Urban Governance and Development Management (UGDM)
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Lecture – 39
Traffic and Transportation Management - 2

Welcome to lecture 39 in this lecture we are going to discuss some focused area of traffic and transportation management. In the last lecture we introduced the lecture in a transportation management we mentioned that the basic and salient features of the transportation management and we also told you that the supply side and demand side of the management. So, today we are going to discuss a few cases and few examples so that you understand better. So, in this lecture we are going to discuss.

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1. Supply and demand side of traffic management
2. Public Transportation – Case Study
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The various types of supply and the demand site of management and out of that the significance and the utility of the public transportation with some of the examples and the cases. We will see some case study and then we will also have discussion on the non motorized transportation modes. And apart from that what are the other traffic controls and management available and that also will just mention.

So let us start with the supply side and demand side. Now you know that the transportation and the traffic is a basic mobility infrastructure in the cities. It allows common people to transport

from one zone to another zone one place to another place and it needs a physical area physical space which we call as the road or the carriage ways. So, out of the land use breakup at least a 15 to 20 percent of the total land use is required to be allocated.

For the transportation infrastructure so therefore it is not only the road infrastructure it is the allocation of the space at the same time the construction of the adequate carriage ways. And also it is required to have the efficient transportation modes on the road so these are required to make the transportation easier for the common people from one place to another place now in these activities 2 aspects is important.

One is that it is not possible to endlessly increase this space allocated for the traffic and transportation. Like in some of the American cities they have gone for increasing the space for traffic and transportation and beyond 25 percent 30 percent spaces is located for the traffic and transportation mainly due to the over emphasis on the privatized vehicles that is the car personalized car but another side which can be also taken into account.

That if we limit the road areas and the allocation of the land or the other infrastructure or the amenities for the traffic and transportation up to some limited manner and we make our modes the transportation modes in such way so that we reduce the privatized vehicle. And we use more public vehicle so the first part which is more focused on the enhancing the transportation infrastructure in terms of the land carriage ways the transportation modes.

Everything those are called supply side and the other side which basically controls the use of the private car and the encourages the use of public transportation that is called demand side of the truck the traffic management so these two parts are important .

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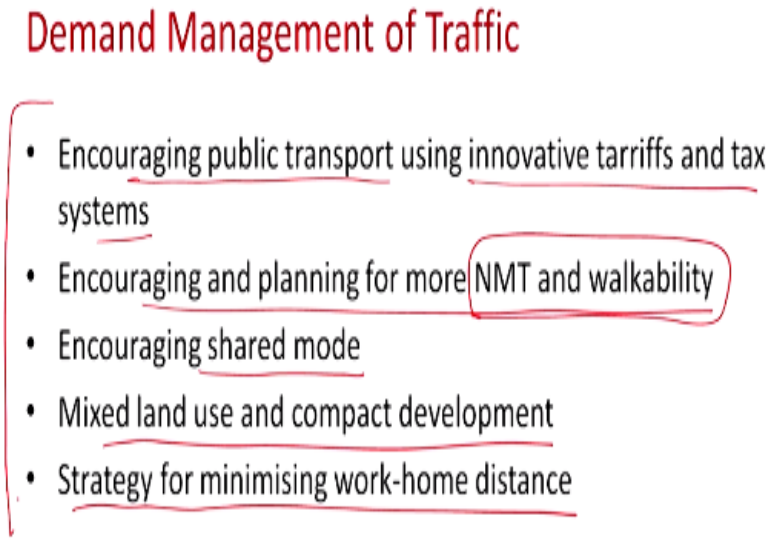

So, now within the demand side of the traffic you will see these are the following elements. Now we told that encouraging the public transport using innovative tariffs and the tax system now. Normally in a city people do not use to try use the public transport unless the public transport is efficient affordable and comfortable. So, the public authority has to make it or ensure that the public transportation is efficient comfortable and affordable.

And then discouraging the privatized vehicle by using a different tariff and tax systems so that people are discouraged to use the car so that they have to pay much more tax and tariffs. So, this kind of demand management if possible encouraging and planning for more non motorized transportation and walkability the non motorized transportation like rickshaw and walkability this do not contribute in making pollution in the cities by because these are not limiting.

