

Enhancing the Quality of Trucking Services in India

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1. Introduction

The trucking industry in India is entirely in the private domain and is dominated by small road transport operators, majority of whom own a single truck. The industry is a major contributor to the economy. It has been increasing its share in the movement of goods within the country vis-à-vis other modes of transport, up from less than 20 per cent in 1951 to 70 per cent now. It has also, in the process, acquired significant political influence. Given the large number of truck owners, the industry appears to be competitive; the fact, however, is that around 5000 cargo operators handle the entire cargo. According to industry sources, in about 2-3% of cases, do customers directly access the truck owners and book their goods. The cargo operators cartelize and decide the freight and there is hardly any competition at their level. This is the most important feature of the trucking industry in India and it has a critical bearing on the quality of its service and the policy design to deal with the issue. The regulatory provisions governing the industry have been liberalized but a lot more is required to be done.

Road traffic has overtaken the railways in both the passenger and freight segments. Currently, road transport accounts for 85 per cent and 70 per cent of the total passenger and freight transport respectively. Most of the remaining traffic is accounted for by the railways, with a small percentage share going to the air transport sector. The road transport sector has witnessed a growth rate of 7 to 10 per cent every year since 1960-61. It is estimated that total freight transport output will double every 10 to 13 years. A rise in the long-term trend line of GDP growth will imply correspondingly rapid growth in transport output.

The growth of vehicle population, by type, is given in the statement in Annexure 1. The number of goods vehicles has grown from 1.7 lakh in 1961 to 30 lakh in 2001-02, making a growth of 8% annually. The industry has a two-tier structure. Tier 1 consists of freight aggregators who account for the bulk of the freight traffic because of their access to information about freight and fleet availability. They control the business and are recognised by banks. The other tier comprises small operators with 1-5 trucks and practically no market power.

Fast growth of industry has several adverse consequences

Although road freight transport industry is growing fast because of its inherent advantages, it has developed certain features which are not in the interest of the country. These include:

- The structure of the road user charges has promoted an uneconomic distribution of traffic between roads and railways. Road freight vehicles are undercharged; road freight rates are below their economic level and encourage the shift of freight from rail. Ideally, railway should carry most of the bulk goods across the country since it is energy efficient mode of transport and India continues to be an oil importing country.
- Roads suffer from several deficiencies. Given the poor road condition, there is little incentive to invest in better-designed high capacity vehicles.
- Overloading is the rule rather than an exception. It is responsible for faster aging of the vehicles and their breakdown more frequently. Paradoxically, trucks overloaded in one direction are usually empty on the return trip; so overall utilization of the trucks is low and price competition severe.
- Bodybuilding remains primitive in design and material; it is unsafe and uncomfortable for the drivers.
- Drivers work for long hours, have little wayside amenities and are potential carriers of HIV.

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- The negative externalities of road transport in terms of air pollution, accidents, VDF (section 4) are significant and have their high costs.
- Structure of ownership is not conducive to introduction of improvements since it increases initial outlay and cost of operations.
- Variation in motor vehicle taxes distort natural inter-state traffic.
- There are inordinate delays at checkposts.
- Small operators find it difficult to access funds for acquisition of vehicles. High cost financing and lack of working capital finance, are also obstacles to truck operators who wish to expand their fleet.
- Extortions by law enforcing agencies at every stage starting from vehicle registration, licensing, toll points, checkposts etc. result in increasing costs and decreasing efficiency of transport operations.

2. Quality of Service

Quality of service consists, essentially, of three things: transit time; reliability of service and safety of cargo. This was confirmed by a limited survey of shippers' perspective. A list of attributes of the quality of service was formulated and the shippers were asked to provide scores on a scale of five to the individual parameters on the basis of importance attached by them. The findings revealed that maximum importance was attached to transit time and interestingly the freight rates received the least importance. The safety of cargo and the experience of the drivers were other important considerations.

Transit time is dependent on the distance between the point of origin and destination of cargo and the speed of vehicles. Discussions with transport operators of high-valued sensitive cargo revealed that it takes three days for a truck to cover a distance of 1408 km between Delhi and Mumbai and four to five days to traverse a distance of 2019 km between Delhi and Bangalore. In USA, the transit time for similar distances would be two and three days respectively.

The trip time is adversely affected by stoppage at check-posts. These barriers consume line-haul hours in unproductive waiting. Truckers reported that 15 to 25 percent of line-haul time was lost at checkpoints, although other estimates were as low as 4 percent. The vehicles are also not able to achieve optimum speeds due to traffic mix of non-motorised and low-powered vehicles. The position is further compounded by overloading of trucks beyond the permissible loading limits. It is for these reasons and poor road infrastructure that the average speed is generally in the range of 30-40 km/hr against 60-70 km/hr in developed countries.

Other factors adversely impinging on the quality of service are the types of the trucks in use, lack of tracking facilities and the unorganized nature of industry with a host of intermediaries. As the situation stands, most of the trucks are two-axle and fitted with leaf-spring suspensions affecting both the output and the productivity of the industry. In addition, the existing insurance regime covering the loss of cargo is detrimental to the interests of the shippers. Besides, the archaic provisions of the Carriers Act, 1865 are harsh on the truck operators.

Despite the above-mentioned infirmities, on a broad sweep, it can be concluded that basic transport services are generally available at low cost when and where needed. The present standards of service are probably adequate for a large portion of the traffic. However, there are concerns as to the transit time and safety of cargo, particularly of time sensitive and higher-valued goods.

Factors impacting quality of service

The important issues regarding the structure of industry, vehicle technology, road infrastructure and taxation of road users which impact the quality of services, are discussed, in detail, later in sections 3-6.

3. Structure of the Industry

Preponderance of small operators, their dependence on intermediaries for all or some of the functions (receiving, aggregating, handling and delivering of goods; marketing of services), invisibility of this sector to the transport planners and the policy-makers, detention of vehicles at check-posts, high cost of financing, varying incidence of taxes in different states, low productivity, lack of wayside amenities, etc. constitute the basic structure of trucking industry in India.

The structure of the trucking industry can be studied as a system comprising the truck operators, intermediaries and users.

Truck Operators

There is ease of entry and exit from the trucking industry. There is no scheme for registration of transport operators. Large transport companies are registered under the Partnership Act or the Companies Act. The Motor Vehicles (MV) Act only mandates the registration of vehicles by the owners and obtaining of a permit for their operation. There are no provisions for qualitative aspects, such as professional competence, financial standing, good reputation, etc. as are obtaining in UK.

Ownership Pattern

The structure of the trucking industry is highly skewed. For example, about 77% of the truck owners own a fleet size of upto 5 vehicles, 10% between 6 to 10 vehicles, 4% between 11 to 15 vehicles, 3% between 16 to 20 vehicles and the remaining 6% own more than 20 vehicles. The main reason for the dominance of small operators is that most of the operators entered this industry because it was their family business.

