



INFRASTRUCTURE
Building for Growth



Government of India

Report of the Task Force

**The Delhi-Mumbai & Delhi-Howrah
Freight Corridors**

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Secretariat for the Committee on Infrastructure

Preface

This Report responds to the direction of the Committee on Infrastructure, chaired by the Prime Minister, to prepare a concept paper on the Delhi-Mumbai (Western) and Delhi-Howrah (Eastern) dedicated freight corridor projects, and to suggest a new organisational structure for planning, financing, construction and operation of these corridors. The Task Force, constituted for this purpose, was chaired by Shri Anwarul Hoda, Member, Planning Commission and included experts and representatives from the Railway Board, Planning Commission and Ministry of Finance. The recommendations made in this Report were approved by the Committee on Infrastructure on February 16, 2006 and their implementation has commenced.

The Indian Railways constitute a critical component of India's transport network, both for passenger as well as freight services. Railways are cost effective and also environment friendly. Yet, capacity and efficiency constraints in the freight segment have, over the years, led to a significant shift from railways to road transport. A renewed focus of the Railway Ministry on efficiency, customer care, and commercial principles is aimed at reversing this trend. The recent turn around in railway operations suggests that Indian Railways are poised for rapid growth in capacity expansion.

The high density Eastern and Western corridors are already saturated in terms of line capacity utilisation. Accelerated growth of the economy is only adding to the congestion on these routes.

A quantum jump in capacity is, therefore, necessary for meeting the rising freight demand on account of robust domestic growth as well as the rapid increase in international trade.

The Report suggests an institutional roadmap for the construction and operation of the dedicated freight corridors. These corridors would be constructed, operated and maintained by a corporate entity on commercial principles, and relying on efficient technological solutions. Scarce budgetary resources would be leveraged for raising debt from the markets, based on a sound business plan.

The proposed corporate entity would provide the rail infrastructure, but would not itself engage in freight business, thus providing non-discriminatory track access on payment of haulage charges by train operators. This approach would herald large scale private investment and competition in freight operations. This underlying separation of rail from wheels would also mark a paradigm shift in the functioning of Indian Railways who have already introduced private participation and competition in the movement of container trains.

(Gajendra Haldea)

Introduction

1.1 Pursuant to the decision taken in Committee on Infrastructure, on 30 June 2005, the Planning Commission established a Task Force with the following terms of reference:

- a) Preparation of a concept paper on Delhi-Mumbai, Delhi-Howrah dedicated Freight Corridor Projects with special focus on a new organizational structure for freight corridors.
- b) Examination of the issue whether a new dedicated freight corridor should be constructed or whether the existing corridor should be dedicated to freight movement and a new corridor be constructed for passenger trains.

1.2 The constitution of the Task Force is given below:

- (i) **Shri Anwarul Hoda,**
Member, Planning Commission
Chairman
- (ii) **Shri Shanti Narain,**
former Member (Traffic), Railway Board
Member
- (iii) **Shri S. Chak,**
Additional Member, Railway Board
Member
- (iv) **Shri Ashok Chawla,**
Additional Secretary,
Deptt. of Economic Affairs
Member
- (v) **Shri Gajendra Haldea,**
Adviser to Dy. Chairman,
Planning Commission
Member

- (vi) **Shri B.N. Puri,**
Adviser (Transport), Planning Commission
Member

1.3 After the retirement of Shri Chak w.e.f. 31 August 2005 Shri V.K. Raina, Additional Member Railway Board served on the Committee on behalf of the Ministry of Railways. The Task Force also had the benefit of consultations with Shri E. Sreedharan, MD, DMRC, who attended one of the meetings.

Summary of Recommendations

2.1 A New Organizational Structure

2.1.1 The mechanism of SPV, owned jointly by the Indian Railways and the users of bulk freight services (e.g. port operators, shipping companies, oil companies, coal, iron ore and steel companies as well power companies, largely in the public sector) should be entrusted with the task of planning, construction and maintenance of infrastructure. The SPV will also be responsible for movement of trains on its system and operation of the dedicated freight corridors.

2.1.2 The Ministry of Railways should be the administrative Ministry for the SPV. In order to ensure that the SPV has effective independence in decision-making and is able to function with a market focus and business orientation it should have sufficient autonomy, delegation and flexibility in conducting its business.

