would be the problem here? So municipality does not know what is happening and they are supposed to be responsible for this.

Student: Ok.

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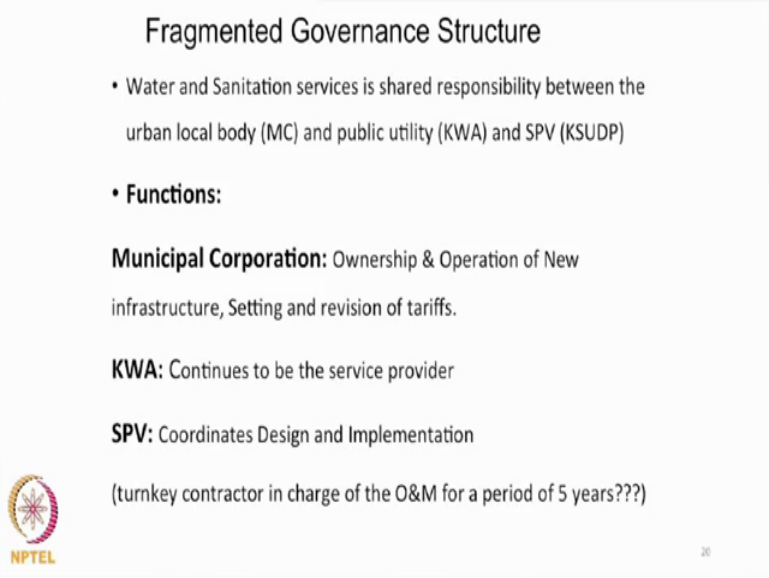

So, let us see what is that? So, this is the fragmented governance the; the water sanitation services is shared by Municipal Corporation, KWA and SPV. Because KWA still has to be there because they are the technical provider and urban local body owns the whole infrastructure and SPV coordinates design and implementation. And then they have a company; it is a turnkey contractor who will do the operation maintenance for the first 5 years and you know in first 5 years nothing dramatic happened after the devilling.

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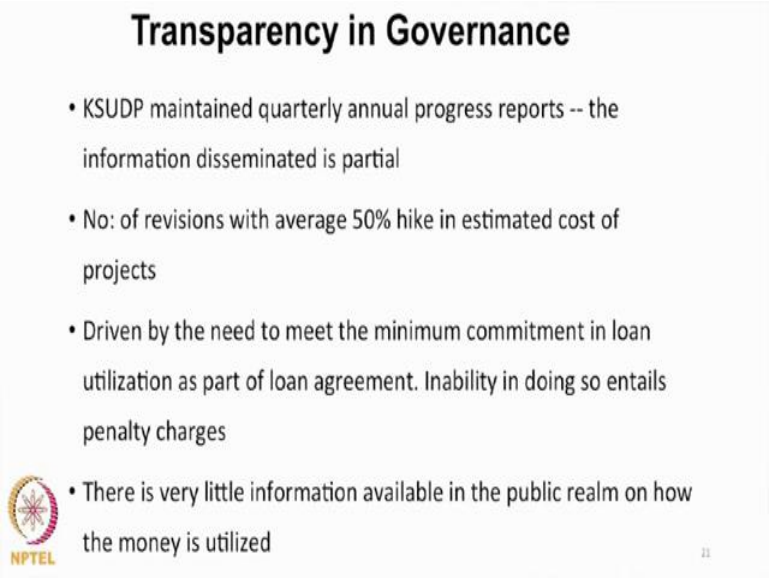

We found that you know the KSUDP actually maintains their accounts and all well, but it is not public. Second you know the number of revisions with the average 50 percent hike in, but things have happened in the project.

Then there is another interesting thing called minimum commitment of the loan. So, if you have a 100 crore loan in the first year you should be a spending 20 percent, second year will be spending 30 to 40 percent; ratio may varying, but there is a minimum commitment that you should be doing that, if you do not do that you invite a penalty; so, you have to quickly spend it. So, you will spend it on somethings you understand. So, as a spending spree and these are blotted projects also; so, you have to spend some where otherwise you will invite a penalty. That is another major; these are clauses that people do not know.

Student: Penalty.

Penalty is you know it is like you know you will have to pay some more money in that; they will they will take away some money. Like 50 crore will be taken as penalty from the next loan. You know one of my researchers so say actually its spending case UDP, a long time you know kind of reading the small print that is there that is when we identified all these and she post as an intern otherwise they will not (Refer Time: 30:05).