Intermediaries

The trucking industry has a number of intermediaries who play a significant role in facilitating the business of truck operators and the provision of efficient transport services. These include the booking agents and the brokers. While broker is a person (or a group of persons) who takes commission from the truck owners and ensures the supply of trucks to the transport contractor, booking agent is a person engaged in the business of collecting, forwarding or distributing goods carried by trucks. In addition, some of these agencies also provide finance and godown facility. Despite the provision in the Act for their registration, the intermediaries are an unregulated lot. No code of conduct has been stipulated for them.

Users

The users of goods transport services are manufacturers, distributors, retailers and the general public.

Factors Influencing Structure of Trucking Industry

Legal Framework

- (i) The road transport sector is regulated by the Motor Vehicles Act 1988. Enforcement of the provisions of the Act is the responsibility of the state governments. They are also empowered to frame rules for implementing the provisions of the Act. The language of some of the existing provisions is vague and prone to varying interpretations. As a result, various states have interpreted law in their own ways especially sections 194 and 200. Some states are charging compounding fee for overloading as per section 200 and simultaneously levying fines under section 194. Other states view these provisions as mutually exclusive; they either levy a fine or impose a compounding fee.
- (ii) The hours of work of a person engaged in operating a transport vehicle are regulated by the provisions of the Motor Transport Workers (MTW) Act, 1961. It provides for 8 hours of work for the drivers. However, MTW Act is applicable only when the undertaking employs 5 persons or more. Considering the present ownership pattern of the industry with dominance of single truck operators, this provision is a major limitation. Drivers generally work for long time beyond stipulated hours without rest endangering road safety.
- (iii) The Carriers Act, 1865 lays down the liability for the loss of or damage to the goods caused by negligence of the carrier or fraud of his servants/agents. Sections 8, 9 and 10 are against the interests of the transporters; they are made to pay for the losses even in cases of theft or dacoity by armed robbers,. Most of the goods transported by road are not insured, putting the entire liability for loss of goods on the transporters. There is an imperative need to review the relevant provisions which are harsh on the truck operators.

Tax Structure

There are multiplicity of taxes, varying basis for taxation and complicated procedures for computation and collection of taxes. Motor vehicle tax rates vary widely in different states. This has resulted in varying incidence of taxes in different states, detention of vehicles at check posts etc. Further, the tax system is inappropriate for multi-axle vehicles which are required to pay more tax in relation to the road damage caused by them.

Deficient Road Network

Our road network suffers from poor road geometrics, weak and narrow bridges, frequent access from side roads to main roads, congested city sections, poorly designed road intersections and existence of level crossings which pose problems for the transport operators. Bad roads result in accidents, frequent breakdown of vehicles, congestion, higher fuel consumption, greater wear and tear of tyres. Initiatives taken by the central and state governments recently to improve the highways would have a positive impact on the efficiency of road transport in the country.

Detention of Vehicles

The smooth flow of goods carriers is hampered by frequent stoppage of vehicles at various check-points. Broadly, the detention is caused by (i) RTO checking: Vehicles are detained for checking the essential documents: registration book, driving licence, permit, etc. (ii) vehicles are also detained by the respective agencies for checking payment of taxes (sales tax, octroi etc) at separate points, (iii) police checking for booking the drivers for offences, such as violation of traffic rules and regulations and (iv) border-post checking of vehicles before these are allowed entry in the state.

The systems and procedures, infrastructural facilities and level of automation vary from check-post to check-post. The detention causes congestion, delay and leaves the vehicles idling thereby adversely affecting the efficiency of the road transport system.

Problems of the Truck Driver

Truck driver is the most critical link in the road transport chain. Despite the significance of his role, he faces several problems. His working conditions are appalling. Long working hours away from home, absence of proper facilities at work, driving on bad roads, inadequate space in the cabin, etc. are responsible for his fatigue which endanger road safety. The various problems of the drivers should be addressed at the earliest.

Spread of HIV/AIDs

Due to migratory nature of their occupation, truck drivers tend to have multiple sexual partners. Prevalence of unsafe sex and lack of knowledge about sexual disease transmittal make them a high risk group for spread of HIV/AIDs.

There is presently a political commitment to the HIV/AIDs programme; Central Government has decided to provide persons with HIV with antiretroviral medicines which if taken regularly, can prevent a person with HIV infection from suffering from AIDs for 15-20 years. Besides, there are numerous NGOs working in the field with expertise and commitment.

It is worthwhile to learn from the experiences of the *Healthy Highways Project* (earlier called the Truckers Project), started in 1997 for prevention of STDs/HIV among the truck drivers, other crew members, etc. The project, initiated by Department for International Development (DFID), has three components, viz. (i) behaviour change communication (ii) sexually transmitted diseases (STD) case management and (iii) condom promotion.

It is essential that transport and allied sectors should come forward and initiate AIDs prevention efforts at the workplace. Their involvement will help to sustain HIV prevention efforts. At government level, efforts need to be made to ensure the supply of quality medicines. Besides, a nation-wide plan of training doctors, nurses and pharmacists needs to be initiated for the success of the programme.

4. Vehicle Technology

There is low level of technology used in the manufacture of Indian trucks; the technology used is of the late 1940s or that of early 1950s. This is despite the fact that two truck manufacturers and the trucking firms are in the private sector; they ought to have shown sensitivity to the technological aspects of the industry. This has not happened; the market/ the economics of business is perhaps not transmitting the signals required for technological upgradation. The body building industry is totally unorganized and unregulated. There is no uniformity in design features which vary from state to state.

Modernisation of Trucks

The case for modernisation is that with increasing age, trucks ability to transport goods declines due to lower fuel efficiency, increased maintenance requirements leading to longer down time period. Modernisation of vehicle fleet may involve: improvement of vehicle technologies, promotion of multi-axle vehicles and replacement of older vehicles by newer/younger vehicles.

Improvement of Vehicle Technologies

The position of technological upgradation is different in most of the developing countries; the diesel engines in these countries are almost 25 years behind the world standards. These countries need to change the existing scenario with respect to various technological aspects, such as manual steering, low power to weight ratio engines, leaf-spring suspensions, low pressure fuel pumps, the conventional air/hydraulic brakes, cabins and seats which are not aerodynamically and ergonomically designed, etc.

Multi-axle Vehicles

The vehicles plying under the national permit should be multi-axle as they cause less damage to the roads, are fuel efficient and cost effective as is brought out in the following table:

Table 1: Two-axle Truck Vs Multi-axle Vehicle

Parameter	2-axle truck	3-axle truck	6-axle truck
<i>Productivity</i>			
Payload (tonne)	9	15	31
Annual utilization (km)	96000	96000	96000
Productivity (tkm)	864000	1440000	2976000
Operating cost per tonne km	Rs.0.99	Rs. 0.78	Rs.0.60
Operating crew	3 persons per truck	3 persons per truck	3 persons per truck
Fuel efficiency per 100 tkm	2.95 litres	2.47 litres	1.77 litres

Source: Study on Trucking Operations in India (1999).

