Infrastructure Planning and Management
Case Study on PPP project - Tirupur Water Supply

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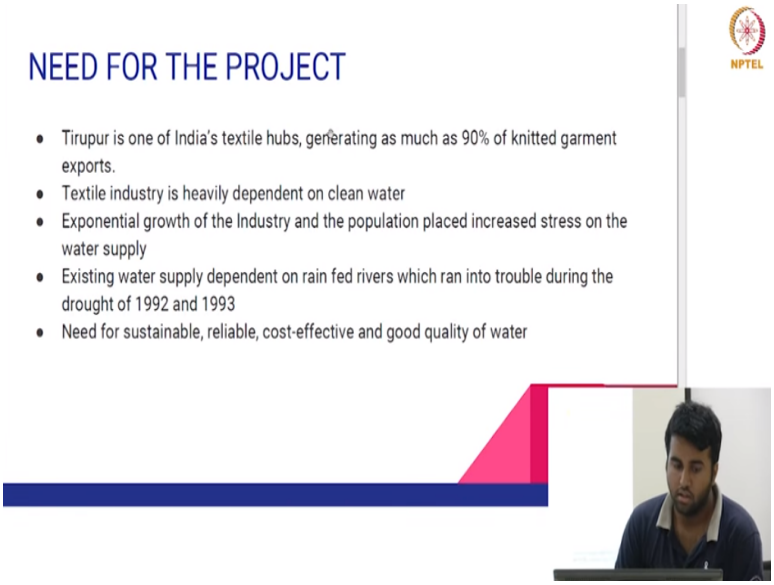

I am going to present on the Tirupur water supply project which was the first water supply project under the PPP framework in India so what was the need for the project, Tirupur is one of Indians textile hubs which generate as much as 90 percent of the Knitted garments exports and the textile industry is one which is heavily dependent on the availability of clean water so the exponential growth of industry along with the rapid increase in population of Tirupur increase the stress on the water supply and the existing water supply of Tirupur was from the rains fit reverse which ran into troubled during the draught of 1992 and 1993 therefore the need for a sustainable, reliable and cost-effective water supply was a role to the project.

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In 1993 the theory poor exporters association which is an industrial lobby group approached the government of Tamil Nadu to provide sustainable water supply, so the Tirupur area is a contributes a lot to the revenue of the state government and the central government therefore they were in support of the project and high-level committee was formed and the Tamil Nadu cooperation for industry infrastructure development limited was entrusted the responsibility of this plan the stash it lacked the necessary competencies to develop it a pure area development project on their own and decided to parent with ILFS is a major infrastructure financing company, so TACID and ILFS started working with experts from Indo-USAID fired project but this is which is an Indo-us joint project meant for sustainable Urban service.

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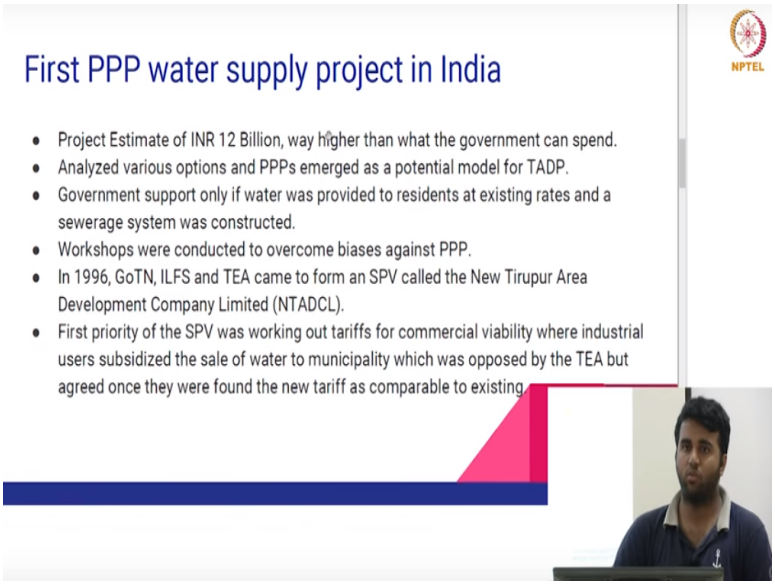

So the project estimate was about 12 billion rupees which was higher than what both the government of Tamil Nadu or the Tirupur municipality cannot afford to spend so they analyze various options to fund the project and the PPP's emerged as a potential model for the TADP, so a prerequisite for the government for the project to be implement was that water should be provided to the residence at the existing rates and save rate systems was to be constructed for the residents the since this was the first PPP project.

