School of Water Resources
Prof. Manoj Kumar Tiwari
Department of Civil engineering
Indian Institute of Technology, Kharagpur

Lecture -60
Pricing Waters

Hi friends and welcome back, so we have been talking about water economics and pricing. This week and last couple of lectures, we did talk about the economics related to water supply projects and more so ever like how do we estimate the cost of water supply projects? Now we are moving from cost towards the recovery aspect and we will be talking about pricing water in this particular class. So what we are going to discuss is the;

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Urban water pricing, water pricing for sustainability so how should we price water keeping the concept of sustainability in the mind and then we will be discussing about water pricing in context of Indian cities and we will discuss some key issues related to the urban water pricing in India.

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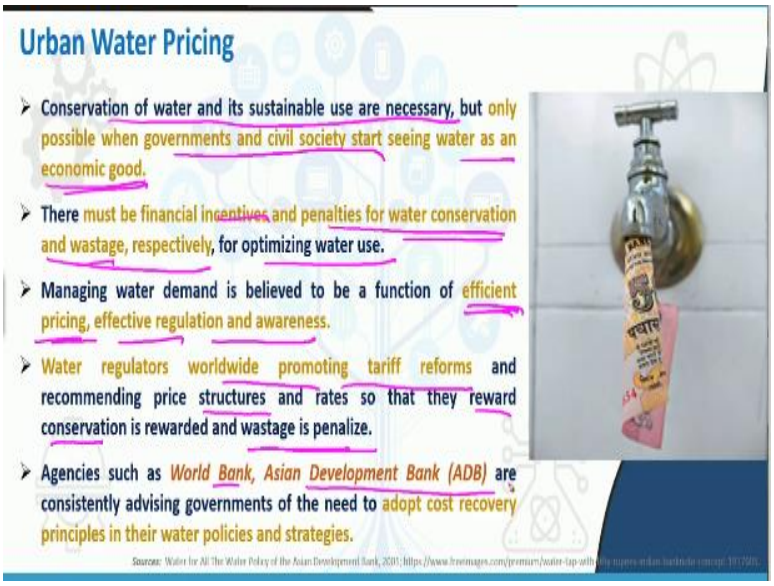

So when we talk about urban water pricing, essentially the idea is to recover the price for the services which is being provided. Now there are so many other aspects integrated along with this concept of urban water pricing. One thing that is like formally acknowledged by everyone that the conservation of water and it is sustainable uses are necessary and it is only possible when the government.

And civil society start seeing water as an economic good that is one of the major issues. Because many places or many people does not recognize water as economic good, they think that water is available for free should be available for free whereas in the Dublin principle also water has been like one of the 4 principle one of the most talked about principle in fact of the Dublin conference was that water should be recognized as a economic good.

And we cannot talk about the sustainable uses or conservation of water or saving water without realizing its economic value. So till time we consider water as a free it becomes very difficult and challenging to put the sum value of water into the mindset of people. So it is like the government as whether civil society has to start losing water as economic good then only will be basically we can take a step towards at least conservation of water and it is sustainable uses.

So there must be kind of financial incentives and penalties for water conservation and wastage.

So basically incentive for water conservation and penalty for water wastage and that might lead to the optimizing water uses now managing water demand is believed to be a function of the efficient pricing because you cannot manage demand without effective pricing. So you have to have of course effective regulation and awareness.

But efficient pricing is also one of the tools which is recognized worldwide for managing water demand. If you do not tag a price to the water people are not going to value it and then there is no control on the consumption. The water regulators worldwide kind of promote the tariff reforms and recommend price structures and rate that basically reward for conservation and wastage is penalized.

The agencies such as like World Bank or Asian Development Bank ADB are consistently advising governments of the need to adopt cost recovery principles in their water policies and strategies.

