Sustainable and Affordable Sanitation Solutions for Small Towns
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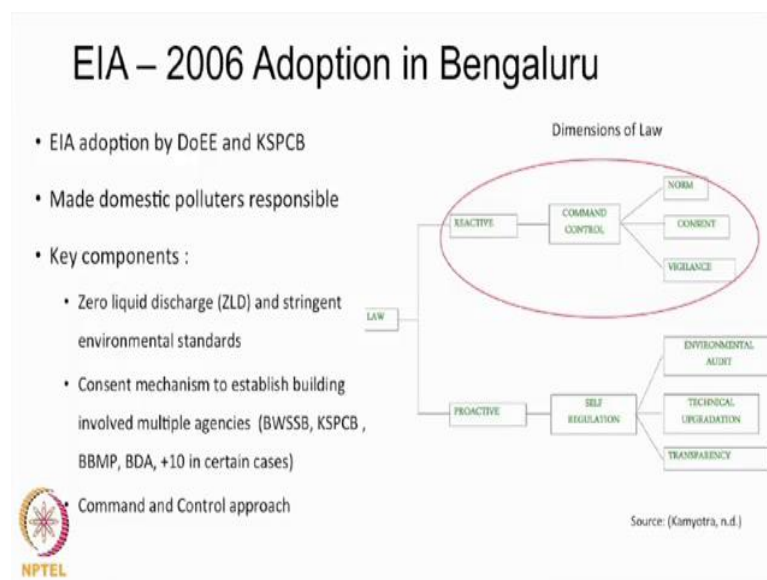**Indian Institute of Technology, Bombay**

Lecture - 07
Environmental Impact Assessment 2006 and National Urban Sanitation Plan

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So, now I am going to talk about EIA case in Bengaluru.

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So, environmental impact assessment notification in the 2006 version, it was adopted by Department of Environment Ecology and Environment by the Karnataka State Pollution Control Board, it made domestic polluters responsible. So, under that whenever you are proposing a building or a construction establishment either commercial or technopark or residential, you have to take a consent which is known as consent mechanism.

You have to take a consent from different authorities to establish that particular establishment, and in that consent you have to clearly state that how you are going to manage your pollution; solid waste, liquid waste and if you are producing any air pollution. So, that was there in the building plan approval. Earlier it was not part of building plan approval. So, the key components within domestic realm were that zero liquid discharge each and every property establishment has to maintain zero liquid discharge. And to maintain the zero liquid discharge ,to motivate people to use recycle to recycle the treated sewage they made environmental standards very stringent`Its like below 10 milligram per litre of BOD it is like it is if it is clean then people going to be use it for their toilets and for flushing or for recycling in their gardens. So, consent mechanism involves lot of agency sometimes it can go up to 10 to 15 multiple agency. So, they have to take approval from Karnataka State Pollution Control Board, Development Authorities, BBMP which is their municipality and this particular example of EIA actually comes under command and control approach as you see, are you able to see this diagram?

Student: Yes madam.

So, there are different dimensions of law, most of the laws in India they fall under reactive category as and where they want to decide the norms, we want to decide the standards and we want to.. it is kind of a vigilance we its it does not promote, you know,proactive actions, it just you regulate something you are just regulating you are just holding a stick you do this thing you do this thing. So, which does not give that sense of ownership that you want to do something for ,you know, your country or your state or your city. It is always comes from the top down approach that we think that you need to maintain your water bodies ok. So, this EIA regulation comes under reactive type of law which have which is a command and control approach and it follows certain norms consent and standards.

So, the adoption of EIA by Bengaluru chose to adopt this particular EIA, there was a twofold motive behind this thing. Bangalore was experiencing lot of urbanization and unplanned urbanization because of IT sector, because of other kind of a employment opportunities that it was providing and because of that the Bangalore water sewerage board, that was not able to provide water and wastewater services to the peripheral region. That lead to untreated waste going into the storm drains and the lakes that the Bangalore has.

