

6.

REGULATORY ISSUES: AN OVERALL APPROACH



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6. REGULATORY ISSUES: AN OVERALL APPROACH

Recognising the importance of transport and inadequacies in the network, India's 11th Five Year Plan had envisaged investment of \$500 billion to modernise, expand and integrate the country's transport infrastructure and other infrastructure services such as power, telecom and urban infrastructure¹.

The 12th Five Year Plan has doubled the expected investment in infrastructure to \$1 trillion². Even this increased amount is hardly going to suffice given the demands that are likely to be placed on transport and other infrastructure services by a rapidly growing economy. Thus, it is both necessary and perhaps inevitable that the role of government change from that of a producer to an enabler as well. This chapter discusses an important part of that transition: the development of a regulatory framework for guiding public and private contributions to India's transport development.

Regulation is an extensive theme. The difficulty of arriving at a precise definition of regulation among other aspects of policy and administration has been widely recognised, due in part to the several justifications that have been advanced for regulatory intervention from different theoretical perspectives³. We define it here as the set of organisations and policy statements that establish and clarify the 'rules of the game' for both public and private actors involved in infrastructure and service deliv-

ery. 'Regulators' are the organisations charged with clarifying and applying rules to specific cases, ideally in an apolitical manner. As a discipline, regulation is best approached from multiple perspectives using instruments of economics, political economy, law and public policy⁴. As an instrumentality of the state, regulation is happily no longer seen in a state versus market dichotomy, but rather as one that reflects the changing role of the state towards market-led development⁵.

Regulation is an essential part of the foundation for collaboration between public and private sectors in delivering and managing transport infrastructure and services. This collaboration is inevitable, but its outcomes will be determined by the quality of the framework for the interaction. In a country of India's size and diversity, the demands on the public purse are enormous⁶. Growing fiscal deficits and lack of fiscal consolidation restrict the ability of the state to fund capital-intensive infrastructure projects. This constraint has stimulated the development of innovative models of engaging with the private sec-

1. Planning Commission (2008).
2. Planning Commission (2013).
3. See den Hertog (2010); Breyer (1984) for a discussion of regulatory justifications.
4. Morgan and Yeung (2007).
5. Kohli (2004).
6. See, for example, Budget documents of various years.

The pendulum is shifting back towards a greater private sector role in financing, owning and operating transport, with public influence wielded through policy and regulations. 'Ownership' may not be the most effective way to influence transport development.

tor in India and elsewhere. Since public investment will coexist with private in all transport sectors, including as public-private partnerships (PPP), the State has to be effective not only in service delivery, but also in regulation, contracting and policymaking to obviate, *inter alia*, conflicts of interest. Private sector participation however requires creating independent and effective regulatory mechanisms to ensure, on the one hand, fair returns to private investment, and on the other, protection of consumer interest, including safety and affordability. India has, thus far, been slow in creating these institutions in all areas of transport. We hope to accelerate the process by providing a clear roadmap for regulatory development as part of a larger portfolio of transport governance reforms.

The chapter addresses both general principles of regulation as well as specific recommendations for the Indian context. After the recent decades of private sector participation in traditional infrastructure industries, there is broad recognition of the need to embed it in the wider social and constitutional context—for locating it within the dynamics of state-market relations i.e., within the local context⁷. Comparative studies of regulation in other sectors have also emphasised the interplay between policy-making institutions, representative governance, the judiciary and so-called 'regulators' in creating the full 'regulatory environment'⁸.

BEYOND OWNERSHIP: REGULATION AS A POLICY TOOL TO SHAPE INFRASTRUCTURE OUTCOMES

Regulation and other policy frameworks for shaping private decisions have replaced public ownership and direct planning as the primary means of public influence on transport infrastructure. Public and private sector roles in transport infrastructure have evolved over time. Private companies played a significant role in building transport networks in the 18th and 19th centuries as part of efforts to access new sources of profit such as natural resources and land for settlement. Much of the United States (US) railway system, for example, was built by private corporations with state charters. The US Army Corps of Engineers contributed civil engineering expertise

and Army officers often managed parts of railway operation. American states also chartered private companies to build some of the initial highways in the late 19th century. England's rail network was initially developed by private companies focused on freight rather than passengers, while its competitor, England's canal network, was state-owned, although steamboats were run by private companies. Rail networks of China and India were initiated by foreign companies in the late 19th century.

The public sector took on a more prominent role in provision of transport infrastructure in the 20th century⁹. Public sector ownership was viewed as a way to ensure broad access, as many transport services had natural monopoly characteristics. Supply responsibilities were assigned to the state primarily because of high upfront costs and long payback periods that the public sector was seen as better able to accept. The indivisibilities in infrastructure investment and presence of externalities also limit the prospects for user charges to cover return on investments. Moreover, it was widely believed that government ownership of transport infrastructure facilities and services was the best way to achieve multiple government objectives: not just facilitating commerce, but also increasing mobility, labour migration in the shift from agriculture to industrial employment, and national integration (and international integration in the case of Europe).

The pendulum is shifting back towards a greater private sector role in financing, owning and operating transport (Box 6.1), with public influence wielded through policy and regulation. 'Ownership' is merely one means of control over infrastructure delivery, and not necessarily the most effective way to influence transport development. There is ample evidence from across the world suggesting that protected state-owned monopolies have failed to respond to demands for expanded service or improved quality¹⁰. Public funding dulls the incentive to respond to customers, while government mandates to provide services may be simply infeasible if they are not accompanied by sufficient financial, technology and human resources to deliver these outcomes. Inclusive, efficient transport cannot simply be decreed without an institutional framework that guides investment and management toward public goals.

The United Kingdom (UK) and the US led the shift to a hybrid approach of private ownership and/or financing, with public policies and regulation as instruments to shape infrastructure providers' incentives to provide wide access to services, consider environmental impacts, and meet other non-commercial goals. These two countries rushed

7. Döhler (2011). It is however necessary to note the origins of the concept in the United States, where 'it appeared as a form of state intervention, enforced by specialised agencies, situated at "arm's length" from direct political control'.

8. See, for example, Levy and Spiller (1996).

9. In the 19th century, however, a good portion of infrastructure investments, particularly investments required to open up access to natural resources or new areas for development, were provided by the private sector. See Rakesh Mohan India Infrastructure Report.

10. Brown et al.

Box 6.1

Shifting Roles in Infrastructure Provision

Regulatory reforms in infrastructure provision—transport and otherwise—have often been pushed by economic circumstances and observations of failures in the reigning model of public finance, ownership and operation. The efforts to strengthen incentives for performance by leveraging competitive pressure have played out in various ways across regulatory environments, offering both cautionary tales and some lessons from experience.

In the late 1970s, the United States initiated wide-ranging regulatory reforms because of serious challenges—including stagflation, energy crises, double-digit inflation, increased environmental concerns, the bankruptcy of backbone industries (such as railways), and a perceived erosion in national productivity and international competitiveness. Deregulation was based on the premise that unleashing competition among service providers would lower inflation and restore productivity growth. At the same time, concerns about the energy crises and environmental protection facilitated the introduction of economically efficient pricing, which was expected to discourage wasteful consumption.

During the same period, large-scale privatisation began in the United Kingdom in 1984, when 51 per cent of British Telecom was sold to the private sector. The company's divestiture was driven by the government's desire to remove telecommunications investment from its balance sheet in order to meet its targets for public borrowing. The subsequent privatisation of other utility industries was accompanied by radical regulatory reforms. Several new regulatory bodies were created, and new tasks were assigned to existing agencies such as the Monopolies and Mergers Commission. Meanwhile, members of the European Union increasingly came to see state-owned monopolies as hindrances to international trade in goods and services. Thus in the 1990s, a series of directives were issued to create a single market where goods, services, people, and capital could move freely. These directives spelled out rules for telecommunications, railways, electricity, and natural gas markets across European Union member states, mapping out a common regulatory framework and liberalising these industries.

As the United States deregulated, the United Kingdom restructured and privatised, and the European Union issued directives calling for extensive liberalisation and building a single market, a powerful privatisation movement began sweeping developing and transition economies. For many developing countries, the primary push for privatisation came from the debt and fiscal crises of the early 1980s. Another major impetus came from the extraordinarily weak performance of infrastructure. Moreover, unrealistic price controls resulted in enterprises being subject to financial distress and impairing their ability to mobilise investments and provide reliable services. In a globalised economy, poorly performing state-owned infrastructure providers were increasingly seen as constraining economic growth and undermining international competitiveness. Developing countries simply could not continue to absorb the fiscal burden of these enterprises.

Over the past decade, there has been more attention to the challenges of industrial restructuring and the details of policy implementation, as well as careful assessment of the costs and benefits of these reforms. While it is clear that structural changes and realigning the roles of the government and the private sector are important for delivering infrastructure, we are still learning about the best combinations of public and private sectors in financing, owning, operating and maintaining infrastructure.

Source: Kessides (2004).

toward privatisation and deregulation, beginning with telecommunications and air travel in the mid-1980s, and moving on to more difficult and challenging sectors such as railways, ports and roads¹¹. Latin America and other lower-income regions joined in the shift in the 1990s, motivated by disappointment with ineffective state-operated utilities, the promise of private funding, and the greater flexibility offered by technological change and regulatory changes. Pri-

mate investment in infrastructure in Latin America increased from about \$17 billion in 1995 to a peak of more than \$70 billion in 1998¹².

The early 2000s witnessed a rethink of the dogmatic rejection of the State-led model of infrastructure provision. In November 2005, 78 per cent of Argentines surveyed desired that infrastructure be brought back under government control¹³. This reflects a gen-

11. Thoopal (2000).

12. Andrés et al. (2008).

13. Ibid.

Box 6.2

Main Messages of World Development Report 1994

- Infrastructure can deliver major benefits in economic growth, poverty alleviation, and environmental sustainability, but only when it provides services that respond to effective demand and does so efficiently.
- The causes of past poor performance, and the source of improved performance, lie in the incentives facing providers. These incentives are shaped by stakeholders including investors and customers, as well as the regulatory context.
- Manage infrastructure like a business, not a bureaucracy: manage personnel to encourage organisational focus on meeting customer needs.
- Introduce competition—directly if feasible, indirectly if not; it can create incentives for innovation and efficiency.
- Give users and other stakeholders a strong voice and real responsibility.
- Public-private partnerships in financing have promise, this potential requires careful planning and allocation of roles to be realised.
- Governments will have a continuing, if changed, role in infrastructure.

eral trend in Latin America where approximately 75 per cent of the population on average expressed discontent with private sector participation in infrastructure in 2005. The public opposition stems from its perceived adverse impact on key variables such as tariffs, employment and coverage. On the other hand, private sector participation had a significant positive effect on labour productivity, efficiency and quality in telecommunications, electricity and water¹⁴. At the same time, in 2005, the private sector seemed to have lost its appetite for infrastructure in Latin America, illustrating a precarious combination of relatively low public and private infrastructure investment.

Beginning with the economic liberalisation of the 1990s, the State in India started to vacate some of the commanding heights of the economy, in which State responsibility for provision of infrastructure and services was synonymous with ownership. India's transport infrastructure is evolving towards more private participation, although the pace varies substantially across sectors¹⁵. The institutional framework for this move remains incomplete, with ongoing debates about consolidation of authority within and across levels of government, formal and informal rules of operation, the degree of consultation among stakeholders, the extent of regulatory capture, appointments to existing institutions, accountability and transparency in decision making, and opportunities for dispute settlement, among other topics.

The new approach makes space for PPPs combined with regulation to address 'market failures' to protect the public from such evils as monopoly behaviour, 'destructive' competition, the abuse of private

economic power, or the effects of externalities¹⁶. The command and control mode is thus being replaced by a new mode of regulatory governance where PPPs and private sector participation require governmental priorities to be achieved through independent regulation and the law of contract. The proliferation of regulatory commissions and parastatals in India is a manifestation of the changed role of the State. It is reassuring that the awareness of the need to establish, and the benefits of establishing, an effective regulatory regime appears to be increasing.

First, it is important to emphasise that understanding of how to combine public and private sector strengths in infrastructure provision is still evolving. Some broad principles for motivating infrastructure provision are well known and have been known for decades. Box 6.2 summarises lessons from a survey of literature in the mid-1990s that are still relevant today. In particular, contained competition is important and increasingly possible. It is now widely recognised that some (if not all) transport operations can be undertaken by the private sector in some form, activities that may motivate public performance as well as supplement gaps in public provision. Recent changes in technology also offer increased scope for the introduction of competition horizontally and unbundling of services supplied vertically. Even where direct competition between suppliers is not achievable, greater use of market forces is still possible. For example, in terms of transport facilities, competitive award of long period concessions, licences or facility leases can be used to improve efficiency, the terms and conditions of such leases being set by an independent regulatory body with the objective of stimulating efficiency.

14. Andrés et al. (2008).

15. Seddon and Singh (2013); Mohan (1996).

16. Ibid.

In case the facility is operated by the public sector, pricing and other decisions should be subject to the oversight of an independent regulator with the aim of reproducing the outcomes of a competitive marketplace. Second, management matters. Public and private practices for risk management, project management and technology innovation can both contribute to delivering infrastructure effectively and efficiently. The move to rebalance public and private roles also includes efforts to shift public companies toward more ‘private-sector’ orientation. Public and private-sector norms for corporate governance, human resource and compensation policy are starting to converge, and the ‘public sector’ does not have to be inefficient. State-owned enterprises in China have produced a large number of world infrastructure records, such as the largest hydroelectric project, the Three Gorges dam, and 6,400 km of high-speed rail besides new airports and railway terminals¹⁷.

Third, both public and private sectors have important roles to play. Transport infrastructure cannot be fully commercial, given social externalities. Low levels of infrastructure investment are a concern because of the widely-documented link between infrastructure and growth, productivity, and poverty reduction¹⁸.

However, there are no detailed blueprints for leveraging policy, public finance rules, and the market environment from suppliers to customers, to guarantee effective delivery of transport infrastructure. Moving forward, an ideologically-neutral approach towards infrastructure development and maintenance is fundamental. Wherever possible and justified, private provision of transport services will be advantageous and at the same time, the public sector will continue to play a role in both actual investment and in delivery of services while its role in regulation will be fundamental.

If anything, in India the government’s evolving role in regulation could be the difference between good and ‘not so good’ outcomes. Effective regulation—including the setting of adequate tariff levels—is the most critical enabling condition for infrastructure reform. Crafting proper regulation is the greatest challenge facing policymakers in developing and transition economies. The new agenda therefore calls for the introduction of a robust framework for transport regulation, including for PPPs so that the much needed investments can fructify. A vast amount of empirical evidence gathered over the years suggests that the quality of regulation matters for sector performance¹⁹. Among the most critical tasks for policy makers is therefore to design and implement stable and effective regulation for infrastructure, thereby

reducing a lot of existing and unwarranted governmental intrusion.

A robust regulatory culture is particularly important in today’s fiscal environment. The massive investment requirement in maintaining existing and creating new public transport infrastructure means that governments will have inadequate resources at the best of times to finance the transport needs of a growing economy. In times of fiscal stringency, the need for private participation becomes de rigueur. While we have made the transition from exclusive provision by the public sector to a situation where there will be many entities, public and private and combinations of both, the rules of engagement must be better defined for the benefit of investors, service providers and consumers. The large requirement of funds needed to improve the quality and quantity of infrastructure can be met, in part, by tapping global capital markets, but the terms of these transactions and their costs for the country depend on the quality and credibility of regulation. Sovereign-wealth funds are in fact favouring infrastructure projects to avoid the volatility of the stock market. The Boston Consulting Group (BCG) argues that over the next 20 years, the BRIC countries will account for more than half of the growth in road travel and more than 40 per cent of the growth in air travel²⁰. In order to leverage these developments, India needs to immediately establish a robust institutional and regulatory mechanism to attract much needed capital to beef up its transport infrastructure, whether driven by the State, the private sector or by PPPs.

WHY REGULATE?

Governments regulate to overcome market failures, or the consequences of markets’ inability to direct effort toward public goals that cannot readily be priced or bought and sold through exchanges (Figure 6.1). In general, regulation can be defined as the use of legal instruments for the implementation of social-economic policy objectives²¹. These instruments can force individuals or organisations to comply with prescribed rules under penalty of sanctions. For example, regulated firms are often obliged to observe certain prices, maintain a minimum quality or service, or face sanctions.

A distinction is usually made between economic and social regulation²². Economic regulation consists of two types, structural regulation and conduct regulation. Structural regulation is used for regulating market structure. Examples are restrictions on entry and exit, rules governing mergers and acquisitions, and subjecting supply to recognised qualifications, such as in the case of professional services. Conduct

17. Ibid.

18. Both foreign and domestic investors routinely cite infrastructure as among the most severe constraints for increasing investment. See Airoldi et al. (2010).

19. See for example Andrés et al. (2008).

20. Ibid.

21. den Hertog (2010).

22. For example, Viscusi et al. (2005).

Box 6.3

The New Economics of Industrial Organisation

The traditional approach to assessing market power in the industrial organisation literature is the Structure-Conduct-Performance paradigm (SCP). The SCP approach assumes a stable, causal relationship between the structure of an industry, firm conduct, and market performance as measured by economic profits. Typically, the set of observable structural variables are measures of seller concentration and barriers to entry and the line of causality is envisaged to run from structure through conduct to performance or the exercise of market power. The implication is that concentration facilitates the exercise of market power. In contrast to this industry approach, the new economics of industrial organisation emphasises that industry structure is not merely an exogenous determinant of conduct and performance, but is instead endogenously determined by the competitive process in a given industry. For example, if sunk costs (irreversible commitments) exist, then the potential entrant must always consider how the incumbent firm will respond to entry. Thus the new model makes the firm the centre piece of analysis. Firms differ in the products they sell, their organisation form and internal efficiency. It is the drive to be different that encourages dynamic competition of the Schumpeterian sort. This firm approach reverses the link between structure and conduct and performance; it is firm specific efficiency advantages that determine how large a firm grows and therefore industry concentration. Thus more efficient companies with superior products or services grow to be larger than other firms. According to this logic, dominance and its abuse cannot readily be inferred from market share since it ignores importance of competitors, extent of entry and exit barriers, countervailing buying power and importantly the source of high market shares. The relation between structure and market power is therefore far from being unambiguous. America's soft-drink industry, to take one example, is noted for price competition although only two firms, Coca-Cola and PepsiCo, control three-quarters of sales. The implication of this is that economic regulation based solely on market share analysis is likely to be incomplete and misleading.

Source: Viscusi et al. (2005).

regulation is used to regulate behaviour through price controls and/or minimum quality standards. Economic regulation is mainly exercised on natural monopolies and market structures with limited competition where firms possess and exercise market power but has become more nuanced in recent times (Box 6.3).

Social regulation, on the other hand, includes setting standards relating to safety, health and environment. Instruments applied here include regulation dealing with the discharge of environmentally harmful substances, safety regulations in supply and in factories and workplaces, the obligation to include information on the packaging of goods or on labels, the prohibition of the supply of certain goods or services unless firms possess a permit²³.

In most developed economies, the allocation of scarce resources is to a large extent coordinated by the market and economic theory has shown that under certain conditions this arrangement is optimal²⁴. The conditions for market efficiency are however extremely demanding in practice. The theory requires that competition must be 'perfect', i.e., there

must be many buyers and sellers, goods from competing suppliers must be indistinguishable, buyers and sellers must be fully informed and markets must be complete²⁵. Thus, the existence of monopolies, public goods, externalities and asymmetric information that distort the allocation of resources, individually and severally, all result in pervasive market failures in practice. For the reason that these demanding conditions are frequently not achieved in practice, government regulation is required to improve the allocation of resources²⁶.

Addressing market failure to meet the public interest, however, is a non-trivial task. There are occasions when markets correct their own failures or may require very little, regulation in order to improve the allocation of resources. Monopoly, for instance, may seem to preclude an efficient market. But if barriers to entry are low, lack of actual competitors does not prove that the monopoly is damaging: the threat of competition may be enough to make it behave as though it were a competitive firm. The role of the government in some cases could thus be limited to reducing remaining entry barriers. That is why it is important to judge whether a market is 'contest-

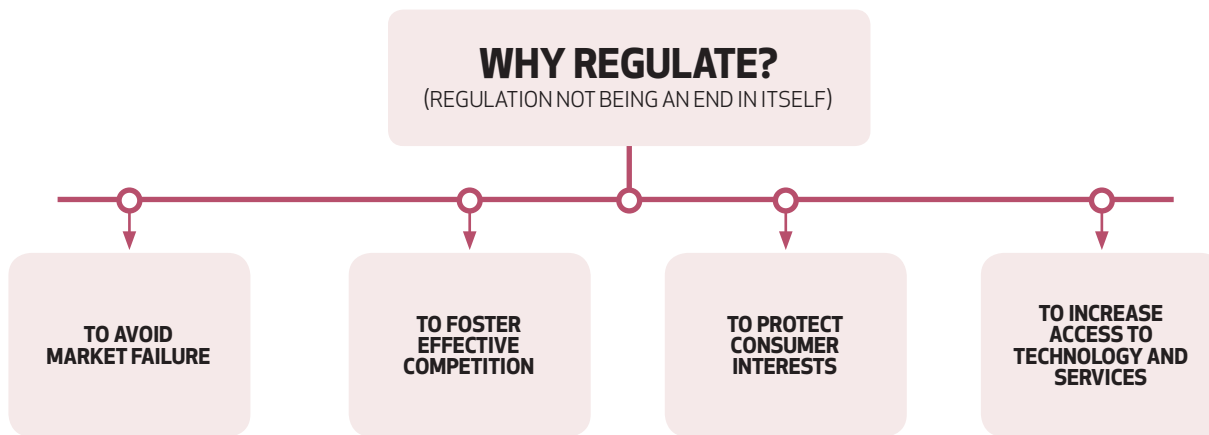
23. den Hertog (2010).

24. Arrow (1985).

25. *Economist* (1996).

26. Arrow (1970); Shubik (1970).

Figure 6.1
The Goals of Regulation



Source: International Telecommunications Union (2008).

able’—that is, whether barriers to entry are high before deciding the extent and nature of regulatory intervention (Box 6.3).

On the other hand, if a ‘natural monopoly’ (whose costs fall indefinitely as it increases its output) exists, from the point of view of productive efficiency, public interest would recommend concentrating the production in a single company. A monopolist striving for maximisation of profits will set a price that deviates from the marginal cost. The pursuit of productive efficiency and excessive profits in such instances will conflict with the public goal of allocative efficiency, i.e., too little of the good will be provided. Natural monopolies are therefore either subject to extensive price regulation or are provided by the State, as happens in many European countries. Regulation in such cases seeks to achieve the outcomes of perfect competition by simulating conditions. Examples of natural monopolies are the fixed infrastructure components of railways, electricity transmission and distribution, gas and oil pipelines and the like. Telecommunications was also once considered a natural monopoly. Today, however because of new technology and deregulation, it is an intensely competitive business, including in India, and therefore subject to only limited tariff regulation²⁷.

From the point of view of public interest, government regulation is also necessary where markets do not exist at all. This occurs in the presence of information problems and when transaction costs are excessive, such as in the case of externalities and public goods²⁸. When it is not possible to establish the quality of goods or services in advance due to information asymmetries, *adverse selection* could

occur, resulting in high-quality goods being driven out of the market by low-quality goods²⁹. Consider the market for used cars. A buyer, lacking reliable information, may extract signals of quality based on average price. If sellers reduce price, buyers might be led to believe that the cars being offered for sale are ‘lemons’ or of poor quality, resulting in the complete breakdown of the market. In addition, incomplete and asymmetric information could also give rise to moral hazard which creates incentives for parties to misuse their information advantage. The markets for professional services, such as medical, law and architecture are examples. Problems of adverse selection and moral hazard also arise in markets such as those in insurance in which there is no incentive for the contracting parties to truthfully reveal information about individual risks³⁰. Certifications, licenses and trading regulations are often used to overcome problems relating to adverse selection and moral hazard.