And the area was dominated by the communist party of India they were opposition to the idea of private player supplying water and several workshops were conducted to overcome this biases, so in 1996 the government of Tamil Nadu ILFS and TEA came to form an SPV called the New Tirupur Area development company limited, so the first priority was to work out tariffs for commercial viability were the industrial tariffs were higher which was used to subsidize the sale of water to the municipality did reduce rates.

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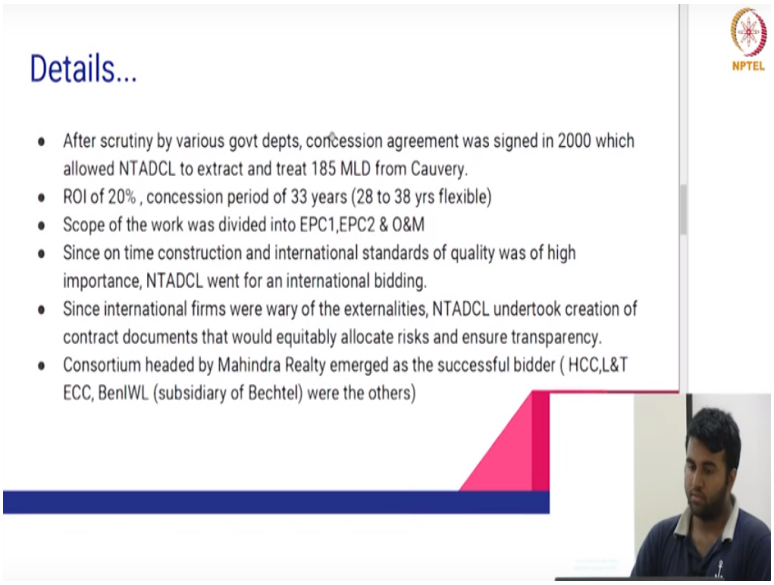

So a return of investment of 20 percent was worked out and a concession period of 33 years which is flexible from 28 to 38, so since the on time construction and international standards were very important the NPDACL went for an international bidding for the project but the international firms were wary of the externalities in India and the contract documents were made to equitably allocate risks and ensure transparency the bid the consortium heated by Mahindra realty emerged as the successful bidder.

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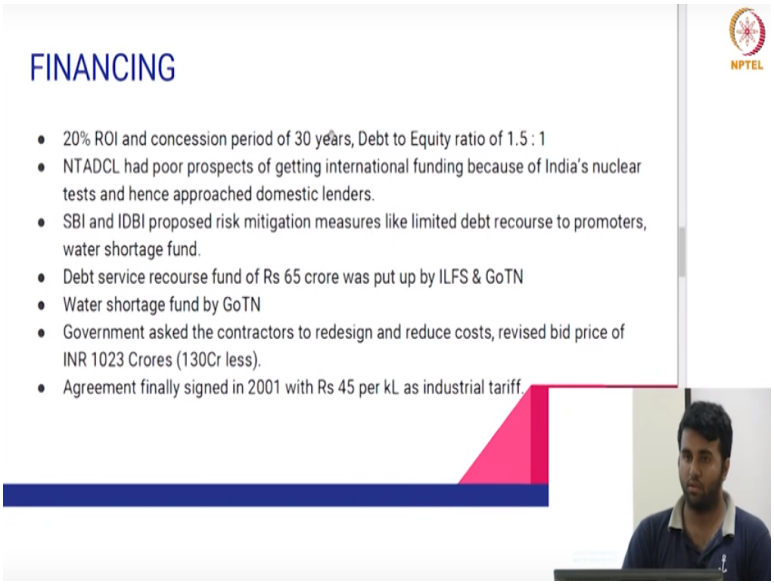

So with the financing the ROI was founded 2 percent and a concession period of 30 years the Debt to equity ratio of 1.5 is to 1, so the NTADCL had poor prospects of getting international funding because of India nuclear test during the time and hence approach domestic lenders the SBI and IDBI wandered risk mitigation measure like limited debt recourse to promoters and setting up of water shortage fund a debt service recourse fund of 65 crore was put up by ILFS and government of Tamil Nadu.

