

Chapter Six

Conclusion and Recommendations

6.1 Policy Rationale

The sustained government effort for improvement of Road Infrastructure is well appreciated by all the stake holders including public at large but the process of revenue generation by levying user fee/toll has been taken with a pinch of salt at least by a certain cross section of the society. The levying of toll on use of infrastructure assets like highways is a globally established practice to generate revenues for funding the highway projects. As mentioned in Chapter 5 (Para 5.2), a majority of users in USA have preferred collection of toll on one on one basis for funding the projects. This concept may, however, not be preferred in India due to prevailing economic disparity in Indian society. Therefore the existing policy of collecting toll on a fixed base rate³¹ is more suitable for economy like ours. As far as the rationale for fixing the user fee is concerned, the factors considered to work out the rates as discussed in Chapter two (Para 2.1), seem justified to the extent that a reasonable fee needs to be paid in lieu of the better service in terms of high quality roads. However the implementation of the policy is not free from hurdles. For example Government's claim of employing ETC across all the plazas to fasten the toll payment process and prevent leakages does not get substantiated as the ground realities indicate otherwise. There is a lack of willingness on the part of larger population to opt for ETC and even to pay toll. As a result toll collection mechanism is still predominantly manual despite installation of ETC system at all locations. Therefore enforcement of toll collection policy needs to be strengthened by roping in the appropriate government agencies. Plazas located in remote & rural

³¹ The per km rate is uniform irrespective of the cost of project and length of highway

areas are much more vulnerable to evasion of toll collection as insistence by concessionaire leads to a law and order problem and due to inadequate support from law enforcement agencies the situation remains grim.

In order to eliminate the hurdles in collecting revenue through tolling, an alternate way may be to dispense with the toll plazas completely, through appropriate policy intervention and by creating alternate avenues of revenue generation, this may not only be possible but a more beneficial proposition. By a careful and logical examination, different category of vehicles can be identified for levying a central tax, may be called highway tax (as the road tax for state roads) at the time of registration for a certain period that can be renewed periodically. This methodology will impact with great deal when almost all highways³² in India will become tolled and in such a scenario collecting toll in the form of one-time tax would perhaps be better and more feasible than collecting separately for individual stretches. Another source of revenue collection could be by enhancing, substantially, the Highway Cess on Diesel and Petrol.

This idea will definitely face an initial public backlash but persuasive approach can help achieve this mission as the initial burden will definitely be outweighed by the huge advantages of keeping the roads toll free. To begin with, a more flexible approach can be adopted. Some of the features in the policy proposal could be as under-

1. Initially highway tax may be kept mandatory only for commercial vehicles.

³² This is most likely to happen as at present highways have a share less than 2% of total roads and hence overwhelming growth is imminent in this sector

2. For personal vehicles it may be kept optional. Seeing the response for commercial vehicles it can be made mandatory for private vehicles also.
3. The tax period can be flexible say one year, two years, and five years etc including an option of life time.
4. For proper identification, unique design of number plate duly tagged with intelligent devices, should be installed on such vehicles
5. Private Citizens owning multiple vehicles should be encouraged to get at least one vehicle with this category.
6. Some rebate can be considered on fuel cess for such category of vehicles with a proportionate increase in cess for others for due compensation.
7. Some interest subsidy could be given on the loan amount to the extent possible.

In the proposed dispensation, the tax rates can be applied ad-valorem thus eliminating a possibility of discriminatory treatment of vehicle owners as in present toll tax system. For example a small car costing say in the range of 3 to 4 lakhs is charged same toll as a high end luxury car³³ costing even a crore and therefore discriminatory to that extent.

