

Task Force on

**INTEGRATED
TRANSPORT POLICY**

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FOREWORD

Transport is a key element in the infrastructure. It provides services essential for promoting development. It plays a significant role in influencing the pattern of distribution of economic activity and improving productivity. It acts as a life-line linking markets, educational and health institutions. Above all, it connects the mosaic of cities, towns & villages of this vast country, thereby underpinning its unity and integration.

The transport system comprises a number of modes. The capacity of each has to be developed to meet its specific demand within the requirements of the transport system as a whole. The system has to be viewed at each step as an integrated structure, keeping in mind the relationship between different transport services.

In spite of impressive achievements in the last 50 years, our transport system remains deficient in several respects. Worldwide transport growth has been consistently higher than the economic growth due to specialization, sourcing of material on a wider scale, the use of just-in-time strategies, further increase and dispersal of retail and wholesale activities etc. Prices of transport services have been falling as a result of increased productivity due to competition among suppliers of transport services as well as pressure from users who face relentless pressure from global competition in their own markets.

The liberalization of our economy has brought home the urgency of recognising that an efficient transportation system is necessary for increasing productivity and enabling the country to compete effectively in the world market. Adequacy and reliability of transport infrastructure and services are important factors, which contribute towards the ability of the country to compete in the field of international trade and attract foreign direct investment. The Government cannot but play a role in this sphere. Even in a market economy, the framework that national governments provide for the transport sector largely determines the level of cost and transport operations. It is, therefore, necessary to create a policy environment that encourages competitive pricing and coordination between alternative modes in order to provide an integrated transport system that assures the mobility of goods and people at maximum efficiency and minimum cost. It is with this objective in view that the Integrated Transport Policy document has been prepared.

The document outlines an approach to the transport policy and indicates the broad direction in which policies in each mode must evolve. The detailed plan priorities for each mode will be outlined in successive plan documents. At present, the country is in

the process of preparing the 10th Five Year Plan. This document on Integrated Transport Policy, I am confident, would provide a useful input for the preparation of detailed plans and policies for the various modes of transport.

29th October, 2001



(K.C. PANT)

INTEGRATED TRANSPORT POLICY

1. Introduction

1.1 The Indian economy is at a critical juncture in its developmental process. The rate of growth has increased but it needs to accelerate further. The faster growth must also be accompanied by a wider regional dispersion of benefits. Achievement of this objective will require massive expansion and improvement in the various modes of transport.

1.2 Transport system in India comprises a number of distinct modes and services, notably railways, roads, road transport, ports, inland water transport, coastal shipping, airports and airlines. Railways and roads are the dominant means of transport carrying more than 95% of total traffic generated in the country. Although other modes like coastal shipping and inland water transport would play a greater role, the railways and roads would continue to dominate the transport landscape in the foreseeable future.

1.3 For purposes of policy planning, the transport system must be viewed as an integrated structure in which various modes complement each other, interface appropriately and where possible provide healthy competition to each other. This competition must be conducted within the framework in which each mode is able to operate on a “level playing field” so that in comparative advantages and economic efficiencies are properly reflected in the costs to the users.

2. Status of Development of Transport Sector

2.1 The transport sector has expanded manifold in the first fifty years of planned development, both in terms of spread and capacity as indicated in the Annexure. Along with the increase in quantity, there are several welcome developments of qualitative nature, such as emergence of a multi-modal system in the form of container transport, marked reduction in arrears of obsolete assets, improvement in the self-financing capacity of the sector and the establishment of new centres of excellence for manpower development.

2.2 Impressive as this progress is, the country’s transport system is far from adequate both in terms of spread and capacity and suffers from a large number of deficiencies.

The quality and productivity of transport network and resources also needs improvement.

- The net ton kilometres per route kilometre for the railways is 4.21 million in India whereas for China the figure is 23.4 million.
- The Indian road network is seemingly very large. However only 46% of the roads are paved and only 20% of the paved roads are estimated to be in good condition.
- The transport system of the country is currently saturated on both the main rail and road links and capacity shortages are a serious constraint for overall growth.
- The high-density corridors of rail and road linking metro cities and ports are completely choked. Out of the total route kms. identified for four laning, around 50% is already carrying traffic that is more than twice its capacity.
- About 14000 kms of National Highway requires four laning, while 10000 kms requires widening from single lane to two lane to facilitate normal flow of existing road traffic.
- The average productivity of a truck is 200 kms. a day as against 350-400 kms. that would be possible through reduction of congestion.

2.3 The road network though extensive remains inadequate in terms of spread. Out of nearly 6 lakh villages, only 60% are known to be connected by all-weather roads at the beginning of the Ninth Plan, although connectivity for the large sized villages (more than 1000 population) is much better.

2.4 The demand for transport is obviously affected by structural changes taking place in the economy, some of which push in opposite directions. Thus, for example, a decline in the share of agriculture and an increase in the share of manufacturing may increase the growth in demand for transport. However, slower growth in population may reduce the growth in demand for transport, which may be offset by the fact that the share of the mobile population (ages 15-60) is likely to increase. Taking all factors into account, it is expected that traffic elasticity with respect to GDP will continue to decline in line with the past trends but will still be around one. This growth in transport demand has to be met by expanding domestic supply as transport infrastructure is non tradable. Investment in transport must reflect the need to make up for existing capacity shortages and also to allow for growth in demand.

2.5 With the diversification of the economy, the share of high value low volume traffic is also likely to increase which calls for more flexible modes of transport, namely roads or high quality and efficient rail container services. Urbanisation and growth of the economy may also fuel demand for passenger traffic.

2.6 Transport planning will have to give priority to creating a policy framework, which ensures an adequate flow of resources to this sector. Budgetary resources are likely to be very scarce but transport infrastructure development will have to be treated as one of the high priority areas for continued budgetary resource allocation. However, even when this is done, the total need for resources will greatly exceed the capacity of the budget to meet the costs of maintenance and expansion. Internal generation of resources through rational pricing and other user charges is therefore absolutely essential for successful development of transport infrastructure. In view of the severe resource constraint, it will also be necessary to give priority in public investments to those projects, which sustain the agricultural and industrial growth of the country and support the country's foreign trade. Freight transport, therefore, has to be accorded higher priority which has not happened in the past.

3. **Policy Objectives**

3.1 The objective of the integrated transport policy is to foster the development of the various transport modes in a manner that will lead to realization of an efficient, sustainable, safe and regionally balanced transportation system, where each mode of transport operates in its field of economy and usefulness, with competitive and non-discriminatory prices that are adequate to support progressive development of transport infrastructure and service. The broad policy objectives of the integrated transport policy could be summarised as follows:

- Meeting the transport demand generated by higher rate of growth of GDP.
- Ensuring transport development, which ensures effective participation of all regions of the country in economic development and pays special attention to integrating remote regions such as the North-East into the economic mainstream.
- Capacity augmentation, quality and productivity improvements through technology up gradation and modernisation.

- Maintenance to be given overriding priority with increased emphasis on higher maintenance standards so as to reduce need for frequent reconstruction of capacity.
- Increased generation of internal resources and also realisation of optimal intermodal mix as well as freight-passenger mix in the railways through appropriate pricing and user charges.
- Increase in overall economic efficiency through injection of competitive impulses in provision and maintenance of transport infrastructure and services wherever possible.
- To promote sustainable transport system with increased emphasis on safety, energy efficiency, environment conservation and social impact.

3.2 With the above objectives and goals in mind, the sectoral issues in the development of transport in the country have been identified and briefly discussed before these are taken up sub sector-wise. The approach to transport policy outlined below indicates the broad direction in which policies in each mode must evolve. Detailed Plan targets or priorities for each mode will be outlined in successive plan documents.

ISSUES

4. **Expansion, Modernisation and Technology Upgradation**

4.1 Despite impressive expansion over the years, the entire Indian transport network is characterised by many deficiencies and a major exercise in expansion of capacity and modernisation is necessary. This will have to be accompanied by technological up gradation in many critical areas. The need for new technology acquires immediate relevance since the transport sector has been suffering from slow technological development for a long time. The magnitude of the tasks of capacity augmentation and replacement of over aged assets offer an opportunity for technological upgradation in each of the transport sub-sectors.