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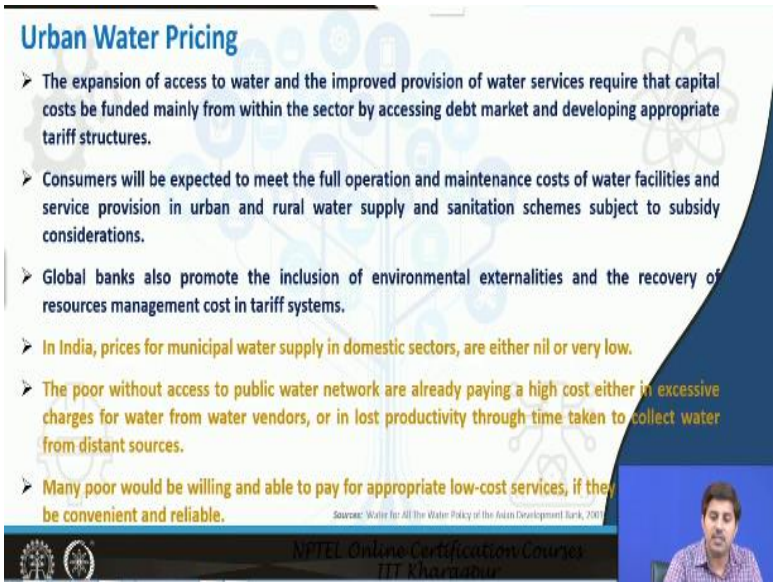

So they are forcing that you plan the cost recovery from the consumer and for the water supply projects now we discussed about how we cost water how do we do costing of the water projects in the earlier lectures. Now it is about the recovery of that and that can be achieved through the urban water pricing, further the expansion of the access to water and improved provision of water services also require capital cost.

And the particularly the like worldwide major agencies like World Bank ADB feels that this should be funded mainly from within the sector and it is not that like the government is providing fund all the time for expansion and in expanding the services of the water sector. So it has to come from within the sector should be able to recover the amount which is being invested in the sector through the appropriate tariff restructures then only it can financially sustain.

Consumers will be basically expected to meet the full operation and maintenance cost, so ideally like the tariff which is provided should be able to recover the full operation and maintenance cost of the water facilities as well as like they should see some they should seek some contribution in the capital cost of CaPEx as well however there should be like provision of subsidy considerations and these things might also be included particularly for the poor section of the society.

Global banks also promote the inclusion of environmental externalities and the recovery of resource management cost through the tariff system. Now in India the price of municipal water supplies in domestic sector are either nil or very low at most of the places. Now quite a few places are coming with a different kind of tariff models but earlier like in earlier ages it was just more and more or less flat price or no price at all.

Still many places in India many cities in India like majority of the places in the West Bengal in Delhi up to 20 kilo liter water is free so many other places there is no price collection there is no tariff collection for water services at all, and that some places are not in some in fact in most of places because we do not have any metered system anyway. So in absence of metering we cannot charge volumetric tariffs.

So generally the flat tariffs are charged and they are very low as opposed to the water tariffs which are charged by the Western world so like we end up paying say some places it is in the range of 50 rupees, 100 rupees, 200 rupees. So generally it is within these ranges the prices of water where there is or otherwise it is free at many places, now the poor without access of public water network are already paying high cost.

And they are like either they are procuring water from the vendors so for that also they are paying high cost or if they are going and collecting water from some distant sources. So there is basically loss of productivity because there is a time value of the money, so then that way also it can be considered that they are still paying even if they are collecting it from but if somebody is spending say one hour in a day for just collecting water.

So you can realize what is the loss of the productivity of that particular that 1 hour manpower. Many poor people will also be willing for appropriate low cost services, if they are integrated in the utility regime.

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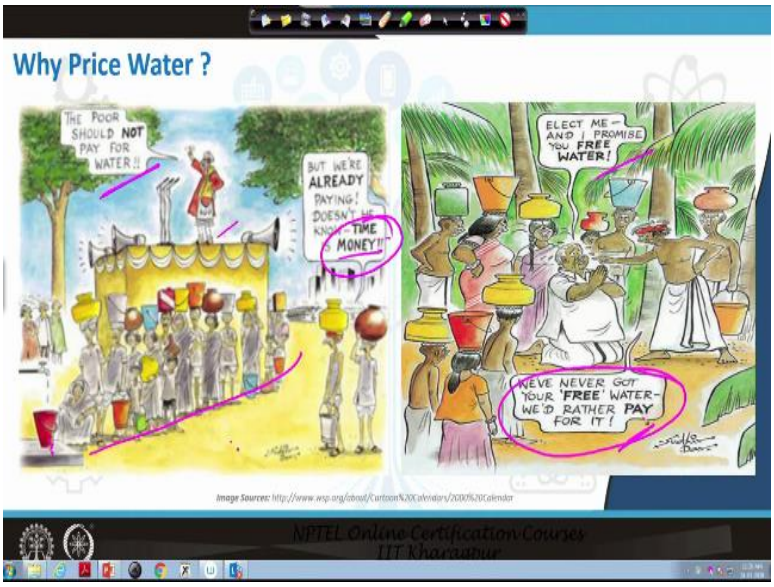

