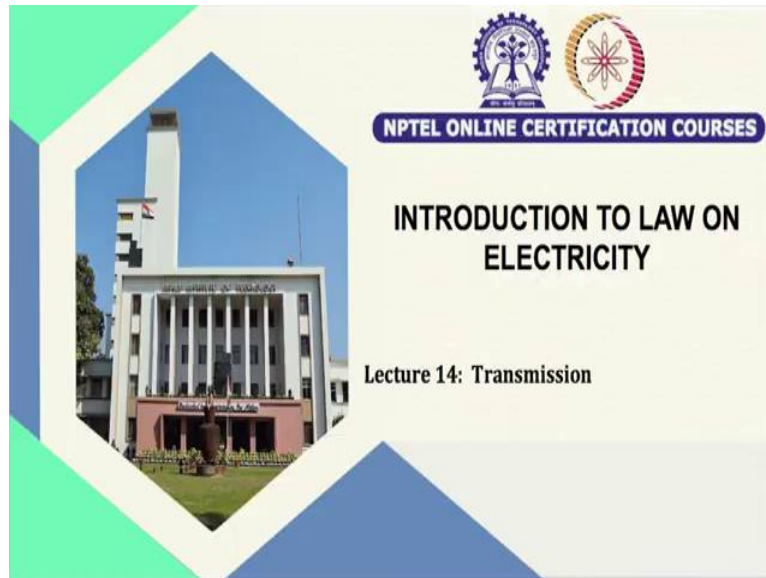


Introduction to Law on Electricity
Professor Uday Shankar
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Lecture 14
Transmission

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Welcome again in this NPTEL course on introduction to law on electricity. In this lecture, we will be discussing the law relating to transmission. If you recollect, we have made this distinction and made this point very clear that the 2003 Act has categorized certain activities as a licensed activities and certain activities where license is not being needed. So, the activity for which license is not needed, we have already discussed that is generation segment. Now, we will be discussing the activity for which the license is been made mandatory to be a player in the power market. So, that is a transmission.

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CONCEPTS COVERED

- Transmission
- Reform Undertaken
- Challenges

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Now, in this section, we will cover these concepts. We will understand that what are the provisions related to transmission? How this sector has been reformed, what are the challenges which are there for this sector and how these challenges are being addressed? Either through the necessary legal changes or by a levelizing the sector further in order to get the desirable result.

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- Transmission
- Transmission Line – Sec. 2(70)
- A licensed activity – Sec. 14
- A robust transmission network is an essential for power market operations
- Transmission networks provide the essential platform upon which the growth of power market depends.

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Now, transmission, as I said, is a licensed activity. And you would find that, there is a definition given of transmission line in the Act that is section 2 subsection 70.

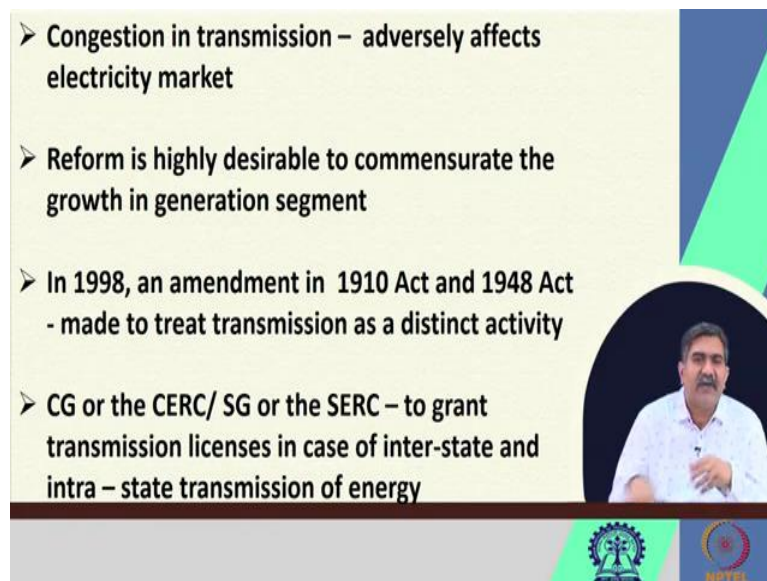
When you look at the, when you visualize the infrastructure or the kind of graphical arrangement of a power plant, you find that there is a generating station which generates power, and from there, the power gets evacuated and, ultimately, it reaches to the load center. Now, in between this, there is a role of the transmission sector which facilitates the evacuation of the electrical energy from the generating station and ensures that it reaches to the load centers in a very smooth manner, without much of the losses.