5. **Pricing and Financing**

5.1 Broad estimates of investment requirement till 2010 indicate that it will be necessary to increase annual investment levels to three to four times the present level in

real terms. The financing of investment on this scale is a massive task. It will require a substantial increase in budgetary support to the sector. However, recognising the scarcity of budget resources the bulk of the effort to meet the additional investment requirement has to come through generation of resources from within the sector. The pricing of transport and user charges will therefore have to play a much larger role than in the past.

5.2 Pricing in the transport sector should conform closely to the cost of services and actual resources used in its production, having regard to scarcity values of these inputs. Subsidies in transport will have to be limited to those areas where their retention on societal considerations is overwhelmingly justified. Wherever subsidies are retained, they must be made as explicit as possible so that they are clearly identifiable to ensure transparency. The instruments of pricing, taxation and subsidy should be used to achieve the following desired socio-economic objectives:

- Develop an economically rational inter-modal mix.
- Promote efficiency in operation and generate adequate resources for sustaining growth.

It is necessary that all social costs must be taken into account in pricing transport services preferably through fiscal measures. While pricing should be cost-based, the policy of improving productivity should be relentlessly pursued.

5.3 The bulk of resources for financing the development of the transport sector should come from internal resources and borrowings or through private sector participation. In order to augment availability of resources for the sector, the budgetary resources could be used to leverage private investment. These measures will be particularly required for improving the viability of the projects both relating to creation of transport infrastructure as well as for operation of services.

6. **Energy, Environment & Transport**

6.1 In the Transport Sector, energy planning has a special significance, not only because transport is the second largest consumer of energy but also because different modes of transport use different forms of energy with varying efficiency and intensity. Transport sector consumes 40% of energy and substantial portion of diesel supplies. The growth of transport not only leads to pressure on limited availability of non-

renewable energy but raises broader environmental issues. Form of energy consumption, operational pollution, land intrusion and congestion are some of the areas of conflict between transport and environment. It is, therefore, necessary that environmental concerns should be built into project planning right from the beginning – at the stage of site selection, alignment finalisation, etc.

6.2 Transport reform and development have widespread ramifications in other related sectors. Energy pricing is one such area. A fuel pricing policy in line with social costs, especially for diesel, would be necessary to rectify the inter-modal imbalances.

7. **Private Sector participation**

7.1 Historically, investment in creation of transport infrastructure has largely been made by the State. In assessing the role of the private sector, a distinction has to be made between infrastructure and services. The basic infrastructure, with a few exceptions is in the public sector. Efforts should be made to involve the private sector in providing of these basic infrastructure facilities as well. The long-term goal should be to provide an open access to the fixed infrastructure for all modes of transport. Most of the transport services and mobile assets with the exception of Railways are owned by the private sector.

Need for a Regulatory Framework

7.2 The basis of the market economy argument is that an optimum allocation of resources will take place if the prices are allowed to reflect the real economic cost and consumers of both intermediate and final products make their choices on the basis of these prices. This presumes that the market must be competitive and all costs must pass through the market. These conditions do not prevail in the transport sector anywhere, much less in our country. There are a number of factors which contribute to market failure in the transport sector. Some of the transport services and infrastructure are more in the nature of public good. The economies of scale, an element of sunk cost, need for coordination and presence of externalities, all stand in the way of effective functioning of market. The presence of externalities leads to over-production or under-production of transport depending upon whether the externalities are negative or positive. Therefore, there is a need to take regulatory measures.

7.3 Many infrastructure facilities and services have natural monopoly characteristics. There is a need for regulation in order to ensure that the operator does not exploit its market power to serve his own ends. In order to achieve this objective, the regulator must be equipped to fix optimum tariff and perform quality-monitoring role. The regulation policy followed in the past has been restrictive with a view to curb “unhealthy competition”. However, the need of the hour is to encourage competition to ensure efficient delivery of services and timely provision of infrastructure at minimum cost. The regulatory practices need an orientation to ensure that the transport modes are truly competitive and responsive to users demand as well as address consumer grievances like quality of services, safety etc. The regulator will also be required to act as an arbitrator in disputes between service providers or between concessionaire and the concessioning authority. In order to perform these functions effectively, the regulator must be independent. It is, therefore, important to ensure that the regulatory authorities are functionally free from bureaucratic control.

8. **Organisational Structure**

8.1 The need for augmentation of capacity in various modes of transport and improvement in the effectiveness of investment and efficiency of transport services would require changes in the present organisational structure of each mode.

9. **Development of Backward Areas**

9.1 There has been a persistent and vociferous demand for capital intensive transport projects, particularly, for new railway lines for development of backward regions. The same reason has been put forward even for construction of airports. If one goes by the long list of railway line projects taken up. In the recent years, this argument seems to have gained acceptability.

9.2 The need for adequate and efficient transport system for promoting economic development is well known. Endowing an area with a railhead or an airport does not automatically leads to its development. However, if transport facility is a part of overall development plan for the region and selection of the mode and the project has been made on rational and objective criteria, its creation will be essential. To begin with, the development of backward region may require a flexible mode like road transport instead of railhead. In difficult terrains, which make surface routes circuitous, air transport may have an edge because of substantial saving in time and therefore, turn out to be the

preferred mode. However, definitely this is not the case in plain areas where surface modes of transport can provide flexible transport services with better frequency. Therefore, while considering the creation of new transport facility in backward regions, it must be borne in mind that transport is only one of the essential elements for development of the region and it is not necessary that only highly capital-intensive transport projects will bring about economic development. Selection of the right mode therefore, is important.

9.3 There has also been persistent demand for subsidising transport operations in backward and remote areas on the plea that the traffic and the low level of income would not generate the kind of demand which could bear the cost of providing transport services. There is merit in this argument. The responsibility of ensuring efficient operation of transport services in these regions is that of the State. But it does not necessarily mean that the state should be direct provider of these services. Whether it relates to providing transport services in the backward area or air services in isolated and hilly region, the State should auction and award routes on the basis of lowest subsidy sought by the operators so that benefits are targeted and costs become apparent.

10. **Data base**

10.1 Over and above the development and implementation of an integrated transport policy, it is necessary to develop an adequate database, which must be systematically collected and kept up to date. However, despite recommendations of various committees, the traffic flow and cost data is not collected systematically and regularly. Even supportive efforts made in the past related only to collection of inter regional traffic flows. The growing intra regional traffic has not been studied at all. The cost data is limited to a few commodities and does not take into account perspective technological improvement. The study of past traffic flows also did not consider the impact of urbanisation. It is necessary that the data relating to traffic flows and cost studies should be collected systematically and regularly preferably under the aegis of Planning Commission. These studies would not only be useful in formulating transport policy but also help in conceiving and implementing projects, both by the public and private sectors.

11. Railways

11.1 The main task before the Railways is to augment capacity so as to make a quantum jump particularly in freight traffic. Indian Railways cannot afford to keep on moving along its historically low growth rate. To achieve a higher rate of growth the Indian Railways would have to augment its capacity through technological change.

11.2 Although some attempts were made at technological up gradation in the past, a renewed concerted effort is needed in order to ensure that the Indian Railways catapult itself to a high growth trajectory over the next decade.

11.3 Despite accelerated track renewal programmes taken up during Seventh and Eighth Five Year Plans, about 11,000 kms. of track length was overdue for renewal at the start of the Ninth Plan. The total requirement of railway track renewal during the Ninth Five Year Plan is estimated at 24000 kms. The increased frequency of engine failures, hot mix detachments, rail fractures and other track failures and the tardy working of signalling and telecommunication equipment put a question mark on the reliability of rail assets. While on the one hand, the poor reliability of assets affects adversely the productivity of Indian Railways, on the other it threatens to jeopardize the safety of rail operations. The incidence of asset failure has to be controlled by providing technology back up to the human element in the area of train operations in order to enhance safety.