So if they are provided services adequately they will be happy to pay; now these are actually couple of interesting cartoons so this is about why we should price water? So as you can see that somebody like leader is announcing the poor should not pay for water and then these guys are saying but we are already paying because the time is money so if there is no household water supply no tap water supply.

If people are queuing up for collecting water they are spending 1 hour 2 hour for just collecting water so are not they paying in terms of time if not in terms of the money, if they are not paying directly in if it is not adding to the monetary revenues of the utility but there is a lot of time being

lost and the time productivity of so many people who are queuing up for collecting or fetching the water is being lost.

Then this is another one where basically somebody saying elects me and I promise you free water but then again there like it the free water never reaches actually. So that way people say that we never got your free water we would rather pay for it but get water because free water means the utility is not having adequate financial resources.

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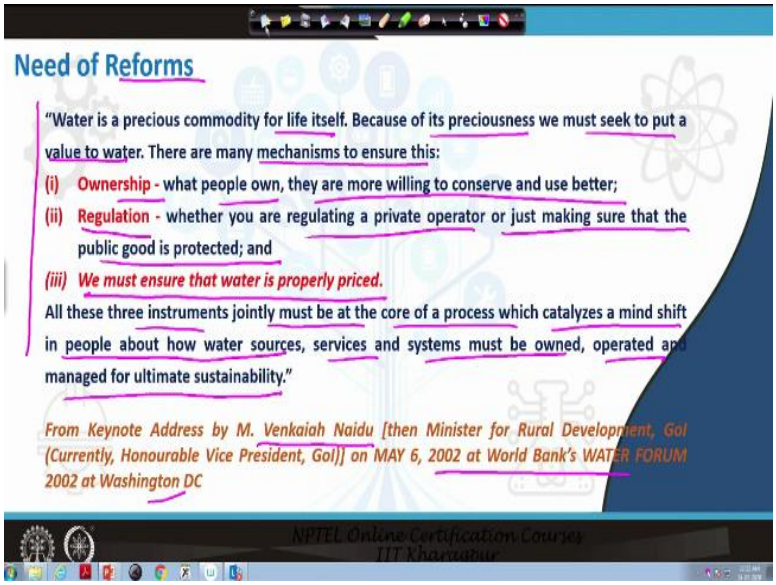

If you are keeping so many things free, so it is just relying on the government grants and government may have like different priorities at times. So if utility is not collecting by itself then it has to rely on other sources and then dependency on other sources makes it like, kind of bind its hands for taking the taking these reforms in the water sector. But there is a need of reforms.

And this is in fact one of the popular quote by Sri Venkaiah Naidu who is basically vice president now he was then the minister of rural development government of India in 2002 World Bank is water forum at Washington DC. He said that water is a precious commodity for life itself because its preciousness we must seek to put a value to water there are many mechanisms to ensure this ownership, so what people own they are more willing to conserve and use better so

the ownership of water should actually reach to the last stakeholder level as well because the they are not considering that, this is mine they will not value it.

Then through regulation whether you are regulating a private operator or just making sure that public good is protected. So that is another approach and the third point what he said we must ensure that water is properly priced. So all basically these three instruments jointly must be at the core of process which catalyzes a mind shift in people about how water sources services and system must be owned operated and managed for ultimate sustainability.