And at the same time the non motorized transportation they do not take much space in the ground. But at the same time they share or the carry much more I mean more number of people when it is compared to a private vehicle. So, therefore non motorized transportation is a and also it creates a large amount of employment for the country like India and walk ability is unique because walk ability ensures you to work from your home to all the places.

Where you need to go so the moment you encourage the non motorized transportation and walk ability definitely your dependence on the car will be less so. The planning and designing of our

cities need to be such so that the non- motorized transportation the cycling and the walk ability. This all are be accommodated in the city so that people are more encouraged to use non-motorized modes and the walk ability.

Third is the encouraging the shared mode even if in our in some of the cities there are some non-motorized mode of the auto rickshaw or the pooled car. So, those kinds of practices which encouraging it encourages the shared mode. That means many people can share one vehicle with distributed or divided tariff so those kinds of shared mode is also encouraging when we say the demand side of traffic.

Because our main objective is to take as less as possible the ground space and as more as possible accommodate the people within a vehicle so the road is for the people road is not for me for the vehicle. If the vehicle is there which carries a significant amount of people then the vehicle can be allowed in the road. Otherwise road is for the people that is the main message and 4^{th} is the mixed land use and the compact development.

Now classically the urban planets they have tried and they have propagated the segregated land use zones and segregating land use zone means residential zones the industrial zone commercial zones are different and resident from the residential zones. You are supposed to come out each and every day to your job location. That is the commercial zone or the industrial zone but now the concept is that if we want to reduce the distance between your work and home.

Work and education we have to break this concept of the segregated land use and we have to bring some amount of mixed land use and compact development so that the distance between the work and home it becomes less. And more people are accommodated within the residence the commercial district and residential district when it is taken together as a mixed use district. And the distance between the residential and commercial is less.

So, therefore the mixed land use and the compact developing is another demand side management. Because using mixed land use we can reduce the number of trips number of journeys in the city significantly because in the segregated land use. People are staying

somewhere else in the district area and they are commuting each and every day. So, apart from that there are strategies for minimizing work from distance.

For example there could be the strategy like if any companies come to the city and they want to set up their industries or the business entrepreneurship. They are supposed to accommodate the office or the quarters the residential quarters of their staff within their campuses are within their easy facility. So, that the distance between the office and the home is less so those kinds of strategies for integrating the residential accommodation or their locations.

In relation to the job location has to be taken or this kind of strategies along with the mixed land use strategy can be taken. So, these are the demand management of the traffic which is very important. There are many I have just mentioned very few important event management.

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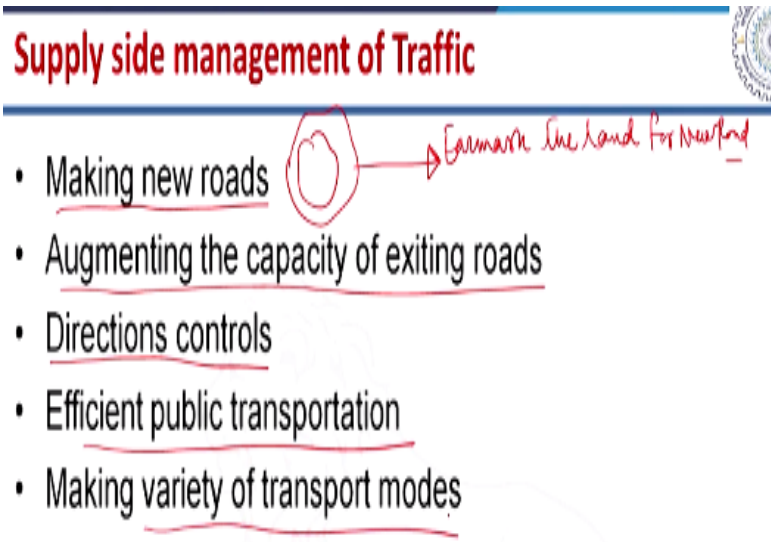

On the supply side we do take several strategies including the first line of the supply side is making new roads because city is expanding population is increasing and every new settlements new population they need new roads. So, the city with city expansion you need new roads so ear mark the land for the new road. For road infrastructure one positive element is that if you acquired the land or if you used to acquire the land for construction the road.