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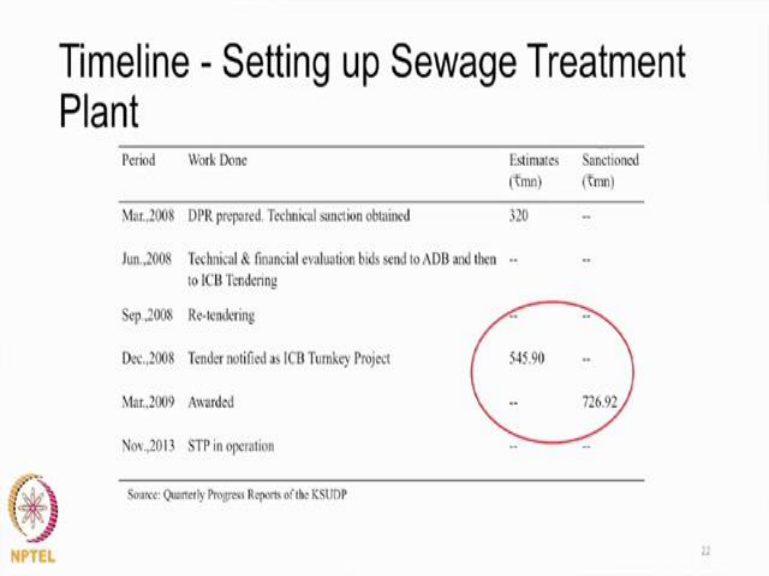

So, this is one example of the timeline you know. So, March 2008 with the detailed project report was prepared. June the technical financial evaluation bids to ADB was done. So, September it was re tendered and December; the tender notified was 545 you know kind of billion. And then when, so in 3 months where the above it was awarded there was a more than 50 percent hike in and this people does not know you know.

Actually up to this people will know the tender not biggest and all and this happens under hand. Even this can happen in Kerala water authority I am not telling that it is only because of a foreign fund project that is happening. But here the it is; in a much more higher scale; why you need an SPV is because you do not need to follow the procedures of the government system; in which you can be caught at some point of time; here this is all kind of you know understood and suddenly kind of you know. So, only you know this both called everybody loves a good drought.

Student: Yeah

Is it from a P Sainath; so, I found that everybody loves a good project who are all involved in this they were all get benefited. Even the engineers in Kerala water authority are not complaining because you know they finally, have to sign. The design and all are done by a consultant, but the signing is done by them then you know what happens. So, earlier they have to design and you know they have to do all that. And curious thing is

that you know the Kerala water authority MD is no longer you know it was an engineer all the time, then it became IAS, now it is IA and as some AGs will come there.

Because big things are happening at accounting big foreign fund and projects are happening. So, you need you need the; so one of my students work is that you know how public water utilities how the engineering you know; how the engineers are losing and how it is kind of becoming you know more kind of accountant oriented and things like that. So, this is the institutionalization and that is why engineering education has to quickly improve and you know kind of answer to these demands from bellowers.

Because the design conduct it is all gone. So, that is why the in this you know we are trying to kind of make them design; you know the civil engineers knows.

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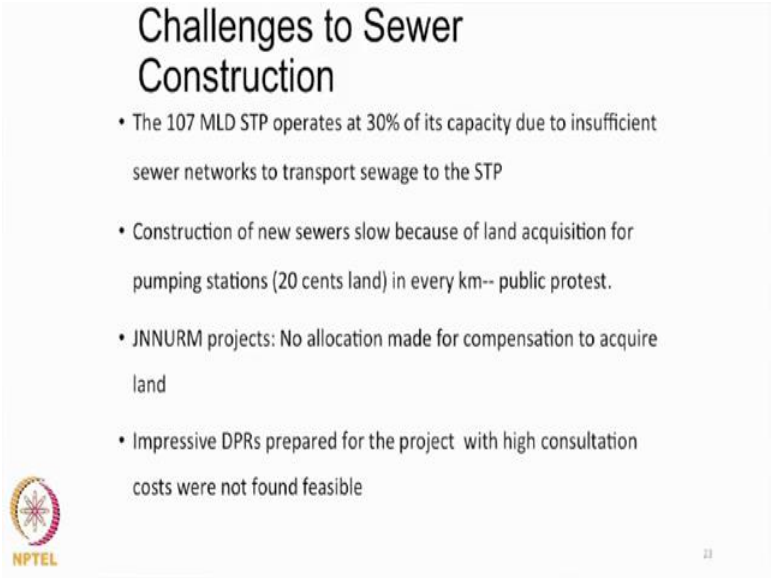

So, this is one thing and this give 107 MLD; 107 million liters per day capacity project, but your sewer capacity is only 30 percent. It is just hardly improved 3 to 4 percent and this was done by the Maharaja in 1936. So, after this big project, the sewer capacity has increased only 3 4.