And a water shortage fund was created by government of Tamil Nadu, so the government asked the contractor, so redesign and reduced costs since the cost was a bit higher than normal turnkey bases project, so it was they arrived at the revised bid of 1023 crores and an agreement was finally signed in 2001 with 45 kilo literacy in distill tariff.

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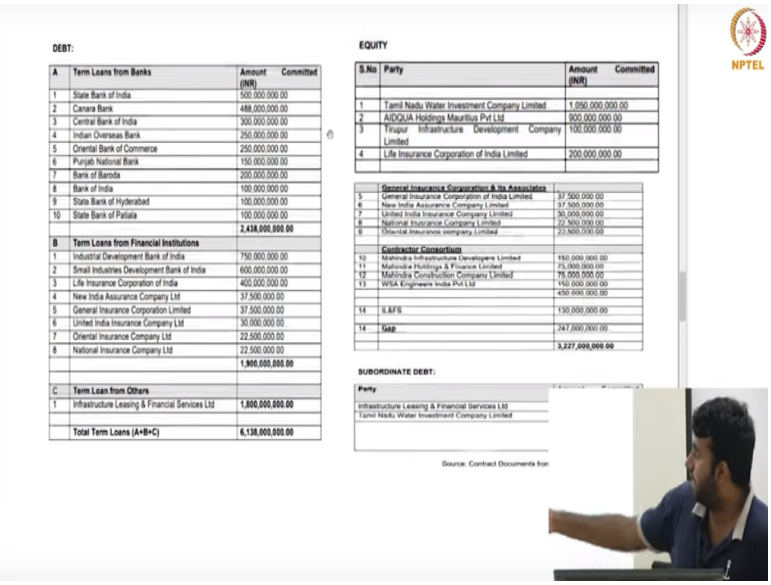

So this is the depth and equity structure of the project, so the equity part is mainly by the Tamil Nadu water investment company let us say LIC also the IL in the first what about 130 crores into the project also they ILFS, ILFS puts subordinate depth and depth to the project.

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So the construction the work commenced in October 2002 the ben IWL exits towards the end of 2003 due to the Dabhol issue in Maharashtra, so the Wilbur Smith and associates were brought in there was a slight delay for the project due to a school near the sewage treatment plan and the plan was relocated the construction was finished on the time in 30 months and people who are happy with the project they were receiving a good quality water to supply cheaper rates than what they used to earlier.

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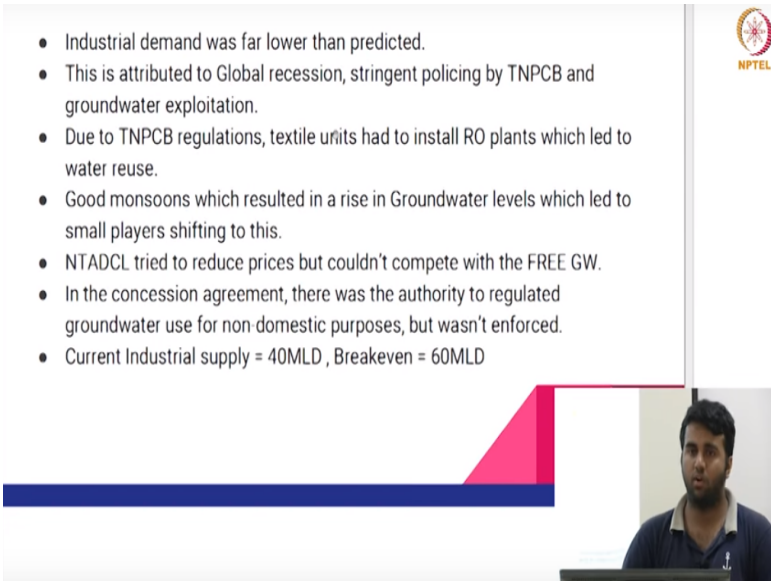

So about what went wrong with the project so the main issue was that the industrial demand was far lower than was predicted and the main revenue on the project came from the industry, so this was attributed to the global position at the time of 2009 and also the stringent policing by TNPCB which select to the textile units installing their own plants I wish led to the use of water and also during that time the monsoon were good result earlier regular to the groundwater levels had rose and the people started to use the same the NTADCL tried to reduce the prices by half but still they could not increase the number of users as the groundwater was essentially free for him.