And this is what has been defined as transmission line under the Act. To elaborate it further, generally, what happens is that, the power plant generates electricity of a lower voltage may be 11kV or 33kV. Then, it is being stepped up with the help of a transformer, and then the higher voltage is being transported, conveyed through the transmission line. And then again at the distribution point, it is being stepped down to a lower voltage. So that the end consumer or the retail consumer get the electricity as per the voltage which has been specified.

So, this is what is the kind of a representation of the line segment. And there, you can very well visualize that, how a transmission sector plays a significant role in overall development of the power market. As I said to you, that transmission is a licensed activity that is what is given under section 14 of the Act. Section 14 deals with the, that what all activities are being categorized as the licensed activities. Now, when you look at the significance, when you look at the importance of this segment, if any government makes a necessary policy change to attract the investor in the generation segment, that very encouraging, that very investment would not bring in necessary reform, would not bring in necessary result, unless and until transmission sector has also been adequately strengthened. So, there is a saying; in fact if you read the literature, you would find, it has been indicated that if one wants to reform the power market, the reform should begin with the transmission segment. That is what is being suggested.

Why? Because generation alone is not enough. Once the electricity is generated, it needs to be transported; it needs to be evacuated. And for evacuation of the electrical energy, you need to have a very efficient transmission system. And that is why it is being said that transmission network is needed; in fact, it is one of the prerequisites for growth of the power market. Any overlooking, any ignorance of this segment would certainly be very fatal.

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- Congestion in transmission – adversely affects electricity market
- Reform is highly desirable to commensurate the growth in generation segment
- In 1998, an amendment in 1910 Act and 1948 Act - made to treat transmission as a distinct activity
- CG or the CERC/ SG or the SERC – to grant transmission licenses in case of inter-state and intra – state transmission of energy

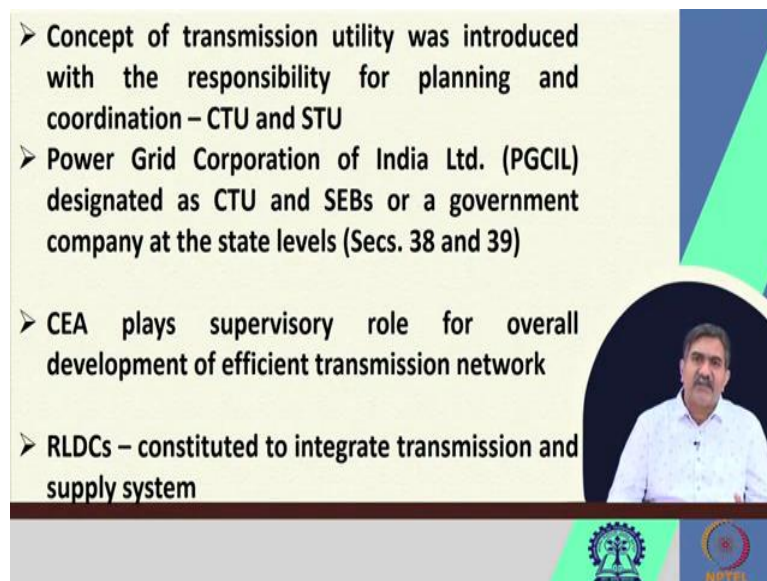
And that is what, we also experienced when you look at the Indian position where much is needed to be done to match up with the reform which has been introduced, which has really brought the result in the generation sector.

Now, it is well known that, if evacuation capacity is limited, if the generated electricity energy cannot be effectively evacuated from the generating plant to the load center, then there will be lot of wastage. And this wastage can be minimized only when we decongest the transmission sector. So, the effort is needed. That is what has been aimed in the law: the sector needs to be decongested. Because congestion in the transmission segment, congestion in the transmission network adversely affects the whole chain system, the whole supply chain system of the power market.