The road is the least resistant element which people do during the land acquisition because road is something which is accepted by many people. And another reason is people know that whenever there is new road. The surrounding land uses will get higher land value because of the road infrastructure that is why making the new road is possible. But it is only possible if the city managers they take initiative to identify the new roads.

Along with the incompliant with the city development plan and then acquired the land and construct the new road then only it is possible. Then not only new roads augmenting the capacity of the existing road now the existing road sometimes have they had the writer of way. But the carriage way with this less so in that case carriage way need to be increased. In some cases the carriage way is so less even it cannot be possible it to widen the carriage way.

Because the height of way is very less so in some cases we do acquire some amount of land to widen the road apart from that the quality improvement of the carriage ways and the cycle tracks and the payments can be done. These are all the capacity improvement of the existing roads then directions control. Sometimes we find that the roads are not having the capacity to have all the traffic volume because every road has.

In the last lecture, we discussed that every road has the capacity to have the traffic volume. So, in those situations we control the directions maybe from the two directional traffic we convert it to the unit directional traffic and we changed the direction during the peak hour and the non peak hours. So, those kinds of controls we do as a supply side management than efficient public transportation.

Now we provide public transportation as efficient means and modes for the general people so that they are discouraged to use the private mode of transportation and making variety of transport modes apart from the public transportation that should would be variety of transport modes in public and private and the shared vehicle. So, that people have much option and they can choose between the options so these are the supply side management of the traffic.

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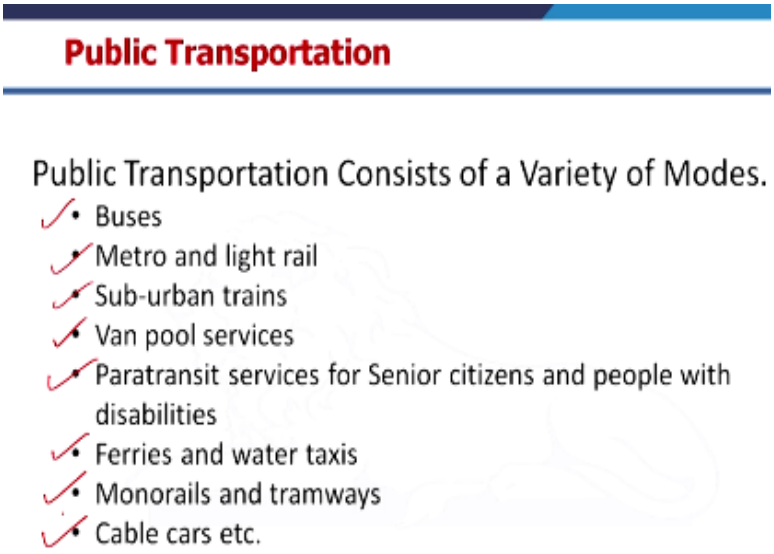

Now, let us talk about the public transportation we told you that public transportation is the backbone of a transportation system of a city and it is the basically the central theme of a city transportation. Now public transportation consist of variety of modes it can have buses metro and light rail sub-urban trains. It can have pooled services and it can have paratransit services like the rickshaw and all those.

It can have ferries and water borne or taxis or the transport it can have monorails and the tramways and have cable cars etc. Apart from that there are various kinds of public transport like the school bus and the buses used for the transporting the employees of a particular company. All those kinds of facilities are also part of public transportation which is available in the city.

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Benefits of Public Transportation

- Public Transportation Saves Money
- Public Transportation Is a Safer Way to Travel than by Private Transport
- Public Transportation Reduces Fuel Consumption
- Public Transportation Reduces Carbon Footprint
- Public Transportation Enhances Personal Opportunities
- Public Transportation Provides Economic Opportunities for Government.