So in the concession agreement they had seen this as a risk and given the authority was given the right to regulate ground water use for non-domestic purpose but this was an enforced well and they found the same pretty hard to be enforced and the current industrial supplies there is only about 40 MLD but the breakeven the project is 60 MLD.

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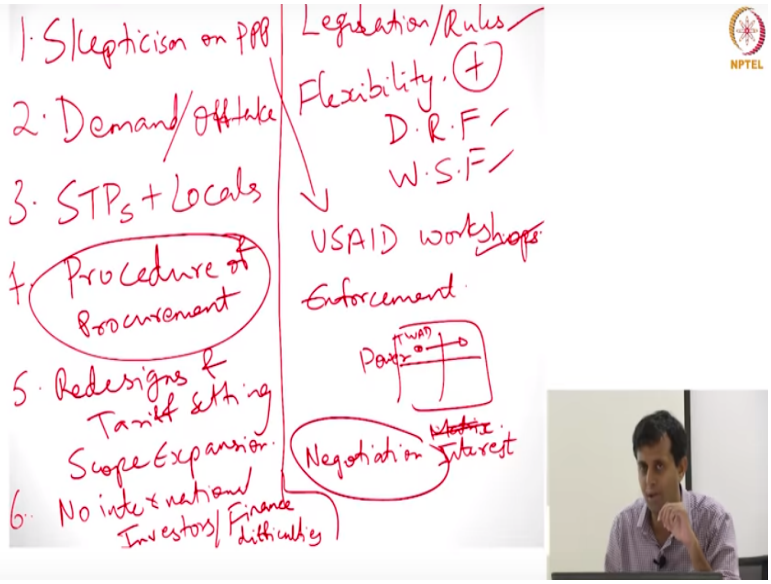

So we will do the same thing, now with Tirupur let us look at the various challenges and then we look at potential strategies, so what are the challenge that this project went through yeah was there a resistance to a private party coming in and supplied water where did you see that resistance okay.

But that was really very widespread I think the government was pretty clear very quickly that private parties could that PPP was an option there was not that much of a protest, so that

probably was a challenge for a short period of time but not a major one Aman, again so we were saying people did not want to have water supply with the private company what where in the case does that come through fine, so there was some let us put that in there some initial skepticism on PPP and again this is because PPP's are completely new etcetera there is some amount of skepticism that is fine that is a challenge that needs to be surmount yeah

So what are the other big challenges was which comes up later in the cases the demand right, sorry one by one Varun you are saying there was a demand , so you guys are talking about two different things when you talk about demand, so you are saying there is an overall demand for the project but what Yamini I think is saying is the actual demand was not in line with the projected demand in terms of the amount of water being consumed from the NTADCM right, you are talking about the project demand.

So you are saying there is a so essentially there is a certain amount of demand for water but and we do not know whether that demand is but the let us say the off take of water from NTAA DCL was obviously much lower than expected right and as Vivek pointed out there are bunch of reason for that one is what you are pointing out Varun which is that the pollution control board should have regulated groundwater extraction which they did not right of the government should have regulated groundwater extraction which they did not and therefore people who are allow to bring in water from the ground.

But the their were all these other consideration also as he says there is a global economic recession due to the subprime crises all of that so why does the global economic recession have anything to do with the Tirupur, correct so the water need decreases because yeah I mean you who are you would through Tirupur as you know Vivek again pointed out in the beginning is a big textile hub people call it the Manchester of India and all of that so it contributes a non-trivial amount to India's foreign exchange and GDP and all of that.

So but what are you doing at the Tirupur you are not manufacturing only for India you actually manufacturing for the rest of the world, so all you gab Banana republic you know whenever you see made in India shirt or you know whatever I think it is probably likely that it came from through Tirupur right down south in Coimbatore, so if you have a recession in the US and therefore people are losing their jobs there therefore people are not buying enough clothes in US

because they do not have any money to buying clothes there Gap and Banana republic and whoever is not placing that many orders to Tiripur or they are not placing many orders to the Tiripur, Tiriput textile units are not manufacturing as much and therefore they are consuming you know les of water.