11.4 Our transport network is characterised by a system of high density corridors (HDC) linking major urban areas. Within the high-density corridors system, the corridors linking up the four major metropolitan cities (Golden Quadrilateral and its diagonals) carry a very heavy volume of traffic as compared to the existing capacity. The augmentation of capacity of HDC system should receive high priority. In the case of railways, strengthening of Golden Quadrilateral would involve doubling/ tripling/ quadrupling in different sectors according to operational needs and up gradation to higher axle loads. Construction of bypasses for major cities and up gradation of passenger and freight terminals are also needed to augment capacity on the busy sections of Indian Railways.

11.5 Presently, the Railways have a large shelf of ongoing projects, mainly relating to new lines and gauge conversion. In view of scarce availability of resources, the available funds are thinly spread over a large number of projects resulting in time and

cost over runs. The throw forward (balance amount required to complete the projects) on all these projects amounts to more than Rs. 30,000 crore and going by the present rate of allocation on these projects, it will take more than 30 years to complete them. Therefore, there is an urgent need to carry out an exercise to prioritise the projects, keeping in view the available resources and reasonable time frame. New projects must also be deferred until resources justify expansion of projects.

11.6 The railways must focus on reducing the speed differentials between freight and passenger services by raising speeds of freight cars to 100 km/hr. This will help improve traffic throughput in the system. It is also necessary to improve freight car designs to secure higher payload to tare ratios for freight and to improve speeds. Locomotive technology is being improved through adoption of latest-state-of-the-art locos as well as upgradation of existing fleet through retro fitment. This process must be accelerated. Mechanisation of track maintenance is another area which should receive higher priority. Introduction of modern signalling and telecom facilities should get a fillip as this would help in augmenting track capacity.

11.7 In order to promote inter-modalism for safe, efficient, customer friendly and faster movement of goods, there is a need to increase Inland Container Depots (ICDs). The establishment of ICDs should take place at the crossings of the three modes of surface transport i.e. rail, road and inland waterways in order to minimise costs and time. The location of ICDs should also be viewed in conjunction with the programme of development of specialised minor ports, which in turn would be influenced by the regional spread of industries. The Railways have to increasingly focus on the creation of rail hubs with sufficient warehousing facilities and accelerate the programme of containerisation not only to promote inter-modal transport but also as a strategy for increasing its own market share and catering to high-value traffic. Roll-on-Rolloff facilities such as those initiated on the Konkan Railway will need to be replicated.

11.8 It will be necessary to bring about major changes in our rail tariff policy in the light of the above objectives. Some subsidisation of rail tariff is unavoidable in our situation. However, the extent of subsidisation must be limited to where it is absolutely unavoidable. Large scale cross subsidisation of passenger services by overcharging certain categories of freight is not justifiable as it deflects freight traffic which should be carried by the railways to road thus preventing the railways from performing according to their comparative advantage. An improvement in the fare freight ratio (earning per passenger km. vis-à-vis earning per tonne km.) from the present level of

0.32, which is one of the lowest in the world, to 0.5 as it was in 1951/52, would result in additional earnings of Rs. 4400 crore. There are also limits to cross subsidisation within the passenger category. Reluctance to impose passenger tariffs which cover costs only prevents the railways from mobilising the resources needed to modernise and upgrade the quality of their services which is increasingly important for passengers. Creation of an intermediate class needs to be explored. There is a need to phase out subsidies both in respect of passenger and freight in a period of next three years. It is also necessary to adopt a system of automatically indexing railway fares (both passenger and freight) to increases in fuel costs and wage costs adjusted for an expected annual productivity increase on both counts. Using an appropriate price indexing formula fares should be adjusted automatically wherever a fare increase of 3% becomes due. Earmarking a portion of the proceeds obtained from indirect user charges would help finance the massive investment required for this sector.

11.9 Considering that (a) rail and road are the major modes of transport and (b) given the higher rate of utilisation of capacity rail is more energy efficient, less polluting and more economical mode of transport, particularly, in movement of freight traffic over long hauls, it may be desirable to raise the share of railways in the total traffic. This may not be easy considering the capacity constraint faced by railways and the availability of more flexible and customer oriented road transport services. Railways, at present, carry 65% of long distance bulk traffic for which it is the most suitable mode of transport. By increasing its share to 80-85% in this type of traffic and by taking accelerated programme of containerisation, the Railways may attempt to increase its share in total traffic from the present level of 40% to 50% by 2010, leading to a savings in diesel, which at the present level of traffic would amount to around Rs. 2500 crore of foreign exchange per annum. In addition to improvement in quality of their services, this would also necessitate strengthening of customised service.

11.10 The abnormally high tariff on power used by the Railways has put an extra burden on Railways. In the long term energy and environmental policy interest, tariff for electric traction is required to be streamlined to bring about uniformity in the tariffs charged by various State Electricity Boards and rationalised in order to ensure that resources are optimally utilised and Railways retain their comparative advantage of additional energy efficiency and regain their declining share.

11.11 Besides being major user of energy, Railways also provide a substantial part of capacity for movement of various forms of energy. Coal and POL together constitute

around 55% of the total rail traffic. The movement of coal by railways is mainly for power generation. It is, therefore necessary to optimise power generation from coal on the one hand and use of energy in railways on the other. Pithead generation of power would reduce the rail load of the energy sector. The location of power plants near the coast would also help to relieve pressure on railways.

11.12 The Railways made a beginning to involve the private sector with the launching of Own Your Wagon Scheme. The scope of Private Sector Participation in acquiring rolling stocks particularly high speed wagons and new generation locos needs to be enlarged gradually through innovative leasing schemes. The railways need to identify projects with a high rate of return for offering to the private sector. Further to tide over the conceptual and procedural difficulties, the legal and tax framework for the leasing scheme requires to be simplified and streamlined. Undertaking pilot projects for commercial utilisation of land/air space using the private sector organisation under the Ministry of Railways as "Special Purpose Vehicles", for ensuring that private initiative is brought in, is a step in the right direction. However, a consolidated approach rather than a piecemeal attempt along with a pro-active role of railways is required to tap the massive potential of private sector participation.

11.13 A Railway Tariff Regulatory Authority should be created to determine Railways Tariffs. An independent authority fixing tariffs keeping in mind the need to prod the Railways to greater efficiency and at the same time ensuring that the cost of providing services is fully recovered is necessary for the development of railways.

11.14 At present, the railway system is a monolithic departmental enterprise which covers provision and maintenance of the track network, operation of freight and passenger services, and also substantial production units producing rollingstocks. Some countries have successfully segregated track management from rail operations. The approach has yielded dividends in terms of more efficient services at lesser cost. Indian Railways should concentrate on its core function, i.e. running of transport services on commercial lines, while spinning off non-core /peripheral activities, such as manufacturing units, into individual cost and profits centres. These can remain in the public sector for the time being, but should operate like any other public sector unit on commercial accounting principles. Restructuring of even the core functions of Indian Railways appears to be desirable in order to improve efficiency and to better meet the objectives of the organisation. Gradually, the private operators may also be allowed to

compete in the provision of rail transport services. This is being done at present on ad-hoc basis e.g., tourist trains.

12. **Roads and Road Transport**

12.1 The augmentation of capacity of the existing High Density Corridors (HDCs) should receive high priority. A massive programme of upgradation of HDCs involving more than 13,000 kms is already underway. National Highway Development Project (NHDP) aims at 4/6-Laning of 2-lane National Highways comprising Golden Quadrilateral (GQ) linking Delhi-Mumbai-Chennai-Kolkata and North-South, East-West Corridor connecting Srinagar to Kanyakumari and Silchar to Saurashtra. The total length of GQ (after alignment finalization) is 5,851 kms. The target for completing GQ is December 2003. The total expenditure on NHDP is expected to be Rs. 54,000. The total length of North-South, East-West corridor is 7,300 kms. The total expenditure on NHDP is expected to be Rs. 54,000 crore.

12.2 The spine and grid system also needs to serve a number of important ports and industrial centres through suitable spur connections. Some of the major ports in the country are experiencing constraints on their efficiency by way of absence of quality road linkages. The growing role of ports visualised for the future necessitates the establishment of high quality road links to ensure the faster transportation of export and import cargo especially container cargo through sophisticated multi-axle trucks. An integrated road-port linkage development programme has been conceptualised within a given time frame so as to allow unhindered and quick movement of cargo carrying vehicles. With such an approach it would be possible to optimise the utilisation of resources and at the same time ensure improved accessibility and mobility. The upgradation of HDC system in roads must be integrated with parallel efforts in railways so that each mode can perform the job for which it is best suited on the basis of its comparative advantage and also provide competition when appropriate.