Now the benefits of the public transportation as we told you that public transportation ensures a affordable comfortable and comfortable journey from one place to another place till we see that what are the other benefits. So, probably transportation saves money that is the first thing because it is the shared vehicle. It is a safer way because always the bus transport or the public transport is always safer from the private transport.

Because of this better design is robustness it is control system and everything and it reduces fuel consumption because it is a shared and the efficient system reducing the carbon footprint usually and enhances the personal opportunities .Now it means that whenever there are variety of public transportation like bus MRTS tramps and other suburban railway. So, it gives you much more opportunity to choose from the options.

Public transportation provides economic opportunity for government because government if they run an efficient public transportation. A public transportation can connect one zone to another zone very distance zone. For example for Mumbai they run the suburban railway and the suburban railway from the city code to the distant area. They are connected and because of this connection not only the residential development.

It is also the commercial and the business development is possible in a very distant area. Now that is why the city grows along the transportation nodes. That is another reason so having said that I like to show some of the practices.

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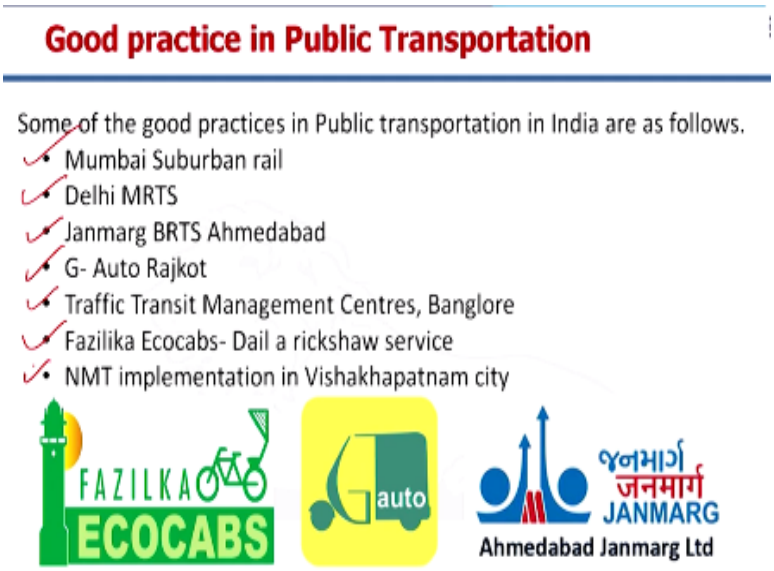

So, few practices are like good practice I told about Mumbai sub urban rail Delhi MRTS and Delhi metro really is another very example. Good example, BRTS Ahmadabad, then Rajkot auto system then traffic and transit management in Bangalore. Then the festival then in recently one small city they have started the Fazilika cabs that is the shared kind of non-motorized transportation and non-motorist transportation in Vishakhapatnam city.

They are actually many good practices which are coming up in Indian cities but I have listed a few and out of that I am going to show some like in Mumbai. You know that it is a very vast system. It connects from the city core area.

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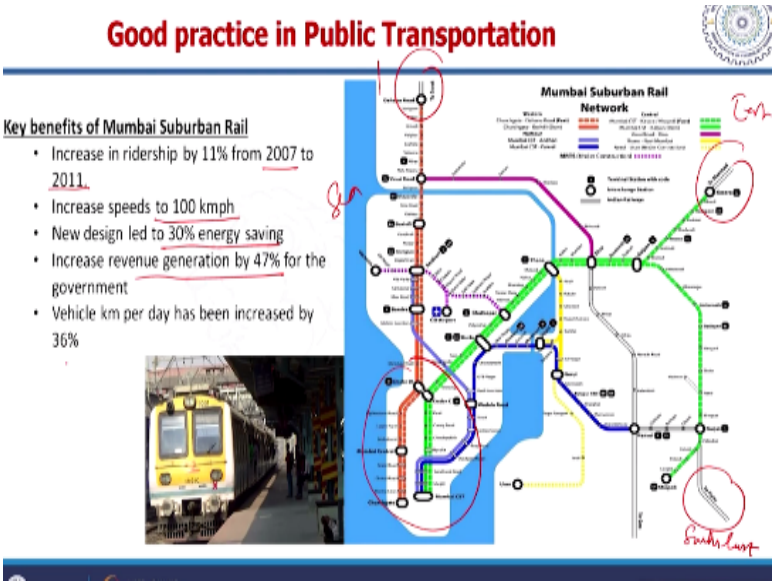