In addition to information failures, very high transactions costs can also result in missing markets. In a market economy, resources are efficiently used when the production of goods is increased until marginal costs equal the marginal benefits of production (Figure 6.2). ‘Externalities’ prevent the market from reaching this socially efficient equilibrium. For example, the cleanup cost of environment damage is often ignored by firms making their production decisions. The cost is therefore ‘external’ to the firm and borne by people with no say in deciding how much is produced. In the case of ‘bad’ externalities such as pollution, markets will produce too much of it; in the case of ‘goods’, too little³¹. Ronald Coase argued that, so long as property rights are clearly established,

27. TRAI (2012).

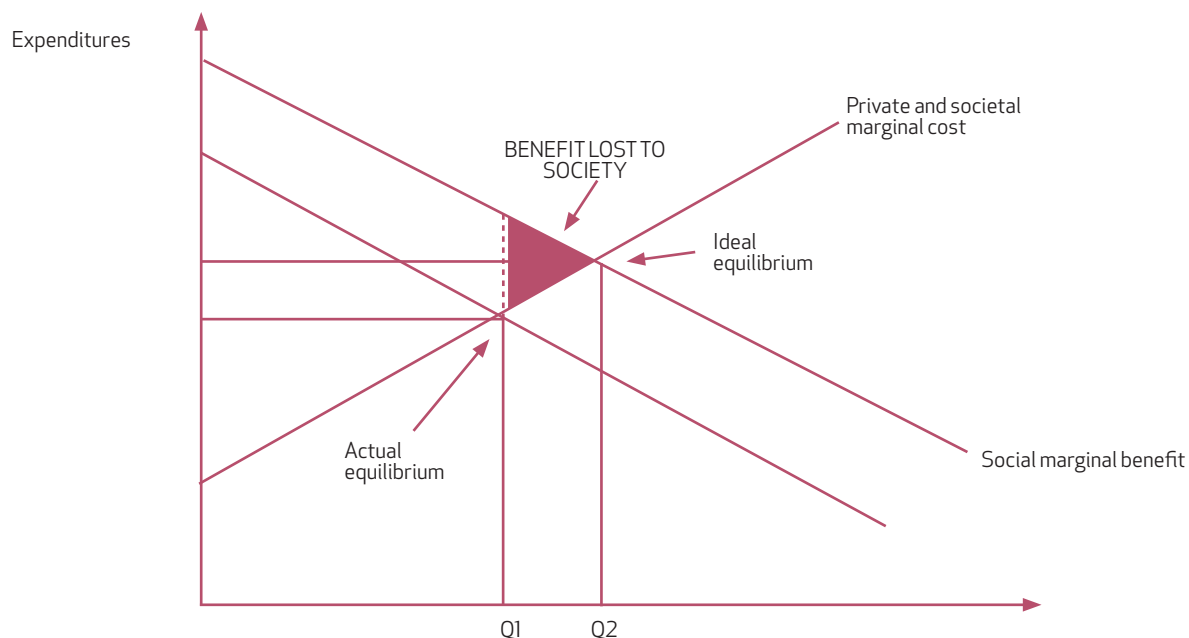
28. Akerlof (1970); Greenwald and Stiglitz (1986); Samuelson (1954).

29. The classic discussion is the used car market due to Akerlof (1970).

30. Stiglitz (1989).

31. Consuming some goods (education, anti-lock brakes) spreads benefits beyond the buyer; again, this will be ignored when the market decides how much to produce. See Stiglitz (1986).

Figure 6.2
The Private Market will Underinvest in Infrastructure, Foregoing Societal Benefits



Source: NTDP Research.

externalities will not cause an inefficient allocation of resources³². While Coase's insight was useful in that markets might find ways to 'internalise' the externalities, the presence of very high transaction costs will prevent that from happening frequently enough, obliging the government to intervene to correct the market failure. Limits for automobile emission or permits for discharge of hazardous substances are examples. Accordingly, it is through the regulation of fuel quality and emission limits of motorised vehicles that auto emissions have been reduced.

Missing markets may also occur in the case of public goods³³. One major reason why infrastructure receives much policy attention is that it displays features of what economists refer to as public goods. Public goods have two unique characteristics. For the supplier of public goods, it is either impossible or too expensive to exclude people from consuming it; the technical term for this is 'non-excludability'. For example, if a buyer refuses to pay for an iPad, it will not be supplied. But if a buyer refuses to pay for national defence, the service cannot easily be withheld. The temptation, therefore, on part of the consumer is to let others pay, the so-called free-rider problem³⁴. Like national defence, there are other services such as law and order and clean air that are practically 'non-excludable' and since private sellers cannot expect to recover the costs of production,

supply will not be forthcoming³⁵. In addition to non-excludability, consumption of these types of goods by one person is not at the expense of another; the technical term for this is 'non-rivalry in consumption'. Classical examples are lighthouses, public order, street lighting and national defence. Because of the free-rider problem and the inability to establish a willingness to pay for these goods, markets will not supply these goods in optimum quantities, if at all. Government regulation or direct supply thus becomes inevitable both for supply and for designing payment methods for these goods³⁶. Many other goods, such as education, healthcare, parks and within the transport sector, roads, also have public good characteristics.

In economics textbooks, the all-time favourite example of a *pure public good* is a lighthouse; since its services are both non-excludable and non-rivalrous, only the state could be expected to provide it. Conversely, markets work best in providing pure private goods or services. Such a neat example (the lighthouse), cited by economists for several years has to now contend with changes that have occurred in technology and in recent thinking in the provision of such goods. For example, television broadcasting was considered both non-excludable and non-rivalrous. Due to improvements in technology, it is now easily excludable: satellite broadcasters collect a subscription, and in return provide a card that

32. According to the Coase theorem, an efficient allocation of resources can result from a process of negotiation in the case of clearly defined property rights and in the absence of transaction costs. See Coase (1960).
 33. See Samuelson (1954).
 34. See *ibid.*
 35. *Economist* (1996).
 36. See Stiglitz (1986).

Table 6.1
Economic Framework Infrastructure/Public Goods

BASIC PROBLEMS	SOLUTIONS
INFRASTRUCTURE	
Long horizon/Economies of scale	Natural monopoly/duopoly
Supports wide range of activity	Positive externalities
PUBLIC GOODS	
Non-rivalrous	Social obligations
Non-excludable/ Externalities	Public support for investment/ Allows internalisation

Source: Cooper (2005).

unscrambles the signal to enable viewing. Tolls are used to restrict access to certain roads and also serve as a method to cover costs (and provide a profit)³⁷. The government's role in this case is confined to authorising the collection. Increasingly, markets could be relied on to supply 'quasi' public goods or 'club goods' but that will need carefully designed and enforceable regulation.

Table 6.1 provides a schema developed by economists to analyse the fundamental issues that arise due to the existence of public goods and the nature of the corresponding intervention that seeks to address the problem. Markets in which economies of scale are extensive, for example in provision of port facilities or rail track, will result in one or two firms dominating the market with the attendant need for regulation or with public provision of these facilities. Rural roads result in externalities and will therefore need public support for the investment.

These market-strengthening innovations for private provision of public goods will however depend on how practicable and feasible pricing is for the specific good in question³⁸. Further, even if pricing is feasible, its nature will vary across sectors and within a sector, and will need to be regulated not only for efficiency enhancements but more importantly for reasons related to access and equity. That there exists a trade off between economic efficiency and equity is not new. Regulation in the public interest that aims exclusively for economic efficiency may not be just or equitable and hence will have to be expanded to achieve social obligations³⁹. In a broader interpretation, regulation for public interest not only attempts to address market failure but also aims to correct inequitable market outcomes⁴⁰. According to this view, regulation can be construed as the socially efficient use of scarce resources. Examples are the design of minimum wage laws, cross-subsidies in

postal systems and in passenger transport, and rules enhancing the accessibility of health care to lower-income or more remote populations. In the transport sector, for example, Indian Railways has been cross-subsidising passengers from the tariffs it receives from freight: hence the recommendation for a rail tariff authority, which has already been approved by the Government. This Authority should be constituted early.

The reason distributional considerations assume importance is that such investments in infrastructure often result in positive externalities that are unlikely to be captured by unregulated markets (Figure 6.2)⁴¹. Since private benefit is lower than social benefit, the market will produce less than socially efficient output. The resulting underinvestment is the deadweight loss or the 'Harberger' triangle, after the economist Arnold Harberger⁴². In other words, the private market undersupplies the public good, even though it is good for the public. To resolve this, governments often support public investment in infrastructure. Empirically there are clear linkages between infrastructure and public goods. Such investments generate widespread spillovers and enable 'crowding in'. The last few years, especially since the financial crisis, have seen a number of governments invest millions of dollars in infrastructure, particularly high-speed telecom broadband infrastructure. This investment is intended to capture positive externalities by stimulating economic activity since the private market will not invest in or will delay the deployment of such large-scale infrastructure projects. Public investment helps solve the problem of the inability to internalise externalities in private market transactions. In addition, as a practical matter, when infrastructure projects are first deployed and for a large part of their economic life, they tend to be uncongested and therefore non-rivalrous and unattractive for private investment⁴³.

37. Ibid.

38. Using the price mechanism for resource allocation is efficient under certain conditions. See First Welfare theorem.

39. Paul Joskow (1998).

40. Posner (1974).

41. Network effects associated with certain infrastructure investment means that the value of the infrastructure investment increases with the number of users. The literature on network effects distinguishes between 'direct network effects' of the sort associated with computer software and 'indirect network effects' which result in more supporting services around the initial investment. Formally, a good exhibits network effects if the demand for the good depends on how many other people purchase it. The classic example is a fax machine; picture phones and email exhibit the same characteristic.

42. Harberger (1954).

43. Cooper (2005).

Table 6.2
The Public Good Character of Transport

	EXCLUDABLE	NON-EXCLUDABLE
RIVAL	PRIVATE GOODS	COMMON PROPERTY
	a) Urban Bus	a) Urban Roads
	b) Rail, Airport and Port Services	
NON-RIVAL	CLUB GOODS	PUBLIC GOODS
	a) Inter-Urban Highways (toll roads)	a) Rural Roads
	b) Rail, Airport and Port Services	b) Street Sweeping
		c) Traffic Signaling

Lower ← Externalities → Higher

Source: World Bank (1994).

Such examples pervade the transport sector. Private sector port terminals need initial public investment in development of the basic port infrastructure; private airport investment cannot be made without the public provision of air traffic control; and initial investment in expressways is unlikely to be remunerative.

Economists are divided in their views regarding the prevalence of market failures. Some view the government's task as ensuring that all impediments to the proper functioning of markets are removed, i.e., regulation ought to be minimal. On the other hand, there are those who support a more active role for public policy since market failures can be pervasive. Indeed, Stiglitz has argued that contrary to the traditional view that market failures are the exception, such failures may be so pervasive as to be the norm⁴⁴. However, it is not at all obvious that government will necessarily succeed where markets have failed. Consequently, not all cases of market failure will be amenable to correction through government action. The key to effective government intervention, therefore, lies not in demonstrating the existence of market failures (and thereby establishing a rationale for government intervention) but rather, one of identifying the nature of the intervention that would make it worthwhile.

One of our chief tasks in this chapter is to understand the kind of market failure in transport and the nature of regulatory intervention that would be effective specifically in the transport sector in India.

THE NEED FOR REGULATION IN TRANSPORT

The combination of the sector's large potential impacts on development, its distinctive technological and economic characteristics that are in sharp contrast to most other goods and services, make infrastructure subject to special policy and regulatory attention. These characteristics include⁴⁵:

- Extensive economies of scale and scope that generally lead to market concentration and limit competition. As a result regulation cannot be completely abolished.
- Large sunk costs relative to fixed and variable (avoidable) costs. Sunk costs are those that in the short- and medium-term cannot be eliminated even by ceasing production. Such costs impose considerable risks and so discourage entry by new service providers.
- Services deemed essential to a broad range of users, making their provision and pricing politically sensitive.

Most parts of the transport infrastructure, and all transport services are private goods with potential for market failure, locating them firmly in the territory where regulation, rather than ownership is an important tool for achieving public policy goals (Table 6.2).

Services provided by the transport sector are excludable in a specific sense—their use depends on gaining access to a facility or network, for example railways, ports, airports and to urban transport services. The use of these services is and has been subject to an explicit charge in most economies. However, once a user is connected to the network utility or gains access to the transport facility that usually entails huge upfront investment, the degree of rivalry with other users depends on the costs (including congestion) imposed on existing users or on the service supplier when an additional service unit is consumed. Congestion is customary on urban roads especially during peak hours.

While transport infrastructure facilities (rights of way, track, terminals and associated traffic management) involve heavy upfront investment and display significant economies of scale, service provision (conveyance of passengers and freight) varies from being monopolistic (railways) to competitive (trucking

44. Stiglitz (1989).

45. Savedoff and Spiller (1999).

and bus services). Consequently, trucking services are provided almost exclusively by the private sector in most countries. Besides, certain services are entirely similar to private goods, such as urban bus transport, while others such as port, air and rail services may be private or 'club goods' depending upon congestion. These services also often exhibit positive externalities: hence the existence of subsidies in public provisioning. Rural roads are the main exception and closest to being public goods: they are non-excludable (except in very specific cases where geography prevents an alternate transport path from being built), and non-rivalrous because they are rarely so congested that one person's use of the road substantially affects another's experience.

These characteristics have important implications for the manner in which transport infrastructure and services should be provided. To the extent that specific infrastructure activities entail economies of scale or depend on a network characterised by natural monopoly, they will not be efficiently provided in an unfettered market. In addition, transport is pivotal to economic development, and its inadequacy a major constraint to socio-economic progress⁴⁶.

Congestion is not the only externality that transport infrastructure and services create. Decisions about infrastructure investment, for example in roads versus public transport, rail and waterways, for example, affect energy efficiency and thus India's prospects for energy security and fiscal health. The current allocation of freight traffic between road and rail is one such negative externality. Indian Railways' (IR) relentless cross subsidisation of passenger travel with high-freight tariffs has resulted in IR losing market share to trucking, further affecting its ability to fund capacity-enhancing and quality-improving investments. All of India's high-density rail corridors face severe capacity constraints. As a result, India presently endures severe and chronic under-investment in railway infrastructure. The resulting diversion of freight and passenger traffic to roads, imposes a heavy burden in terms of a much larger freight cost to GDP ratio and higher environmental cost per route km of freight and passenger traffic compared to other countries. This report is therefore recommending significantly increased investment in the railways, on a proportionate basis.

Transport services and choice of vehicle and fuel affect air pollution, which in turn negatively affects public health. On the positive side, transport infrastructure, like other networks, produces 'network effects' meaning that the value of the economic activity the infrastructure supports expands simultaneously and potentially non-linearly⁴⁷. The social impact of additional investment may be higher whenever a significant network size (or critical

Introduction of private sector participation in transport does not eliminate the need for regulation. In fact, it accentuates the role of effective regulation and regulatory institutions. The Indian experience in power and telecom clearly highlights this.

mass) is achieved. For example, research has shown that Indian states that achieved a penetration rate of 25 per cent or more in mobile telecommunications experienced significantly higher growth impacts compared to States that were below the threshold, i.e., the impact of telecommunications on growth is amplified by network effects⁴⁸. This means there is an important milestone for policy makers for all types of infrastructure subject to network effects.

Transport safety is also an externality from investments in particular forms of infrastructure as well as an 'invisible' aspect of service delivery. Regulation is thus required to reduce incentives to cut corners in parts of service provision that customers cannot readily assess when choosing which services to purchase.

In short, regulation of various parts of the transport network is needed for many reasons: to limit the potential monopoly power exercised by owners of networks with high capital costs; manage congestion, air pollution, and other negative externalities from use of transport networks; achieve positive externalities including network effects; and motivate investments in 'invisible' consumer goods such as safety. Regulation can be used to encourage extension of access to infrastructure and services to lower-income or remote services, though other instruments such as subsidies to providers or transfers targeted to the interested users are often more effective.

Many countries that have implemented economic reform in transport have sought to increase the role of the private sector in the provision of both transport infrastructure facilities and services. Introducing private sector participation in transport does not eliminate the need for regulation; in fact, it accentuates the role of effective regulation and regulatory institutions. For instance, the introduction of private sector participation in the power and telecommunications sectors in India heightened the need for effective regulation and regulatory institutions in India as these forms of policy influence replaced the mandate that ownership offers⁴⁹.

Restructuring of erstwhile monopolies and introduction of competition (where possible) are necessary but not sufficient conditions to improve the techni-

46. Ibid.

47. The magnitude of network effects could of course vary across different types of infrastructures.

48. Kathuria and Uppal (2009).

49. Desai (2006); Dubash and Rao (2007).

cal performance of infrastructure sectors. When the process of restructuring is initiated, these sectors typically exhibit low levels of productivity, prices are often below break-even, and service providers face poor cash flows and encounter difficulties in mobilising the financial resources necessary to maintain and construct adequate additional capacity to meet growing demand⁵⁰. Even after the process of restructuring is started, performance levels continue to be poor due to the quality of regulatory institutions and use of these sectors to pursue a variety of social and political goals. The availability and quality of infrastructure services are often highly politicised, and corruption is widespread. The poor performance of these infrastructure sectors can be a significant drag

on economic growth and development⁵¹.

Creating regulatory institutions is challenging and has been a concern for all countries, especially developing and emerging countries. In India, institutional capacity has been weak.

Although restructuring to promote competition and regulatory reform to address structural impediments has been initiated, the performance of transport sectors in India remains severely deficient even after two decades of deregulation. India's logistics network, for example, is beleaguered by inefficiencies due to the lack of infrastructure

and equipment, high handling costs and damages⁵². McKinsey & Company estimates that losses from logistics inefficiencies cost India around \$45 billion in 2007⁵³.

Even after further restructuring, there will be limits to competition in certain segments of the transport sector. Due to the high initial investment in fixed facilities and therefore the need to attain a certain minimum efficient size (MES), transport infrastructure will continue to exhibit important elements of natural monopoly⁵⁴. Because investments in fixed facilities are lumpy, it is often difficult to match the availability of supply with demand at all times, resulting in episodes of overcapacity at the time of investment or under capacity later. Given indivisibilities or 'lumpiness' in investment requirements and the need to expand consumption over a long-time horizon, it is hard for private actors to realise an adequate return on such projects. Under these conditions, it is very unlikely that multiple suppliers will emerge, so the probable outcome is a natural monopoly, or at best a duopoly⁵⁵. In addition, the associated

sunk costs aggravate the problem of market power in provision which will inevitably lead to socially suboptimal outcomes if pricing and investment decisions are left unregulated.

BUILDING THE REGULATORY CONTEXT FOR TRANSPORT IN INDIA: CROSS-CUTTING THEMES

This section discusses a variety of issues that must be addressed in introducing competition and designing good regulatory institutions to motivate investment in and management of an integrated transport network for freight and passenger movement. There are four general roles for regulation in transport:

- Ensuring competition among service providers, which includes setting terms and conditions of access to bottleneck network facilities as well as tariff regulation in some cases.
- Setting a framework for PPPs, including resolving disputes that arise over the course of the partnership.
- Consumer protection, including safety and quality of service norms.
- Social regulation to reduce environmental impact and allocate costs of social services such as essential air service, road transport to remote areas, etc.

India's regulatory capacity in each of these areas requires strengthening to achieve minimum capabilities (Box 6.4). While India has been able to attract private domestic entrepreneurs who are willing to finance, operate and maintain mobile pieces of transport equipment trucks, buses, flatcars, ships and airplanes in a competitive environment, the development of an effective regulatory framework that promotes price and service competition has been inadequate. The public sector dominates fixed infrastructure such as roads, ports, rail lines and airports. Due to insufficient or timely investment, these facilities have often become physical bottlenecks to efficient transportation of goods and people. India has implemented regulatory reform in sectors such as telecom and electricity, and in transport sectors such as civil aviation and ports among others, although the governance and regulatory architecture has been subject to several design and implementation problems. All major reforms have been predicated on the expectation that effective regulation of infrastructure monopolies can be implemented fairly quickly.

Yet, building regulatory institutions has, at best been challenging and at worst, a severe disappointment.

50. This has been case for example in Indian Railways, Power and Urban Transport.

51. Op cit.

52. India has some of the highest logistics costs in the world. India incurs around 15 per cent of its GDP as logistics costs while this figure is only 9.5 per cent for the US and 10-12 per cent for other developed countries. World Bank (2012a). A high percentage of logistics cost in India is accounted by transportation (62 per cent) and inventory carrying costs (34 per cent) followed by administrative cost. See Planning Commission (2009).

53. McKinsey & Company (2010).

54. See for example Bain (1993).

55. Cooper (2005).

Box 6.4

What Makes for Effective Regulation

Regulatory bodies should

- have competent, non-political, professional staff—expert in relevant economic, accounting, engineering, and legal principles and familiar with good regulatory practices;
- operate in a statutory framework that fosters competition and market-like regulatory policies and practice;
- be subject to substantive and procedural requirements that ensure integrity, independence, transparency, and accountability.

Source: Kessides (2004).

Seddon and Singh argue that the delay reflects the challenges of creating new institutions and political-organisational practices⁵⁶. Unless India is able to create a credible, conducive, capable and transparent institutional structure for governance of logistics, the macroeconomic goals of high, stable and inclusive growth will continue to suffer.

Social regulation on environmental issues and consumer protection are addressed in chapters on Safety (Chapter 12, Volume II) and Environment (Chapter 7, Volume II). This section focuses first on reform sequencing, then on regulatory institutions for promoting competition, setting the framework for PPPs, and ensuring wide access to transport services. The regulatory priorities to support reforms in specific modes of transport are discussed in the next section.

SEQUENCING

Creating regulatory institutions is challenging and has been a concern for all countries, especially emerging and developing countries. In India, institutional capacity has been weak, as it has been so in many emerging markets. Strong institutions take a long time to develop; even in advanced industrial economies which have an established tradition of regulation, the pace has been sluggish⁵⁷. Building regulatory institutions in countries with little or no regulatory tradition in any sector is therefore likely to be much more demanding and a slow process.

The challenges of creating such a context for public and private collaboration in infrastructure provision in India are daunting, but India's experience in telecommunications shows that it is possible. Although marred by recent scandal, the sector has seen the emergence of a governance structure that includes creation of an increasingly independent regulator along with easier rules for market entry, a mechanism for funding of universal access, management of scarce resources, access to interconnection

and bottleneck facilities, and enforcement of regulatory rules via the creation of a dispute settlement tribunal. Arguably, the telecommunications sector best reflects the benefits of creating regulatory institutions, albeit even after 15 years in existence, the regulatory processes are still evolving.

To summarise the history: An 'independent' regulator, the Telecom Regulatory Authority of India (TRAI), was created in 1997 but extensive litigation followed its baptism. Many of its initial decisions were challenged since the public sector was reluctant to accept TRAI as the new regulator, a role it had performed since the 1950s. Successive court rulings that followed diluted many of TRAI's powers, especially those that were critical to independent regulation. Thus, the court decisions, *inter alia*, established that the Government was not required to seek a recommendation from the TRAI before issuing additional telecom licenses and that it did not have the power to make regulations on interconnection and revenue sharing, without these being negotiated between service providers⁵⁸. Several disputes later, the Government separated the adjudicatory role of TRAI and created a new Telecom Dispute Settlement and Appellate Tribunal (TDSAT), which paved the way for the creation of many tribunals in other sectors. India's telecom experience confirms what has been known for many years—designing effective regulatory frameworks and enforcing them is highly complex and requires strong political commitment, skilled personnel, and a well-designed incentive structure. The experience also demonstrates that the independence of regulatory agencies may not be easy to create. It necessarily takes time and attributes such as independence and credibility are established on the basis of both legal foundations and actual behavior of the institutions when faced with difficult decisions that involve substantial interest group controversy⁵⁹. Independence, according to one definition, is the ability to implement policy without undue interference from politicians or industry lobbyists,

56. Seddon and Singh (2013).

57. World Bank (1997).

58. 'Revenue sharing' here refers to the percentage of call revenues to be shared between telecom operators involved in successfully completing a call. In case the dominant operator declines to complete the call or share a fair amount with a new entrant, regulation is vital.

59. Melody (1997).

a test that institutions charged with governance in telecom frequently failed to satisfy⁶⁰.

In most countries, the public policy role of the Transport Ministry (and, it usually is a single ministry) has been separated from the economic regulation and/or safety regulation roles (Chapter 5, Volume II)⁶¹. This is a vital step that is needed right away. In addition to creating independent regulatory institutions in each transport sector, the issue of creating a mechanism for dispute settlement is also important. The state of India's regulatory institutions in transport can at best be described as rudimentary.

For the transport sector, the principle of separation of powers is met only in the breach and is one of the major areas of reform that has been identified in this report. Most transport sectors suffer from poor incentives, lack of clarity in the regulatory structure coupled with overlapping jurisdiction of institutions charged with sector oversight, and a debilitating prevalence of ad-hoc and piecemeal decision making. These have been described in the sector-specific analyses. The coexistence of large, durable assets with significant sunk costs and the highly politicised nature of consumption make certain types of transport infrastructure and similar networked utilities vulnerable to administrative expropriation—both directly and through uneconomic price controls⁶². As a result, private investors reduce their investments, demand high-risk premiums, or both⁶³. These basic features are common to most transport utilities in varying degrees and create special challenges for effective regulation.

Ministries are reluctant to relinquish control of the sector since it serves short-term political goals. Political constraints and ministerial preferences over time seem to have dominated the reform agenda in different infrastructure sectors⁶⁴. It is time to recognise that institutionalising a robust regulatory philosophy based on a framework with adequate capacity is a necessary, although not sufficient, condition for accelerated and sustainable growth⁶⁵. Experience has also shown that the regulatory strengthening must also happen before restructuring of ownership or lifting of controls on private participation (Box 6.5).

'Separation of powers' has been achieved in India (at least on paper) in the telecommunications sector. The institutional framework that has emerged in telecom and is emerging in electricity conforms to the doctrine of separation of powers. The regulators are separate from service providers while appeals against their orders are heard by Appellate Tribunals

that resemble judicial bodies in form and character⁶⁶. This principle has also been applied to the competition and securities regulatory regimes after a prolonged effort.

The first priority for India's transport regulation policy is therefore to create independent regulatory institutions where none exist and to strengthen regulatory independence where they do. The strengthening of the existing regulatory framework along the lines described above and creating new regulators where none exist is essential. Currently, roads, railways and urban transport sectors do not have independent regulators, while the mandate of TAMP is restricted to tariff regulation of major ports. What kind of regulators these sectors need is open for discussion. DGCA performs both policy and regulatory functions for Civil Aviation. This needs to be addressed. A dispute settlement body must also be constituted to ensure transparent administrative procedures and opportunities for judicial review.