The operating cost per tonne km for a 3-axle truck is 21% less and for 6-axle truck 39% less compared to that of a 2-axle truck. Besides, larger vehicles achieve higher levels of utilisation compared to small vehicles, thereby increasing the cost advantage of larger vehicles.

Phasing Out of Old Trucks by Younger Trucks

In the Indian context, where majority of transport operators own a single truck, replacing an old vehicle by a new one may not be easy because of the heavy investment involved and the high interest costs. But the operator can easily consider replacing the very old vehicle by a younger one for which the fund requirement is moderate. This will give him better cash flow, require low maintenance cost, bring down the average age of the truck fleet in the country and ensure better debt recovery for the lender.

Impact of better designed/built vehicles

Introduction of new technology goods vehicles is expected to increase the costs and the freight rates. As a result, some cargo may shift to the railways. However, the inter-modal shift may not be material since road transport has certain inherent advantages over rail mode of transport. Despite higher freight rates, road transport has been growing consistently over the years because of: flexible schedule of services, more number of trips between various routes, transshipment cost in case of point to point delivery of goods by railways and lower risk of handling loss due to lesser number of loading and unloading points.

5. Improving Road Infrastructure

India has 3.4 million km of roads. The road length category-wise, is given in the statement at Annexure 2. The Tenth Plan document has identified transport infrastructure as a major constraint to accelerated growth. The existing network suffers from inadequate maintenance and low capacity, poor quality roads. There is need for timely and adequate maintenance of road network and development of high quality roads to support the growth of the economy. It is proposed to restrict the discussion in the paper to national highways and state highways, which carry about 70% of the road traffic.

National Highways (NHs)

NHs constitute the primary system of roads. The length of national highways is 65569 km. With a share of around 2% of the network, it carries about 40% of the total road traffic. About one third of the NH network is single lane against the minimum requirement of two-lane on considerations of both safety and mobility.

The development of NHs received a boost with the announcement of National Highway Development Project (NHDP) in 1998. This project has the objective to build high quality highways, designed to support vehicle speeds of 100 km/hr in the country. The agency for implementation of NHDP is National Highways Authority of India (NHAI). The funding for the project is based on a fuel cess and the tolls.

The NHDP has given exposure to the engineering firms and the government to new technology, new contractual structures etc; operation and management of roads has also assumed importance. Comprehensive 'corridor management' which can maximize the speeds and throughput of the highways, is being put in place. This brings up a new set of issues such as high efficiency in tolling, maintenance, continuous performance analysis, enforcement against encroachment of roads, accidents, user facilities on the road etc.

State Highways (SHs)

SHs and Major District Roads (MDRs) constitute the secondary roads and provide the link between the primary system and rural roads. State Highways have a length of about 137,711 km. These roads constitute about 4% of road network but carry about 30-40% of the total road traffic.

Approach to Highway Finance: In India, roads have generally been treated as public goods and financed from general revenues of the government. Central Road Fund (CRF) has been revamped to finance road development and maintenance through levy of a cess on diesel and petrol. The annual yield is estimated at Rs. 9000 crore, which will grow with increased transport activity in future. Additional funds are being mobilised through multilateral financial institutions. Tolls are being charged on new roads/bridges; substantial private sector financing is also being sought. However, the present financing pattern contributes to under-funding of maintenance requirements, distortion in traffic distribution between rail and road, neglect of technologically advanced vehicles etc.

Private Sector Highway Financing: The government amended the National Highways Act in 1995 to permit private sector financing of highway projects under build, operate and transfer (BOT) scheme, to expedite land acquisition and allow tolling of public roads. Advance arrangements are being made for timely shifting of utilities; procedure for environmental clearance has been streamlined; duty free import of major construction equipment has been allowed etc. National Highways Authority of India has been operationalised to act as an infrastructure procurer rather than provider.

The government also announced tax benefits of full income tax holiday for 10 years, tax exemption on income of financial institutions and also on the investment in shares, duty free import of several road building machinery/equipment and material; this has facilitated faster and quality construction of highways.

Private sector financing offers an opportunity for supplementing government funding of the highway sector. Despite the measures taken by the government to promote PSP, several constraints remain; these include: (i) absence of fair and independent regulations for dispute settlement, (ii) toll determination, unwillingness to pay tolls, contract monitoring, absence of reliable information on traffic flows, construction and maintenance costs, etc. State governments face greater constraints because of lower traffic and lower creditworthiness. Many states have yet to set up basic enabling environment to promote PSP.

Link between Vehicle Configuration and Road Design: There is a strong correlation between pavement design standards and carrying capacity of vehicles due to interaction between wheel loads, configuration of axles and road surface. It is because of this correlation that countries prescribe maximum permissible gross vehicle weight and maximum allowable axle loads. While such norms have been laid down in India also, it is a rare trucker who adheres to these norms. Overloading is commonplace.

The extent of overloading on a particular road is determined through vehicle damage factor (VDF). This ranges between 1.7-1.9 for the axle load of 10.2 tonne. VDF higher than 1.9 would mean that there is overloading which is damaging the road. VDF for different roads in the country are given in the statement at Annexure 3.

Road Development Plan 2021: The vehicle traffic on inter-city routes is expected to grow 4-6 times during the next 20 years. The existing road network cannot handle the projected traffic. To meet the growing demand, Road Development Plan Vision 2021 has estimated the requirements of road sector in terms of capacity augmentation, strengthening and expansion of the network for the next 20 years which are given in Annexure 4.

The estimated investment requirements for NHs and SHs are:

- Rs. 2,25,000 crore up to 2011 including Rs. 1,20,000 crore for NHs, Rs. 30,000 crore for express ways and Rs. 75,000 crore for SHs.
- Rs. 3,25,000 crore for the decade ending 2021 including, Rs. 1,30,000 crore for NHs, Rs. 70,000 crore for expressway and Rs. 1,25,000 crore for SHs.
- About Rs. 7000 crore per annum for maintenance of existing highways.

Building and maintaining good roads is the primary and necessary condition for improvement of trucking services. Many of the other correctives will follow automatically. Government has taken important steps in this direction. Given the large fund requirement for improving the highway network and the fiscal constraints of the government, there is need for mobilizing all possible funding sources, private financing, multilateral loans and aids to meet the proposed targets.

6. Taxation of Road Users and Highway Expenditure

Road users are responsible for vehicle operating costs such as fuel, tyres, maintenance etc. They are also responsible for certain social costs which include costs of road damage, administration of traffic police, signalling etc., environment degradation, road accidents and congestion.

It may be noted that there is no well defined road user charge policy in India for recovery of road costs. There has been some progress towards road pricing and cost recovery from road users over the last few years. This aspect will assume more importance as road agencies are granted more autonomy in raising funds. Both the central government and some state governments are moving towards "the user pays" principle in road pricing through levy of fuel cess for road development and maintenance.