2.1.3 The coming together of the Railways and mainly public sector undertakings that are bulk users of freight services, with some topping up by the Central Government, would ensure an adequate equity base, which could be leveraged for market borrowings for raising enough capital for investment in the dedicated freight corridor.

2.1.4 The Task Force considered the two broad models that are in existence in the world today and weighed the pros and cons of both vertically integrated and completely separated models. The vertically integrated model has its own advantage by way of synergy between infrastructure and operation but the

disadvantage is that it does not allow above rail competition. The separated model allows above rail competition but suffers from the absence of synergy and also higher costs.

2.1.5 The Task Force recommends the adoption of a model, which captures the benefits of both the models. The SPV, which would own and maintain the track and other infrastructure, would also move the trains within the corridor on its system, but would not own or lease any rolling stock nor do any freight business other than haulage of freight trains. The Indian Railways and other qualified operators would run goods trains on the tracks of the corridors and would be given non-discriminatory access for this purpose.

2.2 Whether the existing corridor should be used for the dedicated freight corridor and a new one constructed for the passenger corridor

2.2.1 Due to the major constraining factors on the existing high-density routes of Indian railways, which limit throughput, the dedicated freight corridors need to be constructed on new alignments. Augmenting freight capacity on existing network would involve significantly heavier investments. Furthermore the investment in dedicated high-speed passenger corridor would give relatively lower returns on capital.

Concept of Dedicated Freight Corridors

3.1 It is widely recognized that in order to improve the performance of the Indian Railways it must be run on business lines and must become customer-oriented and market-driven. At present the Indian Railways is not in a position to run purely on a commercial basis because it has social responsibilities. The Indian Railway system has a dual role: it provides commercial services while at the same time it performs a number of useful social functions. Activities such as movement of freight in general and of some classes of passengers are carried out on a commercial basis, but the Indian Railways also run suburban and other passenger services below cost, transport essential commodities at a loss, run branch lines that are not remunerative and are expected to provide increasing employment opportunities to the population. While the Railways cannot be absolved of these responsibilities, it is necessary for its efficient functioning, that the two roles are separated to the extent possible.

3.2 As observed by the Expert Group on Railways (Rakesh Mohan Committee), since the objectives of commercial activities are different from those for social activities, separate parameters are needed to assess performance. Commonly accepted financial parameters like revenues, profits, return on capital employed etc. are appropriate to assess performance of the commercial projects. For social projects, operational parameters such as improvement in connectivity and punctuality, increase in traffic etc. could be used. Segregation of these two categories of activities and functions over the Indian

Railways across-the-board is a formidable task. However, the dedicated freight corridors present a good opportunity to make a beginning by setting up an independent organization for its establishment and operation.

3.3 In India the railways have been losing freight business to roadways, although less rapidly than in advanced countries. Railways retain their relative advantage mainly in natural resource and intermediary goods markets in which there are large volume movements and relatively low value-to-weight ratios and tend to lose it as the value-to-weight ratios of manufactured commodities increases unless they can provide high quality container services particularly on medium and long hauls. In order to retain and even increase market share the Railways need to be repositioning itself all the time in order to meet the challenge of competition from the road sector. For that it needs a market focus in its operation. In the new organization for the dedicated freight corridor it should be possible to undertake periodic performance-review and problem solving sessions with major clients to improve the service. Information may need to be collected on the enterprise's competitive position vis-à-vis the roadways sector, and improvements undertaken.

3.4 The competitive pressure on Indian Railways will increase with the further up-gradation of the National Highways on the Golden Quadrilateral, which is now being taken up for six-laning. In order to compete with the roadways it would be necessary not only to lower price but also to improve performance

generally in accordance with the requirement of the clientele. According to a nation-wide survey of users of rail freight services conducted in 1997, the results of which are mentioned in the Rakesh Mohan Committee Report, the Indian Railways was rated below roadways on all parameters viz., reliability, availability, price, time, connectivity, suitability, damages, information sharing, adaptability, cost-friendliness, negotiability, access to officials, ease of payment and claim time. These aspects can be addressed more efficiently in an independent organization operating services in the dedicated freight corridors than in a very large organization like the Indian Railways.