Independence of the regulatory agencies in India must be strengthened by insulating them from political pressure to the extent possible. Preserving independence as well as ensuring its legitimacy is a difficult and demanding task, especially for a newly created regulator. To maintain its independence, the regulatory agency should be given functional autonomy in its day-to-day activities while the administrative ministry issues only broad policy guidelines and directives. It is noteworthy that it took several years for TRAI to create a legitimate position within the institutional framework. Establishing an independent regulator is however only a necessary condition for securing legitimacy. One way to ensure the latter is to have a transparent consultative process of decision making and opportunities for judicial review. In practice, this means holding open house discussions and posting consultation documents on the regulators website. This enables the regulator to collect evidence and also take account of the views of those who have an interest in the outcome. Consultation is an essential part of regulatory accountability—and it has now become intrinsic to the regulatory process. Regulatory decisions should be subject to judicial review thereby introducing a reasonable safeguard to regulatory authority.

Financial autonomy is often linked to regulatory independence. In India, this has not yet happened for regulatory institutions⁶⁷. Regulatory institutions are supported by budgetary allocations that can compromise its independence. For example, TRAI is funded by the government and although it has been proposed a number of times, the government has not

60. Ibid.

61. NTDP (2011).

62. Kessides (2004). A key attraction of privatisation is that it places the realignment of prices with underlying costs at the centre of the reform agenda. A similar outcome could be achieved even without privatisation by creating an effective regulatory mechanism that limits or eliminates political interference.

63. Hennis and Zelner (2001).

64. Planning Commission (2006).

65. Ibid.

66. Ibid.

67. The regulatory institutions could be financed by a percentage share of sector revenue as is international best practice.

Why Timing of Regulatory Reform is Important: An Example from Indian Telecom

The change in attitude toward telecommunications was first set out in the National Telecom Policy (NTP) document in 1994. NTP 1994 stated that in order to realise the goals of India's new economic policy (1991), it was necessary to have a world-class telecommunications infrastructure. To achieve these objectives, the policy acknowledged the pivotal role of private investment and therefore NTP 1994 envisaged setting up of an 'independent' regulatory body, the Telecom Regulatory Authority of India (TRAI). Although the policy specified the creation of a regulator, the latter was not set-up until 1997. Meanwhile, implementation of the 1994 policy was carried out by the Department of Telecommunications (DoT). This was faulty institutional design since it gave DoT an enormous advantage over private operators who began commercial operations in Delhi, Mumbai, Kolkata and Madras in August and September 1995. It was later to prove to be a thorny legal matter in regard to the newly-created regulators' powers to give directions to a policy maker that also combined the role of a service provider.

The regime devised by DoT to implement policy was naturally skewed in its favour, especially as it related to its service provision functions. DoT was also not keen on setting up a regulatory body. DoT and its counterpart in Mumbai and Delhi, Mahanagar Telephone Nigam Limited (MTNL) denied or delayed private entrants' access to their networks. In order for communications systems to be effective, it must interconnect with other systems. 'Interconnection' includes both the commercial and technical arrangements under which service providers connect their equipment networks and services to enable their customers to have access to customers, services and networks of other service providers. Private licensees were forced to deal with the incumbents because they were forbidden to directly interconnect among themselves. In addition, all national and international long-distance calls had to be transmitted exclusively through DoT networks in its capacity as the monopoly long distance carrier and interconnection charges were to be borne totally by the new entrants. The effects of unsatisfactory interconnection can undo much of the benefits of good regulation in other areas. Thus, the benefits of private entry can be neutralised by a dominant incumbent, especially in the absence of a regulatory body.

Unchecked, DoT relied on unilateral internal orders in deciding the manner in which private licensees could interconnect to its networks and the process of fresh entry into the nascent telecommunications sector. The inevitable litigation that followed led the Honorable Supreme Court to declare that there had been delay on part of the government to establish an independent regulatory agency.

'The existence of the Telecom Regulatory Authority with the appropriate powers is essential for the introduction of plurality in the telecom sector. The National Telecom Policy is a historic departure from the practice followed in the past century. Since the private sector will have to contribute more to the development of the telecom network than DoT/MTNL in the next few years, the role of an independent telecom regulatory authority with appropriate powers need not be impressed. In a multi-operator environment, an independent evaluation of the economic needs for a new service provider is a condition precedent for on the one hand maintaining investors' confidence and on the other achieving public policy objectives. This is particularly so at this point in India when the Government in the DoT combines itself the roles of a licensor policy maker and service provider'

The creation of the new regulatory agency was a significant event in the need to establish an institutional framework capable of achieving the objectives of NTP 1994. A key defect in implementation of policy was the failure to create a regulatory body prior to inviting bids for private participation in the sector.

Source: Kathuria (2007).

Each transport sector is governed by numerous legislations. It is therefore imperative to simplify the legal structure. Existing sector-specific enactments need to be unified into a single statute.

accepted TRAI's request for independent funding through a percentage of the revenues of regulated firms. Depoliticising the regulatory process will thus remain an important long-term goal in transport. Financial autonomy, however, may or may not guarantee independence. An additional safeguard to prevent 'political capture' is to make appointment processes transparent and grounds for removal clear and structured for all regulatory institutions. Thus, legislation should guarantee stringent conditions for removal of Member or Chairman of any Authority. For example, the term of the first TRAI was reduced from five to three years after bruising collisions between the newly-established regulator and government, indicating the political control over regulatory institutions⁶⁸.

Each of the transport sectors is governed by numerous legislations. It is therefore imperative to simplify the legal structure. This has begun to happen in sectors such as ports and civil aviation but clearly a lot more needs to be done. Existing sector-specific enactments need to be unified into a single statute. This will simplify procedures and make compliance easier. Certain sections of the existing Acts that are anachronistic would also have to be deleted and even some of the Acts repealed. But such unification may not be an easy task, and cannot be achieved within a short period of time. The process of private sector participation should not however be held up, pending completion of the work. Needless to say, a beginning must be made now, even though completion may take some time. Unification of the legislations must be supplemented by the setting up of a statutory regulatory agency for each transport sector as detailed above. Without statutory powers, the effectiveness of this regulatory agency will be lost. This regulatory body could be set up at a central level for sectors such as Civil Aviation. Where a similar body already exists, its role and powers could be suitably modified. Thus, the DGCA and AERA should be replaced by the Civil Aviation Authority (CAA) along the lines described here. If a sector is under state jurisdiction, a regulatory body could also be set up at the state levels. For sectors such as urban transport, different levels of government may be involved—municipalities, provinces or the Central Government. It is recommended that the Metropolitan Urban Transport Authority (MUTA) proposed in Chapter 5, Volume III on Urban Transport also serve as a regulatory body for urban transport in metropolitan areas.

As independent regulation becomes more the norm rather than the exception, other questions about institutional design arise, namely: should regulation and dispute resolution institutions be created for each sector and sub-sector, or should certain functions be consolidated across sectors? India's piecemeal approach to infrastructure reform has led to the proliferation of regulatory bodies and tribunals. 'Regulatory proliferation' is seen as creating continued employment for the bureaucrats and judges, while professionals with technical expertise have been conspicuous by their absence. Commissions tend to be made up of retired civil servants or retired judges. This is worrisome and therefore it is vital to create a cadre of professional regulators with technical expertise for the complex tasks of managing the regulatory processes. If this implies revising the terms and conditions of appointment to these positions to make them attractive for professionals as is the case in the UK and US, then it should be done. The selection process itself should be transparent and based on skills needed for the discharge of regulatory responsibilities.

The alternative to sector-specific regulation (to mitigate institutional proliferation) is a single-umbrella transport regulator with specialised departments, or multi-industry regulators. In the UK, sector-specific regulatory agencies are the norm while 'multi-industry' regulatory agencies are typical of most state public utility commissions in the US. The primary argument in favour of the single-industry regulatory agency approach is that it ensures deep technical and economic expertise about the attributes of the industry within each agency's regulatory jurisdiction, and that this in turn leads to more effective regulatory decisions. The arguments in favour of a multi-industry or super transport regulator include wide-ranging deployment of common skills avoiding unnecessary duplication, opportunities for cross-learning and adoption of new practices across different sectors. Most importantly, it checks the potential for capture of regulatory agency by single interest groups, especially the firms that are being regulated⁶⁹. There is enough overlap in regulatory issues to make it possible for a single agency to regulate transport. The thematic commonality across the different transport sectors suggest that adopting a multi-industry regulator might make the regulatory process more efficient and transparent. However, it will be a lot more difficult to implement because of the volume of regulation required in the medium term future. There is going to be enough sector-specific regulation necessary in the initial years to warrant deep expertise to be created and this is best done at the level of the sector. For regulation at the state level, they should apply the rules and standards set by the central regulatory body. The NTDP

68. In a letter to the Minister, the TRAI Chairman sought extension of the tenure of the Authority from three to five years as is the case with other regulators, *The Hindu*, 15 August 2006.

69. Joskow (1998).

therefore recommends the continuance of sector-specific regulators.

In Australia, Brazil, Canada, Germany, Japan, Russia and the US, among others, unitary transport ministries at the level of the central government level have been created whose role is to develop and administer policies to protect and promote public interests across the transport sector. The reason is that integrated national transport policies transcend or augment individual modal interests and achieve superior coordination. China is a partial exception, although it has recently enhanced the Ministry of Transport to bring together responsibilities for national highways, ports and waterways, shipping, airports, aviation and transport integration and most recently, the railways. In India, attempts at merging the broadcasting and communication ministries met with fierce opposition in 2001 and the proposal had to be dropped. To try and integrate all transport ministries under a single integrated ministry will be difficult. However, NTDPCC has taken a view that, consistent with almost all other countries, it is desirable to set up a unified Ministry of Transport (Chapter 5, Volume II). It has also recommended the immediate setting up of the Office for Transport Strategy (OTS) to coordinate transport policy in the country. As of now, however, it is neither feasible nor desirable to set up a unified transport regulator, which must remain a long-term vision. There is no doubt that all transport sectors will require coordination even in the short term. Policy on a common platform encompassing the entire transport network spanning different modes and addressing critical issues such as pricing, timely deliveries, and cost effective service need to be positioned.

ENSURING COMPETITION

First, we need to re-examine sector policies to assess whether policy is limiting the competition that is technologically possible, and if so, that the rationale for these policies remains valid.

On occasions, ‘natural monopolies’ could be driven by policy, even though it might be possible to introduce competition owing to technological advances in certain segments. For example, in telecommunications, it has been possible to introduce competition in the local loop ever since the divestiture of AT&T in the US in 1984⁷⁰. There may however be legitimate reasons for policy to restrict entry even in the seemingly competitive segments in public interest or in the transition period to introducing competition. The latter is especially relevant given that the competitive model poses significant risks if not accompanied by appropriate structural and regulatory safeguards.

As of now, it is neither feasible nor desirable to set up a unified transport regulator, which must remain a long-term vision. Policy on a common platform encompassing the entire transport network and addressing critical issues need to be positioned.

Second, there is need to focus regulatory effort on the segments of infrastructure delivery that are not naturally competitive, a process that would be helped by the kind of separation of powers mentioned earlier.

The prospects for competition can change over time with technological progress. Technological progress along with new ways of provision has indeed diluted, although not eliminated, the natural monopoly characteristics in certain segments of telecommunications and electricity infrastructure. Horizontal and vertical unbundling can help to separate the potentially competitive components from the natural monopoly segments. For example, in electricity, transmission and distribution have been successfully unbundled from generation in a number of Indian states⁷¹. Likewise, in telecommunications, technological progress and advanced thinking have ensured that the local loop can be operated separately from long-distance and value-added services. This has helped deliver an improved package of service to consumers.

In transport, railroads, tracks, signals and other fixed facilities could in principle be separated from train operations and maintenance. Sunk costs are less significant for investments in rolling stock or freight-handling equipment than for the fixed facilities. In general, it is easier for firms to enter and exit activities with a relative absence of sunk costs i.e., a feature of markets that economists describe as ‘contestable’. Similarly, airport facilities can be operated separately from passenger and freight services and port facilities can be ‘unbundled’ from handling and maintenance services. Segments where natural monopoly conditions persist and are unavoidable (generally because they involve substantial sunk capital) should be regulated and/or perhaps operated by the public sector⁷². Privatising transport facilities is much less compelling than that for services operating on the network. For rail track, basic and access port infrastructure, and portions of airport facilities—where monopoly is unavoidable or substantial sunk capital is involved—public regulation or even operation is essential⁷³. Thus, in the case of both airports and ports, the public authority can act as a landlord, providing all public services, whereas private operators can provide all terminal and other services, while paying user charges to the landlord.

70. Divestiture of AT&T in 1984. For an argument in favour of public policy to support monopoly in the face of declining unit costs see Baumol et al. (1982). It was not until 1994 in India that the National Telecom Policy (NTP 1994) first debated the efficacy of private entry.

71. Dubash and Rao (2007).

72. Kessides (2004).

73. Ibid.

According to the World Bank, regulating unbundled utilities is harder than regulating vertically-integrated utilities, and may require aggressive pro-competition policies. But in some transport infrastructures, like rail track and airports, monopolies are unavoidable.

On the other hand, where competition is possible, greater reliance should be placed on market forces for resource allocation, with regulatory intervention used as an exception to address the underlying market failure.

While unbundling promotes competition in downstream markets, it brings in its wake a need for providers of competitive final services to access the infrastructure network of the monopoly providers—the so called ‘bottleneck’ services. An important task for regulation is to ensure fair access to the monopoly network. In one sense, unbundling makes the regulatory task more complex, and requires compelling institutional capacity to drive the reform agenda since new entrants will need constant access to the monopoly network. Coordination is likely to be difficult especially since the incentives of the new entrant and the monopolist are likely to be divergent. For example, DoT’s incentives to provide access to its infrastructure to new entrants (who were DoT’s competitors in the downstream market) were at best limited; the non existence of an independent and neutral regulatory body exacerbated the problem (Box 6.5). *Although unbundling can reduce the need for regulation by isolating monopoly segments, and replacing regulation with competition, performance becomes much more sensitive to regulatory efficacy because the underlying monopoly segment requires much more effective regulatory oversight.*

In addition, some inefficient practices (such as internal cross-subsidies) that are possible in a monopoly environment are impractical and actually undesirable in the new setting and must be regulated. For example, the State-owned incumbent DoT, in principle, was tasked with fulfilling the Universal Service Obligation (USO) in India, which it did with the higher margins from provision of high value services, such as national long distance (NLD) and international long distance (ILD) and from the higher revenues from commercial and residential customers in urban areas⁷⁴. Once telecom was liberalised in the mid-1990s, sustaining this form of cross-subsidy became difficult since new entrants predictably focused on the lucrative long distance segments

adversely impacting the incumbent’s profitability. In general, competition puts pressure on the ability of the incumbent to use cross-subsidies to fund its rural and other obligations. Since network expansion, universal access and inclusion are vital public policy goals under most circumstances, regulatory intervention becomes necessary to achieve these goals even after the introduction of competition in the unbundled segments.

According to the World Bank, regulating unbundled utilities is harder than regulating vertically-integrated utilities, and may require aggressive pro-competitive policies⁷⁵. In many segments of transportation, such as urban transport, airlines, rail and port services, pursuit of aggressive pro-competitive policies is justified, indeed desirable. For transport network infrastructure such as rail track, port infrastructure and airports, however, monopolies are unavoidable and because substantial amounts of sunk capital are involved, these segments must be regulated or even operated by the public sector.

While the new model offers benefits, these can be realised only if the model is implemented correctly. If not accompanied with effective regulation and regulatory safeguards, the model poses considerable risks. The competitive segments need access to bottleneck monopoly or ‘essential facilities’ to make competition in these supply segments possible (Box 6.6)⁷⁶. Duplication of infrastructure facilities is costly and therefore the incentives between bottleneck components and competitive segments need to be aligned to avoid distortions such as those witnessed during the early years of telecom liberalisation (Box 6.5). These can be precluded by designing effective regulation with a clear dispute resolution mechanism.

A vexing task for regulators has been designing terms and conditions of access to bottleneck infrastructure facilities by competing service providers. These facilities are essential inputs in the production or delivery of final products, and cannot be economically duplicated. Examples include the local loop (‘final mile’) in telecommunications, the transmission grid in electricity, the network of pipelines in natural gas, the track in railroads, access to airport terminals and slots and berthing services in a port. The essential facilities doctrine has emerged in response to these challenges.

Economic theory offers two main approaches to efficiently price essential input facilities: the efficient component pricing rule (ECPR-also known as parity

74. The Universal Service Obligation is an obligation which can be imposed upon the dominant telecom operator (usually the incumbent). This obligation includes a demand to meet any request for provision of a particular telecom service to anybody within the country. The purpose of having such an obligation is to ensure national coverage of a particular telecom service also in remote rural areas, where provision of telecom service may become less profitable. International Telecommunications Union (2008). Universal access policies could be cultural, based on citizenship, equality, and inclusiveness (Goggin and Newell 2006; Preston and Flynn (2000). Others have argued that universal service resulted from interest group conflicts for the reallocation of economic resources from business users to residential users, or from urban to rural areas (Crandall and Waverman 2000). Or the state could actively pursue policy options intended to gain or perpetuate the legitimacy of state institutions.

75. Kessides (2004).

76. Joskow (1998).

Box 6.6

The Essential Facilities Doctrine

An 'essential facilities doctrine' (EFD) specifies when the owner(s) of an 'essential' or 'bottleneck' facility is mandated to provide access to that facility at a 'reasonable' price. For example, such a doctrine may specify when a railroad must be made available on 'reasonable' terms to a rival rail company or an electricity transmission grid to a rival electricity generator. The concept of 'essential facilities' requires there to be two markets, often expressed as an upstream market and a downstream market. Typically, one firm is active in both markets and other firms are active or wish to become active in the downstream market. A downstream competitor wishes to buy an input from the integrated firm, but is refused. An EFD defines those conditions under which the integrated firm will be mandated to supply. While essential facilities issues do arise in purely private, unregulated contexts, there is a tendency for them to arise more commonly in contexts where the owner/controller of the essential facility is subject to economic regulation or is State-owned or otherwise State-related. Hence, there is often a public policy choice to be made between the extension of economic regulation and an EFD under the competition laws. Further, the fact of regulation of pricing through economic regulation, State-control, or a prohibition of 'excessive pricing' in the competition law, has implications for the nature of an EFD. Essential facilities doctrines vary significantly among legal regimes. They may vary according to the types of 'facilities', ownership and market structures to which they apply, and according to who makes the determination that a facility is 'essential'.

In the US, four elements are seen as necessary to establish liability under the essential facilities doctrine:

- 1) control of the essential facility by a monopolist;
- 2) a competitor's inability practically or reasonably to duplicate the essential facility;
- 3) the denial of the use of the facility to a competitor;
- 4) the feasibility of providing the facility.

In Australia, the report on National Competition Policy (the Hilmer Report) recommended that the following criteria must be met for right of access:

- 1) Access to the facility in question is essential to permit effective competition in a downstream or upstream activity [Access must be essential rather than merely convenient].
- 2) That it is in the public interest, having regard to:
 - a) the significance of the industry to the national economy; and
 - b) the expected impact of effective competition in that industry on national competitiveness.

These criteria may be satisfied in relation to major infrastructure facilities such as electricity transmission grids, major gas pipelines, major rail-beds and ports, but not in relation to products, production processes or most other commercial facilities. While it is difficult to define precisely the nature of the facilities and industries likely to meet these requirements, a frequent feature is the traditional involvement of government in these industries, either as owner or as extensive regulator.

Source: OECD (1996).

pricing) and the Ramsey pricing rule. It is however difficult to translate either approach into workable rules and access pricing schedules⁷⁷. Interconnection pricing in telecommunications and access pricing in electricity are two familiar examples of access pricing in India where the political economy pressures have been strong⁷⁸. More often than not, the judiciary has had to intervene to sort regulatory decisions, causing avoidable delay in the implementation of decisions. Drawing from this experience and acknowledging the special circumstance of the transport sector in India, the newly-created regulators will need to identify variants of these rules that

are technically less demanding and whose information requirement is reasonable, at least to begin with. Regulation thus needs to adapt to the local context, the changing circumstances, and new information and experiences in other regulated sectors.

To secure regulatory fairness in decisions, regulatory bodies should be independent from political interference, be staffed with sufficient skills and use their autonomy to improve transparency in the process (Box 6.4). Often the transition into this new role poses, on the one hand, the risk of 'regulatory capture', a process in which the regulatory body ends up

77. Op.cit.

78. See for example Desai (2006); Dubash and Rao (2007).

The boundaries between the Competition Commission and sector regulators will have to be established. One possibility is having the sector regulator focus on ensuring a level-playing field, and the Commission identifying anti-trust behaviour given the playing field.

identifying mostly with the concerns of the industry, or on the other, it succumbs to excessive government interference resulting in what has been sometimes referred to as 'partial expropriation'. Empirical evidence shows that institutional capacity is a strong determinant of outcomes in regulated sectors, along with a host of other variables such as business culture, interest groups, patterns of social conflict, and codes of conduct⁷⁹. Inevitably local variables or 'country characteristics' strongly affect performance i.e., the local context matters. The structure of ownership (public versus private) on the other hand, is not a key explanatory variable for differences in performance of infrastructure utilities across emerging markets⁸⁰.

Third, we need to decide who actually regulates competition. The Competition Commission of India (CCI) established in 2002 will remain the body to resolve anti-trust and competition-related issues. Consolidating competition oversight in the CCI limits fragmentation of scarce expertise and avoids inconsistent policies across sectors that may be administratively distinct but technologically inter-related. While elements of competition oversight are common across sectors, there is a delicate balance between judicial review of regulatory decisions and enforcement of anti-competitive actions by industry players. In the early stages, there is therefore a useful ongoing monitoring role for the sectoral regulatory agency which is likely to have the best information to monitor the sector. Jurisdictional overlap between the regulator and economy-wide Competition Commission is inevitable; neither has the division been clearly established by law or by precedent. One division could be for the sector regulators to set the technical rules and enforce them, while the CCI restricts itself to issues that harm competition such as predatory conduct or cartelisation by players. But ex-ante creating a watertight division between regulation and competition issues is tricky due to the fine line between the two sets of issues. Admittedly CCI's role in enforcement of competition will be a more efficient use of scarce expertise. A consistent approach to competition issues will be good for reducing political risk and cost of finance, and increasing attractiveness for investors. Finally, strengthening the CCI and creating sub-groups with technology expertise would be a more flexible structure to be able to adapt

as technology changes. For example, TRAI was given the additional charge of handling broadcasting regulation, since convergence made it possible and indeed more efficient to do so.

CCI's capacity to detect and establish anti-competitive behaviour in transport services will have to be strengthened substantially, as will its independence. The Commission will often have to rule on cases involving public and private entities. Seddon and Singh, for example describe one such case⁸¹:

'Private participation in inland container depots and logistics is technically open, but on terms set by the Railways Ministry. Private participants compete with Indian Railways and some have sued. Kribhco Rail Infrastructure and Aril Rail Infrastructure, for example, took a case to the Competition Commission of India arguing that CONCOR and Indian Railways work as a group entity and engage in discriminatory pricing. The CCI dismissed the case, arguing that CONCOR and Indian Railways could not be treated as a group entity and neither was dominant'.

The boundaries between the CCI jurisdiction and the sector regulators will have to be established over time by precedent. The option we have discussed here, of having the sectoral regulator focus on technical aspects of ensuring a level playing field, while the CCI focuses on identifying and penalising anti-competitive behaviour given the playing field is one such possibility.

PPP FRAMEWORKS AND MANAGEMENT

Governments around the world have adopted PPP programmes to complement traditional public works to improve their deficient infrastructure. Private sector participation (PSP) in infrastructure financing and service delivery are based on the common principle that PPP is a process for delivering infrastructure and services in which the private and public parties share rights, responsibilities, and risks during the duration of the contract. These differ from standard procurement in that the contract is meant to govern an ongoing relationship rather a one-time transaction. Under such an arrangement, the private sector party usually agrees to undertake the following⁸²:

- design and build, expand, or upgrade the public sector infrastructure;
- assume substantial financial, technical, and operational risks;
- receive a financial return through payments over the life of the contract from users, from the public sector, or from a combination of the two;

79. Andrés et al. (2008).

80. Spiller (1990).

81. Seddon and Singh (2012).

82. World Bank (2011a).

- usually return the infrastructure to public sector ownership at the end of the contract.

PPP schemes are often categorised as BOT (build, operate and transfer) and DBFO (design, build finance and operate). When the underlying asset is not returned to the public sector, it is sometimes referred to as a BOO (build, own and operate) contract, but the procedures to select, prepare, and bid these types of projects are usually⁸³ no different. Each sector may have its own specific issues, but there are commonalities that apply across the range of transport and other infrastructure sectors. When the private party charges a user-fee (for example, a road toll), the public authority grants the private party the right to design, build (or refurbish or expand), maintain, operate and finance an infrastructure asset owned by the public sector⁸⁴. Such concession agreements under a user-fee PPP contract are usually for long durations, 25-30 years, after which responsibility for operation reverts to the public authority. In the Republic of Korea, the PPP programme also has a mechanism for providing construction subsidies to qualifying projects.

The main goals of regulation are to induce firms to produce the service at the lowest possible costs to align prices with costs so that firms do not make supernormal profits which could be generated without appropriate regulation. Access, quality and safety are equally important regulatory goals, particularly for infrastructure sectors. Given the growing use of PPP contracts in transport, an increasing role for the regulator will be to ensure compliance with the PPP contracts. The challenge is considerable; not only because of the complexity and that it requires a learning process, but also because of the lack of a regulatory tradition and track record, scarcity of expertise, and weak formal and informal norms protecting private rights. This problem is everywhere since private participation in transport infrastructure is still an evolving phenomenon.