It is important to distinguish between tax revenue and road user charges. Specific taxes/charges like fuel cess can be considered as a road user charge. But most taxes on vehicles and operating inputs (fuel, tyres etc.) are part of the general tax revenue.

Revenue from Road Users: Revenues generated by road transport taxes are treated as general revenues; it may or may not be spent exclusively on roads. Till 1997-98, the annual revenue from road transport aggregated Rs. 21,943 crore. There has been substantial increase in revenues since the levy of special cess on petrol and diesel; the central government levied an additional excise duty of Re. 1/- per litre on petrol (since 02.06.1998) and diesel (since 01.03.1999). The proceeds are credited to Central Road Fund (CRF). This is utilised for development and maintenance of roads. This levy was enhanced to Rs. 1.5 per litre with effect from 01.03.2003.

The levels and the structure of road taxes have evolved without any economic rationale except the revenue generation. The motor vehicle tax varies substantially from state to state (see Annexure 5). Besides, there is high cost of collection of the passenger and goods tax, sales tax and octroi.

The revenues from road related taxes have increased substantially over the years; these are shown in the statement at Annexure 6.

Impact of diesel price hike on trucker's profitability

Diesel is presently subsidized by the government. Due to deregulation, subsidy is being decreased and consequently there is an upward movement in the diesel prices. This would result in increasing the operating cost of transport services. Part of the increased cost may be passed on to the consumers and a part may have to be absorbed by the trucking industry due to excess capacity and competition. As a result, the freight rates may increase and profitability of the truck operators may decline. This may help in some redistribution of traffic between rail and road which may be in general national interest.

Toll Roads

Many countries have some toll roads/bridges. However, tolls are feasible only on the high volume traffic roads. Toll collection accounts for about 5-10% of road user revenues. In Japan, its contribution is higher at about 20% of the revenues.

In India, both the central and state governments are experimenting with tolls as an option for generating resources for the highway sector. Some road/bridge projects have been thrown open to private sector financing. Success has been achieved in levying tolls in respect of small and medium

size projects of bridges, bypasses, flyovers, railway overbridges and some cases of four-laning. The main advantage of levying tolls as road user charges is that these are directly related to use and are simple to collect.

Highway User Charge Structure: Statement at Annexure 7 gives road user charges and road costs, by vehicle type. Road costs were segregated into capital costs and maintenance costs and allocated to the vehicles. While attributable costs were directly allocated to the vehicles responsible for such costs, non-attributable costs were distributed on the basis of road space occupied by vehicles.

Analysis of the road user charges of goods vehicles brings to light the following facts:

- The overall charges are on the low side; these do not cover the social cost of road accidents, pollution and road safety measures.
- The structure of charges is distorted. For example, user charges on heavy trucks do not cover even maintenance costs; this is the minimum expected cost recovery from users. The charges on heavy trucks can be increased.
- The present charges do not take into account the use of road space. This has significance for urban and inter-urban areas which suffer from congestion on roads.

The road user charge structure is distorted because it undercharges the trucks which inflict heavy damage compared to buses which inflict relatively less damage to the roads. It is responsible for excessive road use by cars in urban areas. There is an urgent need to restructure the charges to make these equitable.

7 Road Map for Reforms

The policy reforms pertaining to various segments of the trucking industry are essential to correct the undesirable features that have developed and the removal of obstacles in the path of healthy growth of the industry. While the primary requirement in this regard is the improvement of the road infrastructure, there is need to balance the road projects with policies, regulations and enforcement measures. Many developing countries have a single minded devotion to expanding the hard infrastructure and overlook network components such as efficient checkpoint clearance and quality trucking services which help in reducing indirect costs of excessive inventory resulting from inefficient supply chains. The savings in cost would either increase corporate profitability or reduce prices for customers. Both would fuel economic growth.

The important components of reforms are discussed in the following paras.

Fleet Formation

It is essential to restructure the industry. Truck operators need to amalgamate their fleet into viable units to secure the benefits of economies of scale and maintain better standards of operation. This will facilitate the enforcement of the provisions of Motor Transport Workers Act regarding working hours. It will be recalled that this Act is applicable to employees of motor transport undertakings which have employed five or more workers. As it is, the Act is not applicable to employees of small establishments which own upto five trucks.

It may be mentioned that the change in the structure of the ownership will not have any adverse effect on the share of road transport which hereafter will be shown under the fleet operators instead of individual small operators.

Technology

For a meaningful technology upgradation in the trucking industry, two pre-conditions have to be met. First, the existing duopoly/oligopoly has to give way to a more competitive industry in which there are at least half a dozen producers of trucks. Second, on the demand side, the cost structure of the industry has to change in such a way that trucking firms begin to look for technological solutions for increasing their profitability.

Recent trends in vehicle technology underscore the need for legislation aimed at promoting the road-friendliness of heavy vehicles. An environment has therefore to be created where the industry begins to look for technological solutions to enhance overall transport capacity and productivity. These include provision of road-friendly suspension systems, multi-axles, power steering, improved tyres, etc. Such a step would help increase not only the payload of the vehicles but would also reduce the stress on the road surface. This would, in turn, enhance private gain while maintaining public good.

For example, research in OECD countries has revealed that road damage can be reduced by 20 percent through the use of well-designed air-spring suspensions in place of leaf-spring suspensions on trucks. Recognising the beneficial effects of improved suspension systems, the European Community has permitted one tonne extra load per axle if the axle is fitted with pneumatic or equivalent suspension. Unfortunately, no such provision has been made in the Indian standards. The most direct policy option would be to reduce dynamic loads on road infrastructure by introducing a regulatory requirement for road-friendly suspensions.

A set of incentives is also needed to encourage vehicles to use more axles. These incentives would basically be in terms of pricing and specific tax differentials both at the manufacturing and operational stages. For example, at the manufacturing stage, two-axle trucks should attract higher duties as compared to three-axle trucks. Similarly, vehicles fitted with air suspensions should be given duty exemptions as an incentive to the operators. At the operational stage, the use of pricing differentials could be extended to the levy of toll charges/user fees. Differential charges can also be set for vehicles with more axles that cause less road damage.

There is need for standardisation of truck body construction. The bodybuilding industry should also incorporate all latest features, which will improve safety and comfort of the vehicles. The vehicles which ply on national permit should have driver's cabin with two sleeper berths, one each for the driver and the co-driver when the vehicle is parked, as drivers are often forced to sleep in the truck. The cabin should have good ventilating arrangements to improve driver comfort in hot summer months.

Regulatory Regime

Usually, it is possible to strike a balance between the demand and supply side of any activity. But in the case of trucking, the fiduciary nature of the activity, in as much as the buyer of trucking services entrusts his property to the seller, has to be kept in mind. This calls for a different approach to regulating trucking, namely, that the thrust of regulation has to be on the seller of trucking services.