12.3 Some of the State Highways carry heavy traffic. HDCs on the State Highway Network should be developed in such a way that they may provide a feeder system to the rail and National Highway network. There are several deficiencies at present, in the form of missing links, weak and narrow bridges ROB/RUB and the absence of bypasses and ROBs/RUBs. These should receive higher priority than the extension of the network itself. The priority for linking up villages and habitation with all weather roads is too obvious to need any emphasis. Programme for construction of rural roads

under various schemes needs to be integrated and co-ordinated under one umbrella in the State sector. Since only about 60% of the total villages have been connected by all weather roads, therefore, there is a need to adopt a time bound programme for providing connectivity to all villages with all weather roads. However, while constructing rural roads, connectivity of Public Health Centres (PHCs), schools, market places, backward areas and tribal areas etc should be given priority.

12.4 Pradhan Mantri Gram Sadak Yojana (PMGSY) has been launched recently with the primary objective of providing connectivity, by way of all-weather roads to the unconnected habitations in the rural areas, such that habitations with a population of 1000 persons and above are covered in three years (2000-2003) and all unconnected habitations with a population of 500 persons and above by the end of the Tenth Plan Period (2007). In respect of the Hill States (North-East, Sikkim, Himachal Pradesh, Jammu & Kashmir, Uttaranchal) and the Desert Areas, the objective is to connect habitations with a population of 250 persons and above. The Programme, as a related objective, also aims to achieve an equitable development of the rural roads network in different States/Districts so as to fully exploit the latent potential for rural growth.

12.5 India is committed to the concept of development of Asian Highway Network for the economic and social growth of the region and has been taking all possible measures to develop the routes within India and establish linkages with neighbouring countries. The entire Asian Highway routes within the country constitute National Highway. Two priority international routes pass through India, the first commencing from Pakistan border and goes up to Petrapole (Indo-Bangladesh border) and enters Bangladesh and again meets Indo-Bangladesh border at Dauki in North-West (in Assam) and from there it goes to Indo-Myanmar border at Moreh and enters Myanmar. The second route originating from Delhi go through Nepal and Bangladesh. Such road transport linkages will facilitate the movement of goods and people across the BIMST-EC countries along Asian Highway routes. The major development works on other Asian Highway routes would be completed on priority. Efforts towards development of Trans Asian Railway Network are also important in this regard and need to be encouraged.

12.6 The existing road network is showing signs of serious deterioration because of neglect of maintenance, which is highly uneconomic. The present allocation for maintenance of National Highways is only 50 to 60% of the requirements and is based on outdated norms. However, the actual availability as a percentage of requirements

based on updated norms would work out to much less. The situation in respect of State roads is still worse. There is a need to provide sufficient funds for maintenance as per the prescribed norms. A rupee spent on maintenance saves two to three rupees in vehicle operating cost besides providing a very cost effective option to improving traffic flow. On selective basis, maintenance operations may be given to the private contractors in order to secure the benefits of competitive price and quality.

12.7 There is an urgent need for the introduction of the new technology in the designs, engineering and construction methods as also carrying out surveys through remote sensing techniques particularly in the upgradation of the roads which are covered by the HDC. Use of machines to improve both the quality and speed of construction need to be pursued more vigorously. The possibility of creating engineering leasing companies need to be encouraged. The concept of awarding big road projects as turnkey Engineering Procurement Construction (EPC) contracts, would help reduce construction time and improve quality. The Public Works Departments of the States also need to be thoroughly modernised. These steps would help in reducing by at least 50% the abnormally high time taken for construction of roads. Several new materials of road construction are emerging such as polymer modified bitumen, geosynthetics etc. that would need to be encouraged depending upon the cost effectiveness. For rural roads, use of local material need to be maximised to economise on investments.

12.8 It is observed that the incidents of encroachments on the lands vested in the National Highways and State Highways are increasing day by day. These encroachments have badly affected the free flow of traffic and making further development works like widening difficult, costly and even redundant from operational point of view. There is, therefore, a need to enact Central Legislation for preventing unauthorised occupation and removal of encroachments from National Highway land. There is also a need for the States to enact legislation for control of development activities on the land adjacent to the National Highways. Some of the States like Assam, Rajasthan, Uttar Pradesh, Haryana and Karnataka have already enacted legislation in this regard.

12.9 There has been substantial induction of new technology in passenger transport segment, particularly in personalised vehicles, though there is almost no progress in so far as bus transport is concerned. More importantly there has been technological stagnation in the field of road freight transport business. Low diesel prices in the past

and extreme overloading made possible by lax implementation of rules and regulations which themselves are not very stringent, unhelpful, tax regime and congested roads - all militate against the introduction of new technology in the trucking industry. There is an urgent need that the country should profit from the increased use of low tare weight and heavy haul multi axle trucks, which are more fuel-efficient.

12.10 Multi-axle vehicles cause much less damage to roads than two axle trucks. These vehicles offer cost reduction not merely in terms of lower line-haul cost per tonne km. but in terms of increased loading/unloading efficiency and maximum interchange ability of loads between vehicles and modes. Since the benefits in terms of lower road damage do not accrue to the user, it is necessary to use differential taxation on multi-axled vehicles to encourage their use.

12.11 Octroi and sales tax barrier lead to unnecessary detention apart from causing avoidable harassment and adding to operating cost. At present 5 States and 3 UTs levy octroi. Beginning with small localities these states may also phase out levy of octroi. While sales tax barriers may be necessary to check evasion of tax revenue, it is necessary that these barriers may be only at the entry and exit points of States and not en-route. Streamlining the procedures and computerisation of sales tax posts may help in reducing detention time and also curbing malpractices.

12.12 Safety of operation is an area of concern in all modes of transport. The sheer magnitude and severity of road accidents require immediate attention. The number of fatalities on Indian roads has increased to over 70,000 per annum, which is completely unacceptable. India's share in the world vehicle population is only 4.3% whereas in terms of fatality it is 13%. The severity of accidents in India is evident from the fact that 1 person gets killed out of 5 accidents, whereas in developed countries a fatality occurs in out of 10 to 85 accidents. The total estimated social cost on account of accidents in the country is estimated at Rs. 55,000 crore per year. A multi pronged attack encompassing engineering, education and enforcement of regulatory provisions is the need of the hour to tackle this problem.

12.13 In so far as road accidents are concerned, there is a need to prepare a realistic National Road Safety Policy providing for concerted action by all concerned to bring down the number of accidents and fatalities in a fixed time frame. For this purpose, the organisational set up in the Ministry of Road Transport and Highways needs to be revamped.

12.14 The road transport services in most cases do not cover all the costs particularly the infrastructure and external costs. In order to have optimal inter-modal mix it is necessary to incorporate these costs into transport pricing.

12.15 In sectors traditionally funded by the States such as roads, it is essential to explore innovative avenues for mobilisation of resources. The principle of charging would be recovery of cost including maintenance taken as an element of cost. The levy of tolls on roads where tolling is possible would provide an additional, albeit, limited source of funding. It is, therefore, necessary to implement indirect user charges in the form of a cess on petrol and diesel, which are principal fuels used in the transport sector, the proceeds to be earmarked for the development of roads. These measures could be supplemented by imposing heavy vehicle tax as also parking and cordon charges. Unless this is done it will not be possible to finance the massive investment needed in the road sector. The resources collected through user charges – direct or indirect should be easily recognisable and thus separable. The collection cost of such charges should be minimum and these should be imposed in a minor to ensure that chances of avoidance/evasion are minimum. Proper monitoring procedure is also required to be evolved to ensure that the funds collected are used in a timely manner and only for the construction of roads and associated activities. A beginning has already been made in this regard. The accruals from additional excise duty imposed on diesel and petrol have been transferred to a Dedicated Fund for development/ maintenance of highways. The States should also explore the possibilities of earmarking funds for development of roads by imposing such user charges.