6.2 Comparative performance of National & State Highways:

As discussed in detail in Chapter three, there is a marked difference in the performance of Highways under central government and the state government and even between the two state governments. Besides, the controlling agency the predominant

³³ Even by the base rate fixation philosophy the luxury cars have much broader tyres and thus higher Vehicle Damage Factor

factor is the geographical location and the socio-economic conditions of the highway users. The revenue generation is subject to political considerations more on state highways compared to the national highways. For example the Ahmedabad-Viramgam-Maliya highway has allowed exemption on CJV category vehicles and the government is compensating the concessionaire to that extent. In other words the concessionaire is being paid from tax payer's money and thereby defeating the purpose of making the highway as use and pay asset as a large number of users are using the asset at others' cost. Besides, the revenue deficit, the toll plazas having rural and semi-urban user base suffer from law and order problems as discussed in chapter three.

The toll plazas catering to predominantly urban population suffer from under reporting of data by the concessionaire, at times in connivance with the concerned authorities. As discussed in chapter three, examples are DND and Mumbai-Pune Expressway. Even Ahmedabad-Vadodara Expressway has approached authorities indicating financial stress on account of loss of revenue due to exemption granted to a certain category of users like vehicle owners in the vicinity of CTM toll plaza at the expressway. The MCA provides for compensation to the concessionaire in the situation of financial stress. But such provision leaves a huge scope for misuse by the private entity often with connivance of the concerned authorities by manipulating the data. For example the counting of exempted vehicles passing through the toll gate is carried out by the concessionaire with no effective counter checking from government side and hence the number of such vehicles can be grossly inflated³⁴ to claim the compensation from government.

³⁴ This is an apprehension only and is not an established fact as the complete process of paying compensation is not known to the researcher

With sustained media campaign against under reporting of revenue generation, and with a view to curtail such practice, MSRDA has decided last year to monitor all the 42 toll plazas on real time basis through a system integrator. This project is at advance stage and once commissioned the plazas will be monitored on line on a single web platform.

Government has been consistently encouraging private investment in infrastructure sector through innovative policy initiatives like concept of sweeteners but the private entities tend to extract undue benefits from such provisions by contractual overreach. Even some of the conditions in MCA appear skewed in favour of the concessionaire. Interestingly, as discussed in chapter three (Para 3.1), in disbursements from escrow account the premium to be paid by the concessionaire to the government is placed on a low priority in the waterfall mechanism being followed to decide the order of precedence in clearing the liabilities on the part of concessionaire or NHAI. With such provisions, even if the concessionaire is having surplus revenues the priority to meet other expenses comes first and government part is fulfilled at a later stage. Whereas when it comes to financial stress to the concessionaire the right of seeking compensation is invoked on priority. As a result on Ahmedabad-Vadodara Expressway the concessionaire has sought concession on payment of premium to government on account of traffic deficit and claiming compensation for exempted category of vehicles. Similarly on Ahmedabad-Viramgam-Maliya Highway the concessionaire has completely stopped payment of premium to government on account of traffic deficit and claiming compensation on account of exempted category of vehicles. Surprisingly

when asked to give details of revenue deficit and the extent of claim by concessionaire the same was not made available by the concerned officials on the grounds of propriety. The officials of MRDC and NHAI Ahmedabad were more conservative and selective in sharing information with the researcher despite the clear written declaration of the purpose of seeking data with undertaking on non-divulgence of the data to any third party. Officials from GSRDC were, however, more open in discussion as well as in sharing the information.

Further on all three toll plazas under study and also as reported by NHAI, almost hundred percent toll plazas are having facilities of Electronic Toll Collection but the user penetration is very low.

The time consumed in collection cash and returning changes etc. is in few seconds generally in the range of 3 to 6 seconds but the time starting from the moment vehicle enters a particular lane and exits the same runs into several minutes and typically in the range of 5 minutes. However it depends on the traffic situation at the toll gate. In high speed zone like expressway, even a small stop of few seconds affect the journey time in minutes due to cascading effect and therefore the expressways should be made practically as no-brake zones for real effective use. But stopping, for paying toll even through ETC system, defeats the concept of expressway.

Generally the users are satisfied with the toll rates but show concern about stopping the vehicle at every plaza even if the toll has been paid for the entire length of the highway.