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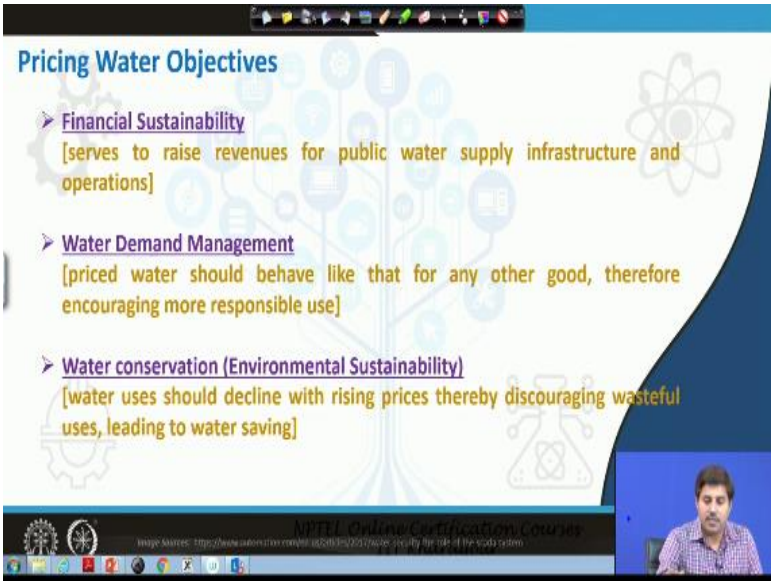

So that is the kind of reason for which we should be focusing on these reforms and we have to kind of price water and price water for what are going to be the objective of pricing water. So the objective of pricing water is going to be the financial sustainability. Financial sustainability means we raise the revenue for public water supply infrastructure and operation so whatever cost is being deployed to the managing water services must be recovered so that the services remain financially sustainable.

Then the another objective is demand management because we should price water so that people think that it is actually a good for which they are paying and then it will encourage the responsible uses. If it is coming for free nobody is going to give any value means it is very

difficult to change the mindset of the people. So for that purpose in order to even control demand control wastage, we should put a price tag to the water.

There is a very popular proverb in Hindi (FL: 13:07). So the people are of that mindset that they do not recognize any value of the water they said that it is to waste water, but not waste money the solution is you tag, the money with the water then only people will realize that even **(FL)** is also not good. So even do not like do not waste water so that kind of signal should be given through the pricing.

And then another objective is water conservation which is environmental sustainability, so water should basically decline with rising price and thereby discouraging the wasteful uses leading to water savings. So these two are somewhat interlinked if you control your demand you are actually working towards environmental sustainability. Anyway so these are the basic objectives for pricing water.

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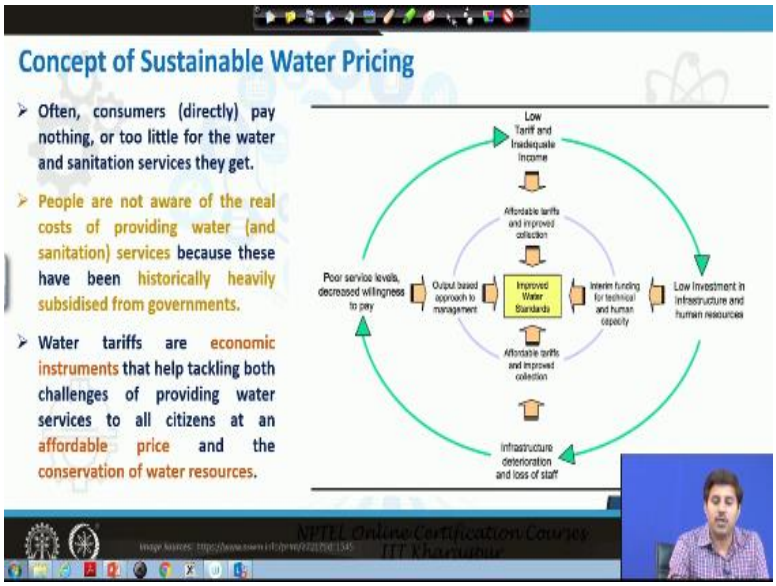

Now when we talk about the concept of sustainable water pricing it is very dicey because often consumers pay nothing or too little to get the water and sanitation services, now if you see this you can see there are two kind of circles. The first circle is with the low tariffs and inadequate income so if utility is not getting adequate income the tariffs are low so then it will be basically

having low investment in the infrastructure and human resources there would not be enough manpower.