In the case of monopoly infrastructure, direct state provision has been the norm in India and elsewhere, although recently private participation in roads, ports and airports is noticeable in the form of PPP contracts. As stated elsewhere, fiscal stress facing the government makes PPP not only attractive but sometimes the only viable alternative for creating the bottleneck infrastructure.

Available information (Annex) suggests that total investments committed under PPP projects in the transport sector over the last two decades is high for India compared to other developing countries.

The PPP model for transport was popular in China through the 1990s, while it picked up in India in the new millennium. The Government of India's data on PPPs shows that road projects account for 53.4 per cent of the total number of PPP projects and 46 per cent by value because of the small average size of projects. However, ports account for 8 per cent of the total number of projects but contribute 21 per cent in terms of value. The states in India with the highest number of PPPs are Karnataka, Andhra Pradesh and Madhya Pradesh. Domestic Competitive Bidding yielded almost 84 per cent of the total investments under PPP, followed by International Competitive Bidding at 11 per cent⁸⁵.

PPP must be viewed as an instrument to not only ease capacity and financing constraints, but also as an effective tool to promote competition in service delivery and improve the quality of service. Access to finance, although commonly cited as the rationale for engaging in PPPs, is one of the weaker reasons to enter into such arrangements for project or service delivery. Governments are generally able to access finance at lower cost than private companies, and any departure from this norm may be due to distortions in intergovernmental relations that should be directly addressed rather than alleviated by market borrowing⁸⁶. Private borrowing also creates long-term economic liabilities that may be difficult to justify if private sector efficiencies do not reduce the overall financing required relative to public finance and implementation⁸⁷. These economic liabilities are not always readily visible in standard public accounting and so may accumulate outside of public expenditure accountability frameworks⁸⁸.

An evaluation of the outcomes and impact of the PPP transport projects in the last 20 years shows that on an average these projects have brought significant benefits, in themselves and when compared with the public works alternative, though variance has been high⁸⁹. The main benefits of PPP have been to accelerate infrastructure deployment, provide possible short-term release of fiscal pressures, and more importantly for India, these partnerships have often offered better value for money. This implies better services over the long term, significant enhancement in the quality of service, and quality of assets and improved productivity and coverage. A critical benefit of PPP comes as a result of the usual bundling of construction, maintenance and rehabilitation for the life of the project/concession, usually from 25 to 30 years. Specifically, the benefits of transport PPPs have been in realising productivity gains ranging from 10-20 per cent to over 70 per cent, improvements in quality of service sometimes

83. Ibid.

84. The demand risk may be shared by the public sector by underwriting minimum usage.

85. Public Private Partnerships in India, Ministry of Finance, GOI.

86. Engel et al. (2007) use a variant of this argument to show that PPPs cannot be justified by their ability to free up public funds.

87. Engel et al. (2007); Hellowell (2010); World Bank (2007).

88. Engel et al. (2009) find empirical evidence that policymakers in Latin America, for example, renegotiated roads concessions in order to pre-empt pre-election expenditure, at the cost of incurring greater post-election liabilities.

89. This part draws from Guasch (2012).

The critical components of success of PPPs are the design of the concession/contract and associated processes, the clarity and transparency of the rules of the game and the regulatory framework, along with conflict resolution mechanisms.

over 60 per cent, and accelerating coverage of service. Experience has shown that reductions in tariffs are difficult to achieve (although there are notable examples such as road PPPs in Brazil and Mexico) given the often poor initial state of assets requiring investment and that the original prices tended to be highly subsidised.

Unsuccessful PPPs in transport reflect several common weaknesses. A review of 20 years of projects in transport shows that unsuccessful PPPs had weak feasibility studies, unresolved land allocation issues, overly aggressive bids, unpredictable and lengthy conflict resolution mechanisms, ambiguous tariff adjustment guidelines, ambiguous risk allocation and a lack of comprehensive planning and use of best practices⁹⁰.

The upshot is that PPP projects in transport have brought benefits, but these benefits could have been even larger and more general had best practices been followed. At the same time PPP projects also have had a number of systemic problems that have reduced their potential benefits. For example, in India, many contracts have suffered from large time and cost overruns and over the years they have been unable to meet expectations regarding transparency and accountability. The Dabhol power project had to be terminated as its tariffs turned out to be exceptionally high; the NOIDA Toll Bridge Company claimed extension of its 30-year concession to 70 years, besides grant of real estate rights; private terminal operators at major ports such as the Jawaharlal Nehru Port and Tuticorin have been charging tariffs that can be regarded as almost twice their entitlement⁹¹.

Well-designed PPP contracts have the potential to deliver benefits and the way they are structured and bid out will influence their outcome. A crucial element in this process is the concession agreement, which as a matter of principle should not be drafted by the potential concessionaire⁹². A model concession agreement (MCA) and other bidding documents that reduce transaction costs and ensure that project terms are fair, competitive, transparent and enforced in a non-discriminatory manner will go a long way in securing for India success that PPP projects have enjoyed elsewhere in the world. This implies creat-

ing an enabling environment for PPPs, including a clearer legal and regulatory framework; improved competitive bidding procedures; more consistent sector policies, and tariff regimes that allow for greater, if not complete cost recovery.

Although the performance of PPP contracts in infrastructure in India has left much to be desired, the clear lesson that emerges from the experience is that governance needs to improve significantly for PPPs in India to deliver value commensurate with their potential. Transport PPPs can induce large benefits and increases in efficiency, but the legal, institutional, procedural and regulatory framework and the PPP contract design and proper oversight are critical⁹³.

The critical components of success are the design of the concession/contract and associated processes, the clarity and transparency of the rules of the game and the regulatory framework, capacity and instruments, along with conflict resolution mechanisms. Concession design and regulatory oversight are the best predictors to reduce regulatory risk and of sector performance and ex-post management problems. An excellent concession design but poor regulatory oversight will lead to deficient sector performance. An excellent regulatory oversight but with poor concession design will lead to deficient sector performance. Both are needed both for effective sector performance and to secure the gains from private sector participation⁹⁴. Hidden subsidies must be costed and accounted for in an open and transparent manner, and evaluated in the context of competing demands for allocation of public resources (Box 6.7).

The basic principles for PPPs should be established by an overarching legal framework, but contracting and oversight would be under specific sectoral agencies.

Over time, the approach of these sector-specific agencies should become more coordinated. Sector specific tribunals have become popular in India due in part to the overburdened court system, but there are also arguments for more integrated treatment of public-private disputes, and even for moving these back into the mainstream judicial system at arm's length from regulators. Vesting judicial power and delegated legislative power within the same institution has been the subject of recurrent litigation in the case of the securities markets regulator, the telecom regulator and more recently the competition authority⁹⁵.

PRICING, SUBSIDIES AND INCLUSION

Policy reforms that usually accompany restructuring and private entry—such as eliminating cross-subsidies and moving toward cost-based prices—are

90. This part draws from Guasch (2012).

91. Haldea (2011).

92. Ibid.

93. Guasch (2012).

94. Ibid.

95. Ibid.

Box 6.7

Why Rebalancing is Necessary before Introducing Competition: Example from Telecom

Technological progress has convincingly undermined the natural monopoly argument for telecom markets and it is now widely recognised that enhancing efficiency and investment requires the introduction of competition, which in turn needs a regulatory mechanism to facilitate competition. An essential ingredient of transition from a protected market to competition is alignment of prices to costs (i.e., cost-oriented or cost-based prices), so that prices better reflect their likely levels in a competitive environment. Tariff ‘rebalancing’ involves reducing tariffs that are above cost while increasing those which are below cost.

A major departure from cost-based pricing involves a high degree of cross-subsidisation. i.e., a small proportion of the subscribers account for a major share of all revenue, and these subscribers are inevitably the subject of competitive churn when private sector operators enter the market. Loss of such customers will have a significant adverse impact on the revenue situation of the incumbent, making it difficult to meet the objectives of universal service and network expansion. Under these circumstances, tariff rebalancing helps prepare for competition and avoids a number of pitfalls. Cost-based prices restrict the possibility of cream skimming by new operators, facilitate smooth inter-flow of traffic, and reduce the dependence of operators on narrow market segments for maintaining their financial viability. This in turn also promotes a greater concern among operators for a wider set of its subscriber base, and to focus on quality of service, improving technology and service options. Traditionally, DoT tariffs cross-subsidised the cost of access to the telecom network by excessive domestic and international long-distance usage charges. Thus, in order to promote desired efficiencies, ‘rebalancing’ of tariffs became a condition precedent to the conversion of a single operator system to a multi-operator environment. Thus, while tariffs have to be reduced for the services which are priced much above cost (e.g., long-distance and international calls), tariffs for below-cost items need to be increased. Such a rebalancing exercise is common when preparing the situation for competition. Otherwise, competition will result in a decline in above-cost prices without any compensating charge in the below-cost prices.

After a comprehensive consultation procedure covering service providers, consumers, policy makers and parliamentarians, TRAI issued a Telecommunication Tariff Order (TTO) on 9 March 1999. The Order was a landmark for infrastructure regulatory agencies in India in terms of attempting to rebalance tariffs to reflect costs more closely, and to usher in an era of competitive service provision. *The chief features of the tariff order were substantial reductions in long distance and international call charges, increase in rentals and local charges and steep reductions (an average of about 70 per cent) in the charge for leased circuits.* These changes were achieved after extensive consultation and considerable political opposition. Over time, prices have now become better aligned with underlying costs. And services have become more responsive to consumer and business needs and to opportunities for innovation.

Source: Kathuria (2000); TRAI (1998).

also politically difficult to implement (Box 6.7 for an example from Indian telecom). It is alleged that restructuring and private entry often lead to higher prices that hurt the poor, especially when they already have access to some sort of infrastructure services. In some cases, for example, the urban poor have access to power, so radical tariff hikes that accompany restructuring could have harsh adverse effects. If they do not have access, then tariff rebalancing is irrelevant for them. In India’s context, where there is limited access to some transport services, the key is not to stop reform but to ensure that tariff rebalancing schemes wherever implemented

by independent regulators, do not involve extreme price increases and are, at the same time accompanied by transparent subsidy mechanisms that cover the poor. Insufficient targeting and lack of transparency in subsidies has meant that a large proportion of subsidies has gone to people other than the intended beneficiaries. The emphasis should not be on setting ‘optimal’ tariffs but on reforming tariffs—to find feasible changes in tariff structures that both improve welfare and generate adequate revenue⁹⁶.

It is inevitable that most tariff increases, especially radical hikes, will be subject to relentless politi-

96. Armstrong and Rees (2000).

Unsound pricing policies and hidden subsidy mechanisms of the past have seriously undermined the financial viability of service providers, resulting in frequent undersupply and rationing of infrastructure services.

cal resistance. For example, in July 2013, the Delhi Electricity Regulatory Commission (DERC) announced a 5 per cent increase in power tariffs and although energy experts believed that the hike ought to have been more, opposition political parties exploited the increase to try and drive political advantage⁹⁷. Arm's length regulation is best equipped to handle such political pressures that more often than not trade off long-run sector interest for the short-term gains of electoral politics⁹⁸. Such shortsightedness can have detrimental effects. For instance, relying on populist measures (and welfare subsidies), while attractive in the short term, can lead to deficit spending and asset quality degradation in the long term, which is likely to impose greater costs on society than current tariff increases. Independent and effective regulation is therefore necessary to balance these conflicting goals and to make up for the lack of competitive alternatives for the consumers while allowing a fair return on operator investment. At the same time, newly-created regulators should eschew abrupt price changes that could result in significant adjustment costs for consumers (and service providers). There exist several models of pricing reform for infrastructure sectors that regulators will be well advised to consider and adapt to local conditions while ensuring a gradual transition to efficient pricing levels and structures⁹⁹.

Admittedly, this is no easy task. Pricing of transport infrastructure services often turns out to be the most contentious aspect of sector reform. Pricing policies and associated subsidy methods play a decisive role in achieving the goals of affordable access and infrastructure development. As stated here, cross-subsidisation, the most popular means for dealing with this issue, is not sustainable in a competitive environment and creates perverse incentives against infrastructure expansion to serve the poor. With competitive entry and reform, new sources of subsidy must be established and/or rates should gradually reflect the underlying costs. A range of possibilities exist in which service levels can vary with price, reflecting consumer preferences and their ability to pay. Alternatively, the regulator can develop tariff schemes that

include explicit and well-targeted subsidies, ensuring that users do not spend an unreasonable share of their incomes on infrastructure services. A common rule of thumb is that poor individuals should spend no more than 15 per cent of their income on utilities and transportation¹⁰⁰. Subsidies for operators can be targeted through 'reverse auctions' or 'negative concessions' (where bidders compete on the basis of the least subsidy needed to deliver the service) or performance-based grants for specified service levels¹⁰¹. In least-cost subsidy auctions, qualified applicants bid for the lowest subsidy to provide a non-economic service as part of the universal service provision. The subsidy thus represents an amount that bridges the operator's financing gap, known in certain circumstances as viability gap funding (VGF) in India. Auctions can also be based on any other measurable characteristic such as the lowest consumer tariff to be charged or the greatest level of service to non-economic areas.

It is important to reiterate the fact that unsound pricing policies and hidden subsidy mechanisms of the past have seriously undermined the financial viability of service providers, resulting in frequent under supply and rationing of infrastructure services, and actually exacerbated inequality. Lack of infrastructure services are a drag on the general functioning of the economy and on economic growth. Better infrastructure promotes general economic growth and enhances economic opportunities, especially for the poor. There is some evidence to suggest that increased productivity brought about by introduction of competition and related reforms in infrastructure seems to benefit the poor more than other groups¹⁰².

The challenge for regulation therefore is to reduce (or eliminate) interest group and political pressure that is often exercised through untargeted hidden subsidies and which undermines the economic viability of each infrastructure sector and frequently becomes a significant impediment to the introduction of competition. To the extent possible, universal service and social equity goals should be implemented separately from pricing policies governing the transport sectors by designing competitively neutral mechanisms. This can be done through either a non-distortionary levy on the sector as a whole (for example, USOF in Telecom and EASF in Civil Aviation) or through the general tax system, although it is preferable to use the former. Universal service funds are desirable especially in the context of liberalised transport sectors to provide financial assistance for

97. According to BSES, over the last 10 years Delhi power tariffs have gone up by 65 per cent when the increase should have ideally been 90 per cent. This 25 per cent gap in tariff increase has led to an estimated under-recovery of Rs 200 billion. In the corresponding period, CPI increased by 120 per cent, fuel by 190 per cent and bulk power cost by 300 per cent. In light of this, Delhi's tariff hike of 5 per cent is deemed to be inadequate. See BSES (n.d.). Note that BSES is an interested party in the matter and has an incentive to inflate tariff hikes. Nonetheless, Delhi's electricity tariffs are lower than in other metros.

98. In their campaigns for the Delhi legislative assembly elections in December 2014, both the new Aam Aadmi Party (AAP) and the Bharatiya Janata Party (BJP) had placed electricity tariffs high on the election agenda in direct conflict over the ruling Congress party over the hike in power tariff.

99. Briceño-Garmendia et al. (2004).

100. Ibid.

101. A reverse auction is the standard way in which the government typically procures any good or service. When the government needs to purchase something, it issues a request for proposals (RFP) describing specifically what it wants. Firms reply to this request, and the government picks the firm that submits the best bid. The best bid may be the lowest, but the government may also take other factors into account.

102. Benitez et al. (2001).

meeting sector-specific goals such as infrastructure expansion and inclusion. The goal of inclusion will be much more effectively served by ensuring the coexistence of several features in each transport sector, including a robust regulatory framework, a transparent pricing and subsidy mechanism and above all competition in supply, wherever feasible and possible.

REGULATION AND STANDARD SETTING

Poor infrastructure services can threaten health and safety, and the regulation of their quality is an important policy concern. Quality has many dimensions, and regulating quality is perhaps more complex than regulating price. Like economic regulation, quality regulation is also motivated by market failure and accordingly the nature of intervention should be guided by the type of market failure that is sought to be corrected. For quality dimensions such as safety, health and the environment, defining and enforcing minimum quality requirements is crucial. For example, for consumers of urban bus services, safety is a key concern. Standards above the minimum are equivalent to changing the economic value of the service for which there will be different willingness to pay by customer groups and can be left to the market.

In India, there has been a singular lack of setting and enforcing minimum safety standards for urban transport and roads, among other modes. The large number of road injuries/fatalities is evidence of laxity since these cannot be justified as mere accidents. Instead it is the result of individual and institutional apathy. Road crashes alone claim more than 118,000 lives every year, mostly pedestrians, cyclists and pavement dwellers. The pedestrian's right to safe and free passage has become a casualty¹⁰³. It is a harrowing experience to walk in an Indian city. It is vital and urgent that Indian cities are made pedestrian-friendly and clean, efficient vehicle technology is promoted for both private and public modes in order to reduce fuel consumption and emissions. Fuel efficiency standards should be introduced in India and implemented effectively.

A beginning must be made now and virtually from scratch. There is little expertise, data or information available to address the transport safety problem in a scientific manner. The international professional consensus is that it is not very productive to focus on human error alone. According to the 1997 Swedish Road Safety Bill, *'The responsibility for every death or loss of health in the road transport system rests with the person responsible for the design of that system'*. This approach has not been internalised yet by any official organisation or institution dealing with safety in India. The predominant approach is still based on the outmoded principle of finding fault with an individual and then acting accordingly.

103. NTDP (2013b).

An unfettered market for transport services will not resolve the related problems of safety, health and environment on its own. Such pervasive market failures obligate regulatory intervention, but only if such intervention works better than the market alone.

Demand for better knowledge and technologies in the transport sector can only be provided by public bodies such as central and state governments, and local bodies like municipalities and transit authorities. Accordingly, institutes for road, railways, water and air transport safety need to be set up to *inter alia* set standards, collect data and ensure that evidence of the effectiveness of safety countermeasures is made an integral part of decision-making at all stages, rather than just a reaction to observed safety failures or political demands. No country has been able to deal with the problem of safety without very strong professional institutional mechanisms, including enforcement. Safety Departments need to be set up within operating agencies (at different levels) for ensuring day-to-day compliance with safety standards as well as studying effectiveness of existing policies and standards, conducting safety audits and collecting relevant data.

An unfettered market for transport services will not resolve the related problems of safety, health and environment on its own. Such pervasive market failures obligate regulatory intervention, but only if such intervention can achieve a better outcome than the market alone, with all its imperfections. As a result, not only setting of standards is crucial but ensuring their compliance is equally if not more important to improve outcomes. The diffusion of responsibility and lack of coordination between existing agencies does not help. For example, in road safety, authorities like NHAI, PWDs in the states and local bodies are responsible for construction and maintenance of roads; State transport authorities are responsible for issue of driving licenses, registration of vehicles and fitness of vehicles; police is responsible for regulating traffic, enforcing laws and educating the public on road safety issues; urban development authorities deal with land use and urban road planning; health departments are responsible for medical care of accident victims; insurance companies provide insurance cover and compensation. Apart from the fragmented structure, there is no coordination among the different agencies.

Road safety and urban transport are reflective of the malaise across all transport sectors. Inadequate data, lack of expertise, absence of coordination and weak enforcement are universal weaknesses in all transport sectors and need immediate correction. By its very nature, setting and enforcing standards

Table 6.3
Trends in Railway User Charges

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Passenger Fares	No increase	No increase	No increase	Reduction	Reduction	No increase	No increase	Fare increase proposed and retracted
Freight Charge	No increase	No across the board increase	No across the board increase	No across the board increase	No across the board increase	No increase	Price increase for 'inflation concession' for some commodities	Across the board increase

Source: Seddon and Singh (2012).

is an integrated activity involving multiple interventions. These interventions need to be combined and implemented in an integrated manner to derive the maximum benefits from each intervention.

BUILDING THE REGULATORY CONTEXT FOR TRANSPORT IN INDIA: SECTORAL DISCUSSION

In the following five sub-sections we discuss regulatory priorities for each of the major modes of transport, highlighting the key role of regulation as a part of the overall reform agenda discussed in more detail in other chapters.

RAILWAYS

The primary regulatory need for Railways is independent price regulation to reduce the persistent cross-subsidisation between freight and passenger services and begin to restore shift freight traffic toward railways. Over time, as policy opens more opportunities for private participation in railway services, the regulatory framework will need to ensure competitive access to trunk lines and include social regulation to reduce environmental impacts and increase safety.

Social expectations of widespread access to low cost passenger service and the financial imperative to generate sufficient revenues to expand and maintain its rail network, wagons, and other equipment create conflicts while politics plays a big role in determining tariffs. The ratio of passenger fares to freight charges is one of the lowest in the world.

Unlike other regulators who fix tariffs based on elements of cost, IR has been unable to increase rates causing increasing financial stress to IR (Table 6.3). An independent Rail Regulator could depoliticise the process of passenger fare revision and arbitrate disputes and grievances of freight customers.

Creating a Railways Tariff Regulatory Authority to provide 'a level playing field to all stakeholders' is one of the many recommendations made by various committees including the Rakesh Mohan Committee on Railway Reform in 2001, the Sam Pitroda-headed Expert Committee on Railway Modernisation and by the Planning Commission. The Government had recently approved the Rail Tariff Authority and this should be constituted early. In addition, an independent dispute settlement tribunal could also be created with the existing Railway Rates Tribunal (RRT) charged with this mandate, but the risk of regulatory institution proliferation as discussed earlier must be kept in mind. International experience does not suggest the best model one way or the other, but in India, there has been an increasing tendency to separate the dispute resolution process from the regulator¹⁰⁴.

In the meantime, freight transport in India is dominated by road, a situation that poses significant economic and social costs. The share of road in freight transport (tonne-kilometres) in India is around 57 per cent, against railway's share of 36 per cent. Railway's share (in originating tonnage) declined from 89 per cent in 1951 to 65 per cent in 1978-79, and from 53 per cent in 1986-87 to 30 per cent in 2007-08. Although it has increased recently, it is below the comparable share of about 50 per cent in similar large countries like US and China. A share of 50 per cent for railway freight is a desirable goal for sustainable long-run growth (Chapter 2, Volume II)¹⁰⁵. Inability to service growing freight demand has been due to many factors, including severe capacity constraints. As a result, IR has been forced to focus on bulk cargo and even within bulk cargo there has been preference for certain types of cargo on public policy considerations, thereby sacrificing other major potential cargo such as automobiles and chemicals which are consequently transported by road.

Such a non-optimal intermodal distribution of freight traffic is estimated to have cost the Indian economy Rs 385 billion in the year 2007, constituting 16 per cent of the total transport cost. It has also

104. The Sam Pitroda Committee has recommended creation of a PPP Ombudsman under the aegis of the Railway Board.

105. McKinsey & Company (2010).

Table 6.4
Main Responsibility for Public Interest Roles

COUNTRY	INTEGRATED TRANSPORT POLICIES	RAILWAY SECTOR STRATEGY/ POLICIES	ECONOMIC REGULATION	SAFETY REGULATION
Australia	Department of Transport		Australian Competition Commission	Departments of Transport or Independent Regulators (varies by state)
Brazil	Ministry of Transport		National Agency for Land Transport	
Canada	Department of Transport		Canadian Transportation Agency	Transportation Safety Board
China	Ministry of Transport		Ministry of Railways	
Germany	Ministry of Transport		Federal Cartel Office	Federal Rail Agency
Japan	Ministry of Transport			Japan Transport Safety Board
Russia	Ministry of Transport		MOT and Ministry of Economic Development and Trade (MEDT)	Ministry of Transport
US	Department of Transport (DOT)		DOT-Surface Transportation Board	National Transport Safety Board/ DOT-FRA

Source: NTDP (2011).

affected energy efficiency of transport: a study by the Asian Institute of Transport Development (AITD) concluded that rail consumes 75-90 per cent less energy for carrying freight traffic and 5-21 per cent less energy for passenger traffic compared to road¹⁰⁶. Similarly, railway scores over road in respect of financial, environmental and social costs by a huge margin by virtue of its scale economies and being a safer and less polluting mode¹⁰⁷. The diversion of freight and passenger traffic to roads produces many undesirable consequences. There is revenue loss for IR, a larger freight cost to GDP ratio and higher environmental cost per route kilometre.

Any shift of traffic from road to rail, especially in freight, would, therefore, result in substantial savings in energy consumption as well as reduced economic and social costs. This has also been corroborated by the Total Transport System Study conducted by RITES for the Planning Commission¹⁰⁸. McKinsey has estimated a loss of about 4.3 per cent of GDP due in large part by the inability of railways to enable a more balanced modal distribution. Independent price regulation alone will not achieve these goals—restructuring investment planning and improving the efficiency with which existing stock is managed are also important.

Restructuring of Indian Railways to operate on business lines is essential for enhancing capacity to meet country's social and economic aspirations in the 21st century. Several expert committees convened over more than a decade have made detailed recommendations on modernising IR's management, but political will to run IR as a commercial entity has been lacking. Nevertheless, railway restructuring must

happen, and it is essential to put an appropriate regulatory framework in place before it does to address anti-competitive behaviour as well as pricing, not to mention environmental and safety goals (Chapters 7 and 12, Volume II).