6.3 International Best Practice:

Chapter five covers the international scenario of tolling in some of the advanced countries, progressively employing latest technology to make tolling a smooth process. Initially in all the five countries namely, Malaysia, USA, Canada, China and Singapore, the toll collection was manual only. But the country like USA (along with some other European countries) introduced ETC in 1987. USA is having two methods of tolling i.e. open tolling like India and close tolling wherein the vehicle is detected at the entry point as well as exit point and is tolled only for the distance travelled on the tolled road only. Similarly Canada adopts a system called Canada 407 Express toll route (ETR). It is one of the most sophisticated toll roads in the world. The 407 uses a system of cameras and transponders to toll vehicles automatically. There are no toll booths, hence the name "Express Toll Route" (ETR). It is one of the earliest examples of a highway that exclusively uses open road tolling. Countries like USA and Canada, having a distinct demographic advantage, are able to implement the policies with relative ease.

However country like Malaysia has relatively low ETC penetration and is suffering from enforcement issues like in India. But with their consistent efforts, Malaysia as on April 1, 2016, have implemented ETC on 51 out of total 177 toll plazas. By fully implementing the ETC Malaysia is targeting to reduce traffic congestion by 30 to 50%. The Malaysian Government has future plans that by 2018, cash payment for tolls will not be allowed and after a full conversion of the ETC system on all highways,

the single lane free flow system will be introduced graduating to multi-lane free flow (MLFF) system in 2020.

Singapore has already introduced a highly advanced system called ERP having following advantage-

- Multi-lane operation with unrestricted vehicle movement.
- Operates for vehicle speeds of up to 150km/hr
- Easy installation of IUs for all types of vehicles
- Smart card technology provides secure and fraud proof revenue collection.

Like USA and Canada Singapore also enjoys a better demographic advantage.

The case of China is different from all other countries as regard tolling system like for any other infrastructure development area. No country has ever matched the pace at which China has created its infrastructure landscape .The country has the record of having 70 percent of total tolled roads of the world. It has 1665 toll plazas as against 394 in India. In a span of two years from 2013 to 2015, the ETC users in China increased from 13 million to 25.5 million, a figure unimaginable in Indian context.

Recommendations:

As discussed in chapter two providing of international quality highways and better riding experience, notwithstanding, the public sentiments do not appear upbeat about the whole process. The main bone of contention is the user fee i.e. toll or

specifically the way it is collected. In a survey in USA, 84 % users support toll collection as primary source of transportation revenue or on a project-by-project basis. Although no such survey results are available in India but frequent news of toll plaza vandalism coming from many parts of the country give an impression that people at large are averse to the concept, at least, in the present form. On several occasions it is seen that the main cause of triggering the conflicts at toll plazas are traffic congestions. Apart from conflicts on toll gates the process of toll collection does not appear to be transparent as there seems a tendency among private agencies (perhaps with connivance of government officials) to misuse the provisions of MCA. Following recommendations on **Policy Intervention** required from governments are made to streamline the process of toll collection and to make it a hassle free process.

1. A stringent enforcement policy is the need of the hour whereby the use of paid assets would be ensured uniformly in an equitable and effective way.
2. No provisions in MCA should be kept for compensation whatsoever for shortfall of revenue collection as the same has potential of misuse by stakeholders causing loss to the government exchequer.
3. The traffic forecast should be as realistic as possible and the prospective concessionaires should be told upfront to seek whatever handholding is required from government side before entering into the process of bidding.
4. The process of selecting the concessionaires must be absolutely fair, transparent and equitable.

5. No concessions to be extended to any section of the society on political considerations.
6. In order to avoid skirmishes with local population, parallel running service lanes can be provided to cater to the need of such population and in no case any exemption is extended to them.
7. If possible a physical presence of government representatives should be ensured on all toll plazas to monitor the functioning on day to day basis.
8. A robust mechanism of social audit by independent agencies should be instituted by making use of technology to the extent possible.