So irrespective whether there is people worried whether it was a payment issue or not the fact of the matter is there was a less demand for water right because there were fewer shirts that were being brought a few articles of clothing that were being bought the second reason that was given was the pollution control board went in shut down some of these textile units because you know of course the whole process of you know using water is to color the fabric and so you put in all kinds of chemicals you color the fabric there is also a lot of effluent in the process and that effluent is just being laid out directly into rivers and groundwater etcetera.

So you are supposed to have an effluent treatment plant and you are supposed to treat the effluent then let it out but many of these units were probably not doing that the pollution control board came and shut them down again by virtue of shutting them down the total amount of water that was required came down because plants are not shut down they are not taking water, so again demand per se is coming down then of course there is the issue of rains were good Tamil Nadu and therefore groundwater table came up and started extracting groundwater which they should not have right.

But irrespective of that demand came down because of the global recession demand came down because of the pollution control board demand also came down because of this new technology is this pressurized air blowing technology we were I mean why do you need water because you put the color in the water and then you spread it over the fabric, so water is the medium for spreading color but the objective is to spread color well then you have this new technology where you can take your dye and you can blow pressurized air through it so that it actually spread quite evenly and as long as the fabric is colored why does it matter to you whether it is pressurized air or water.

You will take whichever is convenient and it turn out on the one hand water is scarce and costly on the other hand this air pressurized blowing technology is relatively cost effective and available and therefore a lot of people started just shifting technology at least for certain kinds of

uses of coloring right and that again brought down the demand for water so demand per se came not on top of it there were issue with regards to groundwater which looked like it came down even more than it had, so demand was a very-very clear issue what other issues does the project have yeah one by one let us hear from.

So STP and locals was an issues the sewage treatment plant and the none of the locals want it is always are not in my backyard thing right I all really like a sewage treatment plant in my city but you cannot put it here and if all of us say this same thing that where do you locate the sewage treatment plot so yeah so that was another issue, so the whole procedure of procurement right was a big headache and challenge in this case because this was a very early PPP we had no frameworks this was in fact one of the first PPP in India not just in water and so how do you procure.

So you get into question like you know the you go to a bank and you say can you give me a loan for this project the bank also is unsure as to how to evaluate this how do I evaluate the risks and a PPP I have no basis, so takes them long time to evaluate government also look at it and say what is this how do I approve it you know what kind of procurement is it, is it a fair procurement am I somehow benefitting the private sector in some way, so it take a long time for people to scrutinize because it is the first one that is running in between you have government that change new government come in and scrutinize when the government is happy with it the initial document that the bank has given you us expired because if I want to give you a loan for a certain period that offer is valid only for a certain period of time you cannot come back ten years later and say that day you promised me can you give me the loan at those rates.

So again those documents expires, so you have a very iterative sort of process, so that was certainly a challenge on this project any challenge redesigns and tariff setting, so lot of redesign very unclear how to set that up finally and the lets of demands also initially it started out as a water supply project for the textile units then the scope so maybe we can sort of say scope expansion here as well except that unlike in the daily case when scope expanded in the middle scope expanded here even before construction but from originally being a water supply it become also supply the wayside villages also built a sewage treatment plant also supplied the city of Tiripur of the municipality of Tiripur and the rates for these are fixed you have to supply.

The villages at three rupees a kilo liter you have to supply the municipality at six rupees kilo liter and then I have to work all of that and therefore say I have to sell it to the industrial units and fortify rupees a kilo liter because only then will I break even, so this is a bit of a convoluted challenges correct but I mean, so I am sure I agree that we cannot combine a compare Chennai in through port but is there is specific challenge that this led to on the project this comparison because ultimately they seem to have fixed tariff that were project specific all right so ultimately they seem to ended up with the right sort of time.

So do you see a challenge that occurred on the project because of later there produced what to half yes but that 45 is nothing to do with Chennai that 45 rupees is tariff is because according to their calculation at that time they felt that this was what was viable based on all the parameters than later on of course because of all these demand issues and other issue ran into problem right maybe a couple of challenges then we are start looking at solutions like it I, so there were no international investors alright yeah the procedure of procurement was a big issue because it took a long time for this to get sight great.