So, that kind of to reduce the burden on BWSSB which is Bangalore Water and Sewage Board Karnataka State Pollution Control Board thought of implementing this EIA 2006. Under this certain properties of 20000 square metre of build up area they were supposed to have their own solid waste management unit and liquid waste management unit. This led to a mixed model as I said. So, in Bangalore currently at least in 2015, they had centralised systems 14 and decentralized system about 3000 functional unit. The number is higher when you go to the records, there around 6000 units decentralized units.

But out of that only 3000 are currently operational or functional or maintaining certain kind of standards. This I have already spoken about that how it is to deal with the growing population, geographical expansion and burden on the current water supply and sanitation infrastructure.

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So, when I studied this case I came to understand that it is achieving somewhat better operational efficiency with respect to pollution treatment. So, I compare centralised systems with the decentralized system What I came to know is that centralised systems are not able to achieve they are not even achieve able to function at a 25 percent, but they are supposed to function while decentralised systems were able to function achieve some kind of an efficiency.
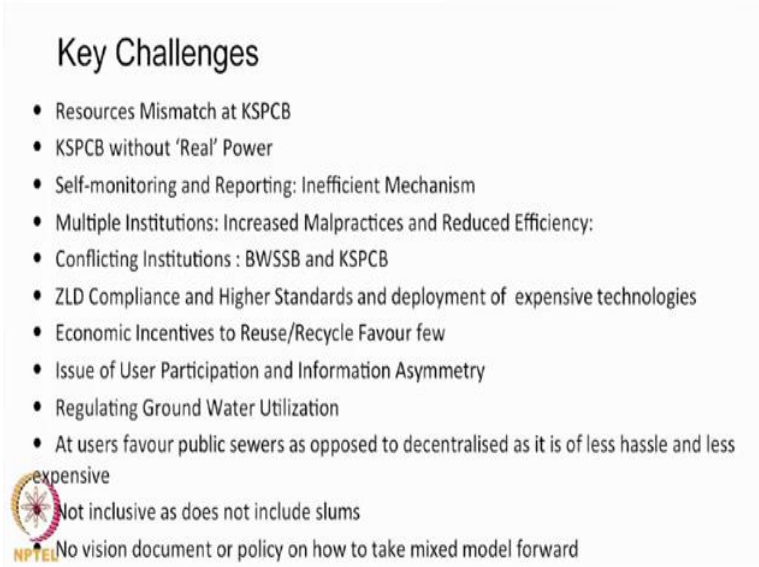
Secondly, they were reaching to un served population that which was there in the peripheral region, centralised systems were not reaching. So, at least that they were addressing that particular region. Thirdly it reduce certain burden on public utility. Now BWSSB does not have to ,you know, reach to these areas. So, they can focus on other more important aspects and there was some degree of recycle and reuse was happening for a larger units like big technoparks they are there in Bangalore peripheral region and for them there is no BWSSB supply there is no public water supply or even if it is there; it is very limited.

So, they make use of this treated sewage and they kind of at least use it for non portable purposes like flushing and irrigating and irrigation purposes. So, for them this model was useful for them this model was working even though it was slightly expensive for them. Because as I discussed, yesterday sanitation tax is very low in Indian cities most of the

Indian cities. So, at least even though they were paying extra amount under this model they were able to recover it through recycling the sewage.

So, this was useful for the bigger in establishment, but not for the smaller establishments.

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Key Challenges

- Resources Mismatch at KSPCB
- KSPCB without 'Real' Power
- Self-monitoring and Reporting: Inefficient Mechanism
- Multiple Institutions: Increased Malpractices and Reduced Efficiency:
- Conflicting Institutions : BWSSB and KSPCB
- ZLD Compliance and Higher Standards and deployment of expensive technologies
- Economic Incentives to Reuse/Recycle Favour few
- Issue of User Participation and Information Asymmetry
- Regulating Ground Water Utilization
- At users favour public sewers as opposed to decentralised as it is of less hassle and less expensive
- Not inclusive as does not include slums
- No vision document or policy on how to take mixed model forward

So, these were the key challenges as I mentioned yesterday when you have so, many decentralised units, you need to, government need to have that kind of resources to monitor so, many such kind of units. So, KSPCB is currently dealing with that resource mismatching has 6000 units and if you go to Bangalore I think Bangalore has 4 regional offices in Karnataka state in Bangalore itself and those regional offices has one environmental engineer, senior environmental engineer, they are supposed to frequently visit these units decentralize unit at least monthly once. they are not even able to do that.