The provisions of the Motor Vehicles Act, the legislation by which trucking is regulated, are, by and large, fairly comprehensive. However, it suffers from two lacunae: one, it has failed to keep pace, as far as its details are concerned, with the emerging changes in economic and technological parameters; and two, its overall design makes enforcement difficult owing to certain inherent contradictions. These contradictions relate both to the clauses within the Act as well as to the other transport related legislation.

Regulation can be effective only if the regulator makes a clear distinction between bilateral contracts between buyers and sellers, on the one hand, and the larger unwritten contract between the service providers and the public interest, on the other. It is therefore necessary to make rules that are compatible with both these objectives. It may be pointed out that bilateral contracts are easier to devise and enforce than the implicit contracts involving the public interest.

The regulation of trucking also needs to be reoriented in the new perspective of globalisation and "organization", keeping in view the fact that maximization of private utilities may not lead to socially optimal outcomes. In a "organizatio environment, freight rate regulation is *passé*. Entry regulation is a knotty problem, especially in India where it involves determining important economic trade-offs and severe negative externalities. Achieving the right balance has to be an important goal of regulation in trucking.

In order to ensure the smooth and socially consistent application of the law, it is necessary that not only the law should be simple and enforceable, it should also adopt the principle of third-party regulation and adjudication. It is, therefore, recommended that a Road Transport Regulatory Authority be set up. On the government's decision to set up such an authority, suitable provisions shall also have to be included in the Motor Vehicles Act.

New provisions need to be incorporated in the Motor Vehicles Act relating to issue of driving licences, inspection and maintenance of vehicles, registration of intermediaries, and insurance of goods. Considering the serious consequences of overloading in terms of damage to the pavements and threat to traffic safety – life and limbs, the specific amendments proposed in the statutory provisions relating to the offence of overloading are given below.

Present Provision	Proposed Amendment
<p><i>Section 114(1)</i> Any officer of the Motor Vehicles Department ¶ rganizati in this behalf by the State Government shall, if he has reason to believe that a goods vehicle or trailer is being used in contravention of Section 113 requires the driver to convey the vehicle to a weighing device, if any, within a distance of ten ¶ rganizati from any point on the forward route or within a distance of twenty ¶ rganizati from the destination of the vehicle for weighment; and if on such weighment the vehicle is found to contravene in any respect the provisions of Section 113 regarding weight, he may, by order in writing, direct the driver to off-load the excess weight at his own risk and not to remove the vehicle or trailer from that place until the laden weight has been reduced or the vehicle or trailer has otherwise been dealt with so that it complies with Section 113 and on receipt of such notice, the driver shall comply with such directions.</p>	<p><i>Section 114(1)</i> Any officer ¶ rganizati in this behalf by the State Government shall, if he has reason to believe that a goods vehicle or trailer is being used in contravention of Section 113, may require the driver to produce a certificate or other proof from a government ¶ rganizati weighing device and in case of failure to produce such a certificate, require the driver to convey the vehicle to a weighing device, if any, within a distance of ten ¶ rganizati from any point on the forward route or within a distance of twenty ¶ rganizati from the destination of the vehicle for weighment; (2) (a) If the laden weight is found to be within the gross vehicle weight specified in the certificate of registration of the vehicle, the vehicle shall be allowed to proceed. (b) In case the laden weight exceeds the gross vehicle weight specified in the certificate of registration of the vehicle by upto 5%, a fine of Rs. 500/- shall be imposed by the ¶ rganizati officer and the vehicle allowed to proceed to destination. © In case the laden weight exceeds 5% of the gross vehicle weight specified in the certificate of registration of the vehicle, the ¶ rganizati officer may, by order in writing, direct the driver to off-load the excess weight at his own cost and risk and not to remove the vehicle or the trailer from that place until the laden weight has been reduced or the vehicle or trailer has otherwise been dealt with so that it complies with Section 113.</p> <p>(3) Whoever drives a motor vehicle or causes or allows a motor vehicle to be driven in contravention of Section 113 or Sub-Clauses (b) and (c) of this Section shall be punishable with a minimum fine of two thousand rupees and an additional amount of one thousand rupees per tonne of excess load or part thereof.</p>
<p><i>Section 114(2)</i> Where the person ¶ rganizati under sub-section (1) makes the said order in writing, he shall also endorse the relevant details of the overloading on the goods carriage permit and also intimate the fact of such endorsement to the authority which issued that permit.</p>	<p><i>Section 114(2)</i> The existing provision may be dropped.</p>
<p><i>Section 188</i> Whoever abets the commission of an offence under Section 184 or Section 185 or Section 186 shall be punishable with punishment provided for the offence.</p>	<p><i>Section 188</i> The existing provision may be enlarged to include overloading. The amended provision will read as follows: "Whoever abets the commission of an offence under Section 113, Section 114, Section 184, Section 185 or Section 186 shall be punishable with a fine and a term in jail as provided for the offence".</p>
<p><i>Section 194(1)</i> Whoever drives a motor vehicle or causes or allows a motor vehicle to be driven in contravention of the provisions of Section 113 or Section 114 or Section 115 shall be punishable with minimum fine of two thousand rupees and an additional amount of one thousand rupees per tonne of excess load, together with the liability to pay charges for off-loading of the excess load.</p>	<p><i>Section 194(1)</i> Reference to Sections 113 and 114 may be deleted in view of amendment to Section 114 suggested above. Section 194(1) shall read as under: Whoever drives a motor vehicle or causes or allows a motor vehicle to be driven in contravention of Section 115 shall be punishable with minimum fine of two thousand rupees and an additional amount of one thousand rupees per tonne of excess load or part thereof, together with the liability to pay charges for off-loading of the excess load.</p>
<p><i>Section 194(2)</i> Any driver of a vehicle who refuses to stop and submit his vehicle to weighing after being directed to do by an officer ¶ rganizati in this behalf under Section 114 or</p>	<p><i>Section 194(2)</i> Add "or imprisonment upto one month" at the end of the Section. The Section shall thus read as follows: "Any driver of a vehicle who refuses to stop and submit his</p>

removes or causes the removal of the load or part of it prior to weighing shall be punishable with fine which may extend to three thousand rupees.

Section 200(1)

Any offence whether committed before or after the commencement of this Act punishable under Sections 177, 178, 179, 180, 181, 182, Sub-section (1) or (2) of Section 183, Sections 184, 186, (Section 189, Sub-section (2) or Section 190), Sections 191, 192, 194, 196 or Section 198, may either before or after the institution of the prosecution, be compounded by such officers or authorities and for such amount as the State Government may, by notification in the Official Gazette, specify in this behalf.

vehicle to weighing on being directed to do by an officer or organization in this behalf under Section 114 or removes or causes the removal of the load or part of it prior to weighing shall be punishable with fine which may extend to three thousand rupees or imprisonment upto one month".

Section 200(1)

Delete Section 194 from sub-section (1) of Section 200.