12.16 The possibility of sharing the cost of provision of transport facilities needs to be explored. As regards rural roads, apart from the fund earmarked under various programmes, beneficiary participation should be utilised as a supplementary funding source. Efforts should be made to organise communities and mobilise people's contribution to rural development. State Governments may also consider introducing special schemes like Market Committee Fund Scheme, which is already working satisfactorily in Punjab, Haryana and Rajasthan. The funds so collected could supplement Plan resources for the construction of rural roads. In order to augment availability of resources for the sector, the budgetary resources should be used to leverage private investment. These measures will be particularly required for improving the viability of the projects, both relating to creation of transport infrastructure as well as for operation of services.

12.17 Road construction will remain in public domain to a large extent. There is a niche for private sector participation in development of roads where the traffic densities are extremely high but the total scope for private sector investment in roads is likely to be limited. There is much greater scope for private investment in bridges and bypasses. In order to involve private sector in development of highways, the public sector funds should be used in the form of equity and/or grant so that the project may become more attractive for the private sector.

12.18 Under the Build Operate Transfer mechanism having three variants of revenue collection -direct tolls, shadow tolls and annuity-the concept of direct tolling, viewed mainly as a user charge has already been successfully implemented mainly on bridges and bypass roads. For the concept of tolling to gain public acceptability, it is crucial to ensure quality construction of roads. This concept is required to be replicated on selected stretches of National Highways, wherever feasible. Shadow tolls-where users don't pay any toll, require effective monitoring. The developer assumes the majority of the risk associated with design, construction, maintenance, operation and financing of the road. In the annuity option of the revenue stream-where a fixed annual payment is made to the entrepreneur- it would be important to justify the value of the annuity payment on the basis of the cost of the project, the reasonableness of which would require to be justified. The adoption of shadow tolls/annuities would make the imposition of tolls well nigh impossible as the populist demand would be not to collect any "real tolls". The mechanism of shadow tolls/annuity may be used for maintenance and taking up of one or two road construction projects on an experimental basis. Stringent measures are required to be evolved to monitor performance parameters. In this context, it is also important to draw lessons from the experiences gained by other countries.

12.19 The legislative framework as well as concession agreement have already been finalised to encourage private sector participation in highways. As and when private sector participation picks up momentum, it would be necessary to set up a regulatory body. The road transport is mainly in the state sector. The State Governments should set up regulatory body/authority. The regulatory body should ensure safety of road transport operation and adherence to schedules by the various operators apart from firming the tariff.

12.20 The road transport passenger operators also need to be organised on sound corporate lines to promote safety and reliability and for provision of services in remote

and backward areas. The State Government should formulate the guidelines, which may lay down the minimum viable size of the fleet, criteria for technical and financial soundness of the operators. This will also help in the effective implementation of laws, rules and regulations governing the operation of road transport.

12.21 In the road transport freight, it is necessary to take action mainly by the State Governments for creating co-operative of small truck operators. The truck owners' co-operative could link up their operation closely with large undertakings to reduce their cost and improve the utilisation of the fleet.

12.22 Within Transport, Road Transport is the largest consumer of HSD in the country accounting for about 75% of the total consumption. Vehicular population has increased at an annual average rate of over 12.7% during the period 1971-1998, resulting in a higher demand for fuel and increase in passenger /freight kilometre along with poor quality of fuel supplies cause menacing growth in vehicular pollution particularly in the cities. Immediate step is required to improve the quality of fuel. The present sulphur content level of 0.5% in diesel needs to be brought down to 0.10% in phases. Delhi where the problem of pollution caused by emission is very acute, the objective should be to reduce sulphur content to the minimum level. The exhaust of emission standards in automobile engines will also be made stricter.

12.23 The total exhaust emission standards for various categories of new vehicles conforming to Euro-II norm have been made effective from 1.4.2000. This is welcome step. But what is required is that these norms are strictly adhered to and their enforcement ensured. Emission standards for new vehicles should be made more stringent conforming to Euro-III norms.

12.24 The improvement in vehicle technology through fiscal incentives, enhancing the riding quality of roads through decongestion, proper maintenance, up gradation of highways, use of local material in consultation of roads along with improving the quality of petroleum fuel and shift to less pollutant alternate fuel, enactment of policies to promote CNG mode of vehicles, uninterrupted supply of CNG with improved delivery system and rebate in duty on import on engine retrofit kits are some of the steps, which would go a long way in promoting energy and environmental efficiencies in road transport.

13. **Ports**

13.1 Capacity augmentation at the existing major ports needs to be pursued, but there is a limit to expansion of capacity of these ports. A substantial part of the port capacity was being utilized by bulk and POL cargo, which could be released by developing a series of specialized ports along the coastline of the country. A number of minor ports have already come up and new minor ports are proposed to be developed by the States. The share of traffic of the minor ports, which was about 10 per cent in the beginning of the Ninth Plan has now gone up to 18-20 per cent. Therefore, there is a need to develop suitable mechanism for coordinating development of existing ports and growth of new ports. The mechanism may ensure sharing of information and avoidance of inappropriate State subsidies.

13.2 International trade is witnessing an increasing trend in containerisation. JNPT and Chennai ports, which are capable of berthing mother vessels need to be developed as mainline gateway ports connected by a rail/road bridge and equipped with efficient, modern container handling facilities. The availability of such inter-modal facilities will result in considerable savings in cost and time for ships from the west carrying containers destined for Chennai or beyond and those from the east carrying containers destined for Mumbai or beyond. The existence of a fast, dedicated rail bridge will facilitate quicker movement of containers, between the two ports and also enable transport of containers from ICDs strategically located close to the rail bridge. Such gateway ports will act as a counter magnet to Colombo and Singapore by directly receiving mainline vessels destined for India and by servicing them efficiently with a quicker turn-round time can assure themselves of far greater container cargo in future. Growth in containerisation would also require skilled labour force at the ports. These issues have to be addressed.

13.3 Though there has been improvement in port productivity over the last few years, there is scope for further improvement. Low port productivity in India, to a considerable extent, has been a consequence of obsolete equipment, inadequate mechanised handling facilities and poor port management techniques. Much of this could be attributed to the non-corporate nature of port management and lack of competition. Current manning scales at ports also bear no relationship with need and work output thereby severely affecting port productivity. The technology also variable acquires sharper focus today in view of the rapid changes being witnessed across the

world both in port handling equipment and in the design and size of the ship. Future ship sizes would be much larger especially in respect of liquid bulk cargo. It is imperative that infrastructure facilities (e.g. the pumping capacity in case of tankers) provided in the port are compatible with the ship capacity.

13.4 Tariffs in India are not uniform and vary from port to port. Tariffs on some commodities like petroleum/oil products are set above the cost, while tariffs on other strategic commodities namely foodstuffs and fertiliser are kept below cost. Likewise tariffs are set higher for imported commodities compared to exported commodities. Tariff Authority for Major Ports (TAMP) has been set up to regulate port tariffs.

13.5 At present, cost plus approach is being followed for determining the tariff structure, which is not an appropriate pricing mechanism for cargo services. While fixing tariff, the improvement in productivity and efficiency needs to be taken into account. It needs to be ensured that users of port services do not have to pay for the inefficiency of the ports. The overall objective should be to move towards competitive pricing. For this, tariff policy may also be used as a leverage to prescribe standards of service and thereby contribute in enhancing productivity and operational efficiency. Cross subsidisation needs to be phased out. Tariff policy should be used as an instrument of rationing of port capacity i.e. higher tariffs should be charged at the most congested facilities/ periods. In the same way differential tariff needs to be introduced for discouraging old vessels. At present independent port authority were determining the tariff structure for all the major ports. Minor ports, however, are not covered by such arrangement. In order to have level playing field among all ports, both major and minor, and to infuse competitive pricing, the tariff could be internally determined by the port authorities and the present regulatory authority could be restructured as appellate bodies to take care of stakeholders interest. It should not only cover issues relating to fixing of freight charges but other aspects also like quality of services etc. The orders of the regulatory authority should be enforceable.