The experience of rail freight liberalisation in various parts of the world has shown that there are considerable barriers to entry, so that competition is unlikely to be a strong force to encourage performance. In markets controlled by State-owned monopoly operators, there could be many barriers arising out of control of key assets and lack of effective regulation to enforce a level playing field. The level of non-discriminatory access to network and the relationship between the access provider and access seekers are also matters of considerable interest in any rail liberalisation exercise. The quantum and structure of access charges paid by entrants to the infrastructure operator play an important role in determining the extent to which effective competition can be achieved. It is a function ideally performed by an independent regulator since determining efficient level of access charges is far from straightforward¹⁰⁹. For India, a vertically integrated, State-owned structure could be an enduring challenge for creating non-discriminatory access to core infrastructure. For an illustration of such risks due to the absence of institutional and structural prerequisites while introducing reform, see Box 6.5 for the experience in Indian telecommunications.

Similarly, the various roles in rail governance currently bundled together in the Ministry of Railways must be separated. All countries with significant rail systems have separated the public policy roles of the

106. AITD (2000).

107. Ibid.

108. Planning Commission (2010).

109. There are several different approaches to pricing of access. See World Bank (2011b).

Lessons from major rail markets establish the sub-optimality of India's framework. The role of the Railways Ministry as licensor, regulator and key player is not conducive for attracting private investment, much less maintaining a competitive environment.

Ministry of Transport (no other major economy has separate ministries for each mode, and only a handful retain a separate Ministry for Railways) and sub-sectoral policy making from either the economic regulation and/or safety regulation roles (Table 6.4).

Lessons from major international rail markets clearly establish the sub-optimality of India's governance framework. The role of Ministry of Railways as licensor, regulator and a key player is not conducive for attracting private investment into IR, much less maintaining a competitive environment¹¹⁰.

ROADS AND HIGHWAYS

Road transport includes a number of regulatory challenges, including managing PPPs in road construction; increasing safety and reducing environmental impact of road-based transport; ensuring competition in road transport services, and potentially using regulation among other tools to ensure widespread access to road transport.

The PPP option is on the agenda for all transport infrastructure, but particularly for roads in which technology is more straightforward and project structures can be replicated as 'model documents'. Expert regulation is particularly important for resolving disputes after the concession. Most competitive bidding processes effectively involve bets on future traffic flows. Bidding based on toll rates is obviously based on expectations about traffic. Rate of return expectations for competitive bidding for viability gap funding (VGF), as has been used by a number of state governments in India, also rests on traffic predictions. VGF allows a maximum subsidy of 40 per cent of the capital cost of the project. These funds are fully used during the high-cost construction periods where there is no offsetting revenue flow from user revenues. The road user toll is fixed, so private sector bidders bid the lowest VGF amount, in principle creating incentives for boosting efficiency. Disputes can arise when traffic flows vary substantially from projections, often provided by the public sector.

India's experience with road PPP illustrates the importance of managing disputes. Competition

has grown tremendously, leading to aggressive bidding and unrealistic traffic forecasts. Together with human capacity constraints, unclear jurisdictions and institutional weaknesses, this has led to high incidence of renegotiation of contracts, and a reduction of the benefits of private participation. In recent awards, some bids have been overly aggressive, rendering the IRRs negative or lower than the cost of capital. For instance, the equity IRR for the Khagaria-Purnea annuity project was estimated as 7.8 per cent, while for the Barasat-Krishnagar project, the IRR is expected to be negative¹¹¹. Land acquisition and clearance obligations for road sector concessions have also been frequently contentious leading to litigation and lengthy delays. According to IDFC, land acquisition and forest clearances are the biggest bottlenecks to timely completion of projects¹¹². NHAI, which was constituted for execution of works on National Highways (NHs), has been involved in a number of disputes relating to its contractual obligations. NHAI has faced several claims under arbitration proceedings but progress on settling disputes has been limited. Only 14 per cent of the projects comprising less than 5 per cent of arbitration award were accepted by both parties involved in the dispute¹¹³.

The combination of limited traffic data and weak dispute resolution can lead to a situation where private investment can only be attracted if the public sector bears demand risk, limiting one of the potential gains from PPPs. In these arrangements, the public sector makes fixed payments to the private party when, and to the extent that a service is made available. The demand risk in these availability-based PPPs is borne by the public authority. The UK pioneered the use of this form of PPP for the provision of social infrastructure (known as the Private Finance Initiative [PFI] Programme), and many other countries, such as Australia, Brazil, Canada, Japan, the Republic of Korea, Mexico and South Africa, are using this approach¹¹⁴. In India, this form of PPP is referred to as the annuity scheme.

As in rail, rationalising regulatory oversight of India's roads is important. The problem is in some ways the opposite of that described for railways: fragmented authority rather than overly consolidated powers (Table 6.5).

There is urgent need to create a strong and an independent regulatory mechanism for India's roads and highways sector, with expert staff tasked with making technical decisions. They should also ideally have incentives to serve long terms that allow the creation of a deep base of expertise and experience and like BPR should be shielded from direct

110. In 1997, regulatory powers of DoT were handed over to TRAI; in 2000 DoT was divested of its role as a service provider recognising that a service provider, licensor and regulator within the same jurisdictional boundary gives rise to conflict of interest.

111. IDFC (2012).

112. *Ibid.*

113. *Ibid.*

114. *Op. cit.*

Table 6.5
Regulatory Oversight for Roads

INSTITUTION	RESPONSIBILITY	GOVERNING ACT
Transport Wing - Ministry of Road Transport and Highways (MORTH)*	<ol style="list-style-type: none"> Licensing of Drivers of Motor Vehicles and conductors of Stage Carriages Offences, penalties and procedures Evolves road safety standards in the form of a National Policy on Road Safety and by preparing and implementing the Annual Road Safety Plan. (Some of these are applicable to urban transport) 	Motor Vehicles Act 1988, Central Motor Vehicle Rules 1989 Road Transport Corporations Act 1950 Carriage by Road Act 2007, Carriage by Road Rules
Roads Wing - Ministry of Road Transport and Highways (MORTH)*	<ol style="list-style-type: none"> Planning, development and maintenance of National Highways in the country Evolves standard specifications for roads and bridges in the country 	National Highways Act 1956, National Highway Rules 1957 Control of National Highways (Land and Traffic Act) 2002 National Highways Fee (Determination of Rates and Collection) Rules
National Highways Authority of India (NHAI)	Responsible for the projects under National Highways Projects	National Highways Authority of India Act, 1998

Source: NTDP (2013b).
 Note: *MORTH formulates and administers policies in consultation with other central government ministries, state governments, and union territories. As per the governing acts, state governments are provided legislative authority to formulate select rules and regulations in order to enable efficient road transport system across the country.

political influence while simultaneously building a culture of professionalism. Theoretically, there may not be a need for an independent regulator (where concessions can be regulated by contract). However, the need for an independent regulatory mechanism is arising on account of institutional infirmities and shortcomings in contract designs. The jurisdiction of any proposed regulator is also an issue, given the concurrent status of the roads and highways sector (national highways with NHAI/MORTH; state highways, district and rural roads with the respective state governments). The functions of the regulatory mechanism inter alia would involve: (a) tariff setting; (b) monitoring and enforcement of uniform technical standards on construction, service quality and maintenance related benchmarks; (c) collation, analysis and dissemination of sector information; (d) ongoing review of concessionaire designs to correct inherent infirmities. Monitoring of contracts has been a vexing issue; an independent regulatory mechanism will be much better suited to monitor performance outcomes associated with all contract types such as turnkey contracts, O&M contracts, BOT contracts, corridor management, etc.

The Government is actively considering the setting up of an independent tribunal under the proposed Public Contracts (Settlement of Disputes) Bill to deal with the differences and disputes that may arise during the implementation of public contracts (which include PPP contracts), refer these disputes to arbitral proceedings over which it would adjudicate and exercise supervisory control. The proposed Act lays down the process for the adjudication proceedings, hearings and enforcement of orders by the proposed

Tribunal, which may be challenged by the aggrieved party only in the Supreme Court. The proposed two-stage dispute resolution process is expected to reduce the time taken for resolution of disputes arising from PPP contracts.

India also needs to create a regulatory framework to guide the use of roads. One element of this framework, traffic management, is discussed in the subsection on Urban Transport. Regulation of interstate vehicle movements is a second area that requires rationalisation. Overlaps or ambiguity in mandates give rise to disputes and costly litigation. For example, the number of clearances that truck operators have to obtain from different agencies in order to operate is large and harrowing for the operators. The agencies involved are (a) Sales Tax, (b) Regional Transport Officer (RTO), (c) Excise, (d) Forest, (e) Regulated Market Committee, (f) Civil Supplies (check on the movement of essential commodities, black marketing, weights and measures, food adulteration) and (g) Geology and Mining. These checks are generally conducted by respective agencies at separate points, resulting in more than one detention. Detention of vehicles causes lower speed, loss of time, high fuel consumption and idling of vehicles, leading to under-utilisation of transport capacity and adversely affecting their operational viability. Besides, it imposes economy wide costs that are not easy to assess. By introducing checks at each interstate border the road freight transport experiences significant inequity compared to the freight/cargo transport by the railways, aviation and even inland transport, which do not face such rigorous en-route checking. The system in vogue hinders rather than

Table 6.6
Regulatory Oversight in Civil Aviation

INSTITUTION	CIVIL AVIATION RESPONSIBILITIES	GOVERNING ACT
Directorate General of Civil Aviation (DGCA)	<ol style="list-style-type: none"> 1) Responsible for regulation of air transport services to/from/ within India and for enforcement of civil air regulations, air safety, and air worthiness standards. It also coordinates all regulatory functions with the International Civil Aviation Organisation (ICAO) 2) DGCA issues licenses to pilots, aircraft maintenance engineers, flight engineers, and air traffic controllers 3) Carries out amendments to the governing acts/ rules to comply with the amendments of the International Civil Aviation Organisation (ICAO) 	Aircraft Act of 1934, Aircraft Rules, Civil Aviation Requirements, Aeronautical Information Circulars
Bureau of Civil Aviation Security (BCAS)	Regulatory Authority for Civil Aviation Security in India. It is responsible for laying down standards and measures in respect of security of civil flights at International and domestic airports in India	Aircraft Act of 1934, Aircraft Rules, Civil Aviation Requirements, Aeronautical Information Circulars, The Suppression of Unlawful Acts against Safety of Civil Aviation Act (1982 and 1994)
Airports Economic Regulatory Authority	<ol style="list-style-type: none"> 1) To determine tariff for aeronautical services 2) To determine the amount of Development Fees at major airports 3) To determine the amount of Passengers Service Fee 	The Airports Economic Regulatory Authority of India Act, 2008; Aircraft Rules 1937, Aircraft Act 1934
Airports Authority of India (merged National Airports Authority and International Airports Authority)	<p>Responsible for creating, upgrading, maintaining, and managing civil aviation infrastructure both on the ground and air space in the country. The functions of AAI are as follows:</p> <ol style="list-style-type: none"> 1) Design, development, operation and maintenance of international and domestic airports and civil enclaves 2) Control and management of the Indian airspace extending beyond the territorial limits of the country, as accepted by ICAO 3) Construction, modification and management of passenger terminals 4) Development and management of cargo terminals at international and domestic airports 5) Provision of passenger facilities and information system at the passenger terminals at airports 6) Expansion and strengthening of operation area, viz. Runways, Aprons, Taxiway, etc. 7) Provision of visual aids 8) Provision of communication and navigation aids, viz. ILS, DVOR, DME, Radar, etc. 	Airport Authority of India Act, 1994 As amended by the Amendment Act 2003

Source: NTDPCC (2013a).

facilitates smooth flow of freight and passenger movement across the country and has thwarted the formation of single common market.

CIVIL AVIATION¹¹⁵

There are three main regulatory priorities for the civil aviation sector: managing PPPs and the terms for private investing in aviation infrastructure, including dispute resolution; regulating pricing and access to core facilities to ensure healthy competition among service providers; and strengthening oversight of airline practices to ensure safety and compliance with minimum standards of service delivery.

The aviation sector in India can be broadly classified into three distinct functional segments: (a) operations of public and private airlines; (b) infrastructure, under the purview of the Airports Authority of

India (AAI) and the newly-created Airports Economic Regulatory Authority (AERA); and (c) regulation and development, the responsibility of the Directorate General of Civil Aviation (DGCA) and the Bureau of Civil Aviation Security (BCAS) (Table 6.6).

As detailed in the chapter on civil aviation (Chapter 3, Volume III), stronger regulatory oversight over the sector is warranted by several factors. First, despite strong growth in demand for both domestic and international air travel, and for the movement of cargo, the airline sector itself remains weak. Many domestic airlines operate on the strength of precarious balance sheets. Meanwhile, offshore carriers dominate the market for international aviation. This may not be a bad outcome in itself if it is the result of careful policy planning. However, given India's geographical advantages and a strong home market, a sense prevails that Indian airlines competing in the overseas market have not made full use of their bilateral flying entitlements

115. The Civil Aviation sector consists of Airlines (scheduled and non-scheduled) Airports, Maintenance Repair and Overhaul (MRO), Air Cargo and Express, Ground Handling and Aviation Academies.

and landing slots. These and other issues of concern to the airline industry are documented more fully in the chapter on civil aviation.

Second, with airports being monopoly providers of critical aviation infrastructure, the regulatory imperative is clear. India is a signatory to the Chicago Convention on Civil Aviation (1944), one of the founding documents of international civil aviation. Amongst other things, the convention establishes the sovereignty of a state over territorial airspace, defines rules for international scheduled air transport, and the basic rules of aircraft safety and registration. In setting out the basic policy on airports and air navigation systems, the Convention also notes that regulatory oversight over these cannot vest with the operators, and instead must do so with the contracting states themselves. In view of the monopolistic nature of airport and air navigation services, the State is required to assume responsibility for protection against monopolistic abuses.

The practical aspects of this regulatory objective are the following¹¹⁶:

- to ensure non-discrimination in the application of charges;
- to ensure there is no over-charging, anti-competitive practice or abuse of the dominant position;
- to ensure transparency and the ready availability of financial data;
- to establish and review standards, quality and service delivery;
- to assess and encourage efficiency amidst the service providers.

These aspects are intended for consideration within the broader objectives of the development of civil aviation, promoting non-discriminatory access to airport services, and the balancing of interests between airport and users. ICAO identifies five different regulatory options that can address these goals¹¹⁷:

- (a) Minimum intervention in the form of self-regulation or market regulation through competitive forces. This strategy may be appropriate whenever, for example, an airport earns a large proportion of its revenues from commercial activities, thereby giving it an incentive to minimise aeronautical charges to attract traffic, or when an urban conurbation is served by several airports in competition with each other.
- (b) Systems of institutionalised checks and balances such as through joint ownership of airports by airlines, or by airlines in partnership with the government, or when the airport's charter specifies financial goals as not intended to generate profit.
- (c) Stakeholder oversight in the form of a third-

India's civil aviation sector suffers from the problem of multiple regulatory bodies with overlapping jurisdiction and often lack of clarity on their sphere of influence.

party advisory commission made up of representatives of airlines, governments and passengers, with powers to call for mandatory consultation on pricing and investment.

- (d) Contract regulation such as through a PPP charter document, or a delegated management contract.
- (e) Maximal regulation through economic measures. This can take place through specification of a defined rate of return or from a cost-plus pricing concept for airport operators. Essentially, it allocates wide-ranging powers to a third-party regulator to assess and authorise an airport's planned tariffs and to review its performance.

The necessary development of the sector has seen several of the systemically important airports converted to joint-venture enterprises as partnerships between the AAI and private entities. The regulation of these new enterprises brings another catalogue of issues for consideration such as on the pricing and enforcement of development and investment contracts; on the pricing of aeronautical and non-aeronautical services and so forth.

There is no doubt that the regulatory mechanism has to be strengthened in civil aviation. Similar to other infrastructure sectors, there are multiple regulatory bodies with overlapping jurisdiction and often lack of clarity on their sphere of influence (Table 6.6). For example, AERA, which was established in October 2008 as an independent authority to set policies crucial for a level playing field, only regulates private airports; the others are managed—and regulated—by AAI. Contracts awarded under PPP for private participation were given without a regulatory mechanism being in place. Disputes in the agreements made prior to the birth of regulator were transferred to the AERA, leading to uncertainty and the risk of regulatory capture. Concession contracts should ideally be monitored by the regulator from the beginning, ensuring minimum deviation from the performance outcomes. Such piecemeal attempts at institutional reform are best avoided since they add to the number of regulatory agencies, render existing regulatory mandates unclear, and risk the possibility of 'forum shopping' that was common in the telecommunications sector in India when the institutions of oversight were being established.

It is imperative that the existing institutional framework be overhauled. With respect to other airports run by the AAI, the government should clarify the

116. http://www.icao.int/sustainability/Documents/Doc9562_en.pdf (accessed on 10 August 2012).

117. *Ibid.*

In civil aviation, the public policy role of the Ministry should be separated from the economic and safety regulation roles. A vexing issue here has been establishing a level playing field between Air India and other carriers.

future role of the agency. As a first step, the AAI should be separated into two distinct functions: Airport Operations and Air Navigation Services. The civil aviation chapter provides further detail on the desired functions, which will, ideally, be corporatised. The AAI should then turn its attention to developing new airports in partnership with state governments, leaving the operation detail to the dedicated bodies noted here.

Over the next 20 years, the essence of the institutional reforms will be to separate the regulatory function from the policy function: these should be clearly independent of each other. While there is an active and welcome proposal to create a civil aviation authority along the lines of UK CAA, the existing proposals essentially imply that the DGCA will be renamed a CAA without fundamental or meaningful changes in its role. What is required is for the new CAA, is to include the DGCA as one of its wings (covering airworthiness, safety, air licensing and certification); and in addition to have separate, expertly manned divisions responsible for airspace management, environment, competitiveness and customer protection. This will then bring it into line with the UK's CAA that is being adopted as a role model.

Separately, a fully autonomous Accident Investigation and Safety Board should be constituted with a lean group of full-time experts, and the empanelment of a larger group of experts drawn from different disciplines and who can be quickly be assembled for the investigation of specific accidents. The DGCA cannot both define the safety environment and then be the investigating authority when there is a breach of safety. All accident investigation reports must be published, as is done abroad, to ensure the lessons from the investigation are shared as widely as possible with the airline community in India and abroad. That leaves the Ministry of Civil Aviation to focus on the larger issues of aviation within the national and international context, to develop and fine-tune policy, all the while being advised by the expertise within the CAA.

In the radically changed, competitive (and increasingly private sector-dominated) environment, the existing institutional framework is inadequate and counterproductive. A dispute settlement body separate from the CAA as has become the practice

in India in other sectors will serve to fast track disputes in the sector (see Box 6.8 for the nature of some recent disputes). The relationship between the sector-specific dispute settlement authority and the CCI will evolve over time and should be guided by the same principles that underpin this institutional relationship in other sectors.

Due to, *inter alia*, the capital-intensive nature of the industry, competition may not always be effective. Oversight or regulation in the presence of such failures is de rigeur; however the extant regulation should be carefully designed so as not to become a burden on the operators. Thus, regulatory costs should be kept to a minimum if competition is sought to be increased. In some trunk routes, the market will function adequately with light-touch regulation, but not everywhere. However, given the significant externalities associated with aviation infrastructure, increased connectivity is desirable but will need to be traded off with viable commercial operations. There is a mechanism currently in place for 'route dispersal', but it is not satisfactory. In the US, after deregulation, routes are determined by individual market participants in accordance with customer demand and financial feasibility, while underserved routes are subsidised through the Essential Air Services Programme¹¹⁸.

There is also a need to transparently and explicitly provide support for socially desirable but uneconomical services, whether airport or carrier. Therefore, a fund to replace the route dispersal guidelines should be non-lapsable and exclusively aimed at providing explicit and direct subsidies to airlines to make up for viability gaps on defined routes. Budgetary support will be required for this fund but the Ministry may also consider augmenting the fund through a cess on domestic passengers chargeable through tickets issued by airlines.

In civil aviation, as in other sectors, the public policy role of the Ministry should be separated from the economic regulation and/or safety regulation roles¹¹⁹. A vexing issue in this respect has been establishing a level playing field between Air India and domestic private airlines. The existing regulation lacks competitive neutrality with regard to private airlines in terms of access to government funds for capital expenditures and potential bailout. Privatisation as a solution has often been contemplated but has been politically difficult to implement. Privatisation will depoliticise the sector and limit the use of Air India for social policy goals and effectively decouple financial resources from the government's general budgetary and fiscal situation. Privatisation though is not an end in itself but rather a means to promoting a level playing field and competition in the sector.

118. US Department of Transportation (n.d).
119. NTDP (2011).

Box 6.8

Nature of Litigation in Civil Aviation

A case was filed with the Competition Commission of India alleging that airline operators had simultaneously withdrawn the promotional offers and increased tariffs by 25 per cent across the board in February 2009. The petitioner further alleged that airlines had again raised fares simultaneously around Diwali in 2010. Private airlines naturally denied charges of cartelisation. Following the investigation, DGCA stated that a high degree of transparency over prices and volumes exists in the airline industry. Similar fares could reflect the forces of competition. Also, most airlines follow a dynamic pricing principle, where fares move according to factors like capacity, market demand, seasonality and time of flight. The basic tenets of pricing by airlines are 'Price Parallelism' or 'Price Parity'. For these reasons, CCI did not find evidence of collusive/anti-competitive conduct during the investigation. The case however highlights the need for effective data collection and analysis by the regulator, a standard practice in mature markets.

In a case filed by the Society for Welfare of Indian Pilots against the DGCA, which brought in a few private airlines as respondents, a difference was noticed in the medical standards applicable for Indian and foreign pilots operating Indian aircrafts. The lower standards applied to foreign pilots was cited as a reason for the rise in aircraft accidents. After receiving the writ petition, DGCA, under the Aircrafts Act of 1934, issued an amendment correcting the anomaly. The case highlights the need to separate the responsibility of the licensor and regulator to enable a mechanism for regulatory checks.

Source: Competition Commission of India, Directorate General of Civil Aviation.

This must remain a medium- to long-term objective, notwithstanding the political impediments. The Narsh Chandra Committee had recommended as much in 2003¹²⁰.

PORTS AND SHIPPING

Shipping remains by far the main mode for international transport of goods since 95 per cent of India's international trade is waterborne. Of this, over 60 per cent is handled by the 12 major ports while the rest is handled by the 200 non-major ports, of which only around 60 handle export-imports cargo with others being mainly fishing harbours. Changing trade patterns and new trade relations are driving trade volumes and thus there is need for capacity expansion to handle the increased trade volumes and also accommodate changing vessel sizes. The neglect of port expansion in the 1980s because of low investments has led to deteriorating port services, obsolete equipment and infrastructure and, hence, a decline in the quality of port services.

The existence of two fundamentally different systems for governance of Major Ports (tariff regulated) and Non-Major Ports (tariff deregulated) creates hurdles to achieving balanced growth while rendering it difficult to draw on the experiences of either of the two or to leverage possible synergies. The current governance structure of Major Ports—the public service port model—is archaic and lacks potential to attract private capital and therefore competitive-

ness. Given that the Non-Major Ports under the management of maritime states have demonstrated greater success as compared to Major Ports, any progressive regulatory shift for Major Ports should attempt to bring uniformity in the approach along with desired cooperation and participation of maritime states.

Till now, investment in both Major and Non-Major Ports has been done in a somewhat haphazard piecemeal fashion, primarily due to lack of a comprehensive and coherent national strategy for port development in India. In addition to making focused investments in capacity creation, the existing regulatory structure for the Major Ports needs overhaul and a new set of incentives needs to be put in place as part of regulatory restructuring. The existing Ministry-centric port management system is a complex bureaucratic process and distorts incentives. There are unnecessary delays and opportunities for wielding political influence.

The dominance of the public sector, the inimical institutional structure and lack of sufficient hinterland connectivity have all been detrimental to promoting competition. India needs legislation which is *inter alia* compatible with the functioning of a market-oriented economy and the global character of the maritime transport. Furthermore, the tendency to introduce more and more control elements in the port management should be eschewed. This is easier said than done and therefore a phasing out of intru-

120. Ministry of Civil Aviation (2012a, 2012b).

Table 6.7
Regulatory Structure of the Indian Port Sector

	RESPONSIBILITY	GOVERNING ACT
Ministry of Shipping	Coordinates the various activities related to ports, shipping and inland water transport	Merchant Shipping Act 1958
Port Trusts	Manage the daily activities of major ports in the country	Major Ports Trust Act 1963
State Maritime Boards/State Government Departments	Govern the non-major ports	Indian Ports Act 1908
Tariff Authority for Major Ports (TAMP)	Regulates tariff setting in major ports	Major Ports Trust Act 1963

Source: TERI (2008).

sive regulation is recommended. A snapshot of the regulatory structure of the Indian port sector has been provided (Table 6.7).

Attempts to modernise the port sector in the last two decades in India have proved futile. An analysis of the various attempts at port reform makes it clear that a rational framework at transforming the Major Ports into viable and autonomous undertakings capable of functioning within a market economy has been absent. Some of the measures aimed at structural changes have not been executed. For example, the Landlord Port Model for the major ports has not been fully implemented despite its apparent attractiveness. The trouble with reform in the port sector and indeed in other infrastructure sectors in India has much to do with piecemeal changes and the inability to separate policy making, regulation and commercial operations. International best practice suggests that these three functions ought to be separate—the Ministry should be charged with policy formulation, an independent regulator should exercise oversight and a public or private sector entity should run the enterprise on commercial principles responding to incentives created by the market and within the constraints set by independent regulation.