To very distance area in all the directions because it site is the C and it connects to the north to the east to also to southeast and the ridership has increased from 2007 to 2011 recently. There were some mishaps in some of the stations but the number of mishaps in a very large time period is very less. So, it is a fairly very successful system and the speeds also they have improved from earlier into a 60 hours 60 or 70 kilometres to 100 kilometre.

New design led to 30 percent energy saving and the revenue also increased by 47 percent by the government and vehicles kilometre per day has been increased by 36%. So, this is how the suburban railway of the Mumbai city is operating.

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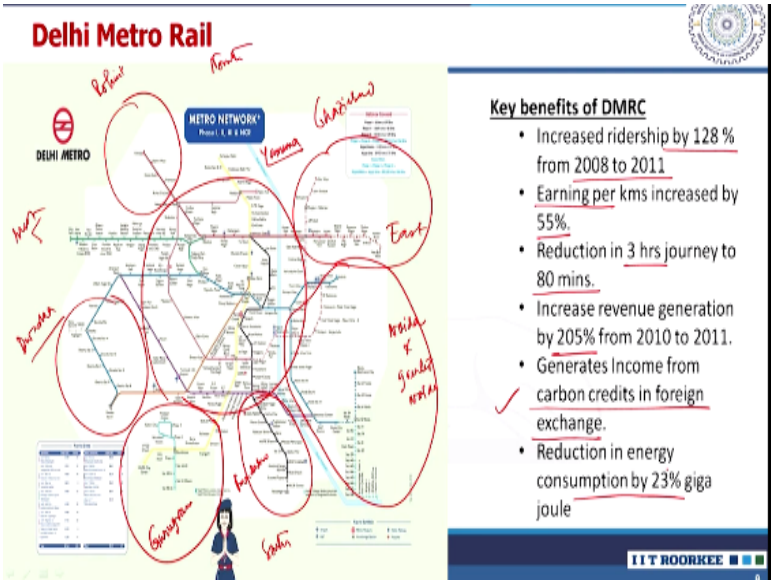

Then another very important system is Delhi metro rail system like any other large mega cities in the world. Now the limit has been also accommodating a large amount of traffic from various parts of the city. You can see the map here you can see that this is the river Yamuna. This is the schematic plan of the metro railway so it connects from west to east across river Jamuna and also it connect from connect the north and south.

And it also connect cities like Faridabad and it connects city like Gurugram and it connects the city like Noida and greater Noida and also it connects the city like Ghaziabad in west it connects Rohini and also it connects the another township Dwarka these are all new township which is situated around the main core city of Delhi. And every city is connected by the metro rail network and because of this metro rail network.

The people are it is now possible from all the corners of the larger metropolitan area to commute and work in the core city of the Delhi within 1 to 2 hours of the transportation. Earlier it was not possible so key benefits of the Delhi metro rail corporation and metro rail service is that the increase ridership by 128 percent from 2008 to 2011. The earning per kilometre increased by 55 percent reduction in 3 hours journey to 80 minutes.

So, it is about more than 50 percent benefit and increase our revenue generation by 200 more than 200 percent within 1 year and generates income from the carbon credit in foreign exchange. So, that is another very important element which very few cities good able could achieve that and reduction in energy consumption by 23 percent from what was earlier. So, this is a very good system and in coming years the network of the Delhi metro rail.

And metro rail will be larger than what is existing and it has been developed in a comparatively smaller timeframe then the other projects which we did in India. So, Delhi metro rail is a better good practice in terms of its project implementation. It is operation it is coverage and it is a social benefit also the next I would like to mention is the BRTS system.