So, only the plan is there and this other one. So, we thought why it is you know; then we found that you know one I what I told you about the Kandy system our roads are not you know then, but in the every kilometer because it this is by gravitation. So, in 1 kilometer you will get into a head of something like 1 meter or more than that; then you need to

pump it. So; that means, you need 20 cents of land every kilometer has pumping station; which then where you get in you know our kinds of cities. So, this is the major challenge you know we are not ideologically against centralization or anything.

There are huge practical challenges in you know in Alleppey, you will not get a head at all because it is a plain thing. So, we need much more kind of your pumping. So, pumping is not only energy, but it is only; it is also a land. So, this is on the huge constraints of the centralized system and then in JNNURM very strangely no allocation for land for buying land. So, where do you get that land? Then, so you have very high you know impressive detailed project reports cannot be implemented.

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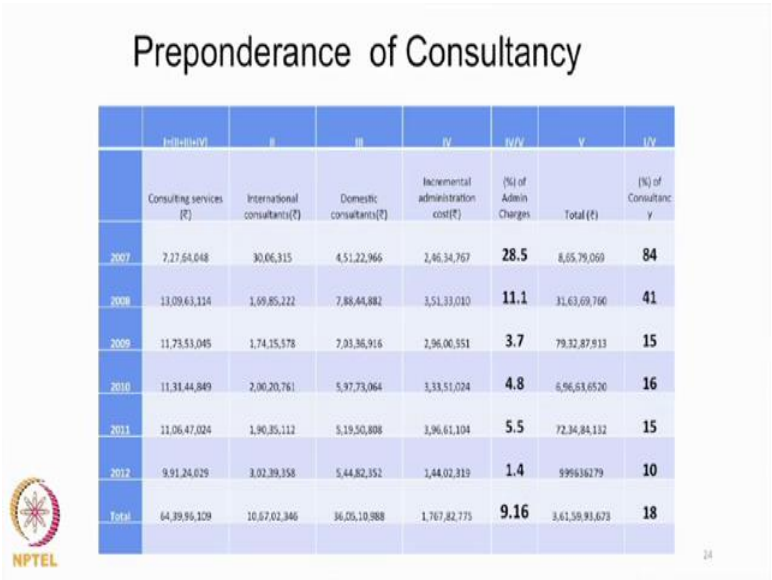

This is another curious thing you know; it is the preponderance of consultancy. We found that this is the percentage of consultancy over a period of time. So, it is first year itself 84 percent is spend on consultancy, the Japanese will come and take away the consultancy in the first year itself; then it is your engineers who can that is why we can need retired engineers to kind of come and design the whole thing.

So, you know; so it is like the Kandy case; you have a very interesting you know technology dependence it is a old thing. We thought that in 50s and 60s; we thought that this technology transfer is a is creating dependence and you know we thought, it is a old debate know.

It is very new through the funding through the neo liberal funding that is happening now; so that is that is the first thing. Second is you know, so there is a zero percent interest rates in Japan you know that. So, even have soft loan invite something like 2 percent for the state government and then you have a central government there who is a money lender who gets a profit in that. So, at the end of the day it is not a soft loan for Government of India or to the state government.

Central government gets the 2 percent; I think you all know how much the state government you will get it for. But for the Japanese Government is actually the machinery or as a country it is the kind of you know their own machinery that is coming their own expertise that is coming. Bullet train wonderful you can you know kind of run like a bullet, but the point is you know everything comes from there. Your bogies, your rail tracks you know everything is constructed there and it is only kind of you know put here.

So, you know you; you just look at the kind of you know flow of money 1880; Dadabhai Naoroji wrote about drain theory how the British develops us. You know what we are paying for the railways what you know; what is the kind of drain that is happening and so we do you think that we are independent now. So, I think this is where you know we have to really think on our own kind of feet which most of us does not have a shoe also, we say think that you know you think on our own shoes isn't it? 90 percent does not have shoes also in this country. So, we have to really think about you know what is actually important for us you know; so, this is it.

So, the first year say eighty four percent and the on an average is income something like 18 percent is the kind of foreign element or the consultancy that is happening.

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So, this is the kind of observations that we have; one there is a financial crisis for the KWA with which we have to really think about why and then lack of planning and foresight organization, growing population. So, there is no kind of technical imagination of the next 20 years or something how we should move for the; for our own public water utility.