Regardless of the path taken in restructuring ports policy, important segments will continue to be natural monopolies. Accordingly, the success of restructuring depends in part on the creation of effective regulatory institutions to exercise oversight and ensure competition, since most of the benefits of private participation in port activities result from competition. Several types of competition are possible (Box 6.9). Governments and port authorities can take a number of steps to enhance competition, including introducing new berths and terminals, dividing ports into competing terminals (terminali-

sation), dividing port operations within terminals, and introducing short-term operating leases or management contracts. The form of competition and regulatory requirements are closely related and largely depend on the size of the port, the extent of external competition, and the degree of captive traffic that needs protection¹²¹.

While the term ‘privatisation’ has often been used in the context of port reform processes, it actually refers to introduction of the private sector into the public domain by privatising terminal services under a landlord port regime. The essence of such a regime is to have major port authorities, disengaged from direct terminal operations while acting as neutral landlords to both private and corporatised public sector terminal operators. The corporatisation of port authorities, however, might need to be done through a customised act that allows considerably more room for socio-political objectives rather than just maximisation of value for shareholders. Corporatisation, apart from its other advantages for port development, opens the possibility for direct participation of the concerned maritime states by means of acquisition of shares in the Port Authority of the port(s) located within its territory (see Box 6.10 for the Gujarat example). Such shareholding should be substantial and not symbolic. In that way, the state will participate in the benefits of the development and expansion of the (former) Major Ports. The new Port Authorities should be allowed to have autonomous powers within the policy framework of the central and state governments to enable them to function efficiently within a commercial setting. All Major Ports should be unbundled and the terminal services also corporatised. It is clear that this unbundling is a complicated issue especially for the older ports. Therefore, necessary changes in legislation should allow a reasonable time for this tran-

121. Kessides (2014).

Box 6.9

Types of Competition in Ports

- *Inter-port competition* can be fierce, as between the major container ports of East Asia. A port's success depends on its ability to process traffic quickly and reliably and integrate its activities with inland or feeder networks.
- *Intra-port competition between terminals* allows technically-efficient integration of port functions without sacrificing competitive pressure within the port. Terminal operators have complete jurisdiction over their terminal areas, from berth to gate. This approach was adopted to great effect in the liberalisation of the port of Buenos Aires.
- *Intra-terminal competition between service suppliers* is encouraged by many ports. Competition in stevedoring, warehousing, forwarding and other services is highly desirable whenever it can be physically accommodated. From a port authority's viewpoint, such competition may be influenced by licensing requirements, which limit the number of competitors but make the concessions attractive for competitive tendering.
- *Competition for the exclusive right to provide services* is an extension of the competitive tendering of licenses and may be the only way to attract private investment in small ports. When local monopoly rights are granted, the question usually arises: to prevent monopoly exploitation, should contracts be used or a regulatory authority established?

Source: Kessides (2004).

Box 6.10

The Gujarat Example

The state of Gujarat came into existence in May 1960 and state ports, including all Non-Major Ports, except Kandla port, were under the control of state government. The ports were administered by the Roads & Buildings Department of Government of Gujarat. Traffic of all Gujarat ports was almost stagnant from 1960 to 1982. The subsequent progress in Gujarat occurred due to state initiatives. Decentralisation played a major role in the process whilst the Centre followed a laissez faire approach.

Considering the long coastline of 1,600 kms and opportunity for development of industries in the state, the Gujarat Maritime Board was established in April 1982, under the Gujarat Maritime Board Act, 1981. This was done to give certain liberties for the development of ports. Industrial and trade representatives were included as members of the Board, along with experts from financial institutions, engineering and navigation. The Board formulated the captive jetty policy in 1986, which encouraged industries to develop their own captive harbour facilities and were given certain concessions/incentives in wharfage charges.

This policy saw traffic of Gujarat state ports increase from 2.7 million tonnes in 1986 to 16 million tonnes in 1995. The prosperity of the coastal area increased simultaneously with the establishment of many industries such as cement, petroleum, fabrication, chemical and refining. Coal imports started, which was beneficial to the foundry industries of Jamnagar and Rajkot. In 1995, the GMB announced a policy for privatisation of ports; Gujarat was the first state to take such step. All the above changes happened only because the ports were a state subject and there were no restrictions from the Centre for development.

Source: Government of Gujarat (2012).

sition process tailored towards the specific situation in each Major Port.

As a guide to the recommended shift to a landlord model of port governance for Major Ports, simplifi-

cation of the regulatory framework in the ports sector, the following guidelines are worth considering:

- Corporatised Port Authority to be professionally run, insulated as much as possible from government intervention.

- State governments to be encouraged to have substantial shareholding to ensure their participation in development and expansion of these ports.
- Autonomy of the Port Authority with respect to financial issues. There should be a separate budget unrelated to the state budget.
- Transparency of port accounts.
- Clear financial relation between the State (Ministry of Transport/Shipping) and the Port Authority. No hidden subsidisation, no financing of terminal equipment and superstructure.
- Equal treatment of all port and terminal users, be it shipping lines, terminal operators or other service providers.
- Equal access for port and terminal service providers, no monopolies for the provision of terminal services, except in case of dedicated terminal.
- Fair competition within the ports between terminal operators and marine service providers (intra-port competition).
- Fair competition between ports, no cross-subsidisation by Port Authority between various traffic categories.

In the current regulatory configuration, the Tariff Authority of Major Ports (TAMP), a regulatory body established in 1997 under the Major Ports Trust Act, 1963, is responsible for tariff fixation for Major Ports. TAMP determines tariff ceilings for Major Ports, while Non-Major Ports are sufficiently autonomous and exercise market-driven efficient pricing. Reducing tariffs below the ceiling as a means of promoting competition is almost nonexistent in the case of major ports. Port operators also do not have much incentive in promoting inter and intra-port competition, as almost all ports in India today operate at full capacity. For instance, JNPT has three container terminals catering for similar cargo and each one is operating at full capacity. One of the private terminals, GTI, has tariffs almost 30 per cent higher than the other two terminals, but it continues to attract sufficient traffic. The second container terminal at Chennai, to compete with the existing terminal operated by DP Port (earlier P&O Ports), as well as a fourth container terminal expected to come up at JNPT, is likely to see intra-port competition emerging in India.

Besides regulating both vessel-related and cargo-related tariffs, TAMP regulates rates for lease of properties in respect of Major Port Trusts and the private operators located therein. Despite being a regulatory body, the TAMP has limited autonomy, being largely under the central government's control¹²². It has rarely used its powers to motivate efficiency of port and terminal services, while it does not have jurisdiction over selection of private parties for contracts, an increasing occurrence given the move and preference toward adopting the Landlord Port model.

In principle, tariff setting or other price controls should not be exercised under the landlord model but left to the market. Rather, economic regulation pertains to establishing conditions for fair competition on a level-playing field. Therefore, tariff setting should be deregulated and its determination should be left to market forces. To this end, TAMP should soon start delegating tariff determination and setting to corporatised terminal operators, where efficient price discovery should be market-driven rather than being regulated. Only in cases of inadequate competition between terminals in a port or among ports, or serious market imperfections, may some pricing control be required. Tariff regulation by exception rather than by rule should be the operating principle. TAMP could act as the Appellate Tribunal for all tariff related matters where tariff is determined by service providers.

A new regulatory authority, Maritime Authority for Ports (MAP), should be constituted under a modernised Indian Ports Act 1908, suitably empowered to regulate competition and port conservancy across all the major and non-major ports in the country. This might create overlapping jurisdiction between the new sector regulator and the economy-wide competition regulator, the CCI. This is not unusual and exists in all infrastructure and utility sectors that have a specific regulator. Since the sector regulator is likely to better deal with specific regulatory and competition issues, it is best to empower the port regulator to address complaints concerning alleged anti-competitive practices or abuse of a dominant position. In addition it should also be charged with merger approvals and review of draft concession agreements to advise the Port Authority on whether any provisions thereof may be incompatible with the promotion of competition. The sector (port) regulator is likely to have the best information about the sector to monitor it. For example, competition issues arising from imperfect price and non-price conditions of access to unbundled elements in Landlord Ports or cross-subsidy problems are best understood and addressed by the regulator. It is also important for the regulatory agency to focus on identifying serious, long-term performance problems, rather than to become a micromanager of the sector as has been the experience with regulation, both in India and elsewhere¹²³.

Questions relating to a continuing role for the regulator in promoting competition or alternatively, whether ongoing competition issues should be left to the antitrust authorities are not new. There is a delicate balance between the two but there is a useful continuing role for the regulatory agency. Besides, the sector regulator should be independent of any Government and have its own sources of income. This issue confronts all regulators in India and is discussed further in the conclusions.

122. CUTS C-GIER (2010).

123. Paul Joskow (1998).

It is also recommended that the two Acts governing Indian ports the Indian Ports Act, 1908, and the Major Port Trusts Act, 1963 be kept separate but modernised. A review of port legislation should be undertaken to have one unified law relating to conservancy and competition and a new law to transform the port trusts to landlord port authorities with functional and financial autonomy.

URBAN TRANSPORT

Economic activity in the city depends *inter alia* on efficiency of mobility. Urban transport is a key urban service that imparts efficiency by providing mobility to the workforce in the city and hence productivity. By all estimates, the magnitude of the expenditure required to develop and upgrade India's urban transport system is enormous. A majority of this requirement will be for roads and urban transport. The level of investment required can be realised only if there exists an extensive and effective institutional framework including clear regulation on the terms of investment and PPPs, competitive access to infrastructure, and pricing of services as well as social regulation promoting environmental sustainability and safety.

Urban planning received scant attention in India's initial Five Year Plans. The 74th Constitutional Amendment Act (CAA) of 1992 was pathbreaking since it provided legitimacy to the third tier of government, i.e., the urban local bodies. It envisaged the creation of empowered local governments, which would take on the responsibility of city planning and management¹²⁴. The Act was a major milestone in recognising the role and importance of cities in economic development and sought the devolution of powers to local bodies. Urban Transport (UT), however, was not devolved. It remains a policy area where multiple national and state agencies are involved with limited coordination and some competition between their efforts.

Among all transport infrastructures in India, UT is easily the most complex. UT is made up of about 20 components and is currently managed by as many agencies¹²⁵. The governance structure for UT is fragmented and the division of responsibility among the various agencies is unclear. The regulatory regime then suffers: the fragmentation handicaps the potential for strategic coherence between infrastructure investment and regulation of its use.

Coordination of regulation with investment planning is critical in three areas in particular¹²⁶:

- Road investment and traffic management

- Traffic management and public transport
- Traffic management and transport demand management

Where *road investment and traffic management functions* are not integrated, there is a tendency for the roads unit to see the transport problems of the city purely in terms of road congestion and the solution purely in terms of increases in road capacity rather than in more effective use of existing capacity. That road infrastructure investment bias is often amplified by the lack of effective management of the existing road system. Failure to integrate *traffic management and public transport* functions has similar policy consequences. In most cities—even very large cities—road-based public transport predominates. The majority of people move in buses, yet traffic management concentrates on securing increased average speed of movement of vehicles rather than of people. Public transport vehicles tend to hamper this because of their frequency of stops. The priority of private transport over public transport tends to be institutionalised in the way in which traffic signal settings are established. Third, even within the traffic function, the absence of strategic integration results in an emphasis on traffic engineering rather than traffic restraint to increase traffic speeds. Parking policies, for example, often concentrate on increasing the quantity of off-road parking in order to increase effective road capacity to improve traffic flow, rather than managing parking capacity to restrain the volume of traffic to improve flow¹²⁷.

A paradigm shift is needed in the approach towards urban transport. Demand management will play an important and crucial role in the quest for reducing congestion on city roads as will supply-side strategies. Congestion is commonplace in metropolitan centres during peak hours and the dramatic growth in vehicle ownership during the past decade has degraded rush hour speeds especially in the central areas of major cities. For example, peak vehicular densities will likely reach as high as 610 vehicles per lane kilometre. At such densities, an average journey may take up to five hours in peak morning traffic—similar to the acute congestion that disfigures some Latin American countries. The peak private vehicular density has already touched 170 vehicles per lane kilometre—50 per cent higher than the

Among all transport infrastructure in India, urban transport is the most complex, with about 20 components and managed by as many agencies.

124. The 12th Schedule, introduced with the passing of the 74th Amendment lays down 18 functions to be performed by local bodies, the major ones being: Urban planning including town planning, Water supply for domestic, industrial and commercial purposes, Public health, sanitation conservancy and solid waste management, Roads and bridges, Fire services, Slum improvement and upgradation, Urban poverty alleviation, Provision of urban amenities and facilities such as parks and gardens, Public amenities including street lighting, parking lots, bus stops and public conveniences, Urban forestry and protection of the environment.

125. Gwilliam (2012).

126. *Ibid.*

127. Chennai's new parking policy, modeled after a payment system use in Budapest, is a notable exception.

basic requirement. Additionally, lack of investment in public transportation has resulted in a significant decline in share of public transportation, from nearly 40 per cent in 1994 to 30 per cent today¹²⁸.

Global evidence shows that an effective shift to public transport can occur only if transport demand management measures are adopted in tandem with increased provision of public transport¹²⁹. A slew of demand management measures have been used across cities; success of each will depend upon, *inter alia*, local conditions. Decentralisation and empowerment will be necessary to achieve the desired outcomes. Use of information technology to reduce demand for travel, congestion pricing, restrictions on vehicles use, road space reallocation, priority for bus and non-motorised modes are some common demand management techniques. Methods such as high occupancy requirements that restrict access to certain lanes during peak hours have been adopted in some countries. New electronic techniques of

In addition to establishing an appropriate framework, implementing modal integration and creating competition, an independent regulator will need to deal with the complex issue of transport pricing. This has to be handled by a professional body.

monitoring road use may eventually make it technically feasible to treat many urban roads almost as private goods. Whether this is also desirable will depend on the local context and circumstances. Consider, for example, water supply, that used to be unmetered but the increasing scarcity and supply cost triggered technical innovations that have made it possible (and desirable) to price these services like other private goods.

Multiple modes of transport coexist in Indian cities, but the pattern of use is not accurately known due to data inadequacies, although one estimate puts the use of public transport at 22 per cent¹³⁰. The objective is to raise this percentage to 60 per cent by 2017 and this can only happen if public transport becomes efficient, convenient and accessible. At present there is a huge deficit in urban public transport services and infrastructure both in quality and quantity and a 'business as usual' scenario will detract from achieving the laudable objective of increasing the share of public transport in cities.

There is, at present, no legislation that enables a regulatory framework for modern, integrated UT. The Motor Vehicles Act deals with the licensing of vehicles, Railway Act covers inter-city traffic, Metro Construction Act deals with the specific issues related to construction of the metro rail, Tramways Act deals with tramways within the road surface with free

access across it. Other modes of mass rapid transit such as the bus rapid transit, the light rail transit the mono rail and several other guided modes of transport and issues of transport planning, multi-modal integration, safety, tariff and financing are not covered under any Act. Clearly, the institutional and regulatory framework for UT is antiquated, not having kept pace with rapid urbanisation, technological advancements and the needs of citizens. The emergence of Mass Rapid Transit (MRT) in certain cities has resulted in a larger system; in general the greater the number of modes involved, the more complex will be the co-ordination.

The new regulatory mechanism must recognise this reality. Often, regulatory structures in India have become a liability because of multiple reasons, such as lack of capacity, a narrow and isolated approach, lack of independence and unclear mandates, besides human capital deficiencies. MRT comprises a spectrum of modes of urban public transport and success, as in other areas of transport logistics, will depend upon effective modal integration. The key to effective modal integration is the existence of a strong local coordination authority backed by different levels of government. The city should carry the primary responsibility for UT and the role of the Centre and the state should gradually get reduced. Decentralisation should be engendered by legislation and the regulatory functions of licensing, vehicle inspection and enforcement should continue with the Transport Commissioner.

In addition to establishing an appropriate framework, implementing modal integration and creating competition, an independent regulator will need to deal with the issue of transport pricing. This is a complex matter and needs to be handled by a professional regulatory body. The National Urban Transport Policy 2006 envisaged the creation of a dedicated Unified Metropolitan Transport Authority (UMTA) to be set up in each city with population in excess of 1 million and dedicated cells in smaller cities for integrated planning and coordination and delivery of urban transport services. The current UMTAs, however, act more like advisory committees and not as empowered technical decision making and coordinating bodies. While being supportive of this broad approach, NTDPC is proposing that such a metropolitan level organisation should be designated as 'Metropolitan Urban Transport Authority (MUTA)'. The MUTA should be a professional technical body with adequate technical staff strength (Chapter 5, Volume II and Chapter 5, Volume III). Whether regulatory functions related to standards, demand management and pricing are handled by MUTA or a specialised and independent regulatory body is a matter of semantics; the core point is that these skills must exist in an agency at the metropolitan level, and they must be protected from political pressures.

128. McKinsey Global Institute (2010).

129. Ghate and Sundar (2012).

130. Planning Commission (2011).

Box 6.11

The Namsan Tunnels in Seoul: Simple Road Pricing Reduces Congestion and Finances Traffic Management

Traffic congestion in Seoul increased dramatically during the 1980s and early 1990s despite extensive construction of new urban freeway and subway lines. In 1996, the Seoul metropolitan government commenced charging 2,000 won (\$2.20) for the Namsan #1 and #3 tunnels, two corridors with high private vehicle use linking downtown Seoul to the southern part of the city. Charges were set for one- and two-occupant private vehicles (including driver) and collected in both directions per entry or exit from 7:00 a.m. to 9:00 p.m. during weekdays and from 7:00 a.m. to 3:00 p.m. on Saturdays. Private cars with three or more passengers, taxis, and all kinds of buses, vans and trucks were exempted from charges, as was all traffic on Sundays and national holidays.

In the two years following commencement of the congestion pricing scheme, there was a 34 per cent reduction in peak-period passenger vehicle volumes, the average travel speed increased by 50 per cent, from 20 to 30 km/h, and the number of toll-free vehicles increased substantially in both corridors. On the alternative routes, traffic volumes increased by up to 15 per cent, but average speeds also increased as a result of improved flows at signalised intersections linked to the Namsan corridors and increased enforcement of illegal on-street parking on the alternative routes.

The whole of the annual revenue from the two tunnels (equivalent to about \$15 million) goes into a special account used exclusively for transport projects, including transport systems management and transport demand management measures throughout the city.

Source: Hwang et al. (1999), quoted in World Bank (2002).

The biggest challenge for the regulating authority will be to evolve a price policy so as to balance equitably the demands of a very heterogeneous passenger travel market in urban areas. In the presence of economic growth, increasing use of personalised transport is one of the key reasons for the growing urban transport problems including that of increased energy consumption. In cities, there is heavy demand for road space combined with undercharging for its use, thus contributing to shortfall in resources to support the investments in urban transport infrastructure. A shift from personal vehicles to other mass transit and non-motorised modes is also necessary to reduce energy demand from cities. As established in the introduction, one role of prices is to allocate resources; the other to raise revenue.

Urban transport pricing is however complicated by the multiplicity of objectives and by the institutional separation of road infrastructure from operations, of infrastructure pricing from charging, and of roads from other modes of transport¹³¹. In the interests of urban transport integration and sustainability, a move towards prices that reflect full social costs for all modes; to a targeted approach to subsidisation reflecting strategic objectives; and to an integration of urban transport funding are desirable. This means that public transport fares should reflect the extent to which road infrastructure is adequately charged¹³². Congestion pricing, fuel tax,

and parking fees are methods that have been applied in practice to charge for urban transport infrastructure and this should be reflected in the pricing for public transport modes (Box 6.11).

To the extent there are non-commercial objectives imposed on suppliers of public transport services, these should be compensated directly and transparently by the government. Efficiency demands that transport operators should operate competitively, whether they are public or privately owned. Overall, pricing and financing regimes for individual transport modes should be designed within an integrated urban transport strategy. This means that the institutional arrangement transcending traditional modal barriers and vertical integration from local to national levels.

For the proposed MUTA to be successful therefore, skills in planning, design, management and in regulation of urban transport are essential. Urban transport professionals, as a rule, are not employed by cities. Given the paucity of transport professionals in India, capacity building is crucial. It will be an ongoing effort and hence this activity ought to be institutionalised. A pool of professionals should be developed through academic institutions for employment by agencies responsible for urban transport. Data deficiencies in UT, as in the roads sector, are enormous and diminish the quality of policy advice.

131. World Bank (2002).
132. Ibid.

Restructuring of erstwhile monopolies and introducing competition are necessary but not sufficient conditions to improve technical performance of transport sectors. There will be limits to competition due to the high initial and 'lumpy' investment in fixed facilities.

A beginning has been made by Ministry of Urban Development to set up a central 'knowledge management and database centre' in the central government with the help of UNDP. It is necessary that collection of data in this sector also be institutionalised. In the future similar database centres should be set up by state governments and independently by some large cities as well. The Institute of Urban Transport should be strengthened as a central repository of information and to provide support to cities. Above all, MUTA should be a statutory autonomous body with full technical and financial authority and accountable for its decisions.

The regulatory functions of pricing, standards and demand management could be entrusted to a specialised independent body, subject to the caveat that 'regulatory proliferation' in India has been criticised as a strategy aimed at defending specific interests rather than improving sector outcomes. We return to this point in the conclusions. In case these regulatory functions are to be handled separately, independent regulators at the state and national level along the lines of Public Utility Commissions in the US is recommended. Inter-state disputes relating to UT can be addressed by the national government.

SUMMARY OF KEY RECOMMENDATIONS

NEED FOR REGULATION

The combination of extensive economies of scale and scope that generally lead to market concentration and limit competition, the large sunk costs relative to fixed and variable (avoidable) costs and the fact that transport services are deemed essential to a broad range of users, make regulation absolutely essential in the provision of these services. While transport infrastructure facilities (rights of way, track, terminals and associated traffic management) involve heavy upfront investment and display significant economies of scale, service provision (conveyance of passengers and freight) varies from being monopolistic (railways) to competitive (trucking and bus services).

The prospects for competition have changed with technological progress and new ways of provision. Horizontal and vertical unbundling can help separate

the potentially competitive components from the natural monopoly segments in transport. As a result, trucking services are provided almost exclusively by the private sector in most countries. Besides, certain services are entirely similar to private goods, such as urban bus transport, while others such as port, air and rail services may be private or 'club goods' depending upon congestion. Many countries that have implemented economic reform in transport have sought to increase the role of the private sector in the provision of both transport infrastructure facilities and services. Introducing private sector participation in transport does not eliminate the need for regulation; in fact, it accentuates the role of effective regulation and regulatory institutions. For instance, the introduction of private sector participation in the power and telecommunications sectors in India heightened the need for effective regulation and regulatory institutions in India as these forms of policy influence replaced the mandate that ownership offers. Most parts of the transport infrastructure, and all transport services can now be classified as private goods, albeit with potential for market failure. However, it is crucial to recognise that it is regulation embedded in the local context, rather than ownership which is vital to achieving public policy goals.

Market failures are pervasive and yet it is not clear that where the market has failed, government through its several instruments will be able to improve the outcomes. The reform will have to be carefully calibrated based on available evidence. It is now clearly established that restructuring of erstwhile monopolies and introduction of competition (where possible) are necessary but not sufficient conditions to improve the technical performance of transport sectors. Even after restructuring, there will be limits to competition in certain segments of the transport sector, due to the high initial and 'lumpy' investment in fixed facilities. In addition, we know that the availability and quality of infrastructure services are often highly politicised and corruption is widespread. The problem of market power in provision combined with the temptation for political interference means that the unfettered market will inevitably lead to socially suboptimal outcomes if pricing and investment decisions are left unregulated. Independent regulation also possesses the advantage of potentially limiting political convenience.

Congestion is an externality that is customary on urban roads especially during peak hours. It is however not the only externality that transport infrastructure and services create. Decisions about infrastructure investment, for example in roads versus public transport, rail, and waterways affect energy efficiency and thus India's prospects for energy security and fiscal health. The current allocation of freight traffic between road and rail is one such negative externality. Transport services and

choice of vehicle and fuel affect air pollution, which in turn negatively affects public health. Transport safety is also an externality from investments in particular forms of infrastructure as well as an ‘invisible’ aspect of service delivery. Regulation is thus required to reduce incentives to cut corners in parts of service provision that customers cannot readily assess when choosing which services to purchase.

As a result, regulation of various parts of the transport network is needed for various reasons: to limit the potential monopoly power exercised by owners of networks with high capital costs; manage congestion, air pollution, and other negative externalities from use of transport networks; achieve positive externalities including network effects; and motivate investments in ‘invisible’ consumer goods such as safety. Regulation can be used to encourage extension of access to infrastructure and services to lower-income or remote services, though other instruments such as subsidies to providers or targeted transfers.

One of the main goals of regulation are to induce firms to produce the service at the lowest possible costs to align prices with costs so that firms do not make super normal profits which they could without appropriate regulation. Given the growing use of PPP contracts in transport, an increasing role for the regulator will also be to ensure compliance with the PPP contracts. The challenge is considerable; not only because of the complexity and that it requires a learning process, but also because of the lack of a regulatory tradition and track record, scarcity of expertise, and weak formal and informal norms protecting private rights. This problem is everywhere since private participation in transport infrastructure is still an evolving phenomenon.

CROSS-CUTTING THEMES

Designing good regulatory institutions is a non-trivial task. Attributes such independence, transparency, accountability, expertise, legitimacy and credibility are the foundation on which the new regulatory institutions should be created within the scope of local legal tradition. No doubt this is a challenge, but one that will be an important causal factor in determining the future quality of our transport services. Effective regulatory institutions must be designed to provide credible commitments for investors who incur large sunk costs, they should protect consumers from excessive prices and poor-quality service and devise a strategy for achieving universal service goals. Besides, safety and social regulations to reduce health and environmental impacts are now integral to good regulatory institutions. By its very nature, setting and enforcing standards is an integrated activity involving multiple interventions. These interventions need to be combined and imple-

mented in an integrated manner to derive the maximum benefits from each intervention.