Now, in this regard, it has been suggested that when you are bringing in reform in this sector, transmission must be a prominent agenda for furthering that reform. And that is why much before the 2003 Act, it was suggested that let transmission be considered as a distinct activity. Let it not be clubbed with other two activities which are associated with the electricity market that is, generation and the distribution.

So, the 1998 Act amended the law, made the necessary changes in the 1910 Act and 1948 Act on electricity supply and acknowledged that transmission be a distinct activity. And thus, it has been said that let the central government or regulatory commission deal with the transmission licenses. Central government to deal in situation of inter-state transmission, and state government or state regulatory commission to deal with intrastate transmission. That is what is the scheme which is being provided.

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- Concept of transmission utility was introduced with the responsibility for planning and coordination – CTU and STU
- Power Grid Corporation of India Ltd. (PGCIL) designated as CTU and SEBs or a government company at the state levels (Secs. 38 and 39)
- CEA plays supervisory role for overall development of efficient transmission network
- RLDCs – constituted to integrate transmission and supply system

Now, carrying forward the reform which has been introduced in the transmission segment, the concept of transmission utility was continued, which was given the responsibility to plan and to coordinate the growth of transmission network. So, transmission utility was introduced with this idea that, let them put in the thought together that what is needed to bring in necessary growth? What is needed to make a kind of effective planning for this segment.

And for the purpose of this very objective, in the year 1998, Power Grid Corporation was established. Now Power Grid Corporation was established for the purpose of the central transmission utility. It was designated as central transmission utility, and then, you have electricity board or a government company, which shall be state transmission utility at the state level.

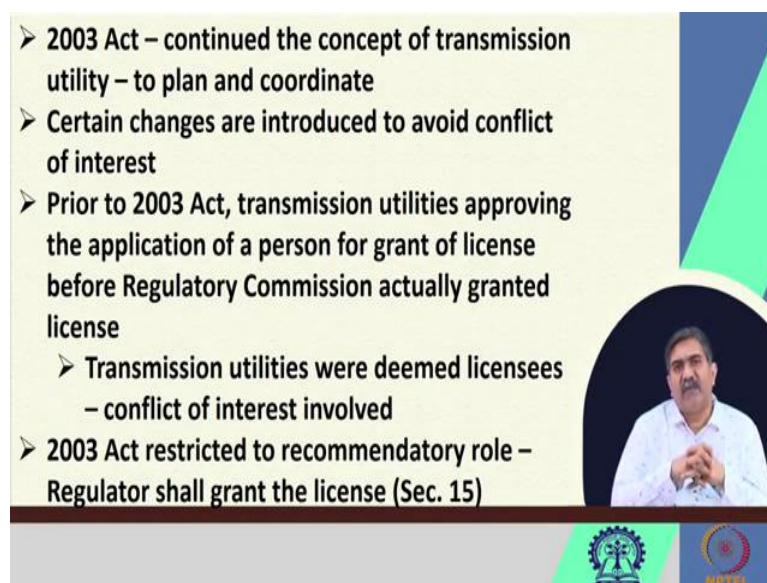
So, this reform was being brought in, what was introduced through the 1998 Act continued under the 2003 Act and section 39 and section 38 deal with these very aspects. As we know very well that certain technical aspects are to be fulfilled in order to effectively participate in the evacuation of the electrical energy and to supply it to the licensees or to the consumer. Central Electricity Authority was given the role to suggest that what are the technical standards to be followed.

So, supervisory role has been given to the electricity authority to plan the development of the efficient network. Now, why it was thought to be done at the central level, why it was decided that let the necessary standard be suggested by the central agency? Because the generation of electricity has its own geographical constants. For example, coal-based power plants are more in the Eastern region, hydro is more in the Northern region, up North, and then you find renewable somewhere in the South or also in the Eastern region.

Now, if we want an integrated power system, where the generated electricity should be transported from one region to another region, then we need a pan India planning. What we need is a mechanism which shall work throughout the country, and that is why electricity authority has been interested with the responsibility that you supervise and suggest that what is needed to develop the efficient networking in this segment?

Now, because of the geographical condition, as I said that, there has been a constraint of ensuring the availability of electricity in the deficit states, or proper evacuation of electricity from the surplus generating states. Now, this issue can be effectively addressed only when we have well integrated structure, well integrated system in the country. And the Act decided to provide for region-wise geographical demarcation for this integrated system and that is, where you find that institutions like Regional Load Dispatch Center, National Load Dispatch Center and State Load Dispatch Center was established.