Imposing fines and offloading of overloaded goods are punitive solutions. The prevailing technological impasse has to be overcome and punitive measures have to be supplemented with incentives for technological upgradation. Effort should be made to find solutions that eliminate profits from overloading. The easy way of doing this is to impose heavy fines. The more long term and permanent solution would, however, require a restructuring of the trucking business.

The starting point of reform, therefore, has to be the recognition of the fact that over half of the trucking firms are single-truck firms. For them, a 20 per cent overload is a pure bonus. In this scenario, overloading could be greatly reduced if there is a movement away from single-truck firms to larger ones owning at least 10-12 trucks, because in that case there would be a strong incentive at the firm level to keep all the assets in use rather than overload just one or two. To achieve this, would require a comprehensive overhauling of the related financing and regulatory regimes.

Taxation

Major problems in the area of taxation are the multiplicity of motor vehicle taxes, variations both in the basis and rates at which these are levied, high incidence of these taxes and the absence of guidelines for the tax authorities. The complexities increase manifold in a federal polity such as that of India where not only the powers of levying taxes but also the proceeds of taxation have to be shared between the centre and the states.

The motor vehicle tax varies substantially from state to state. The present tax structure provides neither economic efficiency nor equity. It has no relationship with the costs the vehicles impose on the roads. In fact, road tax on two-axle trucks, which are generally overloaded, is less than that on multi-axle trucks, though two-axle trucks inflict more damage compared to multi-axle trucks. The anomaly needs to be reformed. State Governments should consider concessional rate of sales tax for multi-axle vehicles relative to 2-axle vehicles; excise duty should also be reduced for such vehicles; a sliding scale of road tax should be fixed so that per tonne rate of tax is progressively lower for the higher GVW vehicles. Government should also educate truck owners and banks on the benefits of modernisation of the industry.

There is imperative need to harmonise the basis and the rates at which different tax-entitled entities in the Indian federation should levy taxes on road transportation. Such organization has been achieved successfully in the European Union with the creation of a single market. An ideal tax system is one which is neutral, efficient in allocation of resources, administratively expedient and avoids cascading effect in the economy.

Barriers to Inter-state Movement

An important feature of the prevailing tax system is the existence of a number of check-posts which interfere with the free flow of traffic within a state and cause harassment to a large body of road users. The existence of check-posts does not contribute significantly to the checking of tax evasion. On the contrary, the more the number of check-posts, the higher is the wastage resulting from stopping of traffic.

In the European Union, a single internal market has emerged. All customs checks have been abolished. Spot checks still occur for drugs and immigration, but routine internal border checks have

disappeared. If a number of countries can come together to form a single market, it should not be difficult for the federating states of India to join hands to work towards this goal.

Insurance Regime

Though trucks account for only 5 percent share in vehicle population they are responsible for almost 30 percent of the road accidents in India. In many countries, insurance industry plays an important role in reducing accidents by linking the premium of vehicles to the driving performance of the driver/owner. This link is absent in India primarily because of lack of information on drivers accidents and traffic violations and the associated failure to remove accident-prone drivers from the roads. This is a serious policy failure. The insurance premium should be linked with the performance record of the owner and the driver of the vehicle. Experience-related premium is hiked if driving/accident record of the driver is not good. This would help in promoting road safety through minimizing accidents in the country.

Trucking Finance

Banks are hesitant to lend to small operators because of the fear of default in repayment of loan. No loans are given for working capital requirement or for bodybuilding. The repayment period is short and the margins are high. Small operators have to depend on private financing with high rate of interest. Present system of financing is too inflexible and does not work in favour of small road transport operators. It is suggested that government encourage formation of cooperatives among small operators for meeting their financial needs. Pending this, financial agencies should be directed to consider a viable fleet and infrastructure as a condition for lending.

Intermediaries

The single truck owners make up for as much as 50 per cent of the trucking firms. There are a large number of producers of trucking services and none of them is big enough to influence the price line. As a result, the industry today is essentially controlled by intermediaries, because a large number of truck owners themselves are too small as firms to acquire critical market information. This asymmetry must not be allowed to become the fulcrum around which the industry revolves. The answer would lie in the establishment of information exchanges. A beginning in this regard has recently been made on a limited scale.

Furthermore, because the industry is characterized with the twin-skews – large number of micro-firms on the one hand and domination by brokers on the other – the contractual element of the industry takes on another dimension. This is that while there is a bilateral agreement between the buyer and the seller and an implicit one with the seller and the public interest, there also needs to be one between the seller and the broker. At present, it is an informal arrangement which is highly iniquitous as a direct consequence of the brokers' access to information. The power the intermediaries exert over the industry is not, however, matched by the capital employed by them. This suggests that there is an imbalance here in the way the revenue is being shared by the various players in the industry. Clearly, there is a need to bring the intermediaries under the purview of regulation.

Road Infrastructure

Massive investments are being made to strengthen the road network. As the roads infrastructure and its supporting services improve, there is likely to be a shift in the tonnage mix from medium commercial vehicles to heavy commercial vehicles/multi-axle vehicles. This would reduce the cost of operation by carrying higher loads with minimum distress to road pavement.

Hitherto, road maintenance has been neglected due to financial constraints. There is need to raise adequate revenues through restructuring user charges for maintenance of highways.

In view of the excessive overloading of vehicles, the latest guidelines of the Indian Roads Congress provide for designing of roads on the basis of prevailing axle-load spectrums. This is leading to lack of uniformity in road design because different road sections would show different axle-load spectrums resulting in different vehicle damage factors. There is need to bring about uniformity in the design of pavements across the road network.

Wayside Amenities

Provision of wayside facilities should become an integral part of road development. As regards NHs BOT projects, land for these facilities should be acquired by the government and given to the entrepreneurs for development and management during the concession period. For other NH

stretches to be upgraded by NHAI, facilities should be created and franchised to private sector for operation and management.

The provision of these facilities will improve the efficiency of truck drivers as well as the transport services. Additional costs in respect of these facilities can be easily passed on to the customers who use road transport services for moving their goods since they also stand to benefit, as their goods would be transported under greater safety and security.

Truck Crew

Truck owners and transport companies have shown little regard for the usual norms of working hours prevalent in most industries. In developed economies, there are clearly laid down laws that prohibit any heavy vehicle driver to remain at the wheel for more than 4-6 hours. These norms have been framed not just to ensure that the driver gets a decent break and rest from his work, but also to make sure that road safety norms are honoured. A tired driver is a hazard for road safety, particularly when he is at the wheel of a heavy vehicle. There are two ways of handling the situation. The first one requires the state to actively intervene and ensure enforcement of the prescribed laws. A better alternative would be for the industry to intervene and ensure self-regulation. The latter depends upon the enlightened approach of the members of the industry to a human problem. The larger issue is to bring the industry under an umbrella organization structured for the benefit of all the stakeholders involved in the task.