3.5 Following the initiation of economic reforms in 1991, India has been gradually increasing its integration into the world economy. With the abolition of import licensing and the gradual reduction in customs duties, Indian manufactures have to compete with foreign manufactures not only in foreign markets but in the domestic market as well. Unless the Indian industry has the benefit of world-class services at internationally competitive prices, it would not be able to compete with its foreign counterparts. In India many production centers are situated away from the ports and production and consumption centres are also far apart. In this situation it is not simply the cost of transport that matters. Equally important is the quality and reliability of service. In an increasingly competitive environment the Indian industry has to keep its inventories of raw materials and intermediate products

down and keep pace with the imperatives of just-in-time manufacturing. All that is not possible if a reliable transporter does not back the supply chain of industrial goods. Unless its performance is improved through the adoption of a customs-oriented approach, in providing particularly on-time services, the Indian Railways cannot provide that type of service.

3.6 In recent years, the Indian Railways has taken a number of steps to improve its services, with the result that its physical and financial performance has shown marked improvement. This is a welcome development. However, the Railways has to do much more to improve the quality of its services. A separate new organization, which is not burdened with the task of balancing the conflicting objectives, would be in a much better position to follow a market savvy approach and lift the standard of service significantly.

3.7 The Task Force noted that the development of a dedicated freight corridor is highly capital intensive. The provision of such a corridor and its operation must be on commercial principles if quality services are to be provided on a sustainable basis. This would require setting up of higher productivity standards, entailing the adoption of norms, benchmarks, policies and practices, which may be significantly different from what are being followed by the Indian Railways.

3.8 Finally, the investment requirement of the freight corridors is currently estimated to be at least about Rupees 22,500 crore, although the RITES study now under way might well result in a higher estimate. The project would

take at least five years for implementation (after the new organizational structure is established, project report finalized, approval obtained and funding firmed up) and assuming that the current estimates are correct, the average annual requirement would work out to more than Rupees 4500 crore. This requirement would be over and above the normal requirements of the Railways for renewal and replacement, acquisition of rolling stock, multiplexing, modernization, projects for new lines and conversion into broad gauge etc. There are constraints in the Central Government allocating and in the Railways generating funds of this magnitude. The prospect of the Japanese Government providing assistance for the dedicated freight corridors is being explored. A final picture in this regard will emerge only after a study commissioned by the Japanese International Co-operation Agency (JICA) is completed. The current assessment is that the aid, if forthcoming, will be available in two to three years.

3.9 In light of the above an independent commercial organization, capable of raising funds from the domestic capital market appears to be the only feasible option. Such an organization would be able to leverage equity of say about Rupees 7,500 crore to raise a debt for the remaining requirement of Rupees 15,000 crore and finance the project. A departmental enterprise of the Ministry of Railways may not be able to raise loan from the domestic capital market, but a separate corporate entity will, if it inspires confidence in its ability to run as a commercially viable undertaking. Worldwide railway undertakings, particularly those that

also take up infrastructure development, have generally not been able to run as profit-making commercial enterprises. Recovery of capital spent on the infrastructure has not been accomplished and capital grants from the Government have been the general practice.

Organisational Structure

4.1 Having regard to the factors considered above, a Special Purpose Vehicle (SPV) would seem to be best suited to carry out the task of planning, construction and operation of the dedicated freight corridor. Should the SPV be owned fully by the Indian Railways or should it have a more diversified ownership? The Task Force believes that a more diversified ownership with other stakeholders, mainly from the public sector, as investors in equity would be in the best interest of efficient management of the freight corridor, besides generating the requisite equity fund. Some of the stakeholders identified for the purpose are the port operators including Port Trusts, shipping and shipping-related companies, oil companies, coal, iron ore and steel companies, such as CCL and SAIL and NMDC, and power companies such as the NTPC.

4.2 It would be recalled that the Department of Shipping had at one time indicated that port operators/ shipping companies were interested in constructing and operating the freight corridor between Delhi and Mumbai. The oil companies are likely to continue as one of the main users of the railway system even as they make increasing investments in pipelines. CCL, SAIL, NMDC and NTPC would have a major stake in the development of many segments of the Eastern Corridor, but to motivate them to make investments, it would be necessary to take their requirements into consideration while deciding on the alignment.