India’s regulatory capacity in each of these areas requires strengthening to achieve minimum capabilities. Institutional capacity has been weak, as it has in many emerging markets. A unitary Transport Ministry is a vital step towards good regulatory design along with independent regulatory institutions in each transport sector that includes a separate dispute settlement arrangement. Ministries are reluctant to relinquish control of the sector since it serves short-term political goals. Political constraints and ministerial preferences over time seem to have dominated the reform agenda in different infrastructure sectors. It is time to recognise that institutionalising a robust regulatory philosophy based on a framework with adequate capacity is a necessary, although not sufficient, condition for accelerated and sustainable growth. Evidence shows that regulatory strengthening must also happen before restructuring of ownership or lifting of controls on private participation.

Independence implies shielding regulatory agencies from political pressure to the extent possible. The regulatory agency should be given functional autonomy in its day-to-day activities while the Ministry issues only broad policy guidelines and directives. Legitimacy on the other hand, requires the regulatory agency to follow a transparent consultative process of decision making with opportunities for judicial review. In practice this means holding open house discussions and posting consultation documents on the regulators website. This enables the regulator to collect evidence and also take account of the views of those who have an interest in the outcome. Consultation is an essential part of regulatory accountability—and it has now become intrinsic to the regulatory process. Judicial review of regulatory decisions is a reasonable safeguard to regulatory authority.

Financial autonomy is often linked to regulatory independence. In India, this has not been the practice since regulatory institutions are supported by budgetary allocations that can compromise independence. TRAI’s request for independent funding through a percentage of the revenues of regulated firms has not been accepted by the government.

Financial autonomy is often linked to regulatory independence. In India, this has not been the practice. Depoliticising the regulatory process will therefore remain an important long-term goal in the transport sector.

Regulatory structures in India have often become a liability due to multiple reasons, such as lack of capacity, a narrow and isolated approach, lack of independence and unclear mandates, besides human capital deficiencies.

Depoliticising the regulatory process will thus remain an important long-term goal in transport. Financial autonomy however may or may not guarantee independence. An additional safeguard to prevent 'political capture' is to make appointment processes transparent and grounds for removal clear and structured for all regulatory institutions. Thus, legislation should guarantee stringent conditions for removal of any Authority Member or Chairman.

As independent regulation becomes more the norm, questions about institutional design will arise, namely: should regulation and dispute resolution institutions be created for each sector and sub-sector, or should certain functions be consolidated across sectors? India's piecemeal approach to infrastructure reform has led to the proliferation of regulatory bodies and tribunals. 'Regulatory proliferation' is seen as creating continued employment for the bureaucrats and judges, while professionals with technical expertise have been conspicuous by their absence. Commissions tend to be made up of retired civil servants or retired judges. This is worrisome and therefore it is vital to create a cadre of professional regulators with technical expertise for the complex tasks of managing the regulatory processes.

The alternative to sector-specific regulation is a single-umbrella transport regulator with specialised departments, or multi-industry regulators. The primary argument in favour of the single-industry regulatory agency approach is that it ensures deep technical and economic expertise about the attributes of the industry within each agency's regulatory jurisdiction, and that this in turn leads to more effective regulatory decisions. The arguments in favour of a multi-industry or super transport regulator include wide-ranging deployment of common skills avoiding unnecessary duplication, opportunities for cross-learning and adoption of new practices across different sectors. Most importantly, it checks the potential for capture of the regulatory agency by single interest groups, especially the firms that are being regulated. There is enough overlap in regulatory issues to make it possible for a single agency to regulate transport. The thematic commonality across the different transport sectors suggests that adopting a multi-industry regulator might make the regulatory process more efficient and transparent, but it will be a lot more difficult to implement in the short term given enormous vested interests. A unitary Transport Ministry and/or a multi-industry

regulator, despite its attractiveness, is therefore neither feasible nor practicable to adopt immediately in India. It will require significant legislative changes but should however remain a long term vision.

The Competition Commission of India (CCI) will remain the body to resolve anti-trust and competition-related issues. While elements of competition oversight are common across sectors, there is a delicate balance between, judicial review of regulatory decisions and enforcement of anti-competitive actions by industry players. The boundaries between CCI jurisdiction and the sector regulators will have to be established over time by precedent. It is also important to strengthen the CCI and create sub-groups with technology expertise would be a more flexible structure to be able to adapt as technology changes.

KEY IN-PRINCIPLE SECTOR RECOMMENDATIONS

Each transport sector in India is beset with numerous legislations. It is therefore imperative to simplify the legal structure. This has begun to happen in sectors such as ports and civil aviation, but clearly a lot more needs to be done. Existing sector-specific enactments need to be unified into a single statute. This will simplify procedures and make compliance easier. Certain sections of the existing acts which are anachronistic would also have to be deleted and even some of the acts repealed. But such unification may not be an easy task, and cannot be achieved within a short period of time. The process of private sector participation should not however be held up, pending completion of the work.

Unification of the legislations must be supplemented by the setting up of a statutory regulatory agency for each transport sector as detailed here. The primary regulatory need for railways is independent price regulation to reduce the persistent cross-subsidisation between freight and passenger services and begin to restore shift freight traffic toward railways. Thus, creating a Railways Tariff Regulatory Authority to provide 'a level-playing field to all stakeholders' is a major recommendation, also of various other committees including the Rakesh Mohan Committee on Railway Reform in 2001, the Sam Pitroda-headed Expert Committee on Railway Modernisation and by the Planning Commission. In addition, an independent dispute settlement tribunal could also be created with the existing Railway Rates Tribunal (RRT) charged with this mandate. Over time, as policy opens more opportunities for private participation in railway services, the regulatory framework will need to ensure competitive access to trunk lines and include social regulation to reduce environmental impacts and increase safety.

Road transport includes a number of regulatory challenges including managing PPPs in road construction; increasing safety and reducing environmental impact of road-based transport; ensuring competition in road transport services, and potentially using regulation among other tools to ensure widespread access to road transport. The PPP option is on the agenda for all transport infrastructure, but particularly for roads in which technology is more straightforward and project structures can be replicated as 'model documents'. Expert regulation is particularly important for resolving disputes after the concession. In addition, functions such as tariff setting, regulation of service quality, assessment of concessionaire claims, collection and dissemination of sector information could be performed by an independent body with expert staff tasked with making technical decisions. They should also ideally have incentives to serve long terms that allow the creation of a deep base of expertise and experience and like Bureau of Public Roads of the US, and should be shielded from direct political influence while simultaneously building a culture of professionalism. Separately existing institutions at the Centre and states, including the NHAI should be strengthened.

The primary regulatory priority for Indian ports is to unify national and state regulatory structures. The existing regulatory framework, comprising many regulators and multiple legislations is complex and needs simplification to enhance integration and improved coordination. India needs legislation which is *inter alia* compatible with the functioning of a market-oriented economy and the global character of the maritime transport. A new set of incentives needs to be put in place as part of regulatory restructuring. The existing Ministry-centric port management system is a complex bureaucratic process and distorts incentives.

The jurisdiction of TAMP extends to Major Ports only. Over time, with more competition between ports and within ports (intra-port), the role of TAMP will necessarily undergo a change. Tariff regulation by exception rather than by rule should be the operating principle and its role transformed to limiting abuses of competition and applicable to all commercial ports in the country. This might create overlapping jurisdiction between the new TAMP and the economy-wide competition regulator i.e., the CCI, but this is not unusual for sectors that have a specific regulator. At the state level, a regulatory agency should also be set up to exercise oversight on Non-Major Ports in that state.

For civil aviation, a central regulatory agency called Civil Aviation Authority (CAA) should be created replacing the existing DGCA and AERA. Similar to other infrastructure sectors, multiple regulations and overlapping jurisdictions between institutions cause confusion and delays. CAA

will consolidate the existing fragmented regulatory functions and combine economic, technical, safety, environment and consumer protection regulation. A dispute settlement body separate from the CAA will serve to fast-track disputes in the sector. The relationship between the sector-specific dispute settlement authority and the CCI will evolve over time and should be guided by the same principles that underpin this institutional relationship in other sectors.

Urban transport is a key urban service that imparts efficiency by providing mobility to the workforce in the city and hence productivity. Among all transport infrastructures in India, UT is easily the most complex. UT is made up of about 20 components and is currently managed by as many agencies. The governance structure for UT is fragmented and the division of responsibility among the various agencies is unclear.

Modern legislation for integrated UT is necessary to replace the antiquated structure. Regulatory structures in India have often become a liability due to multiple reasons, such as lack of capacity, a narrow and isolated approach, lack of independence and unclear mandates, besides human capital deficiencies. The key is to create a strong local coordination authority backed by different levels of government. The city should carry the primary responsibility for UT and the role of the centre and state should gradually get reduced. Decentralisation should be engendered by legislation and a dedicated Metropolitan Urban Transport Authority (MUTA) should be set up in each city with population in excess of 1 million and dedicated cells in smaller cities for integrated planning and coordination and delivery of urban transport services.

Many governments implementing economic reform in recent years, including India, have increased the role of the private sector in provision of transport infrastructure and services recognising that under normal circumstances, the role of the state should be one of broad policy formulation and regulatory oversight. Ownership and operation by the public sector should be in extreme cases of market failure such as for infrastructure that is financially unviable and has high social value. At the same time, a robust regulatory governance structure is needed to ensure gains from the transition to this new model. Attributes of a good governance structure include *sufficient political and financial autonomy for the institutions charged with regulating the sector; structures for decision making that constrain regulatory discretion; adequate access to regulatory means, including legal provisions for effective enforcement of decisions; and efficient rules of accountability and review.*

Given the socio-economic-political context, robust institutions for regulatory governance in transport

will no doubt take time, first to create and then for these to mature and gain legitimacy in India. Merely delegating regulatory powers, including enforcement, may not be enough to minimise regulatory risk. But good decisions are more likely if regulatory design is sound. Badly designed regulatory and legal institutions can become a source of performance problems. For example, the improper design of regulatory and ownership structures are believed to be major causes of poor performance in sectors such as gas, electric-

ity and transportation leading to significant economic costs to the order of 1 per cent of GDP. The guiding principles of good regulatory institutions include independence, transparency, accountability, expertise, credibility and legitimacy. Although independent regulation in India is relatively new, there is a wealth of evidence from the telecom and power sectors that can help design and implement a performance enhancing regulatory mechanism for transport that emphasises local needs and the local context.

Annex

Total Investment Commitments in PPI Projects in Transport Sector

[in current \$ Million]

INVESTMENT YEAR	ARGENTINA	INDIA	CHINA	INDONESIA	BRAZIL	SOUTH AFRICA	COLOMBIA	RUSSIAN FEDERATION	TURKEY	CHILE
1990	2,088	1.9	173	116	-	0	-	-	-	-
1991	214	-	2,378.8	10.8	-	-	-	-	-	-
1992	814.7	-	532.6	114.5	-	-	40	0	-	-
1993	1,439.6	-	1,172	351.5	-	0	260.1	0	-	93.4
1994	940.5	125	2,086.1	26.7	328.1	-	518.9	0	20	27
1995	621.2	-	309.3	502.8	989.3	-	195.8	0	-	419.5
1996	930	182	5,084.42	-	4,357.2	-	148.9	-	85	190.4
1997	1,195	405	3,092.74	-	4,048.3	426	48.8	0	305	1,949.1
1998	1,911.3	301.6	1,670.5	-	7,808.7	165.7	284	406	-	168
1999	2,345	466.7	695.55	1,028	53.9	794.7	-	-	-	367.6
2000	129.8	96.4	1,558.5	-	1,373	3.7	1,047.7	109.4	-	201.5
2001	63.5	350.8	642.23	-	917.2	484	60.5	-	-	2,340.6
2002	6.9	719.17	1,787.11	-	157.8	-	10.8	-	-	1,045
2003	0	579.14	4,054.65	0	107.8	17	110.4	-	85	18
2004	3.4	1,141.4	782.58	159.2	224.2	-	26	0	155.6	791
2005	-	1,526.51	6,628.9	-	376.5	-	242	-	2,848.2	434.6
2006	337	10,028.47	8,351.01	372	233.5	3,483	672.36	144	217	147
2007	728.7	3,924.92	4,494.38	1,139.5	3,336	-	474	23	2,578	423
2008	331	5,423.65	436.75	-	9,967.1	-	956	24	1,491.5	260.1
2009	5.89	4,871.75	2,512.87	220	8,550.3	-	-	-	0	290
2010	0	14,220.87	-	-	1,440.8	-	2,359	4,595.9	332.7	823
2011	0	16,087.4	1,012.09	-	4,057.2	97	-	4,284.6	1,740.35	282
Cumulative Total	14,105.49	60,452.68	49,456.08	4,041	48,326.9	5,471.1	7,455.26	9,586.9	9,858.35	10,270.8

Source: World Bank and PPIAF, PPI Project Database (<http://ppi.worldbank.org> [accessed on 8 August 2012]).

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ANNEXES TO PREFACE

ANNEX P.1

CONSTITUTION & TERMS OF REFERENCE OF THE COMMITTEE

F. No. 571/2/3/2010-Cab.III
Government of India
Cabinet Secretariat
Rashtrapati Bhawan

New Delhi, the 11th February, 2010

OFFICE MEMORANDUM

Subject: Setting up of the National Transport Development Policy Committee as a High Level Committee.

It has been decided to constitute a High Level Committee, the National Transport Development Policy Committee (NTDPC) under the chairmanship of Shri Rakesh Mohan who will hold this assignment in an Honorary capacity with the status of a Minister of State.

2. The Terms of Reference of the Committee will be as under: -

- (i) To assess the transport requirements of the economy for the next two decades in the context of economic, demographic and technological trends at local, national and global levels.
- (ii) To recommend a comprehensive and sustainable policy for meeting the transport requirements keeping in view the comparative resource cost advantages of various modes of transport i.e. road, rail, air, shipping and inland water transport with a special focus on the modes that have developed less than economically desirable and the need to:
 - (a) encourage a rational mix of various modes of transport in order to minimize the overall resource cost to the economy,
 - (b) ensure balance between the ability of transport to serve economic development and to conserve energy, protect the environment, promote safety, and sustain future quality of life,
 - (c) ensure universal rural connectivity,
 - (d) address the special problems of remote and difficult areas on the one hand and of urban and metropolitan areas on the other, and

- (e) adopt and evolve suitable technologies for cost effective creation, economical maintenance and efficient utilization of transport assets.
- (iii) To assess the investment requirements of the transport sector and to identify the roles of state and private sector in meeting these investment needs and to suggest measures for greater commercial orientation of transport services. In this context the Committee should pay particular attention to reviewing the experience with the PPP approach or suggest ways of modifying it further.
- (iv) To examine the laws, rules and regulations pertaining to various modes of transport and traffic and to suggest measures for strengthening their enforcement in the interest of the community and streamlining the procedures and processes in line with the needs of a fast growing modern economy.
- (v) To identify areas where data base needs to be improved in order to formulate and implement policy measures recommended by the Committee.
- (vi) To suggest measures to improve the capacity to evolve and implement projects.
- (vii) To suggest measures for implementing various components of the recommended policy within a specified time frame.
- (viii) To recommend any other measure which the Committee consider relevant to the items (i) and (vii) above.

3. The Committee may get special studies carried out by expert bodies. The Headquarters of the Committee will be at New Delhi. The Committee may visit such places and consult such stakeholders and experts as may be considered necessary for its work. The tenure of the Committee shall be 18 months.

4. The Committee will be serviced by the Planning Commission.

5. The composition of the NTDPDC shall be as under: To

Chairman

Shri Rakesh Mohan
(in Honorary capacity, with status of MoS).

Members:

Chairman, Railway Board
Secretary, Ministry of Urban Development
Secretary, Ministry of RT&H
Secretary, Ministry of Civil Aviation
Secretary, Ministry of Shipping
Secretary, Department of Financial Services
Secretary, Ministry of Coal
Secretary, Ministry of Power
Secretary, Ministry of Petroleum & Natural Gas
Adviser to DCH, Planning Commission
Chairman, RITES

Asian Institute of Transport Development
Shri K.L. Thapar, Chairman,

Former Chairman, Railway Board
Shri M. Ravindra

Former Secretary, Transport & Shipping
Shri S. Sundar

Former DG, Ministry of Road Transport & Highways
Shri D.P. Gupta

Indian Institute of Technology, Delhi
Prof. Dinesh Mohan

M.D., Great Eastern Shipping
Shri Bharat Sheth

MD, IDFC
Shri Rajiv B Lall,

Infosys Technology
Shri Mohandas Pai

AFL Group
Shri Cyrus Guzder, Chairman

Member Secretary
Shri B.N. Puri

Sd/-

(Puneet Agarwal)
Deputy Secretary
Tele : 23016576

Chairman and Members of the Committee

Copy forwarded to:-

(1) Smt. Sudha Pillai, Secretary, Planning Commission.

(2) Shri Davinder P.S. Sandhu, Director, Prime Minister's Office with Reference to their U.O. No. 430/31/C/12/2010-ES.I, dated 9.2.2010.

Sd./-

(Puneet Agarwal)

Deputy Secretary

Tele : 23016576

ANNEX P.2

WORKING GROUPS

1. RAILWAYS

No.-3/1/2010-Tpt
GOVERNMENT OF INDIA
Planning Commission
National Transport Development Policy Committee (NTDPC)

Capital Court, Olof Palme Marg
Munirka, New Delhi-110067
Dated: 19th July, 2010

Subject: Working Group on Railways for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Railways Sector. The Composition and Terms of references of the Working Group are as under:

1. Composition

- 1 Chairman, Railway Board - Chairman
- 2 Shri K.L. Thapar, Member, NTDPDC
- 3 Shri M. Ravindra, Member, NTDPDC
- 4 Member Secretary/Co-ordinator, NTDPDC
- 5 Ms. Sowmya Raghavan, Financial Commissioner of Railways.
- 6 Member Traffic, Railway Board
- 7 Adviser (Infrastructure), Railway Board
- 8 MD, Container Corporation of India (CONCOR)
- 9 Professor S. Sriraman, Walchand Hirachand Professor of Transport Economics, University of Mumbai
- 10 Dr. Ram Singh, Associate Professor, Delhi School of Economics, New Delhi.

- 11 Shri S.K.N. Nair, Sr. Consultant, National Council for Applied Economic Research (NCAER), New Delhi
- 12 Shri Saurabh Srivastava, Chairman, CA Group
- 13 Shri R. Gopalakrishnan, Executive Director, Tatasons.
- 14 Representative of financial sector (nominated by Secretary, Department of Financial Services)
- 15 Representative of IT Sector
- 16 Shri S.K. Mishra, Executive Director/Traffic/PPP- Convenor

2. Terms of Reference

1. Determine the role of railways in meeting transport requirements of the Indian economy over the next two decades, keeping in view the need to
 - a. Conserve energy and protect the environment,
 - b. Promote safety, sustain future quality of life and reduce logistics costs,
 - c. Create an optimal intermodal mix.

The group may also keep in view the recommendations of various committees including those of National Transport Policy Committee, 1980, and the Expert Group on Railways, 2001.

2. Estimate the share of railways in total transport in 2020 and 2030 consistent with the role envisaged for Railways and the projected macro-economic scenario.

3. Estimate:

- a. Passenger traffic for the year 2020 and 2030 along with broad break-up of passenger traffic in terms of long distance (1000 km and above), overnight, intercity (250 km to 1000 km), local and suburban in both premium and value segments.
- b. Freight traffic for the year 2020 and 2030 including expected composition in terms of specific segments and leads.

4. Consistent with the above, assess the current capacity and recommend the magnitude and type of capacity creation/augmentation/modernization required in the railway system. The following aspects may also be kept in view while assessing the requirements:

- a. Special problems of remote and underdeveloped areas including the north-east region.
- b. Rail connectivity with power plants, water fronts and mines.
- c. Rail connectivity with neighbouring countries.
- d. Development of regional and international railway corridors.

5. In light of the above,

- a. Assess the investment required to achieve the projected traffic growth.
- b. Identify sources of funding and assess fund requirements from budgetary, non-budgetary and private sources for different areas in rail infrastructure.
- c. Identify areas for PPP and the requirement of private and public funding in these areas.
- d. Examine the existing PPP policy framework and policy initiatives including regulatory and institutional framework and suggest changes necessary to attract greater private investment.
- e. Suggest measures for greater commercial orientation of railways.

6. Assess the full costs of rail transport, including the costs of externalities, and suggest appropriate pricing regimes for various transport products in both passenger and freight traffic, including institutional arrangements for rational pricing.

7. To suggest policy framework for provision of rail connectivity to remote areas and under developed areas.

8. Estimate the energy requirements necessary for rail infrastructure and suggest measures to put the railways sector on a sustainable low carbon path and promote energy efficiency, emission reduction and environment protection.

9. Suggest the role of railways in promoting the development and growth of integrated logistics solutions and reduction in intermodal interface impedances. This would include the development of sustainable integrated rail/road, rail/air, and rail/port transport systems.

10. Assess the availability of human resources for the railways and suggest measures for skill development and institutional capacity building for various stakeholders.

11. Suggest measures for promotion of research and development and technology upgradation in the railways, including institutional development.

12. Indicate broad areas and investment for IT in the railways to improve customer interface/satisfaction and internal efficiency.

13. Examine the issue of land availability as a critical resource and technological solutions to reduce potential land requirements. Also, suggest measures for speedy acquisition of land for railway infrastructure, along with rehabilitation and resettlement of persons affected.

14. Identify data deficiencies in railway sector and suggest measures for improving, maintaining and updating the database, including institutional measures.

15. Suggest broad areas for business process re-engineering in railways to improve its customer and business orientation as well as project execution capability.

16. Study and evaluate the international experience in rail transport with particular stress on institutional design, business strategies and freight and passenger transport products (heavy haul high speed and customer focused services), quality of service (reliability, speed, elimination of accidents), productivity and technology and development of competitive world class rail equipment industry and its relevance to IR.

3. Additional guidance for the Working Group

- a. The Group may get special studies carried out by experts.
- b. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.
- c. The Group may examine the laws, rules and regulations pertaining to roads in connection with the TOR above and suggest legal, organizational, institutional and procedural reforms as necessary.

4. The Chairman may co-opt up to two additional members.

5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Railways.

6. The Working Group shall submit its report within nine months.

7. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDPC. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDPC
2. All the Members of the Working Group

2. ROADS

No.-3/1/2010-Tpt.
GOVERNMENT OF INDIA
Planning Commission
National Transport Development Policy Committee (NTDPC)

Capital Court, Olof Palme Marg
Munirka, New Delhi-110067

Dated: 19th July, 2010

Subject: Working Group on Roads for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Roads Sector. The Composition and Terms of references of the Working Group are as under:

1. Composition

- 1 Secretary (Road Transport & Highways)-Chairman
- 2 Shri S. Sundar, Member, NTDPC
- 3 Shri D.P. Gupta, Member, NTDPC
- 4 Member Secretary/Co-ordinator, NTDPC
- 5 Chairman, National Highway Authority of India (NHAI)
- 6 Director General, Roads, Ministry of Road Transport & Highways
- 7 Principal Secretary (Transport), Government of Andhra Pradesh
- 8 Principal Secretary (PWD), Government of Assam
- 9 Joint Secretary (Road Transport), Ministry of Road Transport & Highways.
- 10 Joint Secretary (Rural Roads), Ministry of Rural Development
- 11 Professor Geetam Tiwari, Indian Institute of Technology, Delhi
- 12 Shri Partha Mukhopadhyay, Centre for Policy Research, New Delhi.
- 13 Shri Athar Shahab, Dy. MD, IDFC Projects and Chairman, CII Roads Committee
- 14 Shri O.B. Raju, MD, GMR Highways Pvt. Ltd., Bengaluru.
- 15 Shri Parvesh Minocha, MD, Transportation Division, Feedback Ventures
- 16 Representative of financial sector (nominated by Secretary, Department of Financial Services)
- 17 Representative of IT sector
- 18 Adviser (Transport Research), Ministry of Road Transport & Highways - Convenor.

2. Terms of Reference

1. Determine the role of road transport in meeting transport requirements of the economy over the next two decades, keeping in view the need to
 - a. Conserve energy and protect the environment,
 - b. Promote development of remote and inaccessible areas through universal connectivity,
 - c. Promote safety and sustain future quality of life,
 - d. Create an optimal intermodal mix.
2. Estimate the growth in road traffic, passenger and freight, by 2020 and 2030 in the context of economic, demographic and technological trends at local, national and global levels.
3. Consistent with the above, assess the current capacity and required capacity in future, of the physical road infrastructure. The requirements may be grouped into different categories:
 - a. Expressways
 - b. National Highways
 - c. State Highways and Major District Roads
 - d. Rural Roads – both PMGSY and non-PMGSY (urban road requirements would be addressed by the working group on urban transport).