13.6 In the port sector, initiative had already been taken during the 8th Plan to involve the private sector through leasing out of the existing assets. Now the focus has shifted from leasing out of the existing assets to the creation of port assets. One way of involving private sector in the creation of port infrastructure is through formation of joint ventures between major ports and foreign ports, between major ports and minor ports, between major ports and private companies (Indian and Foreign). However a more active way of private sector participation is through the Build Operate Transfer

(BOT) route. The private sector participation in the development of port infrastructure is encouraging so far. The private sector/ port projects of 60.05 MT capacity with an investment of Rs. 4527 crore have already been approved and they are in different stages of construction.

13.7 The major investment in port sector so far has come from captive users. In order to attract more private sector investment, several issues need to be addressed. These include a rational tariff policy supported by commercial accounting system and a re-look at manning scale, which have become outdated and bear no relationship with the need and work. The latter is a sensitive issue and needs to be resolved in the context of overall national policy. But it must be borne in mind that this is one of the most critical issue having serious implications on productivity of ports and privatisation. Other issues which need attention include autonomy to port trust accompanied by delegation of authority with accountability at operative level and introduction of professionalism in the management of ports. These issues are crucial to achieve the goal of opening up port sector for the private sector and making port trusts as a landlord.

13.8 The major ports in the country are organised as trusts and these are administered by a Board of Trustees under the control of Ministry of Road Transport & Highways. Over the years, these Trusts have become large bureaucratic organisations. It is essential that the ports are corporatised. This will impart greater autonomy, flexibility and accountability and eliminate time lags in decision-making. Moreover, as corporate entities, ports will have access to institutional finance on a larger scale since port assets can serve as collateral for the financing institutions. Foreign collaborative ventures will be far smoother with corporatised ports. Central Government has already established a company Encore Port Ltd. at Encore. The new port has started functioning with effect from February 2001. It has also been decided that the existing major ports may be corporatised starting with JNPT and Haldia. The proposed amendment of Major Ports Trust Act, 1963 would facilitate early corporatisation of major ports, except in case of Kolkata and Mumbai Ports. In the long run it is envisaged that all the ports should become Landlord Ports where the Government only owns the port and shore land and all the operational functions of running the ports as also their financing are assigned to private sector/captive users.

14. COASTAL SHIPPING

14.1 Coastal shipping is an extremely economical, environmentally friendly mode of transport, especially for bulk transport, and has the potential to carry a large part of the traffic currently being served by rail and road. The development of coastal shipping has been low despite the fact that the entire coastal trade is reserved for Indian vessels. Low productivity at major ports, paucity of ship repairs services and the relative under development of minor ports affect coastal shipping operations adversely. Further, ship owners are reluctant to acquire dedicated coastal vessels due to various impediments such as complex customs procedures, time-consuming port clearance, high manning scales etc.

14.2 In order to make the sector more effective, there is a need to create adequate infrastructure facilities, simplify customs procedures and provide the necessary fiscal incentives for the development of the sector. It would also necessary to synchronize the development of minor ports with the needs of coastal shipping. It should therefore be accorded a status at par with other domestic modes of transport, especially with regard to customs and other procedures etc., which are hampering it from realizing its full potential. To encourage coastal shipping, measure has already been taken to grant priority berthing to coastal ships without priority berthing charges. It has also been decided to exempt coastal shipping and sailing vessels from the payment of light dues.

14.3 The land route, particularly along the Chennai and Vishakapatnam on the East Coast, is parallel to the coast, thereby providing the potential for diversion of rail / road cargo to the sea route. For this, there is a need to develop coastal shipping as a part of a multimodal transport system, by connecting the minor ports with the hinterland in a cost-effective manner. The level of facilities for cargo handling at these ports would depend on the extent of traffic. Even without equipment, the ports could still be served by vessels with appropriate equipment.

14.4 Coastal shipping involves no investment in line haul capacity except in navigational aids and appropriate terminal facilities. Considering the vast coastline and severe congestion faced by the land modes of transport, coastal shipping offers an effective alternative with increased energy efficiency and lower costs.

15. INLAND WATER TRANSPORT (IWT)

15.1 Inland Water Transport (IWT), like coastal shipping has not been able to realize its full growth potential despite being an extremely energy efficient, environmentally clean and economical mode of transport. India has navigable waterways aggregating 14,544 kms., of which about 5,200 kms. of major rivers and 485 kms of canals are navigable for mechanized crafts. Currently, most of these waterways suffer from navigational hazards like shallow water and narrow width of channel during dry weather, siltation, bank erosion, absence of infrastructure constrained by the absence of proper surface road links to facilitate the smooth transit of cargo. Furthermore, less than 400 vessels are available for IWT. This includes tankers, bulk carriers dumb barges and others, with an average capacity of less than 600 tones.

15.2. Keeping in mind the constraints facing IWT, and recognizing its potential for growth, there is a need for reduction in cost and time of transportation, and enhancement of the safety and reliability of cargo. To achieve this, the thrust should be on the cretion of infrastructure in the form of fairways, with adequate depth and width, besides the setting up of terminals. There is also a need to augment the IWT fleet, with suitable vessels. Further, in order to facilitate 24 hour navigation in inland waterways, a number of lighted buoys should be provided along the entire water route.

15.3 The private sector can be involved not only with the ownership and operation of vessels for cargo and passengers, but also with the construction and operation of terminals and river ports, the provision and operation of mechanized handling systems, fairway development including dredging, provision and maintenance of navigational facilities and provision of pilotage services. In order to attract the private sector for development of this mode, suitable incentives, reflecting its environmental benefits, need to be considered.

15.4. The North Eastern region offers immense potential for the development of Inland Water Transport as a cheap, viable and eco-friendly transportation mode for various commodities through Bangladesh. The existing IWT infrastructure, which offers an assured draft of two meters, is being under utilized and therefore, further investment on infrastructure in this region may not be too significant. The need however is for the deployment of a fleet of shallow draft vessels to take advantage of the increasing cargo-carrying opportunities in the North East region. The involvement of the private sector would be crucial in this regard.

15.5. Inland Water Transport offers great scope for evolving an inter-modal approach in its development. There is an opportunity now to undertake projects linking the inland waterways with the ports particularly the minor and intermediate ports, so that cargoes emanating from the hinterland can be transported directly to the ports through inland waterways without any diversion of roads. Such a programme will benefit the inland water transport sector and required investments from the private sector can be infused, as the assured cargo traffic will make the package commercially profitable.

15.6. While private sector participation will address the objective of developing IWT as an important mode of transport to a large extent, there may also be a need to take suitable policy initiatives to channelise funds from identified user agencies. Efforts can be made to pool resources from captive users, such as public sector undertakings dealing with oil, coal, fertilizers and cement. These agencies could be encouraged to make investments in the IWT sector, which could be recovered over a period of time.

16. **Civil Aviation**

16.1 The infrastructure facilities in the establishment of terminal runways and operational and safety oriented equipment need upgradation particularly at the international airports. Delhi and Mumbai are our main airports and each is well connected with the rest of the country in a regional hub. The high volume of traffic on these airports and their interconnection offer the most immediately viable opportunity for their upgradation to world-class international airports. Other airports that could be taken up for such upgradation are Chennai and Kolkata.

16.2 There is a continuing need for the upgradation and modernisation of air traffic services. The navigation and surveillance facilities should be upgraded as a matter of priority to be in line with world standards. New approaches in airport designs should be considered to accommodate technological innovations like the New Large Aircraft. Technological upgradation should be extended to cover the ground facilities by introduction of automation and computerisation, mechanisation of baggage handling facilities and provision of aero-bridges etc.

16.3 The airport projects are highly capital intensive. Astronomical sums are required for the construction of greenfield airports and also for modernisation and upgradation of the existing airports. It is, therefore, necessary that the cost of infrastructure is taken into account while pricing the air transport services. The charges like passenger service

fee, user development charges, aerobridge charges etc, need to be rationalized/ optimised and imposition of new levies like security charges may be considered.

16.4 Across the world, the trend is towards a very high percentage, ranging from 60-70%, of the total revenue of airport operators being generated from non-aeronautical sources at major airports. In India, the comparable figure for AAI at international airports is just 22 per cent. There should be a major thrust towards increasing the share of commercial revenue emerging from non-aeronautical sources. This would also help in optimal exploitation of the full commercial potential of airports and make many airports not only viable but also capable of generating surplus for further expansion and development.