4.3 Even though the Task Force believes that the SPV could be viable as a commercial undertaking, it does not consider that at the

outset it would generate interest among private sector investors, except a few entities already in transport business. The investment would have to be made principally by the Railways and the public sector companies named above. The Task Force recommends that the equity be shared between the Railways (including its subsidiaries) and the other stakeholders, mainly the bulk users of freight services among the PSUs. The Central Government could come in for meeting any shortfall in equity that might arise.

4.4 Participation of the above-mentioned stakeholders would serve two ends. First, the burden on the Railways for making a large equity investment would be reduced and the funds available with public sector undertakings would be utilized. Second, financial participation by users of freight services would bring to the boardroom the much needed customer orientation and help to bring a market focus in the working of the organization.

4.5 It will be ensured that the SPV functions fully as an independent commercial enterprise. The Ministry of Railways should be the administrative Ministry for the SPV. The appointment and number of functional Directors should adhere to PESB guidelines. Further, the Ministry of Railways should nominate one part-time Director as stipulated in the PESB guidelines. Similarly, appointment of independent Directors should also be governed by PESB guidelines.

4.6 The Task Force recommends that in order to help ensure the requisite volume of financing

as well as to provide adequate representation of other stakeholder interests, the Board should have a nominee each from the Finance Ministry and Planning Commission. However, the representative of Railways Ministry expressed reservations.

Separation of Infrastructure from Operation

5.1 The Task Force considered the option of separation of control and management of the railway track and associated infrastructure on the one hand and above-rail operators (i.e. operators of rolling stock) which have been provided access, on the other. Such separation is considered by some as ideal for unleashing above-rail competition for greater efficiency. A situation in which no rail operator controls the infrastructure can ensure equality of access.

5.2 The Task Force reviewed the international experience in this regard. There are three basic models in existence.

5.2.1 First is the vertically integrated structure, as in China, Russia, India, Brazil, Mexico, and Argentina, to name a few countries with large railway systems. Where publicly owned some of the railway systems are run either directly by Ministries or by corporate units or organizations owned by Government. In Russia, China and India the State-owned companies are horizontally integrated, while in Brazil, Mexico and Argentina there are many privately owned regional companies. In other instances, the integrated railways are run by the private sector on the basis of concessions or franchises awarded by the government owner. In yet other cases, the integrated structure is owned and managed by the private sector.

5.2.2 Second is the structure in which the dominant user is integrated with infrastructure while incremental users have access for which they pay access fees. The best example of this is in the US, in which one vertically integrated freight railway uses the infrastructure of another

vertically integrated freight railway without much difficulty. Further the Amtrak under public ownership runs its passenger trains over the tracks of the privately owned freight railways. In Japan, the Japan Rail Freight Corporation runs as a Government undertaking on infrastructure owned by privatized regional undertakings, which carry passengers. This model has also been adopted in Canada, Mexico and other countries.

5.2.3 Third is the model in which the infrastructure is separated from the users but remains accessible to all under an access regime. We are familiar with this model in the roadways and airports, but in recent times it has been advocated as one of the ways of restructuring railways. The European Union has adopted this model progressively since 1991, but infrastructure and operations were genuinely split in a number of other countries even earlier. In all these countries both the infrastructure and operations remained mainly under public ownership. The British Government, although a member of the European Union, went far beyond others in establishing a separate infrastructure enterprise in conjunction with one or more freight companies, intercity passenger companies, and a number of regional or suburban passenger companies, which were all privatized. The British experiment was unique in that the infrastructure company was also privatized. However, the experiment for privatization of the infrastructure was not successful and the privatized infrastructure company became bankrupt and had to be renationalized. It should be noted that even when the infrastructure company in Britain was

privatized more than a third of its income came from state subsidies to train operators, which were passed through. The bankruptcy was a direct consequence of the Government turning off the tap.