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- **2003 Act – continued the concept of transmission utility – to plan and coordinate**
- **Certain changes are introduced to avoid conflict of interest**
- **Prior to 2003 Act, transmission utilities approving the application of a person for grant of license before Regulatory Commission actually granted license**
 - **Transmission utilities were deemed licensees – conflict of interest involved**
- **2003 Act restricted to recommendatory role – Regulator shall grant the license (Sec. 15)**

And it was established obviously under the 2003 Act, but prior to that also, it was being mentioned under the 1998 Act. We will have a separate session on load dispatch center, what are the powers, what are the functions? We will study that in the next session. Now, the 2003

Act, as I said, continued the concept because it was a viable solution, viable solution in order to attract private participation as well as to bring in efficient management in the functioning of transmission sector.

And that is why, the idea of transmission utility continued under the 2003 Act but then certain changes were being introduced, and thus, those changes were being introduced to attract private participation, to attract more investment in the transmission sector. Earlier, what was happening was, that it was the transmission utility which was approving the application submitted for obtaining a license, and that approval was, in a way, stamped and notified by the regulatory commission.

So, you can very well visualize a situation where transmission utility engaging into the transmission business is evaluating the application from the applicant who wants to enter this business. It is not very difficult to imagine that biasness may creep in, while undertaking the evaluation process. And as a law student, we need to understand that any decision-making influenced by biasness is not sustainable in law.

So, in order to avoid that conflict of interest, what was suggested was that, let this transmission utility play a role but not of deciding on the approval of the application. Not to decide whether such application is to be considered or not? Let it only recommend so; the transmission utility is now allowed to recommend whether the application is to be accepted or not. It is for the regulatory commission to grant license, that is what is given under Section 15.

Now, in order to meet the requirement of granting the license, the law suggests that let there be publication of the interest shown by the applicant, so that objection can be invited, and if the appropriate commission decides not to accept the application, it is being suggested that reason must be given and that's why the application is not accepted, the premise is that, if the government wants to attract private investment, then transparency must be the key feature.

So, necessary confidence will be there, necessary trust will be there, in all those who want to participate, and that is why this process is being categorically let down that once the application is submitted, it has to be notified, and at the same time in case of rejection, if the application is rejected, it must be backed by, it must be backed by the reason as to that why it is rejected?

So, principles of natural justice is being required to follow; it is advised that the applicant should be made aware of the ground on which the application has been rejected by the commission. So, that so what is the process which is being laid down.

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- Envisions multiple licenses in parallel transmission and distribution lines – opens up the participation of private licensees for inter and intra state transmission
- Duty of utility and licensees - non-discriminatory Open Access to its transmission system - every licensee and generating units – and - consumers after open access is introduced in distribution segment
- Needed to Operationalise– multi-buyer model

Now, why this is a recommendatory role? why the transmission utility is still being asked to play the role? One reason is to avoid unnecessary congestion in the network. Perhaps the capacity in that station is sufficient enough to cater to both the generating unit and the distribution licenses. Thus, it is not advisable to go for erecting towers and laying down the transmission network.

Since transmission utility is already there in the market the input of the transmission utility would certainly help the appropriate commission in taking a call which would be plausible, which would be more scientific and also it will be in the interest of the market.