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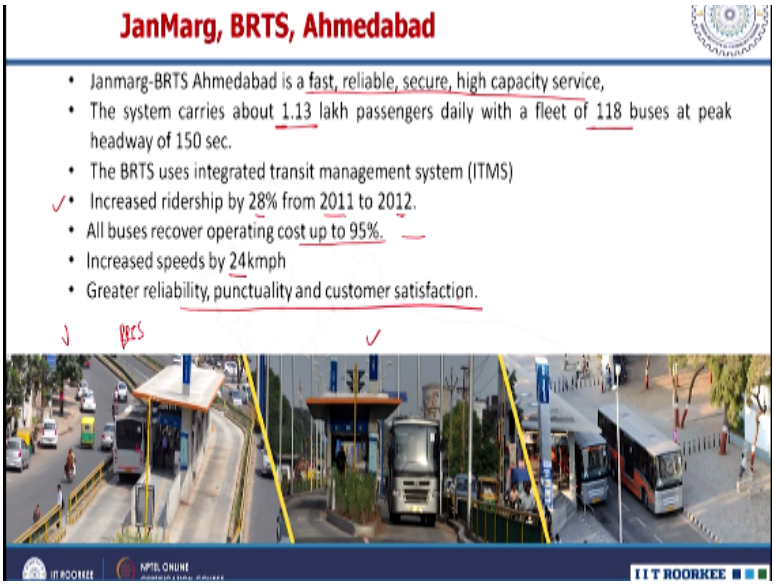

The BRTS system Ahmadabad it is a very fast reliable and secure high capital capacity service the system carries about more than 1 lakh leg passenger daily with a fleet of 118 buses at peak headway of 150 second. So, you can see some of the pictures like this is the BRTS corridor with the central facilities or bus stoppage and the shades of the common people. These are some of the pictures again and the other traffic is going in two directions in other direction.

So, this is going along the mid way of the road and you can see the other points in increase ridership from 28 percent from 2011 to 2012. All buses recover operating cost up to 95 percent. This is something new because earlier in all the transport company the operating cost of the bus was not possible to be realized from the day to day operation. They had they could it increases speed by 24 Kilometre per hour.

Greater reliability punctuality and also customer satisfaction now in India the bus service in all the cities was not that good after JNNURM in 2005 government tried to give good quality of the buses in the Indian street. But if you do not have the good amount of the road condition or the good road track I mean the good quality also bus cannot serve. So, this is a good example that where they could integrate.

And they could create a good amount the efficient amount of road system and a better fleet in this BRTS Ahmadabad. The second is that in the city of Bangalore.

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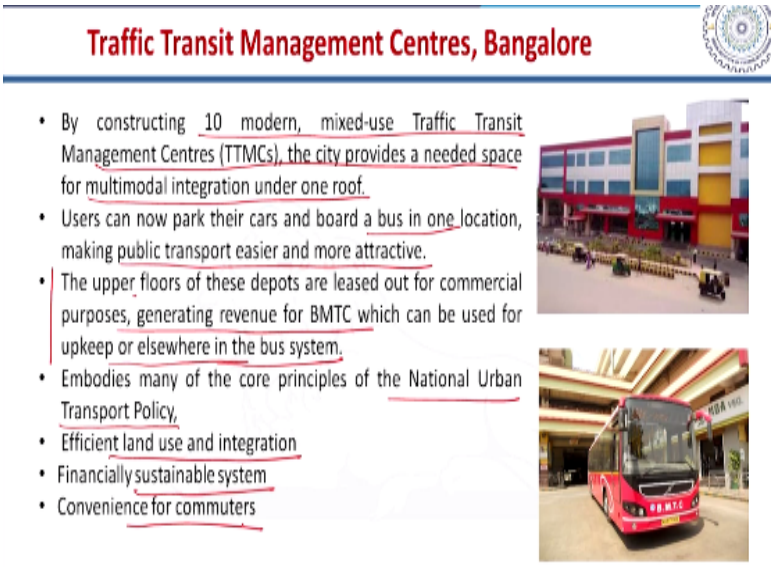

They have also tried to integrate the provisions as a national transport policy in their traffic and transportation management. So, what they have done they have consulted 10 modern mixed use traffic transit management centre which in the city provides the needed space for multimodal integration under one roof. So, therefore the objective of this traffic and transportation centre is to integrate.