That is a kind of a crunch mismatch is there between the resources required and resources they have and KSPCB does not have any real power and why I say so? So, KSPCB at most or any State Pollution Control Board at most, what they can do? They can file a criminal case against the who is who whoever is a defaulter in pollution management. So, what they did was they filed a case, criminal case against BWSSB which is another government agency. So, they filed a criminal case against BWSSB there are 18 cases running since 2006 and nothing has been done after those cases. So, the maximum they can do is just ,file a criminal case and second thing what they can do which is kind of understood as a

administrative power they can ask local authorities local utilities to cut electricity or to cut water supply to certain industries or commercial properties.

But these two measures are not applicable for domestic use because water and electricity is considered as a basic services. So, you can't cut these two services if a domestic person or domestic like polluters defaulter then you cannot do these things. And then they have different measurements like I would like to draw your attention on the ZLD compliance.

The zero liquid discharge was not working as I said for smaller units. It was very expensive for them to manage the residential units they had to because as I said it this was a command and control approach. So, they had to establish these systems otherwise building plan approval was not possible. So, they made the capital investment in these units, but ultimately when it comes to maintaining and you know recovering the O and M cost they were not able to do. So, most of these system 6000 were there only 3000 are working and the out of these 3000 only few are able to recycle or do the zero liquid discharge because the demand is very low for the recyclable water.

They are not even allowed to sell to another party so, that they can make some money out of it. So, these are the certain policy recommendations that people are now making that at least allow us to sell our treated sewage. So, that we can make some money out of it and also this model does not includes slums. So, centralised model anyway slums are not part of it, because slums do not have a land tenure. So, you can get connected to centralised system only if you have a kind of a land tenure like if only if you own certain land how so, the connection can happen only then and; obviously, decentralized systems are also not meant for slums.

So, slums were anyways part are not part of centralised system or decentralised system. So, poor were anyways excluded from either the two models. So, if you have any question I can take one or two questions regarding this case study then otherwise I can move to next case study.

Question :
## Why Operation and Maintenance (O&M) cost is high?

NPTEL

So, with this case what has happened that so, at the point that I have missed here is this point the information asymmetry. So, what has happened that buildings are made by builders and then even the such kind of systems like solid waste management system or liquid waste management system, these are established by the builders. The buyer's potential buyers like me or you if we if we want to buy a flat in that particular building complex we are not aware of the expected or potential cost ok. So, when it comes to our hands building operator builders actually builders are supposed to maintain these system for 5 years such kind of solid waste and liquid waste system. After 5 years they are supposed to handover the system to resident welfare association.

But because we are not part of the decision making of which technology is appropriate, which technology do we want, how much do we you know can we really pay the O&M cost for these technologies because we are not part of that selection process we are not aware of that. So, ultimately when it comes to us, we do not want to manage that its too much of a burden for them in terms of you know it is better to pay a very minimal of sanitation tax to the government than maintaining a entire facility on our own, it is very expensive for them at least for the smaller residential units or smaller units.

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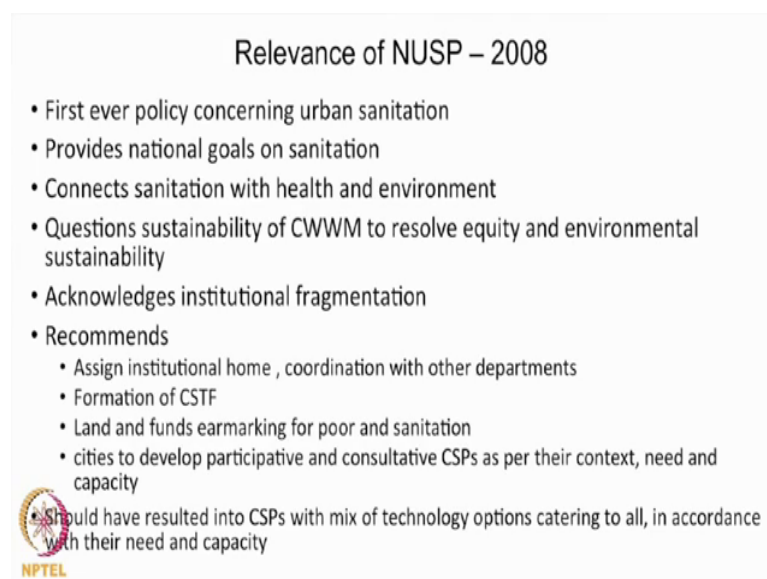
Now I am going to talk about national urban sanitation policy, why this policy is important is that it is a first ever policy that concerns urban sanitation.