So, it is not any foreign for persons problem; it is our own problem that we are not kind of thinking with foresight. Second is you know does it invites soft loans with unequal and opaque terms, then we have global standards of infrastructure. Like what she was telling you know like the SLBs; you know the service level benchmarks where all the all; the population have to be connected through sewers very good. London has done that, Paris was done that, Trivandrum should do it is the kind of you know; so, that is the global imagination of that.

Needs to deskilling of Kerala water authority engineers, plans done mostly through retired personnel and international consultancy cornering bulk of the consultancy. So, you know the context our context has challenges in accommodating global bodies all of you agree?

Student: Yes.

This global imagination our context has a problem in accepting that; can we think about what our context is and then plan? That is a challenge then we have to you know can them ask. So, fit in models to context or conceive models that suit the context that is question that we are asking.

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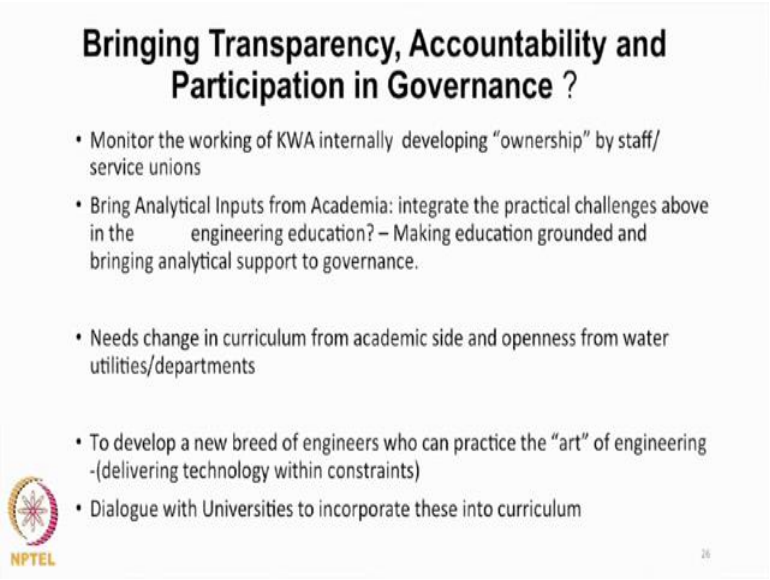

These are some suggestions like you know how to bring in transparency, accountability and participation in governance. Yeah how to bring in more ownership by the staff; staff unions is there a process to kind of do that? Bring analytical inputs from the academia how much can engineering education you know kind of feed into practice and how much can the academia learn from practice?

So, can there be a synergy that is been brought up so that we have contextual education also that has to be out of your engineering college you can plan the infrastructure also familiar. So, you do not need to have foreign consultancy committee and once this (Refer Time: 39:42) engineers are retired they have a big back from there; deinstitutionalization and that is when they can come and take over.

Because the big technologies can be handled only by the mistake; so in Cochabamba for example, you know in Argentina and many North American country; this is happening Many french, companies have come and they took over, but the problem is that you know it was too much of hike and so people have reacted also. So, need to change curriculum from academic side and openness from you know kind of water utilities,

develop a new breed of engineers who can practice the art of engineering. We have the science of engineering, how to talk with people, how to design from below you know those kinds of things.

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Then dialogue with universities incorporate these into category; so those are the things. So, my last slide we can kind of regroup all these things. So, that is a global policy discourse and then infrastructure discourse which actually is very global which comes to international financial institutions and this come become their vision documents this comes to government of India. And then this also become funding conditionalities and this and then we have old state public utilities which are kind of bypassed.

Because the funds have to come to government local bodies through the international financial institutions also need that because they do not need to deal with the big state the big public water utility where there a engineers. So, if that is not there then it can happen through SPBs; that is where the SPBs. So, national water policy also will reflect all these and then you have you know water engineers field level bureaucrats here; who are actually bypassed. What happens to that you have been expert provider that is the big consultants who directly comes to the local body.

You understood this? There is a there is a global discourse that global discourse gives us global finance and the global finance give us global consultants; they bypass the central and state government and come directly to the municipality, who does not have any

capacity. So, since there is no capacity there is a parallel body that is being made; that means, this government institutions get de institutionalized de capacitate.

And so the point is now urban local bodies are they need to create plan that the assessment, technology selection, institutional options, implementation monitoring and regulation; all this have to be done by the urban local body. So, the challenge that we are prosing from this project is that can academic institutions may knowledge providers? And local NGOs and residents associations and all can this realm work with these people to help them kind of get into this? So, there are; so local actions how can local actions be there?

So, when you choose this actually there is no model for that how do you do it. So, that is our protocol and it is an evolving protocol. So, it is very important that you know; so our this exercise is very important to kind of to find their protocol.

Thank you.