So these are a set of challenges that this project had and clearly the story at least where the case stops is not a very happy one because although they did again like in the Delhi Airport a construction they ale to do on type that was not the problem but the overall profitability of the project is seriously in question, so 30 perfect or 40 percent or whatever of expected revenue al that they are able to get, so they have got a big hole in their pocket, so strategies what could have been done what was done what could have been done, so there is certainly an issue with the fact that there was no legislation at the time you could bring in legislation rules these are one-time things the first few project are always going to get into these kinds of problems and hopefully these problems have been solved.

So if you look at the modern day PPP's many of them fail but at least these challenges are not there, so they have legislation in place they have rules in place that part has not been speeded up that entire mess in the beginning that is a challenge that has sort of been overcome by institutional strengthening, so they have got rule in place now tender committees and we also know banks know very quickly how to evaluate this asset you know government committee is no very quickly how to sort of award these, so all of that is in place so that is fine so that is one set

of challenges have been addresses what else could have been done what was done some amount of flexibility could have been was sort of brought in.

So there was a little bit of flexibility given in the construction agreement but again you see that after operation the assumption that you made during operation do not necessary hold true you had predicted a certain amount of demand and maybe you looked at the number of people into Tiripur you looked at over the last five years how much water are thy consuming based on which you came up with a water supply figure or whatever but then you find out because of global recession because of pollution control board because of new technology etcetera after the project starts you get a completely different picture.

So you need two three you really think about, so lot of uncertainties in these project and that completely changes the shape of the project and so we have to figure out flexibilities in this case there is a little bit of flexibility given in the construction the concession agreement on the duration but perhaps we also needed to look at other kinds of you know strategies what other flexibilities did you see in the case, so what other risk mitigation mechanisms did you see to mitigate against this demands flexibility this demand uncertainty, so they have this funds no they had something called a debt reserve fund, there something called a water shortage fund, so these are exactly that is saying look overall I might have a certain demand but it is nit there every year it will sort of go increasingly in step right there tough rears and peak years etcetera.

So what happens if my first few years are bad years for whatever reason it does not rain there is no water in the river there is no demand etcetera let us create this fund which are buffers of money pots of money that are put aside through which I can repay the loan etcetera in bad years and in good years I will replenish that fun so I will always have a little bit of contingency sort of later, so some there is some thinking that was really that was given for risk management but it still assumed that there would be only minor fluctuations when you look at fluctuation of this side you really need to start thinking very seriously about tariff.

You need to start thinking very seriously about regulation and enforcement off groundwater withdrawal or whatever you need to start thinking very seriously about concession extension you need to start thinking very seriously of things like step in right at some point as the government just step in and at some discounted price buy the asset from the private sector and run it itself

right because NTADCL is not making any money so you buy the asset off into a DCF you say I will pay you a lump sum now the asset is a property of government of Tamil Nadu we will sort of run it because you guys are going to do a poor job running it because you are not making a profit out of it.

So can we start thinking of things like step in right which are one form of real options, so certainly more flexibility you know should have been a part of this contract and therefore as you can see with Delhi it something that I fell is rather universal when you look at these large long gestation period infrastructure project it is probably a point that you can blindly put in on every infrastructure what else any other strategies to removes skepticism of PPP's there were some USAID workshops and like I said skepticism was there again initially but you know that was we were able to circumvent and today while there skepticism on PPP that lease is a better understanding of what a PPP is etcetera what else could have been done clearly.

So this was done this was done probably a little bit more flexibility thinking could have permeated the contract what else could have been done, so enforcement is a key strategy, so you really need to start enforcing, now how do you get enforcement, do again here I think our power interest kind of matrix become important tools, so for is a key stakeholder you have got to realize here is the authority that is enforcing whether it is the twat board or whoever it is right it becomes a key authority who, has in it sorry power interest who it turns out has very little interest in the project right but quite a lot of power.

So there are one of these you know they are sort of you know odd is may be somewhere there and maybe that is not where you want what to be maybe you want them to also sort of move here where they also have a lot of interest in the project and therefore thy can you know regulate the use of groundwater etcetera, so again I think stakeholder mapping there are key stakeholders that you often omit that need to be part of your project strategy the other part that I think it was quite relevant here is the whole negotiation angle we have talked about yes how these USAID workshop were able to convince some people but ultimately.