5.3 The experience of separation in Australia also has a similar lesson. A World Bank Report (TP-7 OF September 2005) on the experience of restructuring in the Australia and New Zealand, has come to the following conclusion on the operation of the Australian Rail Track Corporation (ARTC), which was established in 1998 to manage access and infrastructure development on the interstate track:

“The publicly owned ARTC, which manages many of the higher density interstate rail corridors in Australia, has been cash positive but earns significantly less than the replacement cost of its assets, and over the longer term will require some public funding to sustain and enhance its network. The Australian Government has already committed to significant grants to uplift the quality and performance of the interstate rail network, including improving access into the congested Sydney network. However, as volumes increase the commercial performance of the ARTC, which has spare capacity and largely fixed costs, will improve.”

5.4 The European Union has been moving towards separation since 1991. Article I of the Council Directive of 29 July 1991 on the development of the Community’s railways (91/440/EEC) explains both the aim and the content of the directive.

“Article I

The aim of this Directive is to facilitate the adoption of the Community railways to the needs of the Single Market and to increase their efficiency;

- by ensuring the management independence of railway undertakings;
- by separating the management of railway operation and infrastructure from the provision of railway transport services, separation of accounts being compulsory and organizational or institutional separation being optional,
- by improving the financial structure of undertakings, -by ensuring access to the network of Member states for international groupings of railway undertakings and for railway undertakings engaged in the international combined transport of goods.

Article 6 of the Directive mandated Member States to ensure that ‘the accounts for business relating to the provision of transport services and those for business relating to the management of railway infrastructure are kept separate. Article 10 directed that international groupings must be granted access and transit rights in all Member states in respect of international services.’”

5.5 Member States implemented the Directive in various ways. We have seen that the British Government not only brought about a total separation but also broke up the two segments into multiple private companies. Sweden had

initiated action for setting up separate public sector undertakings for infrastructure (Banverket) and operations (SJ) even before it acceded to the European Union in 1995. On 29 April 2004 the European Union moved further for bringing about enhanced access. By the Council Directive 2004/51/EEC the European Parliament and the Council of the European Union required not only that railway undertaking must continue to be granted access to the Trans-European Rail Freight Network but also they must be given access for the purpose of operating all types of rail freight services.

5.6 While the European Union is committed to forge ahead with the separation model, reviews of the implementation of the policy seem to indicate that in railway circles there is considerable doubt on the acceptability of the separation model as the superior option. A recent publication states that “no clear view emerges on the ‘best’ model (integrated or separated)” (Community of European Railway and Infrastructure Companies 2005, *Reforming European Railways- An assessment of progress*, Eurorail Press, Hamburg). Another publication, of which the author was Director of the Public Transport Union in Switzerland from 1969 to 2000, is more forthright in his assessment. “As does the generally known situation in Great Britain, also this analysis of the seven countries with institutional separation gives proof of the fact that separation has no benefits. It only brings serious problems” (Pfund, Carlo, *Separation Philosophy of the European Union- Blessing or Curse*, Service D’Information Pour Les Transports Publics).

5.7 A communication from the Executive Director of the Community of European Railway and Infrastructure Companies (CER) in Brussels addressed to the Chairman of the Task Force states:

“There is no empirical evidence in Europe that separation between infrastructure and operating services leads to real improvements in the railway system: just the other way around.”

The same communication brings out the following facts:

- The CEO of the most successful railway company in Europe (in terms of capacity utilization, customer satisfaction, quality, etc.)- the Swiss railway company SBB believes that the high quality of SBB rail services is only possible because he can optimize simultaneously the synergy of infrastructure and operation within one company under one management.
- Despite the EU move towards separation almost all countries in the centre of Europe - i.e. those companies experiencing a high density of rail traffic - have retained the model of integrated holding companies (Germany, Poland, Switzerland, Austria, Italy, Belgium, Luxembourg) in order to maintain a high efficiency and productivity of the railway system as a whole. Separation has been effected mainly in countries at the periphery of Europe, i.e. without transit traffic and with considerably lower traffic intensity.
- The experience in quite a number of European countries (Germany, Switzerland,

Austria, Italy, Poland, etc.) has shown however that the objective of competition can be achieved without giving up the model of an integrated company. The Deutsche Bahn has the full responsibility for the rail infrastructure, but shares the offering of railway services today with 290 other rail companies having a railway company licence for the German network. A well functioning regulatory framework defines the general rules for the access to the rail infrastructure - rules to be applied by Deutsche Bahn, which is supervised in this respect by a German public rail authority.