All modes of transportation which is segregated along the across the city in all corners if you see the other cities or in the earlier practice was that in the cities if the railway transit is a terminal is in zone A. The bus transit or bus terminal is in another zone or the metro rail is another zone so they tried to integrate all the modes of the public transportation and bring it under one roof
But this kind of transportation centre is many numbers.

Here the number is 10 and they have distributed across the city. Users can now park their cars and board a bus in one location. So, these are the park and ride facility they have done for the city. The upper floors of depots were leased out for commercial purposes generating revenues for Bangalore mass transit corporation, which can be used for upkeep or elsewhere in the buses. So, therefore what they have done that they have created or they have brought the other land.

Uses like commercial and business land uses to make the project viable so that along with the transportation the project becomes viable and people also get some amount of benefit from the other land uses. And I have told that the integrated the national urban transport and transport policy provisions so here they have tried land use integration and it is a financially viable system and it is very much convenient for the commuters some of the pictures you can see.

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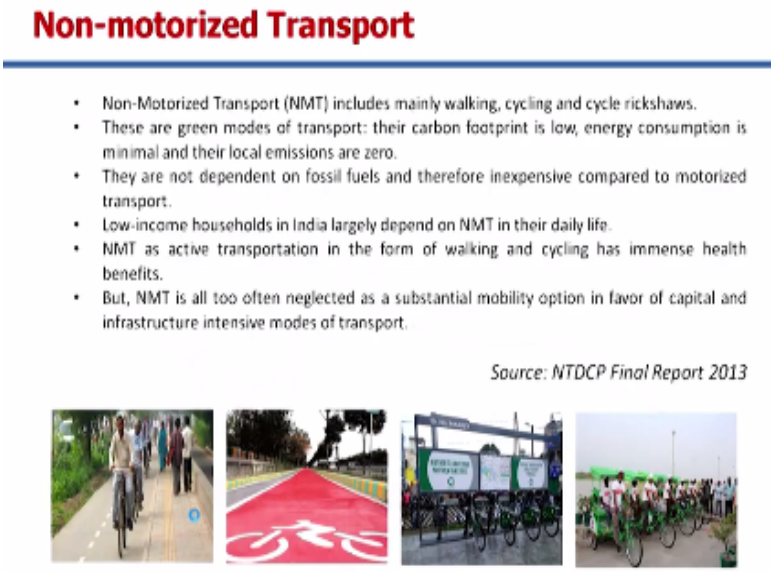

Next is the I would like to mention salient points about the non motorized transit. Now non motorized transits are basically as I told that these are a very good option when compared to the cars. Now in India fortunately many people they use cycle naturally walking also naturally but it is the role of the public authority to create such infrastructure like cycle track or some common track which will provide the space per cycle the walk ability.

And the non- motorized transportation not only across along the road but also in the intersections in an integrated manner. So, those kinds of facilities need to be accommodated in Indian road condition. So, some of these cities they have done such practices.

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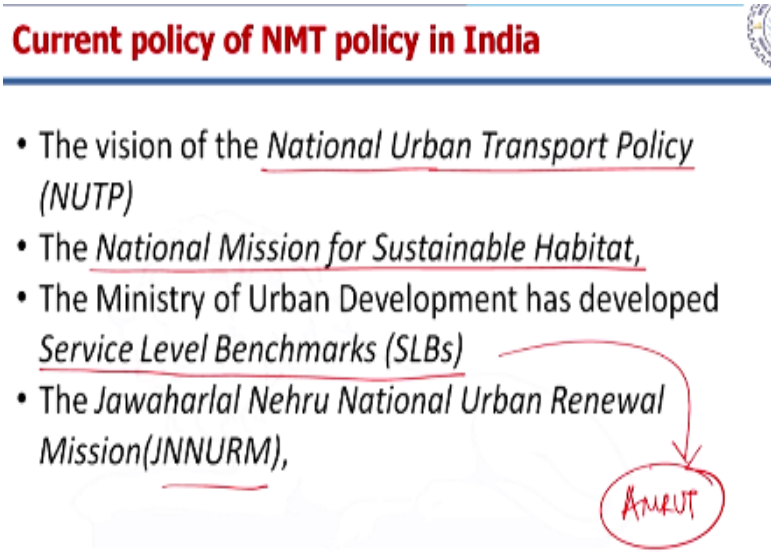