There would not be sound infrastructure and there would not be good quality services. So this will affect the quality of services and infrastructure deterioration so you will see that infrastructure is getting deteriorated there is a loss of staff and the quality of services remains poor. Now with poor services level the willingness to pay of the people also decreases because if I am not getting a good quality services why I would be willing to pay.

You can see this way particularly in Indian households people like even many places many I think majority of the middle class or upper middle class household or upper-class household have their own household water purifier based on high-end systems like RO or like various filters, ultrafiltration, Nano filtration those kind of technologies they are using for household filtration they are happy to change a cartridge once in a year which cost them around 3000 or so.

They are happy to go for the maintenance of that RO system the power required for that RO system just in order to produce drinking water. Now if you see if somebody is say spending 4000, 5000 in a year which will translate to if you catch if you say that, so 4000 in a year that means some 333 rupees in a month. So if people are willing to spend 300, 350 rupees in a month just for a private purifier.

They would happily be able to pay this to utility if they are guaranteed good potable quality water in their taps from a centralized system. they have cost for storing the water pumping the water to the rooftop so overall like storing purifying treating the water there anyway paying some 500 rupees a month. But for water utility they are charging 50 rupees, 100 rupees, 200 rupees.

If, they charge this 500 rupees because customers will be willing to pay if the utility develop trust about their services, so the willingness to pay will also increase there is low willingness to pay because low level of services we are ready to spend that much on the equipment's RO systems or purifier systems or our household storage and pumping systems on which we trust.

That this treatment what we are treatment unit or purification unit what we are providing will give us a good quality healthy quality water.

The motor or pump that we are providing will ensure us the round-the-clock supply 24/7 supply by overhead storage systems. So we trust and that is why we invest we do not trust utility. We generally do like in India it is very rare that people from middle or higher middle-income just open the tap and drink water anywhere in any city in India, so because there is no trust so we do not pay that much also.

So there is a no there is less willingness to pay because of the poor services which are coming from the poor infrastructure and if we are not paying so utility is again not getting fund so tariff is again low. So we are actually roaming and roaming in this outer circle where the funds are less investment, poor infrastructure towards services, quality less willingness to pay and less tariffs and inadequate income.

So we are just roaming in this outer circle the another one is that if we make affordable tariffs and improved collection so utility is having some like substantial pool of funds available, they can improve their infrastructure and they can hire the good quality technical manpower so their infrastructure will be improved the quality of services will be improved and if you are supplying a good quality services to the people their willingness to pay will also increase and that will increase in the revenue collection as well.

So there is inner circle where we can shift we have to shift from outer circle to inner circle and that can be done through integrated approach not only just pricing because straightaway if somebody is putting a high price and services are not improved people are reluctant to pay. So we have to come from this outer circle to the inner circle in order to go for a sustainable management system.

People are not aware of the real cost of providing water we do not know how much is the real cost because there is no data dissemination there is no proper system to make people aware that

this is the cost of production of water and water has historically been heavily subsidized by the government. So we are still unaware and we do not value that much because of this high subsidy.

The water tariffs are generally the economic instruments that will help tackling both challenges of the providing water services to all citizens at an affordable price and conservation of water resources. So water tariffs can be taken as a tool for this purpose.

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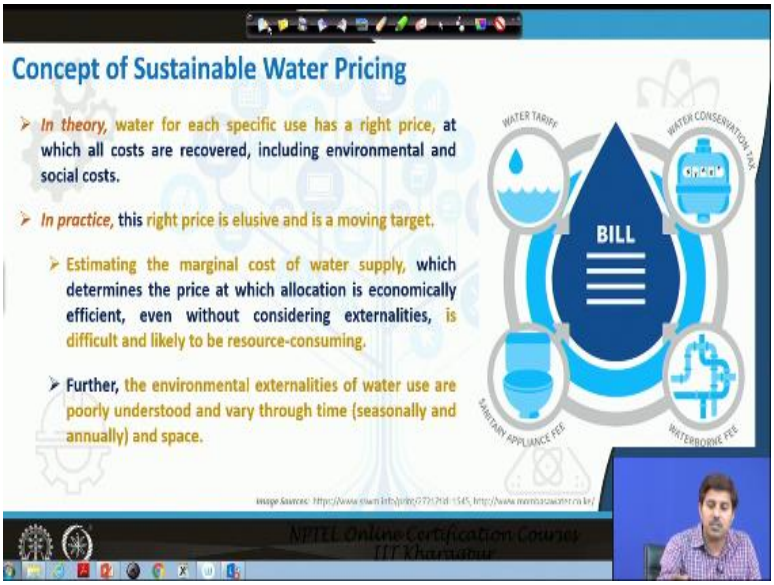