5.8 In order to get over the handicaps of separation, efforts are underway to reinforce again cooperation and links between the separated units in order to regain the interdependencies and synergies of the railway system. Publications on the subject of railway organization have also brought up some other relevant facts:

- Even where separation has taken place sometimes it is more in form and less in substance. In France the infrastructure company, RFF, owns the infrastructure assets but maintenance of the infrastructure as well as operations is handled fully by SNCF, the National Railway System. RFF defines the principles and objectives of traffic management and direction, and SNCF is the delegated infrastructure operator contracted for operation and maintenance. Thus SNCF is formally separate but materially integrated (Pfund, Carlo, Separation Philosophy of the European Union- Blessing or Curse).

- Studies by scholars show that an integrated structure produces a cost saving of 27 per cent over a separated system (Ivaldi, M. and McCullough, G., 2002, Subadditivity tests for network separation, mimeo Toulouse and Northwestern University, cited in Reforming Europe's Railways –An assessment of progress, Eurail Press, 2005)

5.9 The concept of synergy between infrastructure and operation is also referred to by experts as rail-wheel interaction and has been explained at length as follows:

Optimization of train operation on the network

5.9.1 The railway functions as a system of vehicles, infrastructure, and operation control technology, like a machine. Only through a combined working of all the elements of the technical system, operational reliability and safety can be guaranteed. This is where the railway differs from other transport modes. By means of permanent central coordination, including the use of modern telematics, the system can be optimized and can thus guarantee maximal efficiency and punctuality. By way of central coordination, headways of trains can be shortened until braking distance, timetables can be harmonized, and efficient measures can be taken in the event of incidents. Modern technology and traffic control systems make it possible to reduce headways between trains, to speed up vehicle turn-round cycles and to reduce the vehicles fleet held in reserve. The optimal run of operations is only guaranteed by the integration of operations and infrastructure. Only a technically integrated

enterprise can assume full responsibility towards the customers for its run of operations.

Further technical development of the comprehensive railway system

5.9.2 Until technical innovations and adaptations in the railway world can finally be put into practice, they are subject to an onerous harmonization process. Different groups are involved in the elaboration of the service product, groups whose interests are not necessarily quite the same. An integrated enterprise, in its decision oriented towards the technical and economical overall optimum, can implement necessary innovations quickly and can assume responsibility for the investment risk. Railway offers that are competitive for a long time presuppose a permanent further development of the compound system railway as a homogenous whole. The other transport modes are developing themselves further at breakneck speed. In this innovation race, the railway can only stand its ground if technologies in the infrastructure, as well as in the vehicles, are developed further at the same speed and in a concerted way. High-speed lines and trains, the safety system ETCS, and the digital GSM-R radio communication system connected with it, all have been planned and developed by integrated railway enterprises.

Guaranteeing a high safety standard in the use of the latest technology

5.9.3 Train traffic puts special demands on observance of safety standards in the system-specific interplay of wheel, rail and control

technology. Also, if high safety standards can be defined or be monitored by a political authority, a clear responsibility for safety must in the final analysis be discernable. If one considers the implication in the case of accidents, a fragmentation of responsibility between operations and infrastructure must be doubly rejected. Overall responsibility for train operations can only be assumed by the manager or managing body who can control and supervise all safety-relevant influence factors. (Pfund, Carlo, *Separation Philosophy of the European Union - Blessing or Curse*, Service D'Information Pour Les Transports Publics).

5.10 The experience of British Rail in separation also has some lessons. A World Bank Report drew inter alia the following conclusion on this:

“Separation of infrastructure from operations did cause problems of complexity and cost (transaction costs). It did not cause increased accidents and it did not support an increase in demand. Whether it yielded benefits in the British context worth the added costs is still debatable. Alternative approaches, such as creation and sale of a limited number of market-defined, integrated franchises might have worked equally well if not better (Thompson, Louis S., *Privatizing British Railways Are there lessons for the World Bank and its Borrowers?* Transport Papers, World Bank, TP-2 September 2004).”