Before that, before 2008, we never had a any policy concerning urban sanitation and it provides national goals on sanitation; that means, it links the SDGs and NDGs with the national level goals, it connects sanitation with health and environment which I told you that sanitation was used to be part of health. And in 2008 NUSP again made that connect the sanitation should be linked with the public health then only you will be able to improve

sanitation goals or achieve sanitation goals it questioned the sustainability of centralised systems that why as I said the centralised system cannot connect to the slums because they do not have land tenure.

Centralised systems are too expensive to be managed by smaller cities. As I mentioned yesterday they cannot have they do not have the required capital and the capacities. So, centralised systems are actually failed to resolve equity issues and environmental sustainability issues. So, NUSP questions the sustainability of such centralised imagination in context to sanitation and then it recommends certain things which cities should adopt over a period of time. It said that its currently sanitation does not have any institutional home.

So, when you talk about sanitation, sanitation does not fit into any of the categories. Rural sanitation has a ministry urban sanitation does not have any ministry; it comes under some urban development this thing. And even ULBs if you go at the state level in some cities ULBs are managing sanitation, in some states its sewerage board that are managing ,you know, sanitation.

So, it is like different components of sanitations are being managed by different agencies even at the state and city level. Slum sanitation is being managed by a slum development board; cities are being managed by water sewerage board. So, they wanted that who is ultimately responsible for sanitation. So, anyway we said that you want to have an institutional home and it said that ULB should be the nodal agency to manage sanitation. And it said that you need to establish city sanitation task force. So, they understood that sanitation policies or sanitation solution should be developed bottom up rather than top down.

Because when you go top down you just go for the centralised imagination and each city as you are going to I think today we are going to talk about that Alleppey itself has a very heterogeneous pockets. So, there are certain pockets which has higher sanitation infrastructure and good practises there are certain pockets, where sanitation infrastructure is very poor and the practices are very poor. So, at city level you need to adopt rather than one size fit all solution which is centralised solution, you need to have heterodox model of sanitation where you choose technical options based on the those heterogeneous pockets.

So, that is how the NUSP said that you have to make city sanitation plans according to your need, according to whatever your the pockets are there and according to your capacity which is your institutional capacity, your technical capacity and your financial capacity otherwise how it happens is that each city irrespective of their finances they want to adopt centralised systems. So, NUSP said that you have to adopt different models according to your need and capacity. So, then what I did was to understand this NUSP recommendation ultimately you know kind of translated on ground in with respect to cities. So, I studied few city sanitation plans.

ah This process started in 2011 we have 134 city sanitation plans and out of that I could manage to lay my hands are only 31 CSPs because others were not available in public domain and out of that I studied around 27 CSPs and I studied these CSPs to understand that how many recommendations of NUSPs are actually are part of CSPs.

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So, what I understood or what I learned from the this study is that CSP actually all the CSPs they adopt a centralised system. The CSPs were very bad documents all these CSPs were more of a ,what do you say project reports rather than a plan. They were not plans they were just projects reports made by some consultant drawing upon secondary data whatever old data 2011, 2010, 2008 data and they sat; therefore, 2 months and made a CSP. So, there was no participation there was no consultation workshop so, it was just a formality to draw funds from the centre and the state.