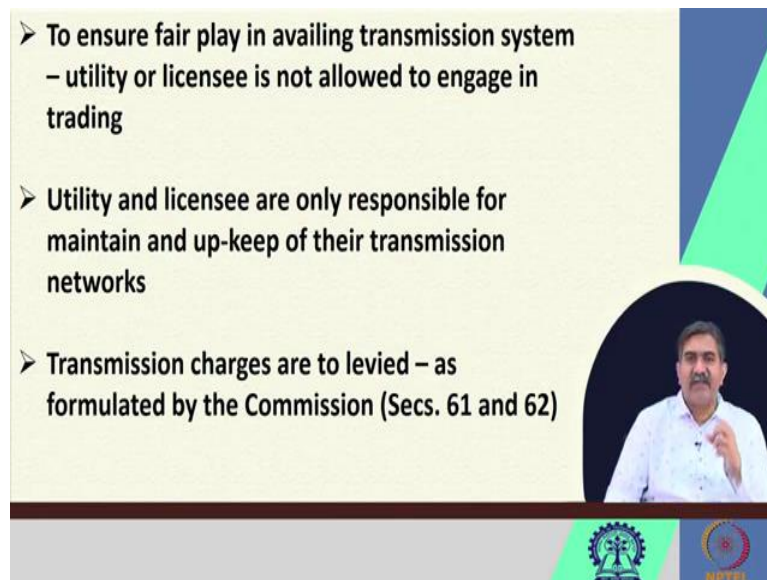
That is why this role has been conferred upon the utility. Now in this segment, like distribution licensee, which I will be discussing in lectures to come, even in this segment the law envisages the presence of more than one transmission licensee; that is what is clearly spelled out parallel transmission licensees are possible. We can have multiple licensees in one region, and why this is needed because, already, the segment is controlled rather than majorly controlled by the government.

Suppose the idea is to invite private capital. In that case, it is suggested that they must also be allowed to operate without any discrimination. Thus it is being provided that non-discriminatory open access should be the governing principle in this sector.

There shall be no discrimination to the private licensees if they are allowed to operate and do business in this segment. This is also needed for implementing the idea of multi-buyer model (if you can recollect); I said this while discussing the salient features of 2003 Act that; one phenomenal change which the Act has introduced in this sector, that is discarding single-buyer model and introducing multi-buyer model where the choice is being given.

And in order to make this happen, these multiple licensee provisions are needed, non-discriminatory open access is needed. And only when you find multiple players participating in this segment, the sector becoming competitive. And if the sector becomes competitive, it will cater to the need of the consumer.

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- To ensure fair play in availing transmission system – utility or licensee is not allowed to engage in trading
- Utility and licensee are only responsible for maintain and up-keep of their transmission networks
- Transmission charges are to levied – as formulated by the Commission (Secs. 61 and 62)

Because transmission utility has a very important role to evacuate and ensure the supply to the distribution licensees or to the consumer, it is being suggested that they should not be allowed to engage in trading. If they are allowed to engage in trading, then what will happen? That, the infrastructure will be used to advance the cause of its own cliental, and that is why transmission licensees are being debarred from entering into the business of generation and trading.

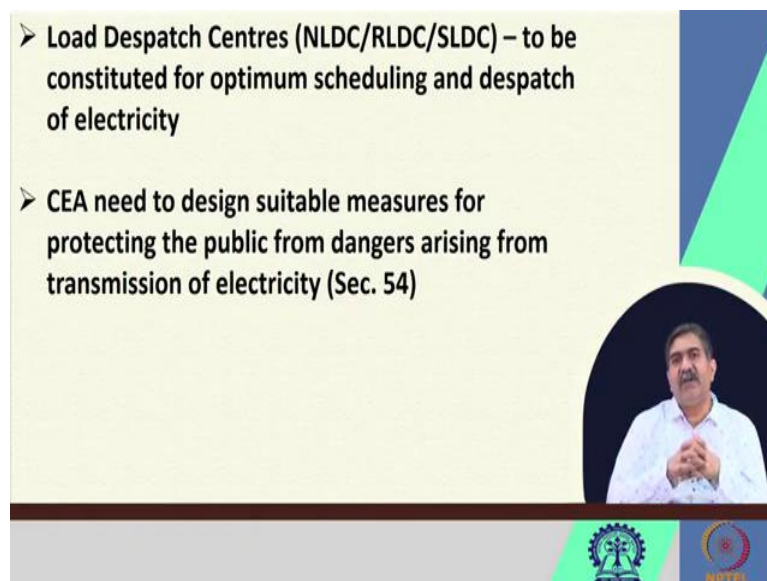
They are not allowed to be a generating company, and also they are not allowed to do trading. The moment you take these activities away from transmission utility or licensees, you would find that they will participate, play, and give in a very fair manner. Because they do not have any vested interest, they do not want to promote one generating company over another.

They do not want to facilitate one licensee over another, so they will go by the rule of the market, and they will facilitate each participant fairly, which is why the law categorically prohibits them from trading.