Besides the appropriate policy intervention as recommended above, the existing system of toll collection can be improved by leveraging advanced technologies available worldwide. Some of the suggestions that necessitate technological improvements are discussed below-

1. **Radio Frequency Identification (RFID) Based Electronic Toll Collection:**

Government has already decided to implement ETC at all the Toll Plazas across the country but the user base for this technology is very thin. As against estimated 20 lakh users only 3 lakh users have installed RFID tags in their vehicles and therefore, despite availability of technology infrastructure, the system is not able to reap the benefit to the desired level and problem of traffic congestion at toll booths is continued. Enforcement Policy needs to be strengthened for implementation of ETC so as to make it mandatory to install the RFID units in the vehicles. As far as possible the

toll plazas having ETC system should cease to accept cash thereby forcing the users to switch to the ETC mode.

2. Introducing Close Tolling:

In India open tolling system is prevailing across the board wherein the toll amount is fixed irrespective of the used portion of the tolled road. For example if a commuter enters through Kheri-Daula (Gurgaon) Toll Booth on NH-8 and goes to Manesar which is around 9 Km travel or to Shahjanpur in Rajasthan which is around 75 km travel, he has to pay the same amount which is against the principle of pay and use service.

To rationalize the concept the monitoring mechanism can be installed at every exit point on the tolled section so as to measure the actual length of the tolled road used and should accordingly be billed to the users by advance technology leveraging. This concept is quite popular in USA and will go a long way in India as well and will encourage toll compliance among the commuters.

2. Open Road Tolling (ORT):

ORT or free flow tolling is the collection of tolls on toll roads without use of toll booths. This is the latest technology. The major advantage is that users are able to drive at the highway speeds without having to slowdown to pay the toll. The disadvantage to ORT is the possibility of leakage i.e. violators who do not pay. However the technological advancements will be able to check the violators by incorporating suitable mechanism in the system.

Toll Collection Methodology:

Collection of tolls on open road tolling is done by two methods- either by employing transponders or through automatic plate recognition. While rarely used as the primary vehicle identification method, automatic number plate recognition is used on a number of different highway systems.

Transponders

Transponders are a receiver-transmitter that generates a reply signal upon proper electronic interrogation. Transponders are an adaptation of military identification friend or foe technology. Most current AVI systems rely on radio-frequency identification, where an antenna installed at the overhead gantry at the toll gate, communicates with a transponder on the vehicle via dedicated short-range communications (DSRC). As the vehicle crosses the gate the toll amount will be deducted from the smart card built-in with the transponder.

Automatic Number Plate Recognition

Automatic number plate recognition (ANPR) or an automatic license plate reader (ALPR) is a system that uses optical character recognition on images to read the license plates on vehicles. ANPR can be used in conjunction with transponder systems. If a transponder is not detected on a vehicle, a system of cameras located at each junction logs the vehicle's unique identity and an invoice is mailed to the user. The use of ANPR reduces fraud related to cash transactions or non-payment, makes charging effective.

The Open Road Tolling system is a new technology and has been implemented partially in a very few countries like USA, Norway, Canada. Malaysia has a target to implement ORT or MLFF (Multi-Lane Free Flow) system by 2020.

3. Aadhaar based Linking of Users' Accounts:

ETC system can be further extended by linking the Aadhaar based accounts of users to the central server by employing appropriate technology. With this system the frequent recharging/topping up of smart cards will be dispensed with and the toll amount will get debited to the user's account.

4. Flexi-Toll System:

An attempt can be made to render the toll collection process a bit less cumbersome by introducing a flexi-toll system wherein the toll charges can be discounted at different time of the day(may be called TOD scheme) thus reducing the crowding at peak hours on the toll booths. Implementation of this proposal would also need changes in the relevant rules.

Besides the technological improvement for toll collection process as suggested above following are some recommendations for suitable considerations by the governments-