So if you see the concept of sustainable water pricing in theory water for each specific use has a right price if we are actually providing water for say drinking or municipal purpose providing water for horticultural purpose providing water for industrial application agricultural application for each of these applications there is a right price for that water including environment and social cost.

But in practice this right price is an elusive concept and it is a moving target always. It is very difficult to reach a right price in practice, why? Because this right price generally are based on the marginal cost, so marginal cost essentially means you for expansion by one unit what is additional cost required. So if we go for the marginal cost kind of criteria which determines the price at which allocation is economically efficient.

Because general like financial concept is that the any good should be priced at it is a marginal cost in order to be economically efficient. So that is very difficult to get this marginal cost here and even without externalities, if we consider externalities environmental externality is further means what is going to be the impact on the environment of these services. Then it is kind of even difficult to get.

Because, these environmental externalities of water use are very poorly understood and they varied through time as well as in space. So using same amount of water in a monsoon may have certain environmental consequence but same amount of water using in a summer may have much severe environmental concerns.

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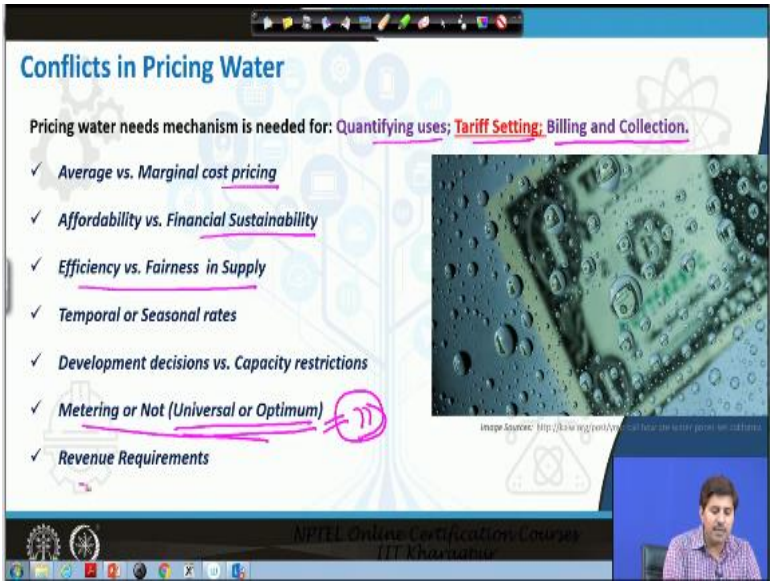

So that way like this externality is also vary a lot. Now there are various conflicts in water pricing when we go for considering putting a price tag to the water. We need to basically see how we are going to price it. So pricing water need mechanism and that is needed basically for quantifying uses need mechanism for tariff setting, mechanism for billing and collections. Now if we do not have this it becomes a challenge.

Now if you see the major conflicts in the pricing water there are average and marginal cost pricing whether we price water on an average cost or a marginal cost. Average cost means whatever is the how much water is utility producing what is the average cost per unit water and marginal cost is if utility wants to expand by a certain capacity so what is going to be the cost of expansion per unit water.

So then there are affordability and financial sustainability concept. So whether water should be made affordable or financially sustainable again there is a conflict in this because if you make financially sustainable the cost might turn up high which may not be affordable to some section of the society. If you make it affordable to a larger section then it may not be financially sustainable.