So, what is their responsibility? They do have a responsibility only to maintain and up keep their transmission networks. That they need to maintain, regular maintenance is being needed so, the transmission network should not collapse, and that is very vital because blackouts happen because of non-maintenance of transmission network. The supply of electrical energy gets hampered because of the absence of maintenance; and how do they maintain? They would be maintaining it from the tariff, what they would be charging for the use of their network.

The tariff is to be determined by the appropriate commission under Section 61 or 62. So, there also it is being suggested that let there be a tariff formulation in a fair manner and let the transmission utility get the necessary revenue for meeting the requirements of the licensees. Get the necessary revenue to maintain its network.

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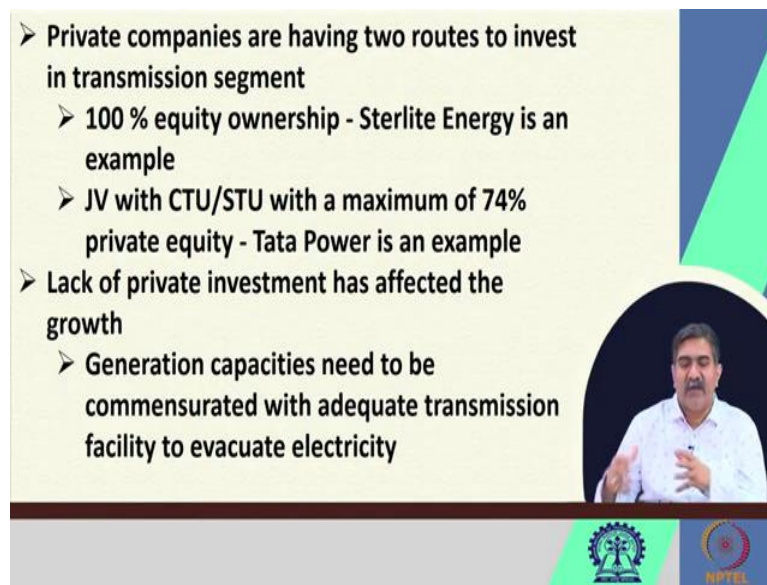


- Load Despatch Centres (NLDC/RLDC/SLDC) – to be constituted for optimum scheduling and despatch of electricity
- CEA need to design suitable measures for protecting the public from dangers arising from transmission of electricity (Sec. 54)

Now, as I said, the transmission sector plays a significant role in connecting one region with another region throughout the country, and that requires a proper coordination and for furthering it, three institutions are being established (NLDC) National Load Dispatch Center, Regional Load Dispatch Center, and State Load Dispatch Center which has responsibility of planning the optimal scheduling and dispatch of electricity. So, that over drawl should not happen so, that over injection should not happen, all these are the responsibilities, and we will be discussing it in detail in the next session.

And then because transmission network, is responsible for carrying the electricity on a very high voltage, ranging from 100kV to 700kV. It is very well imagined that such activity may put the life of human beings in danger or life of living creatures in danger, and therefore, electricity authority is being suggested to provide for the major switches needed to protect public from such dangers. The mandate is provided under section 54 of the Electricity Act.

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➤ Private companies are having two routes to invest in transmission segment

- 100 % equity ownership - Sterlite Energy is an example
- JV with CTU/STU with a maximum of 74% private equity - Tata Power is an example

➤ Lack of private investment has affected the growth

- Generation capacities need to be commensurated with adequate transmission facility to evacuate electricity

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Now, as I said, the private participation is the desirable goal, and that is why, the necessary tweaking has been done in the legal scheme also. So that, a private participation comes in this segment, they will augment the strength; they will make the system more efficient. The management will be professional, though, the success story is not very remarkable as on date, but then gradually, perhaps, we would find more private players entering into transmission business also.

For this, it has been provided that if any private player wants to do this business, they can always go for it, 100 percent equity owner. With 100 percent equity ownership, it is being allowed; in fact, we do have such player in the market. For example, Sterlite Energy is one example, Reliance Infra is there. Along with it, there is also a planning of Joint Venture between government-owned companies and the private players. We have a Tata Power example of that, which is a joint venture between Power Grid and Tata Power.

So, that is what is there, but then there is no denial that more participation is needed, the power sector has witnessed the involvement of private participation in the generating units, in the generating plants.