16.5 The main advantage of civil aviation lies in its speed. No other form of transportation can approach the aircraft in speed of travel particularly over long distances and difficult terrain. Air transport, however, is heavy on fuel. The cost of fuel accounts for about 25% of the cost of air operation. The saving in travel time, therefore, has greater merit and significance if it is substantial and not marginal. Viewed in the inter-modal context, the presence of other modes of transportation and considering the total travel time involved which include time taken from city centre to airport, reporting time, flying time, luggage clearance time etc., saving in time offered by the air transport may be marginal on short haul routes. It is, therefore, desirable that the short haul routes covering distances of up to 250 - 300 kms. are served by other modes of transport like Railways and highways for optimising the use of scarce energy resources. However, there may be need to provide air services on short-haul route, which serve difficult terrain or an important tourist destination.

16.6 The operation of airports should be in full accord with the provisions relating to prevention of air, water and noise pollution. All effluents would require to be treated before allowed to leave the airports. Large scale plantations and other eco-friendly activities like construction of golf courses should be encouraged around airports, both for environmental purposes as also to provide relaxation to transit passengers. In order to mitigate problem of noise pollution during nighttime, when it affects the most, night landing of aircraft need to be discouraged through levy of higher landing charges during night time.

16.7 Both for reasons of bridging the gap in resources as also to bring in greater efficiency in management of airports, all possible steps should be taken to encourage

the private sector participation. The legislative framework for privatisation of airports already exists in India. What is needed is a strategy that promotes utmost latitude in the patterns of ownership and management of airports in the country. It would be best to keep all the options open in respect of the management of airports or parts of airports.

16.8 The organizational structure of the airports need to be corporatised to enable entry of private sector, both in greenfield airports and existing airport operations. The process of long-term leasing of airports at Delhi, Mumbai, Chennai and Kolkata in order to make them world-class airports has already been initiated. This would help in attracting investments to improve the infrastructure and services at these airports. AAI could develop other airports with the lease rentals received from the lease of these airports. In domestic air transport operations, the objective should be to provide adequate capacity and ensure healthy competition among private sector and between private and public sector operators.

16.9 In the context of a multiplicity of operators, including private operators, there is a need for establishing an independent regulatory framework in the Civil Aviation sector for ensuring economic regulation in the sector. The authority need to ensure healthy competition among all players and help in speedy and effective redressal of grievances and resolution of disputes among the various stakeholders, while taking measures for promoting growth of the sector.

16.10 The disinvestments of Air India Ltd. and Indian Airlines Ltd. are also in process. It is stipulated that 60 per cent equity of Air India should be disinvested out of which 40 per cent going to the private sector and balance 20% to the financial institutions and public. In the case of Indian Airlines, out of 51 per cent equity to be disinvested, 26 per cent would be given to a strategic partner and balance 25 per cent to the employees, financial institutions and the public.

16.11 Some regions having immense tourist potential could not develop because of lack of infrastructure facilities in the shape of airport and air services. There include centres like Gaya in Bihar, which have potential for attracting substantial international tourists. There is a need to develop such facilities in these centres with the help of private sector.

16.12 There is a need to make the air services more effective and reliable in the North East and other inaccessible areas. Ministry of Civil Aviation have formulated route

dispersal guidelines which, inter-alia, provide for the air operators to operate at least 10% of their deployment of capacity on trunk routes, in category II routes which are for connecting North East region, Jammu & Kashmir, Andaman & Nicobar Islands and Lakshadweep. The guidelines are aimed at ensuring availability of a minimum level of air operations in and intra category II routes. The airline operations in category II routes, being short haul routes, are loss making. The operation of route dispersal guidelines is meant to cross subsidize operations in category II routes from the profits generated on trunk routes. All the airlines are, thus, forced to operate part of operations, on category II routes. The more appropriate way to ensure reliable air services in these areas would be to provide direct subsidies. There is a need to evolve a more transparent and enforceable mechanism for subsidizing these routes from the surplus generated operation on trunk route.

17. **Urban Transport**

17.1 About 30% of Indian population lives in urban areas. The number of Class 1 cities having population of more than one lakh is rising rapidly. The increased urbanisation and concentration of population in large cities will put a heavy pressure on the already over-saturated urban transport network, thus adversely affecting the productivity in urban areas.

17.2 The modal shift in favour of mass transport system is not only poor but declining. This is mainly because of supply-side factors where the mass transport systems are either non-existent or are unable to cater to demand imposed on them. As a result, there is tremendous increase in the use of personalised vehicles. But the carrying capacity of roads has not kept pace. This is leading to congestion, continuous slowing down of average vehicular speeds, increasing air and noise pollution, increasing accident rates and excessive use of non-renewable energy. The use of personalised vehicles which create congestion and parking problems should be regulated through Low Cost Transportation Systems and management techniques aimed at optimising the existing available infrastructure by various measure includes creating existing infrastructure facilities for the off-the street parking. There are two important issues to be addressed to salvage the situation. *First*, mass transit requirement of the Metro-cities and other large cities need to be addressed on a priority basis. *Secondly*, there is need for strategic land use development policy in all large cities with an aim to integrate land use with mass transit transport planning models to guide future growth process of cities. Legislative issues concerning such land use also need to be addressed.

17.3 Mass Transport Systems, both rail and road based need to be developed. Taking into account the growing urbanisation and its impact on intra-urban and sub-urban rail transport, MRTS and sub-urban rail systems are required to be integrated. In a multi-model transport system, the urban transit system should complement and not compete with other components of the systems. But the substantive problem is that solutions are expensive and require massive mobilization of resources for investments that have long gestation periods. Urban transport also has an inherent imbalance as it involves carriage of high volume of traffic during peak hours whereas during rest of the day, it is under utilized. This affects the economic viability of the system adversely. Fare box revenue is unable to meet the cost. The financing of urban transport project, therefore, becomes a difficult task, which cannot be performed by a single agency. It is necessary to follow a consortium approach.

17.4 Travel is a derived demand, and it is a function of the type and intensity of the land uses spread over the space more significantly for Urban Areas. In another way, the demand for travel can be explained as the result of the desire to fulfil the economic activities in the city space. Thus, land use and transport are intricately related with continuous (dynamic) feedback from each other. Therefore, studying or planning one without the other is never likely to provide any realistic understanding. At present time, all types of activities in city space with uniform or mixed land uses can be modelled and accurate estimation of travel can be made. All cities, medium to large, must carry out strategic land use development policy study using appropriate and integrated land use transport planning model to guide the city's future developments with respect to the feasible options for land use and transport developments. Rigorous estimation of future travel using detailed and integrated transport and land use planning to develop and analyse transport projects to be implemented simultaneously with urban developments in terms of traffic impact and economic viability is a must. . The land to be acquired for mass transit system should be frozen to avoid increase in land cost later on.

17.5 At present, institutional arrangement for planning and developing urban transport in the country are far from satisfactory. Urban Transport should be regarded as a separate subject in the Allocation of Business Rules and existing rules need to be modified to place full responsibility with one single Ministry. There is a need to strengthen set-up in Ministry of Urban Development & Poverty Alleviation in this regard. The Ministry of Urban Development and Poverty Alleviation could set up a group to work out city-by-city requirement of mass transit system and land use

planning. Similar groups should be set up at the State level and at municipalities of cities with more than two million population to co-ordinate the work relating to mass transit system and land use planning. In the metropolitan cities, there is a need to set up Unified Metropolitan Transport Authority. The role of the authority should be restricted to a regulator and a facilitator for planning and implementing projects of all modes of transport resulting into an integrated transport system. The authority should not act as the implementing body.

17.6 At present, there are a number of Acts like Metro Act, Tramway Act etc, which are the governing laws for mass transit system. These fall under the jurisdiction of different Ministries including Ministry of Road Transport and Highway etc. and there is not always one-to-one correspondence between the user Ministry and the Ministry in-charge of the Act. Some of these Acts are also outdated and need considerable amendment in the context of present day requirements. Rationalisation of such Acts therefore is essential for the success of mass transit system.