5.11 One of the lessons that the above World Bank paper draws from the UK experience is the following:

“Bank clients that are not compelled to adopt the EU mandates to separate infrastructure from operations should carefully explore the alternatives before adopting the UK or EU approach. The vertically integrated (infrastructure and operations) freight and passenger concessions in Latin America furnish a very valuable alternative model where traffic is heavily freight or heavily passenger oriented, and where on-rail, intramodal competition is not an important objective. The model in which the dominant user is integrated with infrastructure, but other, sometimes competing, sometimes complementary, users are permitted access as tenants, also deserves strong consideration where there is a strongly dominant user and an effective regime of independent economic regulation to assure fair access for the tenants”.

5.12 On the question of independent infrastructure companies operating on a commercial basis and earning returns on the investment we have seen that the Australian Rail Track Corporation, while making cash profits is dependent on substantial grants from the government for sustaining its network. In the Member states of the EU the position is no different. Where separation has taken place the infrastructure is owned and maintained by public sector undertakings, and available evidence indicates that although they are not incurring cash loss, they are not generating enough revenue to give a return on the assets transferred to them and some of them continue to need periodic injection of capital from government.

5.13 There is overwhelming evidence from international experience that an undertaking

entrusted with the ownership and maintenance of rail infrastructure is unlikely to be financially self-sufficient. Financial self-sustenance is even more unlikely in the case of a new entity, which is asked to undertake heavy investment at a time at which the market price of several inputs such as steel and cement are running at historically high levels

5.14 The Task Force considered the main models that are in existence in the world today and weighed the pros and cons of both vertically integrated and completely separated models. The vertically integrated model has its own advantage by way of synergy between infrastructure and operation but the disadvantage is that it does not allow above-rail competition. The separated model allows above-rail competition but suffers from the absence of synergy and also higher costs. The separated model encouraged by the EU has not been fully adopted by the major railway systems in the EU itself, as the only mandatory requirement is that the accounts be separated. Some of the leading and successful railway systems such as Japan and the USA have not gone in for institutional separation between infrastructure and operations.

5.15 The Task Force also considered a number of variants of the organizational structure in order to capture the benefits of different models in existence in the world today, including one in which the SPV would not only own the infrastructure but would also be the dominant operator, allowing the Indian Railways and other qualified operators to conduct business of freight movement and run trains in

competition with it. However, the consensus in the end was that the SPV would be responsible only for the infrastructure and for the movement of trains on its system, while the Indian Railways and other qualified private and public operators would run trains on the tracks owned by the SPV. Thus the SPV would plan, build, own and maintain the infrastructure and move the trains on its system, but would not own or lease any rolling stock nor do any freight business other than haulage of freight trains.

5.16 The Task Force, therefore, recommends the adoption of the organizational model in which the SPV builds, owns and maintains the infrastructure and moves the train within the corridors on its system, while allowing non-discriminatory access to Indian Railways and other qualified private and public sector operators of goods trains within a regulatory framework.

5.17 The SPV would not own or lease any rolling stock nor do any freight business directly with clients. The ability of the SPV to run as a profit making commercial enterprise giving some returns on equity can be judged only after a feasibility report is received from RITES. However, having regard to international experience, it is likely that with this organizational structure, the SPV would require periodically to be granted substantial funds for capital improvements in its assets though such need for support would be mitigated by the density of traffic on these corridors. Despite the lack of assurance of a return on capital, the Task Force believes that the user

PSUs would have sufficient stake in developing an efficient railway system for freight movement to be encouraged to contribute to the equity of the SPV.

Market Contestability

6.1 In some countries roadways and waterways offer adequate inter-modal competition. While the extent of inter-modal in the Delhi-Howrah segment can be assessed only after the exact alignments of the corridor are known, the Task Force believes that on the Mumbai-Delhi segment trucks moving on the National Highways would offer enough competition to the dedicated freight corridor. With the broadening of the highways into six-lane recently announced by Government the competition would intensify.

6.2 The dedicated freight corridor could still manage to retain and even increase its share of the freight business if it can offer the reliability that the manufacturing industry would want in particular. The service could improve further if trucking and railway services complement each other in the transport of containers, for instance. Even if inter-modal competition can be expected to keep the dedicated freight corridor on its toes, allowing the Indian Railways and other players to operate on these tracks would increase market contestability further.