Same way, we need to see in the transmission network so that independent power producers need not struggle to find the consumer, independent power producers need not struggle to supply electricity to the licensees in qualitative way. And that is why it is being suggested that, let there be a private participation.

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➤ **Right – of – way – A measure concern for the expansion**

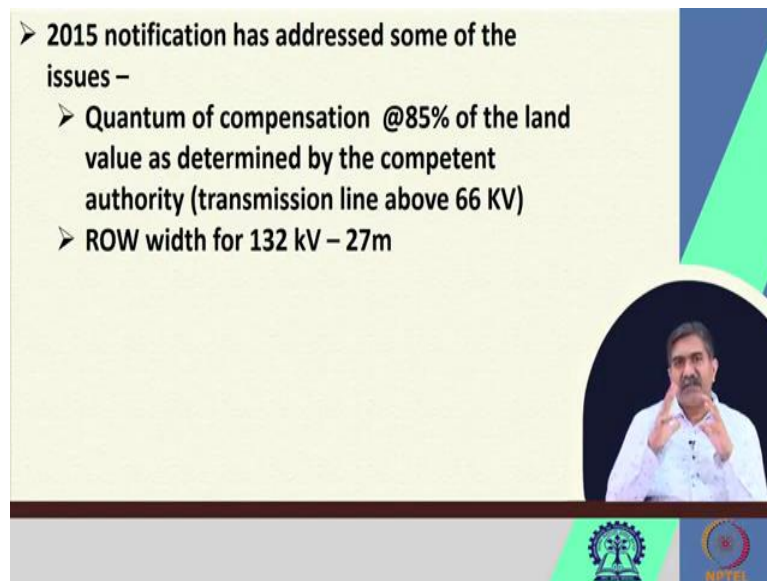
- Strip of land used by electrical utilities to construct, operate, maintain and repair the transmission line facilities
- Width of a right-of-way depends on the voltage of the line and the height
- Land-acquisition, environmental clearances, awareness amongst land-owners are major issues

In transmission, there is another important thing which also causes a bottle neck in the growth of this sector, bottle neck in the participation of private players that is right of way. Now, right of way is about use of land where the transmission tower is erected. Needless to say, that it does not amount to acquisition of land as such, the way we see it for infrastructural project. For example, a national highway or, for example, when the land is being acquired by the government for some important national activities, in this case, it is only a tract of land that has been acquired.

And many times, it so happens that the land owner refuses to part with the land; one because of the land becoming completely a waste piece for the land owner, land owner cannot do anything on that piece of land. Other is also because of the danger associated with the wire crossing over that land. So, right of way is something which is also becoming a major concern for the growth of this sector. Though we have a very scientific mechanism in place where it says that what shall be the width for right of way and what shall be the height of the tower, all this is being scientifically established, and accordingly, the land is being acquired.

But, still, it is a matter of concern; still, it is not being accepted because of various reasons. Apart from the reluctance of the land owner, there are also issues of environmental clearances. You must have seen big transmission towers crossing through dense forests, so there are issues; how that should be allowed in the forest land? You must have seen transmission towers in the agricultural land. So, what will happen to the agricultural activities in that area? So, obviously, these issues create a sort of bottle neck for the necessary growth of this sector.

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- 2015 notification has addressed some of the issues –
 - Quantum of compensation @85% of the land value as determined by the competent authority (transmission line above 66 KV)
 - ROW width for 132 kV – 27m

In 2015, the notification has come from the government; this notification primarily addresses the issue of the payment of compensation because the rate of compensation was varied from the state to state. And therefore, a demand was being raised that we need to bring a standardized format of compensation, and that is why in this notification, it was suggested that, let there be 85 percent of compensation to be paid as per the land value.

The land value has to be determined by the competent authority, be it a district collector or any authority designated by the government. And also, it is being suggested that what shall be the width when the right of way is to be determined. Generally, a wire zone is being determined that, what shall be the wire zone and that zone is being kept absolutely obstacle free; things are being cleared even when it comes to the growth of tree; beyond a point if tree is growing, then it is to be cut in order to make the transmission line clear.

So, these are the issues; these are the challenges which are somewhere creating the necessary bottle neck in the growth of this segment. That is all for today's session. Thank you for joining.