18. **Conclusions**

18.1 The major modes of transport have witnessed an impressive growth in the last half a century and contributed to the development process in the country. Notwithstanding all the achievements, the quality of transport infrastructure and services is required to be improved along with the expansion of network both in terms of spread and capacity. This is a big challenge for the coming millennium. It is necessary to formulate an integrated transport policy to ensure adequate, efficient and high quality of transport infrastructure and services with a view to achieving maximum efficiency at minimum cost to the end that mobility of goods and people may be assured. While formulating such a transport policy, it is important to visualize the transport system as an integrated structure of different modes and services functioning as distinct entities in a level playing field with the element of inter-modal and intra-modal competition, ensuring organisational efficiency and individual viability. This will require reorientation in our transport policy. The emphasis will have to shift from merely providing transport infrastructure and services to technological upgradation and modernisation of the same in order to ensure mobility and not only accessibility. The thrust will have to be on provision of improved high quality services with minimum use of cross subsidisation and emphasis on achieving optimal inter modal mix with appropriate pricing and user charges policy and through injection of competitive impulses. The policy initiatives detailed in order to achieve the desired objective will

require to be implemented by the concerned Administrative Ministries. However, a Task Force or a Coordinating Body should also be set up which, by visualising the transport system as in integrated structure of different modes and services would give policy thrust of intermodal nature, oversee implementation and introduce corrections, if required, in the mechanism in order to achieve an optimal inter-modal mix.

Railways

- Regain its share in freight traffic through qualitative capacity augmentation aided by corrective pricing policies and organisational change.
- Focus on technology upgradation and modernisation. Augment capacity on the saturated high-density routes and replace over aged assets, facilitating reduction in asset failure, improvement in productivity and enhancing safety of rail operations.
- Technologically, reduce speed differentials between freight and passenger services,
- Improve coach and freight car designs as well as pay load to tare ratios for freight, mechanise track maintenance and adopt latest state-of-the-art locos.
- Organisationally split the existing six manufacturing units into independent profit and cost centres.
- Improve self-financing capability through marked reduction in the extent of subsidisation of passenger traffic.
- Focus on creation of rail hubs with sufficient warehousing capacity to accelerate the programme of containerisation.
- Enlarge the scope of private sector participation gradually in acquiring rolling stock through innovative leasing schemes.
- Set up an independent regulatory authority for fixation of taxes and freights.

Roads

- Need to upgrade high-density corridors both in terms of carpet width and riding quality keeping in view the parallel programme of Railways.
- Ports and industrial centres to be served through spur connection.
- Higher priority to be given to removal of existing deficiencies in the road network vis-à-vis network extension.
- Develop Asian High Network in order to exploit trade and other possibilities with neighbouring countries.
- Modernise high-density corridors through introduction of new technology in the

design, engineering and construction methods.

- Encourage use of new materials of road construction and award of big road contracts on turnkey basis and use of machines to improve quality and speed of construction particularly for development of HDCs.
- Introduce and encourage low tare weight and heavy haul multi-axle vehicles through suitable fiscal measures
- Reduce octroi and sales tax barriers to facilitate flow of road transport.
- Encourage private sector participation in construction of by passes, bridges and short stretches carrying heavy traffic. Under BOT concept, direct tolling, viewed mainly as a user charge, to be replicated on selected stretches of National Highways. Mechanism of shadow tolls/annuity to be used mainly for maintenance and road construction projects on experimental basis.
- Utilise budgetary resources to leverage private investment for improving the viability of projects.
- Evolve a system of user charges to be used as an important source of revenue for road construction in future.
- Reduce exhaust emission from automobile engines by stricter emission norms, improved petroleum fuel supplies and shift to less pollutant alternate fuel.

Ports

- Adopt a strategic approach in order to explore inter port complementarities.
- Enhance port productivity by developing a series of specialised minor ports, along the coastline in order to divert traffic from the congested major ports.
- Establish two modern gateway/transshipment ports in Mumbai and Chennai and provide for inter-modal linkages through efficient rail/road services between two ports namely JNPT and Chennai so as to facilitate movement of large transshipment containers.
- Have a sharper focus on port technology ensuring compatibility with development in shipping.
- The pricing policy of port services should ensure adequate returns and enhance productivity of ports. Cross subsidization needs to be phased out.
- Effect organisational changes in the form of corporatisation for efficient management, institutional funding and attractive private and foreign collaborative ventures.
- Make TAMP as appellate body.

Coastal Shipping and Inland Water Transport

- Need for comprehensive planning of this sector, which is yet to take off.
- Immediate redressal required for removal of constraints in the form of shallow draft, narrow width of channel, absence of terminals, bank erosion etc.
- Focus on Inland Water Transport projects which are inter-modal in nature.
- Exploit potential by encouraging private sector participation both in the creation of infrastructure and operation of services.
- Adopt Govt. backed strategy for reviving coastal shipping.
- Evolve a system of berth reservation for coastal vessels at all ports as also fiscal incentives to enable acquisition of vessels.

Civil Aviation

- Upgrade main airports i.e. Delhi and Mumbai to the standards of world-class international airports with phased programme of modernisation and upgradation of other airports.
- Upgrade and modernise both air traffic services and ground infrastructure to accommodate technological development including introduction of new large airports.
- Take into account the cost of infrastructure while pricing the air transport services.
- Increase the share of airport revenue emerging from non-aeronautical services not only for making many airports viable but also for generating surplus for further expansion and development of airports.
- Serve the short haul routes covering distances of up to 250-300 kms. by other modes of transport like Railways and highways for optimising the use of scarce energy resources.
- In order to mitigate problem of noise pollution during nighttime, discourage night landings of aircraft through levy of higher landing charges during nighttime.
- Corporatise organisational structure to enable entry of private sector, both in green field airports and existing airport operations.
- Establish an independent regulatory framework for the Civil Aviation for ensuring economic regulation in the sector.
- Restructure the existing airports at Delhi, Mumbai, Chennai and Calcutta through long-term lease basis for private sector management.

- Provide effective air services in the backward and remote areas such as North East through auctioning and awarding of routes on the basis of lowest subsidy sought by the operators so that the benefits are targeted and the costs become apparent.

Urban Transport

- Develop Mass Rapid Transport System both rail and road (buses) to discourage growth of personalised transport.
- Follow consortium approach for financing Urban Transport projects.
- Strengthen institutional arrangements for planning and developing urban transport.
- Set up Unified Metropolitan Transport Authority in metropolitan cities.

19. Profile of Transport sector		Annexure		
<u>S.No.</u>	<u>Item</u>	<u>Unit</u>	<u>1950-51</u>	<u>1996-97</u>
1.	RAILWAYS			
1.1	Route length	Kms.	53596	62725
1.2	Electrified Route Length	Kms	388	13018
1.3	Throughput			
1.3.1	Freight traffic (total)	M.tonnes	93.00	409.02
1.3.2	Net Tonne (Kms)	B.T.Kms.	44.12	279.99
1.3.3	Passengers Originating	Millions	1284	4153
1.3.4	Passenger Kms.	Millions	66517	357013
2.	ROADS			
2.1	Total Length	000 Kms.	400	3320*
	of which National Highways	000 Kms.	22	52.00@
2.2	Percentage of village with 1000-population connected with all weather roads	percent	NA	85.7*
2.3	Surface Length	000 Kms.	156	1517*
3.	ROAD TRANSPORT			
3.1	No. of Goods vehicles	in 000	82	2260
3.2	No. of Passenger Buses	in 000	34	488
4.	MAJOR PORTS			
4.1	No. of Major ports	number	5	11
4.2	Traffic handled	M. tonnes	19.38	227.26
5.	CIVIL AVIATION			
5.1	Indian Airlines			
(i)	Available Tonne Kms.	Million	76\$	1075
(ii)	Revenue Tonne Kms.	Million	53\$	698
6.	INLAND WATER TRANSPORT			
6.1	Length of Navigable Water ways	Kms.	14544	14544

* These figures pertain to 1st August, 1999

\$ These figures pertain to 1954-55

@ This figure pertains to August, 1999