The foregoing road map for reforms needs urgent attention of the government and other concerned authorities. A timeframe may be evolved for implementation of the reforms. It is felt that this would enhance the productivity, efficiency and quality of trucking services in the country.

8. Proposed Reforms and the Impact on Interest Groups

The proposed reforms will surely improve the efficiency and quality of trucking services in the country. These will correct the undesirable features of the industry and remove the hurdles in the way of healthy growth of the industry. As a result, the various stakeholders/interest groups will stand to benefit (as discussed below) in their area of operation; these should be welcomed by them. Generally, no major obstacles are expected in implementing the policy recommendations mentioned above.

Truck owners and operators

Better roads, minimization of inter-state barriers will result in reduction in transit time, better utilization of assets and improved profitability of truck operators.

Drivers

Better roads and improved working conditions will contribute to environment conducive to better driving, less fatigue and reduce the number of accidents.

Consigners/Consignees

They stand to benefit through reduction in transport costs due to efficient transport services, greater safety and security of goods and minimization of inventory costs with just-in-time deliveries of components or inventories of final goods

Government Departments

Government authorities benefit through higher tax collections on sale and operation of new vehicles, less road damage once old trucks are replaced with new technology multi-axle trucks and improved road safety leading to reduction in the number of accidents and the associated social costs.

General Economy

The economy stands to benefit through enhanced transport capacity, greater efficiency of road transport due to the use of upgraded technology vehicles, savings in health costs due to reduction in ailments, deaths etc., savings in fuel costs due to better fuel efficiency of upgraded technology vehicles, reduction in environment damage through reduction in vehicular emissions and increased employment through step up in vehicle manufacturing to meet the replacement demand and additional demand for better technology vehicles.

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Number of Registered Motor Vehicles in India

(in thousands)

Year (as on 31 st March)	All vehicles	Two Wheelers	Cars, Jeeps and Taxies	Buses	Goods Vehicles	Other*
1951	306	27	159	34	82	4
1956	426	41	203	47	119	16
1961	665	88	310	57	168	42
1966	1099	226	456	73	259	85
1971	1865	576	682	94	343	170
1976	2700	1057	779	115	351	398
1981	5391	2618	1160	162	554	897
1986	10577	6245	1780	227	863	1462
1991	21374	14200	2954	331	1356	2533
1996	33786	23252	4204	449	2031	3850
1997	37332	25729	4672	484	2343	4104
1998	41368	28642	5138	538	2536	4514
1999	44875	31328	5556	540	2554	4897
2000	48857	34118	6143	562	2715	5319
2001	54991	38556	7058	634	2948	5795
2002(P)	58863	41478	7571	669	3045	6100
2003(E)	64804	46290	8278	707	3197	6332
2004(E)	71600	51655	9179	751	3414	6601

(P): Provisional

(E): Figures for 2003 and 2004 have been estimated

*: Others include tractors, trailers, three wheelers (passenger vehicles) and other miscellaneous vehicles which are not separately classified.

Source: Ministry of Road Transport and Highways

Total and Surfaced Road Length in India as on 31st March

(Length in kms)

Category	Total/ surfaced	1971	1981	1991	1995	2000	2001	2002(P)
All India	T	914979	1485421	2327362	3057411	3316078	3346667	3383344
	S	397948	683676	1090167	1379300	1573800	1597749	1603691
National Highways	T	23838	31671	33650	34262	52010	57679	58006@
	S	23276	31520	33399	34046	51952	57679	58006
State Highways	T	56765	94359	127311	134085	132797	132100	137711
	S	51744	90250	124847	131506	130592	129862	135546
Other PWD Roads	T	276833	421895	509435	511046	730680	736001	725425
	S	198640	301230	390931	414320	601512	610516	603358
Rural Roads	T	354530	628865	1260430	1949866	1938356	1945163	1986858
	S	64823	154044	373978	611304	545378	551354	561645
Other Roads	T	203013	308631	396536	428152	462235	475666	475238
	S	59465	106632	167012	188124	244366	248338	245136

P : Provisional

@: During February 2004, an additional 7457 km of State roads were declared as National Highways, increasing the National Highway length to 65569 km as on 31.03.2004.

Note: 1. Rural Roads include roads constructed under Jawahar Rozgar Yojana for the period after 1991

2. Other Roads include Urban Roads and Project Roads

Source: Basic Road Statistics (2004), Ministry of Shipping, Road Transport and Highways

Vehicle Damage Factors for Different Roads in India

Name of the state	Name of road section/road	Road No.	Location (km)	VDF
<i>A. National Highways</i>				
Haryana	Delhi-Ambala	NH-01	48	4.05
Haryana	Delhi-Amritsar	NH-01	146	4.89
Haryana	Delhi-Palwal	NH-02	52	6.11
Haryana	Delhi-Palwal	NH-02	54	4.56
Uttar Pradesh	Kanpur-Allahabad	NH-02	164	8.30
Uttar Pradesh	Allahabad-Varanasi	NH-02	240	11.90
West Bengal	Burdwan-Durgapur	NH-02	527	6.06
West Bengal	Near Calcutta	NH-02	657	3.95
Uttar Pradesh	Agra-Gwalior	NH-03	14	7.10
Madhya Pradesh	Gwalior-Shivpuri	NH-03	190	11.88
Madhya Pradesh	Indore-Dewas	NH-03	590	3.42
Maharashtra	Nasik-Igatpuri	NH-03	41	4.48
Maharashtra	Dhule-Nasik	NH-03	356	5.16
Maharashtra	Mumbai-Pune	NH-04	38	1.57
Karnataka	Pune-Bangalore (Chattradurga)	NH-04	188	7.08
Karnataka	Bangalore-Chennai (Hoskote)	NH-04	307	2.52
Orissa	Near Baripara	NH-05	257	4.26
Orissa	Near Tangi	NH-05	371	4.57
West Bengal	Near Kharagpur	NH-06	125	4.90
Tamil Nadu	Madurai-Kanyakumari	NH-07	48	3.85
Madhya Pradesh	Varanasi-Mangwan	NH-07	204	6.79
Rajasthan	Delhi-Jaipur	NH-08	156	7.41
Rajasthan	Delhi-Jaipur	NH-08	203	8.13
Rajasthan	Jaipur-Ajmer	NH-08	280	12.53
Rajasthan	Jaipur-Ajmer	NH-08	376	9.25
Gujarat	Ahemdabad-Mumbai	NH-08	48	6.40
Gujarat	Ahemdabad-Mumbai	NH-08	284	3.99
Gujarat	Ahemdabad-Mumbai	NH-08	346	4.35
Gujarat	Ahemdabad-Mumbai	NH-08	223	5.14
Gujarat	Bharuch-Mumbai	NH-08	198	4.90
Gujarat	Vapi-Mumbai	NH-08	369	4.56
Haryana	Delhi-Hissar	NH-10	40	4.09
Haryana	Delhi-Hissar	NH-10	57	5.07
Haryana	Delhi-Hissar	NH-10	173	4.90
Haryana	Delhi-Hissar	NH-10	268	7.54
Uttar Pradesh	Agra-Jaipur	NH-11	14	6.50
Rajasthan	Agra-Jaipur	NH-11	168	5.11
Rajasthan	Jaipur-Bikaner	NH-11	357	5.12
Rajasthan	Bikaner-Jaisalmer	NH-15	28	5.83
Himachal Pradesh	Chakki Khad-Mandi	NH-20	13	3.05
Himachal Pradesh	Chakki Khad-Mandi	NH-20	111	0.90
Uttar Pradesh	Delhi-Lucknow	NH-24	118	8.92
Uttar Pradesh	Delhi-Lucknow	NH-24	238	10.84
Uttar Pradesh	Delhi-Lucknow	NH-24	267	11.24
Uttar Pradesh	Lucknow-Kanpur	NH-25	67	6.78
West Bengal	Koochbihar-Baxirhat	NH-31	789	5.31
Tamil Nadu	Chennai-Trichy	NH-45	197	3.64
<i>B. State Highways</i>				
Karnataka	Corridor No. 3 at Mudhol			5.61
Karnataka	Corridor No. 5 at Gangavathi			7.35
Karnataka	Corridor No. 6 at Challakere			11.81
Karnataka	Corridor No. 6 at Pandavapura			4.27
Karnataka	Corridor No. 11 at Chickamagalur			4.32
Karnataka	Corridor No. 12 at Nargund			10.10
Punjab	Sirhind-Morinda-Ropar			6.55
Uttar Pradesh	Bhognipur-Ghatampur			8.04
Uttar Pradesh	Gonda-Bahraich			6.65
Uttar Pradesh	Sultanpur-Pratapgarh			6.78
Uttar Pradesh	Jaunpur-Azamgarh			4.90
Uttar Pradesh	Katra-Allahganj			10.35