Whether the New Corridors Should be for Freight or Passenger Trains

7.1 The Task Force examined the question whether the existing infrastructure could be used for the dedicated freight corridor and new railway tracks constructed for passenger trains. It was pointed out that the existing infrastructure imposed significant technical constraints limiting the payload carrying capacity of freight trains. Axle Load permitted on the tracks is 20.3- 22.9 tonnes against 25 to 37.5 tonnes per axle carried by major freight carrying systems. The length of loops provided in yards and in stations is 686 metres, limiting the length of trains to 58 BOX 'N' wagons. Against this, heavy haul freight systems internationally carry more than 100 wagons, with the Australian system carrying over 300 wagons per train. The moving dimensions, which is the space envelope in which the locomotives, coaches or wagons have to be designed is restricted on the Indian railways.

7.2 The envelope in other countries is larger allowing use of wagons with higher cross-sectional area permitting increased pay load in the same wagon. Payload to tare ratio i.e. the payload compared to empty weight of wagon is in the range of 4-7 internationally against 2.5 prevailing in India. The envelope cannot be increased as structures on the track like stations, platforms, roofs, bridges, tunnels, road over-bridges etc. have been constructed with clearances according to the current space envelope. The Railways may not be able to cope with the growth in container traffic of around 15% annually without double stack movement. Double stack container movement would not be possible due to the physical limitation imposed by the restrictive space

envelope. Increasing clearances will mean large-scale investment in raising bridges, increasing width in platform areas, increasing height in platform areas, increasing height of electrical OHE, tunnel sizes etc.

7.3 The technical constraints indicated above limit the payload, which can be cleared in one train and consequently the throughput of the section. One train in Australia clears the same payload as would require 6-7 trains in India. Thus the sectional capacity gets vitiated on the Indian Railways due to extra trains being run. Making the existing tracks fit for high axle load, increasing loop length and clearing physical impediments on existing structures would not only be very difficult but extremely costly, and a big challenge in built-up urban/semi-urban areas. A dedicated freight corridor free from the technical limitations enumerated above and fit for high axle load, longer trains and larger clearances can be constructed afresh with little extra investment compared to normal track construction.

7.4 To summarize, the following are the major constraining factors on the existing high-density routes of Indian railways, which limit throughput, and which necessitate the construction of freight corridors on new alignments:

- The axle load limitation on the existing network is 20.3-22.9 tonnes against 30 tonnes and above in major freight carrying systems.
- The length of loops in yards and stations is limited to 686 metres against nearly double the figure in other freight carrying systems.

- The maximum moving dimensions allowed by the existing structures along the tracks, which determines the space envelope for the design of locomotives and wagons, is restricted and less than what is available even on the narrower standard gauge in other countries.
- Payload-to-tare ratio internationally is much higher than the existing 2.5 prevailing in the Indian railways.

7.5 The Task Force was of the view that establishing a new passenger corridor instead of a freight corridor was not tenable for a number of reasons. A high-speed passenger corridor needs a higher level of technology to provide the necessary safeguards towards safety, and other systems including coaches, locos and signaling etc. The high-speed train system between Mumbai and Ahmedabad that was proposed in the past was estimated to cost around Rupees 70 crores per km. For the Delhi-Mumbai and Delhi-Howrah passenger corridors, a total distance of 2800 kms, even at 50 % of the earlier estimate the project cost would be around Rs 100,000 crores. Against this the corresponding freight corridors are estimated to cost Rs 22500 crores. Given the magnitude of funds required for the passenger corridors, the project cannot be given priority over the freight corridors. As a matter of fact the Task Force was informed that at a meeting taken by the Finance Minister on 22 August 2005 the view had been taken that the decision on not taking up the dedicated passenger corridor was a settled issue.

7.6 To summarize, the dedicated freight corridors have to be preferred over high speed passenger corridors for the following reasons:

- The investment requirement to build passenger corridors is five times that required for freight corridors
- Simultaneously significantly heavy investments would be required to augment capacity on existing networks to cater to the freight business.
- Even after these investments physical limitations imposed by the restrictive space envelope would remain
- Investment for the dedicated high-speed passenger corridors would have relatively lower returns on capital, which the country can ill-afford.