So whether we go for affordability or we go for financial sustainability here comes the concept of subsidies also. So we may price water as a based on the financial sustainability and for affordability clause. We keep a subsidize tariffs for a certain section of the society for whom the financial sustainable model may not be affordable, then efficiency versus fairness of supply. So what are the most efficient water uses versus what are the most fair water uses efficiency?

In generally taken in terms of the economic efficiency so if we are providing what somewhere where we are getting high return so that is kind of a more efficient use versus if you are providing water somewhere where we are not getting adequate return. So that is lesser efficient use but water is an essential commodity so we may need to compromise on the efficiency part in order to maintain the equity and fairness in the supply we have to supply water to the lower section of the society.

As well where we have to see that the amount of water what they need is provided even if it is not a financially efficient model so we have to basically resolve this conflict whether we want to go for efficiency or we want to go for a fairness of supply. Then temporal and seasonal rates so how the rates like what kind of rates should be kept based on season to season or time to time because we may have high demand seasons and low demand seasons.

So how to tackle with that then there are development decisions and capacity restrictions. Now this is also a very important point that whether utility should plan should go for the development decision means expand it and try to like cater as many population as is coming or it should restrict on the capacity in order to prevent the environmental consequences. So how much water is available for withdrawing it can restrict its capacity.

In order to kind of protect the natural resources, whereas then what will happen to the water being demanded from the different sectors like municipal sector or industrial sector so whether it should allow the development to take place at a cost of environmental consequences or in my like compromising with the environmental sustainability or it should basically strictly follow the capacity restrictions.

And do not allow the developments which are going to hamper the environment or going to put extra burden on the water resources, then another debate is whether we should meter water or not. Now there is no doubt that metering helps in terms of the data collection like we just as we were talking the week before that it is a very important to collect the data we are talking about the smart water systems.

And like 24/7 supply the putting a price to water or adopting water tariff appropriate water tariff structures and all these would require metering, all this would require that can water consumptions should be metered and monitored. However there is a huge cost associated with metering, because putting a water meter to every household is will require huge cost and then there is basically the maintenance management of those meter readings or putting a system for meter reading either manual system or automated system.

But it will need a system for meter reading maintenance. So there is a huge cost associated whether the financial returns on metering is adequate to allow like meter to be installed or not. If you are not going to go for a safe financially sustainable model just trying to put meter for monitoring purpose whether it is justifiable in terms of the amount of financial resources it require and even if we are going to meter whether we should go for the universal metering or optimal metering.

Universal metering means metering every consumer and optimal metering means metering putting meter at a select places where basically we can achieve the objective of kind of getting an idea of the flow and demand sequences and not metering all the consumers so if we are not going for a consumption or volumetric based tariff, do we really need a universal metering. So that also is a question but again if you do not go for that you are going to compromise on the data.

And you are again not being able to send any concrete water conservation signal to the consumers, so this may have cost but there are a lot of advantages also and they must be kind of weighted that whether we should go for metering or not and if we are going for metering what kind of metering regime we should choose for then there are revenue requirements.

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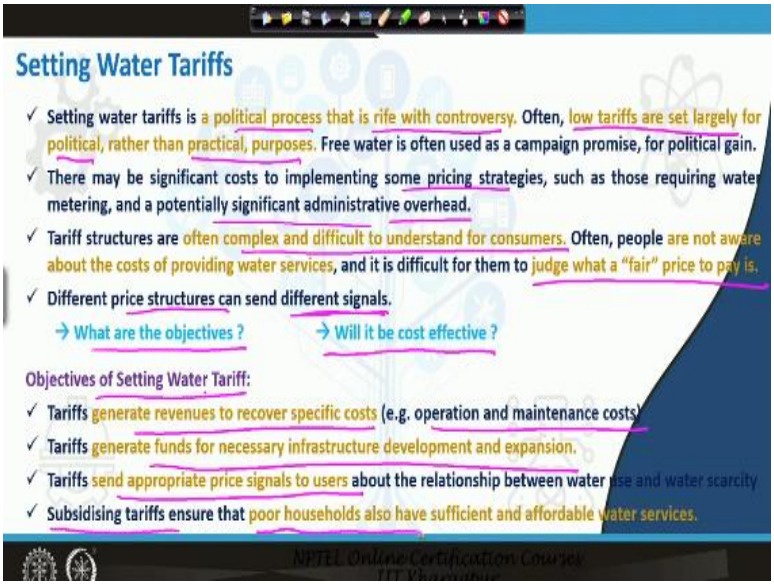

So again like from where that revenue is going to come so that is another aspect then if we go for setting water tariffs so particularly in India setting water tariffs is more of a political process and many times right with the controversies there are tariffs usually set at very low level which are mostly for political reasons rather than the practical purpose. Free water is often as a taken as a campaign for political gain.