Proposed Development of Highways

Highway Category	2001-11		2011-21		2001-21	
	Length (km)	Amount (Rs. Crore)	Length	Amount (Rs. crore)	Length	Amount (Rs. crore)
<i>National Highways</i>						
• Four-six laning	16000	64000	19000	76000	35000	140000
• Two-laning with hard shoulders	15000	18750	7000	8750	22000	27500
• Strengthening weak pavements	20000	15000	24000	18000	44000	33000
• Bypasses, over bridges, safety and drainage measures	Lump sum	7250	Lump sum	9250	Lump sum	16500
• Expansion of NH system*	10000	15000	5000	7000	10500	25500
Total NHs		120000		130000		250000
<i>Expressways</i>	3000	30000	7000	70000	10000	100000
<i>State Highways</i>						
• Four-six laning	3000	10000	7000	25000	10000	35000
• Two-laning with hard shoulders	35000	28000	60000	50000	95000	78000
• Strengthening weak pavements	30000	22000	40000	30000	70000	52000
• Bypasses, over bridges, safety and drainage measures	Lump sum	10000	Lump sum	10000	Lump sum	20000
• Expansion of SH system	1000	5000	20000	10000	30000	15000
Total SHs		75000		125000		200000

* Adjusted on the basis of existing NH length of 65500 km

Source: Road Development Plan Vision 2021

Motor Vehicle Tax on Trucks (as on 01.04.2002)

(in Rs.)

S. No.	State	RLW of Vehicles	
		6 tonnes	16.2 tonnes
1.	Andhra Pradesh	8696	9946
2.	Assam*	4410	8190
3.	Bihar*	1341	6398
4.	Chattisgarh	3600	9900
5.	Gujarat	3930	9705
6.	Haryana	4340	6500@
7.	Himachal Pradesh*	754	3368
8.	Karnataka	3800	6800
9.	Kerala	5200	13200
10.	Madhya Pradesh**	4452	12100
11.	Maharashtra	3790	9360
12.	Orissa	2356	7179
13.	Punjab	4000	4000
14.	Rajasthan**	21000	28000
15.	Tamil Nadu	6000	18000
16.	Tripura	2100	4200
17.	Uttar Pradesh	6720	14008
18.	West Bengal*	1511	6500

* Rates as on 01.04.1998

** Rates as on 31.03.2000

@ Includes goods tax

Source: Motor Transport Statistics of India (2001-02), Ministry of Road Transport and Highways

Road Related Taxes (1998-2002)

(Rs. Crore)

Taxes	1998-99	1999-2000	2000-01	2001-02
Central levies				
Import duty on motor vehicles and accessories	1081	1484	1429	966
Excise duty on motor vehicles and accessories	3966	4949	5605	4898
Excise duty on tyres and tubes	1403	1515	1382	1360
Excise on diesel	3293	8004	9864	12207
Excise on motor spirit	4442	5001	5581	8501
Sub Total: Central levies	14185	20953	23861	27932
State levies				
MV taxes and fees	5344	6153	6666	7384
Sales tax on motor spirit	4132	4729	4161	6271
Taxes on traffic (goods & passengers)	2091	2099	2075	4088
Sub Total: State levies	11567	12981	12902	17743
Total	25752	33934	36763	45675

Source: Transport Research Wing, Ministry of Road Transport and Highways

Road User Charges, Road Costs – National and State Highways

(Rs./km)

Vehicle Item	2 wheels	Cars	Jeep/taxi	Bus	Freight Vehicles		
					Light	Heavy	Multi-axle
Road User Charges (broad definition)*							
User charges/vehicle	0.12	0.63	0.23	4.44	0.44	0.67	1.02
Road Cost/vehicle							
Total cost	0.17	0.33	0.33	1.14	0.55	2.03	2.81
Capital cost	0.13	0.25	0.25	0.84	0.41	1.34	1.88
Maintenance cost (total)	0.04	0.08	0.08	0.30	0.14	0.69	0.93
Maintenance cost (variable)	0.02	0.04	0.04	0.19	0.09	0.58	0.78
User Charge: Cost Ratio							
Total cost	0.7	1.9	0.7	3.9	0.8	0.3	0.4
Maintenance cost (total)	3.1	8.2	3.0	14.9	3.1	1.0	1.1
Maintenance cost (variable)	5.6	14.8	5.5	23.0	4.9	1.1	1.3
Road user Charges (narrow definition)**							
User charges/vehicle	0.06	0.28	0.17	4.29	0.30	0.49	0.83
User charges/cost ratio							
Total cost	0.4	0.8	0.5	3.8	0.5	0.2	0.3
Maintenance cost (total)	1.5	3.5	2.1	14.3	2.1	0.7	0.9
Maintenance cost (variable)	3.0	7.0	4.3	22.6	3.3	0.8	1.1

* Takes into account charges/taxes specific to road transport plus excess over the average rates for excise and sales tax.

** Takes into account only charges/taxes which are specific to road transport such as fuel cess

Source: Highway Sector Financing in India, World Bank (June 2004)