And now currently the government of India they have identified the national the NMT in the national urban transportation policy. And then they have mentioned that the national mission for sustainable inhabited that if we encourage more the NMT the sustainable habitat. The objective of achieving sustainable habitat will be more fulfilled then ministry of urban development they started the service level benchmark and during the post Jawaharlal Nehru mission.

Now they are continuing it in AMRUT mission so in AMRUT mission the non - transportation non – motorized transportation is one of the very trust areas where every city is supposed to accommodate and plan.

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So, apart from this public transportation and non-motorized transportation they are various traffic controls and management system which you can adopt and you can study more like we can have a road pricing. All the roads may not provide equal road pricing for all the commuters there could be variable pricing the parking pricing.The parking pricing is very common like in India you might have seen that people park their car in the within the carriage way.

And it creates a botulinic and it creates conjunction it should be discouraged and they should be allowed the part of vehicle alone on a designated place and also with the cost. Second is the public transport fare structure is another very important element. Now all the fare structure can be variable based on the economic group. All it can be uniform and it can be integrated also like fair in the bus system metro system rail system.

All this management of the fairs can be integrated then innovative measures like park and ride I mentioned about it. Car pooling is also very important some of the taxi operators they know provide the carpooling facility in India also. Dial and ride in this method you can dial and you can ride taxis or other vehicle then there could be regulatory measures like access control parking management traffic coming zones pedestrianisation and cycling.

Public transportation promotion areas supplementary measures like urban traffic control vehicle management system and other enforcement and regulation. So, this kind of various states of control and management you can adopt in your city based on the situation of your city. Now usually after the city development plan and the zoning plan in the city which is a mandatory requirement under the statute.

We do a formulate a mobility plan and other thematic for all the infrastructure so your job is to make a traffic and transportation plan for your city. A typical traffic and transportation plan will review the existing situation of the traffic and transportation. We will analyze the potential areas where the city can build up and analyze the problem areas and issues and then identify the future development and future roadmap for that development for another 5 or 10 years.

It will clearly demarcate the supply side and demand side interventions in the city for the traffic and transportation. The identification of the new road augmentation of the existing road augmentation of the existing transport infrastructure bringing new transport infrastructure the mixed land use policy the enrichment of the NMT and walk ability. All these policies and the strategies will be taken care in an integrated manner.

In that traffic and transportation plan and the mobility plan so if you have not done that exercise in your city. So, please do that and that will guide the development of the traffic and transportation for your city and since this exercise has already started for a few of the cities. I hope that in near future our Indian cities also will have a better transportation network and the transportation management in terms of providing very easy comfortable and efficient transit.

From one place to another place so with this I just summarized today I showed few cases of the supply side and demand side management. We were told that in the supply side and the demand side there could be various methods for managing the traffic and transportation. We showed few good case studies about the public transportation and then we mentioned the significance of the non-motorized transportation. So, having said that I would like to conclude todays lecture next lecture will be.

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Another very important element that is that how we designed the urban spaces when we create a city or develop a city. There are buildings and apart from the building there are urban spaces within the premises and beyond the premise services which are basically public in nature. Sometimes these places are transport related spaces some spaces are recreational spaces so how to design those are urban spaces or even if you know the design.

What are the salient features in the design it should not avoid to see you should see those elements those kinds of things. We will design and discuss next lecture with some example so thank you very much.