So, CSP would not actually participative documents at all. So, that is what we understood over there and, but then I wanted to understand that why cities adopted centralised option why they did not go for the decentralised option even when there was a opportunity for them to plan. So, what I understood was that there was policy centralisation I do not know how many of you understand this thing, but when you say policy centralisation it means that, policy is being affected by the top down model they were at different steps CSP formation CSP content was affected by other actors.

Not just the ULBs. So, like first thing was that it was a consultant driven process. So, even though ULBs were supposed to develop these CSPs the consultants were decided at MOUD level. ULBs were not even allowed to choose their own consultant for developing CSPs. So, there was the policy centralisation happening there. So, it was a chunk kind of a thing where MOUD gave contract top one big agency and MOU and that particular agency had to establish a CSPs for 21 cities. So, when you see when you compare all these CSPs, all CSPs will look copy paste documents

Only the name if cities changed or maybe certain the data is changed otherwise same language is there same everything is similar. So, it shows that how much consultant can sit for 2 months and can equally like can easily prepare 11 CSP in one go it was so, easy for them and then where is the you know participatory process there. And the second thing which they said was that why they did not adopt decentralise option? They said that we already have big money coming under JNNURM decentralization is you need small money small pockets, centralisation means that we will have big money which is already there with JNNURM why do we want to adopt decentralised options.

So, this was a second reason. Third reason was service level benchmarks; service level benchmarks have you heard of these service level benchmarks?

Student: Yes.

So, these are the service level benchmark that are given by a ministry of urban development in water supply and sewerage and solid waste management. So, these if you see these service level benchmarks they are they do not considered they are not based on city size or city population. These are based on that every city has to reach to 100 percent level of sewerage network, every city has to have 100 percent connection every city has to have 100 percent you know disposal rate, but when you see each city is very specific each

city has their own problems their own issues and own strengths, but this model actually advocates that every city has to have a one size fit all solution. So, when you compare these norms with the previous norms which was given by Zakira committee, which was given by CPH EEO which were given by nine 5 year plan those are very differential kind of standards in which they acknowledge that if is a city is of 1 lakh population they have to have only 70 LPCD water supply.

If the city is of bigger size they might want to have 120 LPCD. In this case every city has to have a 150 LPCD every city has to have you know 24 hours 7 of water supply every city has to have a 100 percent sewerage network. So, this differentiality and the concept that every city has their own problems or own needs own capacity that was not acknowledged in SLBs In case of liquid waste management there are type of standards that they are talking about they said that every city has to have a 100 percent sewerage network ok. But within that there are two things that that are there you can reach these 100 percent sewerage network either a centralised way or decentralized way.

But when I saw these when I review these CSPs most of the cities kind of ignored this factor that you can achieve 100 percent sewerage by combining both the model. So, there comes that even the cities they do not want to adopt decentralized model. So, it is not just the SLBs, it is just that they do not want to adopt decentralized model and what is what is promoting them or what is promoting pushing cities towards service level benchmarks of 100 percent, is the fact its SLBs are actually under 13th finance commission are linked to are linked to fund release.

So, when something is linked to fund release you have to show that you want to achieve 100 percent of everything because that is how you are going to get funds from the centre. If you are going to say oh I will just have decentralised system and then we will see how it works who is going to give you funds for that ok. So, this is one factor as she said that, there is an ambiguity in this SLBs and when there is ambiguous policy or the open policy or all inclusive policies, every actor can choose to interpret that particular policy the way they want.

So, the policy can swing either ways wherever you want its suitable thing. So, that is one thing which is there in the SLB implementation at city level. In Alibagh what we try to do it that, we try to develop sanitation zones I think he mentioned about that. So, in sanitation

zones you divide zones according to their infrastructure practices and future needs. So, that is how CSPs were expected to made, but that does not happen what they did they gave a very brief introduction data these are the status this is the problems and in the end oh we need so, many big projects that was the city sanitation plan which even I can do.

So, what is the need of having you know a participative institution like having a city sanitation task force, where you have representative from public health department from sanitation from solid waste. So, all these things were not reflected in any of the CSPs where there like you can clearly see the linkages between proposed solution and how it improves public health. So, you can see that these documents are just copy paste from one to another to second to third and just city name is changing and some this thing are changing data is changing.