What happens was a lot of people said look this 45 rupees a kilo liter water it is too expensive for me if I am exporting internationally fine I will pay you 45 rupees because I am getting paid in dollars or whatever it is and the way a rupee is going today I am becoming richer and richer

because if I get paid in dollar but on the other hand if I am exporting in the local market and you know we know that we as Indians tend to be relatively price conscious bargain seeking etcetera and therefore I need to reduce my costs as much as I can and therefore 45 rupees of kiloliter might be too expensive if I can withdraw groundwater at 10 rupees a kilo liter then that is you know much better right from a cost perspective.

What through poor also is trying to say that it is not just cost it is also quality and reliability I will provide you reliable water today it is rain tomorrow it might not secondly my water is purified it is good quality and what that means this your dying process will yield more uniformly colored you know clothes than you know you have seen some where the same shirt or whatever itself will be slightly darker blue on this end and slightly lighter blue you know all of that will because you can claim that is a style and all of that but it is probably just poor workmanship.

So that the claim is you are buying from me water that is highly more reliable and higher quality but this is sort of negotiation exercise I need to convince you just like you guys did on Monday trying to convince people on what you fell is the right course of action, so do you for instance did you even understand what their Batna was the Batna for this people at 45 rupees in this ten rupees did you even sort of understand and the fact that the twat board ever is not going to enforce groundwater extraction makes it a very-very real Batna, so to what extend did you have planned negotiation versus say I am just doing this project I will expect the government to regulate.

So I think again negotiation with stakeholders is probably another very important step on this project it just so turns out that what happened later on is you know these guys also looked at a few alternative source for selling the water because it is water it is market is water I can probably pipe it elsewhere you guys do not want it I mean we are a water scarce country somebody will want it they were able to renegotiate a lot of the loans with the their lenders essentially renegotiate to different interest rates, so see if you can shave a half a percent or a percent off the interest rates etcetera, so that your outflow, so whatever revenue comes in not as much as going out into loan repayments etcetera.

So bases on doing a bunch of financial juggling looking at alternative markets for water demand in Tirupur also picking up because they actually ran these campaigns to convince people that

getting it right the first time RFT they call it with my water is actually going to be in the long term more profitable for you then have gotten to a point where I believe and Mr. Krishnan was mentioning it the other day there at least operationally profitable in other word there are annual expenses in terms of operation are being met by whatever revenue that they are generating right although repayment of the loans will probably take a little but longer than expected.

So again you see that some of the tools that we talked about the class flexibility negotiation power interest matrices are all tools that possibly could have had a slightly more positive impact on these projects and flexibility of course is something that I think applies to all of these kind of projects many projects one started not as of all projects once the new government comes in or have stopped so you might argue that you know some of our NHAI projects extra many were started possibly in the congress regime or in the older BJP regime etcetera continue irrespective of the governments do is stop project but there are certain cases.

Where if the government can get some political mileage out of the project then they have some incentive to stop it in this case there is no political mileage to be gained out of stopping it the report is an important stakeholder both for the state and for India if you say no-no I am not going to give you water then that is a very sort of terrible political statement to make, so here these this kind of project may not have been under such a risk of political takeover it is a good point, so and this is correct, so this is classic question on revenue share versus profit share when you say revenue share the government makes a certain amount of money with respect because you will get some revenue and you say profit share you may actually make money at all but at the same time it is more financially sustainable for the project as a whole.

So I agree so I think it really should be a question of profit share if you look at the national telecom policy when it was renegotiated because initially a fixed amount committed to the government when people initially took their spectrum licenses and so on and they coated very high amounts which were not sustainable, so later on we moved to a more of a profit sharing kind of imagine thing with profit sharing is you have got to be able to figure out what my profits are if I just sort of escalate my expenses in some way and slow that there are no profits then I can get away with paying you very little which by the way is partly an issue with the Delhi Airport as well good okay.

So we will stop here but this is the idea is that we should be able to take these kinds of project start looking at what kind of challenges that they went through start looking at what kind of solution and possibly even I mean hypothetically if you were to reframe the project if you were to go back in time then we should be able to come up with a much more robust plan and you know typically in the in semester examination you will have one exercise like this we will have some project I will have you guys think through look at challenges look at potential strategies may be talk a little bit about if you were to redo the project what are the things that you might have done but if you can do that than I think you really absorb most of the material that we have taught in this class okay so we will stop here.