Now there is a significant cost for implementing some pricing strategy like requiring water metering potential significant administrative overhead all these cost would be required, the tariff

structures also like many times are simple, but many times are complex and it is difficult to understand for n consumers and moreover people are not aware about the cost of the providing water services.

So they cannot it is difficult for them to judge whether they are paying a fair price or not, then what kind of price structure we are choosing depends on what kind of signal we want to send, what is the objective of setting up a particular tariff model. So I will need to see whether it will be cost effective or what are they specific objective. Now if you talk about the objective of setting out water tariff model.

So up as we discussed objective of water pricing is generate revenue to recover the specific cost so at least operation and maintenance cost must be recovered generate fund for necessary infrastructure development and expansion and then send appropriate price signal to users for water conservation purpose and subsidize tariffs should all we considered ensuring that poor household have sufficient and affordable water. So these are the major objectives.

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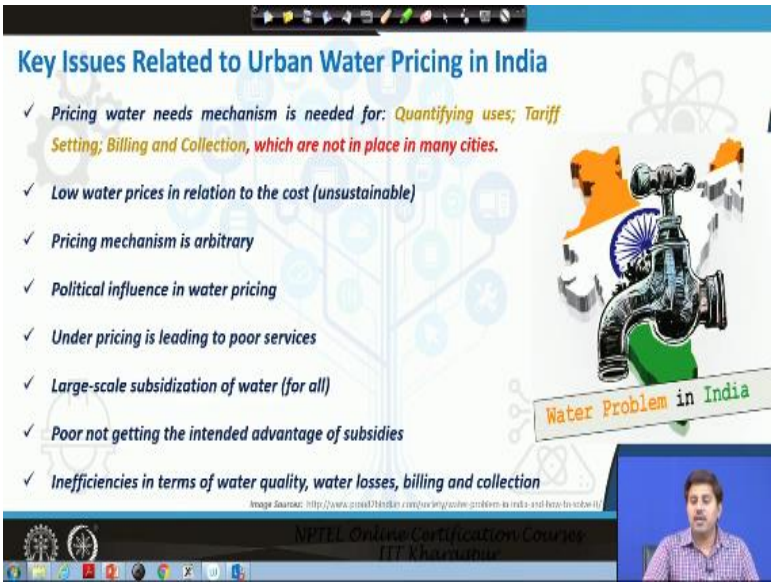

Now various issues related to the urban water pricing in India so as we discussed earlier also there are actually if we go for a pricing we need a set up we need a mechanism for quantifying usage tariff setting billing and collection and these are not in place in many cities. So that is one

of the key issue and challenge. Then the low utter prices in relation to the cost are unsustainable which is generally trained in the India.

Pricing mechanism is arbitrary there is no like proper study or proper mechanism or proper evaluation of the cost and pricing mechanism does not depend on the cost. In India particularly cost is not considered while pricing the water, then political influence is very high in water pricing, under pricing is leading to poor services as we discussed large-scale subsidies are there in water and the subsidies is not for the people who need it.

But these subsidies are for all so like you see if prices are low it is just 100 rupees a month it is for all households whether you have a very big bungalow or you have a small dwelling, so that kind of systems are also there, then like if water is free it is free for all so that kind of problems are also there who are not getting the intended advantage of the subsidies because if subsidies are spread for all, it is not reaching its target zone target section of the community.

And then there are in efficiency in terms of water quality, water losses, billing and collection so these are like the major issues that we have in the Indian water sector and more so like that in a way directly or indirectly affect the pricing.

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So with this we conclude this particular class, next class we will talk about what are the various pricing models that are available and what are the various regimes or schemes for setting up water tariffs so I see you in the next class. Thank you for joining