The following aspects may also be kept in view while assessing the requirements:

- a. Universal rural connectivity.
 - b. Special problems of remote, difficult and border areas including the north-east region.
 - c. Road connectivity with ports, power plants, water fronts.
 - d. Road connectivity with neighbouring countries.
 - e. Development of regional and international road corridors.
4. In light of the above,
 - a. Assess the investment required to achieve the projected road traffic growth.
 - b. Identify sources of funding and assess fund requirements from budgetary, non-budgetary and private sources for different areas in road infrastructure.
 - c. Identify areas for PPP and the requirement of private and public funding in these areas.
 - d. Examine the existing PPP policy framework and policy initiatives including the regulatory and institutional framework, and suggest changes necessary to attract greater private investment.
 - e. Suggest measures for greater commercial orientation of road transport services.
 5. Assess the full costs of road transport, including the costs of externalities, and suggest appropriate pricing regimes, both direct and indirect,

including institutional arrangements for rational pricing.

6. Estimate the energy requirements necessary for road infrastructure and suggest measures to put the road construction and road transport sector on a sustainable low carbon path, promoting energy efficiency, emission reduction and environment protection.
7. Review status of road quality and safety measures and ways to ameliorate road accidents and make roads more user friendly.
8. Assess the availability of human resources for the road sector and suggest measures for skill development and institutional capacity building for various stakeholders.
9. Suggest measures for promotion of research and development and technology upgradation in the road transport sector, including institutional development.
10. Indicate broad areas and investment for IT in road transport to improve customer interface/satisfaction and internal efficiency.
11. Suggest measures for speedy acquisition of land for roads, along with rehabilitation and resettlement of persons affected.
12. Identify data deficiencies in road transport and suggest measures for improving, maintaining and updating the database, including institutional measures.
13. Assess the current industry structure, including the role played by the public and private sectors and suggest policies to promote adequate competition in road transport with the objective of enhancing access and affordability.
14. Examine the barriers to free flow of road freight traffic and suggest measures to promote seamless movement of road freight across India, including in particular the use of IT.
15. Suggest measures towards consolidation and preservation of road assets.
16. Identify social disconnects arising out of construction of roads and suggest measures for their mitigation.
17. Suggest measures for upgrading and modernizing the trucking industry.

3. Additional guidance for the Working Group

1. The Group may get special studies carried out by experts.
2. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.
3. The Group may examine the laws, rules and regulations pertaining to roads in connection with the TOR above and suggest legal, organizational, institutional and procedural reforms as necessary.
4. The Chairman may co-opt up to two additional members.
5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Road Transport and Highways.
6. The Working Group shall submit its report within nine months.
7. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDPC. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDPC
2. All the Members of the Working Group

3. CIVIL AVIATION

No. 3/1/2010-Tpt.
GOVERNMENT OF INDIA
Planning Commission
National Transport Development Policy Committee
(NTDPC)

Capital Court, Olof Palme Marg
Munirka, New Delhi-110067
Dated: 19th July, 2010

Subject: Working Group on Civil Aviation for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Civil Aviation Sector. The Composition and Terms of references of the Working Group are as under:

1. Composition
 - 1 Secretary, Ministry of Civil Aviation — Chairman
 - 2 Shri K.L. Thapar, Member, NTDPC
 - 3 Shri Cyrus Guzder, Member, NTDPC
 - 4 Member Secretary/ Co-ordinator, NTDPC
 - 5 Managing Director, National Aviation Company of India Limited
 - 6 Director General, Civil Aviation
 - 7 Chairman, Airports Authority of India
 - 8 Dr. Shashanka Bhide, Senior Fellow, National Council for Applied Economic Research (NCAER), New Delhi.
 - 9 Shri Rakesh Gangwal, Former Chairman and CEO, US
 - 10 Capt. G.R. Gopinath, CMD, Deccan 360.
 - 11 Shri Sanat Kaul, Chairman, International Foundation for Aviation and Aerospace Development.
 - 12 Shri Sanjay Reddy, MD, GVK, Mumbai & Bengaluru International Airports.
 - 13 Representative of financial sector (nominated by Secretary, Department of Financial Services)
 - 14 Shri U.G. Krishna, GM, ECTI, Wipro Limited.
 - 15 Joint Secretary, Ministry of Civil Aviation-Convenor
2. Terms of Reference
 1. Determine the role of air transport in meeting transport requirements of the economy over the next two decades, keeping in view the need to
 - a. Conserve energy and protect the environment,
 - b. Promote development of remote and inaccessible areas,
 - c. Promote safety and sustain future quality of life,
 - d. Create an optimal intermodal mix.

2. Estimate the growth in air traffic by 2020 and 2030 in terms of both passengers and freight by:
 - a. Total volume of traffic, domestic and international.
 - b. Domestic origin – destination pairs.
 3. Consistent with the above, assess the current and the required capacity in future, of civil aviation sector:
 - a. Aircraft fleet
 - b. Infrastructure in terms of
 - i. On the ground, including airport terminals, runway capacity, apron – parking space, access to terminal buildings etc.
 - ii. Airspace and air traffic control.
 - iii. Creation of additional/greenfield airport infrastructure and its role in promoting regional development.
 4. In light of the above,
 - a. Assess the investment required to achieve the projected air transport traffic growth.
 - b. Identify sources of funding and assess fund requirements from budgetary, non-budgetary and private sources for different areas in air transport.
 - c. Identify areas for PPP and the requirement of private and public funding in these areas.
 - d. Examine the existing PPP policy framework and policy initiatives including the regulatory and institutional.
 5. Assess the full costs of air transport, including the costs of externalities, and suggest appropriate pricing regimes, both direct and indirect, including institutional arrangements for rational pricing.
 6. Estimate the energy requirements necessary for air transport infrastructure and suggest measures to put air transport sector on a sustainable low carbon path and promote energy efficiency, emission reduction and environment protection.
 7. Review the impact of ongoing developments of international air transport in the world and India and suggest changes in policy for India in following areas:
 - a. Licensing of airlines for scheduled, non-scheduled and cargo services.
 - b. Safety, security, economic and environmental issues, keeping in view the recommendations of ICAO, international practices and the conditions in India.
 - c. Taxation policy affecting various sub-sectors of civil aviation, including taxes on aviation turbine fuel.
 8. Assess the current industry structure, including the role played by public and private sector and suggest policies to promote adequate competition in air transport with the objective of enhancing access and affordability.
 9. Assess the availability of human resources for the air transport sector and suggest measures for skill development and institutional capacity building for various stakeholders.
 10. Measures for promotion of research and development and technology upgradation in air transport, including institutional development.
 11. Identify data deficiencies in air transport and suggest measures for improving, maintaining and updating the database, including institutional measures.
3. Additional guidance for the Working Group
 1. The Group may get special studies carried out by experts.
 2. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.
 3. The Group may examine the laws, rules and regulations pertaining to air transport in connection with the TOR above and suggest legal, organizational, institutional and procedural reforms as necessary.
 4. The Chairman may co-opt up to two additional members.
 5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Civil Aviation.
 6. The Working Group shall submit its report within nine months.
 7. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDPCC. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDPCC
2. All the Members of the Working Group

4. PORTS AND SHIPPING

No.-3/1/2010-Tpt.
GOVERNMENT OF INDIA
Planning Commission
National Transport Development Policy Committee
(NTDPC)

Capital Court, Olof Palme Marg
Munirka, New Delhi-110067
Dated: 19th July, 2010

Subject: Working Group on Ports and Shipping for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Ports and Shipping Sector. The Composition and Terms of references of the Working Group are as under:

1. Composition

- 1 Secretary (Shipping) - Chairman
- 2 Shri Bharat Sheth, Member, NTDPC
- 3 Shri Gajendra Haldea, Member, NTDPC
- 4 Member Secretary/ Co-ordinator, NTDPC
- 5 Director General, Shipping
- 6 Director General, Foreign Trade (DGFT), M/o Commerce & Industry
- 7 Additional Member, Planning, Railway Board)
- 8 CMD, Shipping Corporation of India
- 9 Joint Secretary, Ports
- 10 CEO, Gujarat Maritime Board
- 11 MD, Container Corporation of India
- 12 Chief Engineer, Planning, Ministry of Road Transport & Highways
- 13 External Academic Expert
- 14 External Academic Expert
- 15 Shri Jimmy Sarbh, Sarbh Consultancy
- 16 Shri Krishna Kotak, Managing Director, J.M. Baxi & Company
- 17 Shri Thomas Netzer, Director, McKinsey & Company.
- 18 Representative of financial sector (nominated by Secretary, Department of Financial Services)
- 19 Representative of IT Sector
- 20 Adviser, (Transport Research) - Convenor

2. Terms of Reference

1. Review and determine the role of the maritime sector in meeting transport requirements of the economy over the next two decades, keeping in view the need to
 - a. Conserve energy and protect the environment,
 - b. Promote safety and sustain future quality of life,
 - c. Create an optimal intermodal mix.

2. Estimate the potential growth in waterborne traffic by 2020 and 2030 in terms of both passengers and freight by
 - a. Sea borne, Coastal and Inland Water.
 - b. Major ports and non-major ports.
3. Consistent with the above, assess the current capacity and the required capacity in future, maritime infrastructure, including:
 - a. Port infrastructure.
 - b. Shipping.
 - c. Creation of additional port infrastructure or the creation of ports at new, greenfield sites, and their role in promoting regional development.
4. In light of the above,
 - a. Assess the investment required to achieve the projected maritime infrastructure capacity.
 - b. Identify sources of funding and assess fund requirements from budgetary, non-budgetary and private sources for different areas in maritime infrastructure.
 - c. Identify areas for PPP and the requirement of private and public funding in these areas.
 - d. Examine the existing PPP policy framework and policy initiatives including regulatory and institutional framework and suggest changes necessary to attract greater private investment.
5. Examine the regulatory issues including the role of the Tariff Authority for Major Ports (TAMP) and suggest changes in policies concerning ports and shipping.
6. Review the relative role of major and non-major ports and suggest measures for integrated development of the ports sector, including a review of the current legislative provisions.
7. Estimate the energy requirements necessary for port infrastructure and shipping and suggest measures to put water transport sector on a sustainable low carbon path and promote energy efficiency, emission reduction and environment protection.
8. Review the status of rail-road connectivity of ports to the hinterland and make recommendations for development of multi-modal transport systems.
9. Assess the availability of human resources for the maritime sector and suggest measures for skill development and institutional capacity building for various stakeholders.
10. Suggest measures for promotion of research and development and technology upgradation in the

water transport sector, including evaluation of technology trends in global shipping.

11. Indicate broad areas and investment for IT in water transport to improve customer interface/satisfaction and internal efficiency.

12. Identify data deficiencies in water transport and suggest measures for improving, maintaining and updating the database, including institutional measures.

13. Review the processes, productivity and efficiency of ports and shipping development and operations and make appropriate recommendations for their improvement.

3. Additional guidance for the Working Group

1. The Group may get special studies carried out by experts.

2. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.

3. The Group may examine the laws, rules and regulations pertaining to maritime sector in connection with the TOR above and suggest legal, organizational, institutional and procedural reforms as necessary.

4. The Chairman may co-opt up to two additional members.

5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Shipping.

6. The Working Group shall submit its report within nine months.

7. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDP. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDP
2. All the Members of the Working Group

5. URBAN TRANSPORT

No. 3/1/2010-Tpt.

GOVERNMENT OF INDIA

Planning Commission

National Transport Development Policy Committee (NTDPC)

Capital Court, Olof Palme Marg

Munirka, New Delhi-110067

Dated: 19th July, 2010

Subject: Working Group on Urban Transport for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Urban Transport Sector. The Composition and Terms of references of the Working Group are as under:

1. Composition

- 1 Secretary, Ministry Urban Development - Chairman
- 2 Prof. Dinesh Mohan, Member, NTDP
- 3 Shri S. Sundar, Member, NTDP
- 4 Member Secretary/ Co-ordinator, NTDP
- 5 Secretary, Urban Development Department, Government of Maharashtra
- 6 Representative from Railways (urban/suburban/metro transport)
- 7 Shri P. S. Kharola, Commissioner, Department of Commercial Taxes, Bengaluru.
- 8 Shri S. N. Sahai, Managing Director and Chief Executive Officer, Delhi Integrated Multi Modal Transit System Ltd. (DIMTS)
- 9 Professor Sudhir Chella Rajan, Indian Institute of Technology, Madras, Chennai.
- 10 Professor Geetam Tiwari, Research and Injury Prevention Programme, Indian Institute of Technology, Delhi.
- 11 Dr Ashwin Mahesh, Indian Institute of Management, Bangalore.
- 12 Shri K. Ramchand, Director, IL&FS Transport Network
- 13 Shri Vinayak Chatterji, MD & CEO, Feedback Ventures.
- 14 Representative of financial sector (nominated by Secretary, Department of Financial Services)
- 15 Shri C.N. Raghupathi, Vice President, Infosys.
- 16 OSD/Director, Ministry of Urban Development- Convenor

2. Terms of Reference

1. Determine the role of urban transport in meeting transport requirements of the economy over the next two decades and develop a rolling plan for 2030 in consonance with the National Urban Transport Policy. The plan should cover urban

- agglomerations as well as satellite towns, including integrated suburban rail based systems, and should be based on the following considerations:
- a. Promote access of all citizens to jobs, education and recreation at affordable costs and within reasonable time.
 - b. Minimise overall production of green house gases and pollution (well to wheel) per passenger km.
 - c. Minimise financial costs of transportation.
 - d. Minimise overall demand for transportation.
 - e. Achieve minimum service level benchmarks.
 - f. Aim towards zero traffic fatalities.
2. Estimate the growth in passenger traffic by 2020 and 2030 in the context of economic, demographic and technological trends at local, national and global levels.
 3. Consistent with the above, assess the current capacity and recommend the magnitude and type of capacity creation/augmentation/modernization required in urban transport.
 4. In light of the above,
 - a. Assess the investment required to achieve the projected urban transport capacity.
 - b. Identify sources of funding and assess fund requirements from budgetary, non-budgetary and private sources for different areas in urban transport.
 5. Identify the roles of state, the private sector and the financial sector in meeting the investment needs of the urban transport sector. This would include examination of the current modes of financing urban transport and review of the Public Private Partnership (PPP) experience, which is designed to attract greater private participation.
 6. Assess the full costs of urban transport, including the costs of externalities. Suggest appropriate pricing regimes including appropriate taxation measures, that would achieve the desired mode mix keeping in view affordability and access.
 7. Estimate the energy requirements necessary for urban transport and suggest measures to put the urban transport sector on a sustainable low carbon path and promote energy efficiency, emission reduction and environment protection.
 8. Assess the availability of human resources for urban transport and suggest measures for skill development and institutional capacity building for various stakeholders.
 9. Suggest measures for promotion of research and development and technology upgradation in urban transport sector, including institutional development.
 10. Indicate broad areas and investment for IT in urban transport to improve customer interface/satisfaction and internal efficiency.
 11. Identify data deficiencies in urban transport sector and suggest measures for improving, maintaining and updating the database, including institutional measures.
 12. Review status of quality and safety measures and ways to ameliorate accidents and make urban transport more user friendly.
3. Additional guidance for the Working Group
 1. The Group may get special studies carried out by experts.
 2. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.
 3. The Group may examine the laws, rules and regulations pertaining to roads in connection with the TOR above and suggest legal, organizational, institutional and procedural reforms as necessary.
 4. The Chairman may co-opt up to two additional members.
 5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Urban Development.
 6. The Working Group shall submit its report within nine months.
 7. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDPC. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDPC
2. All the Members of the Working Group

6. NORTH EAST

No. 5/1/2010-NTDPC
GOVERNMENT OF INDIA
Planning Commission
National Transport Development Policy Committee
(NTDPC)

Capital Court, Olof Palme Marg
Munirka, New Delhi-110067
Dated: 8th August, 2011

Subject: Working Group on Improvement and Development of Transport Infrastructure in the North East for the National Transport Development Policy Committee (NTDPC).

It has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Improvement and Development of Transport Infrastructure in the North East. The Composition and Terms of references of the Working Group are as under:

1. Composition:

- 1 Shri Vivek Sahai, former Chairman, Railway Board, Chairman
- 2 Shri B.N. Puri, Member Secretary, NTDPC, Member
- 3 Chairman Inland Waterways Authority of India (IWAI) or her representative, Member
- 4 Director General, Roads, Ministry of Road Transport & Highways, Member
- 5 Director General, Boarder Roads Organisation (BRO), Member
- 6 Shri Rohit Nandan, Joint Secretary, Ministry of Civil Aviation, Member
- 7 Joint Secretary (BSM), Ministry of External Affairs, Member
- 8 Executive Director (Projects), Railway Board, Member
- 9 Prof. Mahendra P. Lama, Vice Chancellor, University of Sikkim, Member
- 10 Representative of North East Council (NEC), Member
- 11 Representative of Planning Commission, Transport Division, Member
- 12 Representative of Customs & Excise Board, Member
- 13 Representative of Asian Institute of Transport Development (AITD), Member
- 14 Ms. Jayashree Mukherjee, Joint Secretary, DONER, Convenor

2. Terms of Reference:

- 1) To assess the Transport Infrastructure Deficit in the North East Region.

- 2) To assess the role of each mode of transport for improving the accessibility and mobility of both people and goods.
 - 3) To make recommendations for provision of transport infrastructure and facilities keeping in view:
 - (a) the role of each mode of transport
 - (b) the requirement of traffic demand, particularly, that relating to movement of essential commodities
 - (c) need to ensure balance between the ability of transport to serve economic development of the region and to conserve energy, protect environment, promote safety and sustain good quality of life.
 - (d) Need to adopt and evolve suitable technology for cost effective creation, economical maintenance and efficient utilisation of transport assets.
 - 4) To assess transport infrastructure, requirement of providing connectivity with the neighbouring countries with a view to enabling trade between North Eastern Region and neighbouring countries.
 - 5) To assess the investment requirement of Transport sector and to recommend measures to fund the projected investment.
 - 6) To suggest measures to improve the capacity to evolve and implement projects in North East.
3. The Chairman may co-opt up to two additional members.
 4. The representatives of the North Eastern States will be special invitee to the meeting of the Working Group.
 5. The Working Group shall submit its report within three months.
 6. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDPC. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to:-

1. Chairman, NTDPC
2. All the Members of the Working Group

7. TRANSPORTATION OF ENERGY COMMODITIES

No. 3/1/2010-Tpt.
Government of India
Planning Commission
National Transport Development Policy Committee
(NTDPC)

6th Floor, Capital Court,
Olof Palme Marg, Munirka,
New Delhi-110 067.
Dated: 5th April, 2011.

Subject: Working Group on Integrated Strategy for Bulk Transport of Energy and Related Commodities in India.

The surge in economic growth witnessed in recent years in India has strained the capacity of its transport system as well as energy supply, particularly electric power. The government's ambitious development targets and plans as well as popular discourse attest to importance of addressing such binding infrastructure constraints in a decisive manner over the next decade in order to sustain high levels of economic growth and to make it more inclusive.

Movement of bulk commodities is a major role of India's transportation system. For example, coal accounts for almost half the freight volume on Indian Railways which is a major supplier of transport services to the electric power and steel industries. Indeed, the congestion caused by inadequate expansion in transport capacity to date, especially on crucial links and corridors underlies many issues such as security of supply chains, inventory of raw materials, port-handling, etc. affecting industry.

The future poses more profound challenges. Even if ambitious aims to improve energy intensity of the Indian economy are achieved, sustaining economic growth at 8-10% per annum over the next two decades will require massive increases in power generation and transportation of bulk commodities such as coal, iron and steel. The Integrated Energy Policy foresees generation capacity increasing six-fold to 960 GW by 2031-32 and coal requirements expanding commensurately to 2-3 BT p.a. Out of this requirement, approximately 10 to 15% will be imported coal. The task ahead is also rendered more difficult by the evolving economic geography and structural changes in the energy system, such as the increasing role of natural gas and growing imports of coal that will impose major new demands on the transport networks. Current projections for coal imports in 2031-32 and LNG imports in 2029-30 for example, are 930 million tones and 162 MMSCMD respectively.

Finally, there is increasing recognition of the adverse environmental impacts, including not just local pollution and damage to habitats and/or livelihood of vulnerable groups but also global climate change that need to be addressed in an economically efficient, equitable and effective manner.

Development plans from the key ministries of the government as well as initiatives and investment proposals from the private sector seek to address the issues alluded to above. However, the needs are vast and multifaceted, while resources are necessarily limited and more importantly the issues are intimately interrelated and the viability of solutions is interdependent both in terms of the nature of the investment (e.g. transport coal or transmit power) as well as the timing and duration of execution. Hence a piecemeal approach to planning could be severely suboptimal leading to colossal wastage of resources and lost time.

Keeping in view what is stated above, it has been decided by the National Transport Development Policy Committee (NTDPC) to constitute a Working Group on Integrated Strategy for Bulk Transport of Energy and Related Commodities in India. The composition and Terms of Reference of the Working Group are as under:-

1. Composition

1. Shri P. Uma Shankar, Secretary, Ministry of Power — Chairman
2. Shri B.N. Puri, Member – Secretary, NTDPC
3. Shri Pradeep Bhatnagar, Additional Member (Traffic), Railway Board
4. Representative* of Ministry of Coal
5. Representative* of Ministry of Shipping
6. Representative* of Ministry of Steel.
7. Representative* of Ministry of Petroleum & Natural Gas
8. Representative* of Ministry of Road, Transport & Highways
9. Representative* of Ministry of Environment and Forest
10. Representative of State Govt.
11. Representative of State Govt.
12. Representative of CEA
13. Private Sector Representative, Power
14. Private Sector Representative, Gas
15. Private Sector Representative, Steel
16. Dr. Anupam Khanna, Principal Adviser, NTDPC — Convener

** Not below the rank of Joint Secretary.*

The Chairman of Working Group may co-opt/invite representative, special experts, functionaries including that of Central Public Sector.

2. Terms of Reference

1. Develop demand scenarios for electric power and natural gas and steel for final consumption at 5-year intervals (2017, 2022, 2027 and 2032) disaggregated into a suitable number of spatial locations (transmission nodes) and consumer type.
 2. Identify production locations (existing and potential) for the following:
 - a. Electric Power Generation, separating out current and potential hydro- and nuclear power plants.
 - b. Iron & Steel plants
 - c. Coal Mines (differentiated by type of coal and ash content)
 3. Indicate current and potential port terminals for
 - a. Coal
 - b. LNG
 - c. Landing site for offshore natural gas
 4. Indicate current and potential transport links
 - a. Railway corridors
 - b. Road Corridors
 - c. Inland Waterways
 - d. Possible Coal Slurry pipelines
 - e. Natural Gas pipelines
 - f. Coastal Shipping options for coal
 5. Study the economics of transmission of energy vs. transportation of fuel (coal, natural gas) within a coherent and analytically tractable framework.
 6. Make recommendation for rationalization of coal linkage by optimizing the distance of coal transportation from source of coal supply to power station taking into account economic and environmentally significant variables such as calorific values, ash and sulfur content, carbon emissions, etc.
 7. Estimate the rail, road and port capacities required and associated investment to meet the demand.
 8. Develop estimates of both environmental externalities as well as economic cost of shortage of energy and transport services.
 9. Examine laws, rules and regulations pertaining to transport in connection with the ToR above and suggest legal, organizational, institutional and procedural reforms needed to achieve the objectives of the integrated strategy.
3. The report of the Working Group should pay due regard to the uncertainties inherent in the development of such a complex system over a long period of twenty years. Thus it is necessary to distinguish what is clearly known now and what the Group believes needs to be known through suitable analyses. The aim should be to set robust directions for the long-term that can be adapted as events unfold but also recommend immediate concrete actions that address critical bottlenecks and identify promising options (e.g. for new corridors, dedicated facilities) in order to begin planning investments in a timely manner.
4. The Group may get special studies carried out by experts.
 5. The expenditure on studies commissioned by the Working Group would be borne by the Ministry of Power.
 6. The Group may visit such places and consult such stakeholders, key users and experts as may be considered necessary for its work.
 7. The Chairman may co-opt up to two additional members.
 8. The Working Group shall submit its report in July, 2011.
 9. The non-official members of the Working Group will be paid TA/DA in accordance with the guidelines of NTDP. The official Members will be paid TA/DA as per their entitlement by concerned Ministry/Departments where they are working.

Sd/-
(B.N. Puri)
Member Secretary
(NTDPC)

Copy to

1. Chairman, NTDP
2. All the Members of the Working Group

ANNEX P.3

COMPOSITION OF THE WORKING GROUPS AND SUB-GROUPS

1. RAILWAYS

WORKING GROUP

Chair: Chairman, Railway Board. Shri K.L.Thapar, Member, NTDPCC & Chairman AITD. Shri M. Ravindra, Member, NTDPCC, Shri B.N.Puri, Member Secretary/Co-ordinator, Shri R.Gopal Krishnan, Executive Director, Tatasons, Professor S.Sriraman, Walchand Hirachand Professor of Transport Economics, Dr.Ram Singh, Associate Professor, Delhi School of Economics, Shri S.K.N. Nair, Sr.Consultant, National Council for Applied Economic Research (NCAER), Shri Saurabh Srivastava, Chairman, CA Group, Shri Anil Kumar Gupta, MD, CONCOR, Representative of the Department of Financial Services, Representative of the Ministry of Power, Shri R.K.Jain, CAO/FOIS, Dr. Badrinarayan, GM/UTS, CRIS, MD/RITES

SUB-GROUPS

External/Policy Environment Market Analysis and Demand assessment: Chair: Shri S.K.N.Nair. Sr. Consultant, NCAER Shri Sanjeevan Kapashe, CCE/WCR, Shri Jatin Sarkar, GGM/RITES), Representative of Planning Commission, Shri Manoj Singh, Dy.COM, South Eastern Railway, Shri S.K.Das, ED/TT/F, Ms.Suhash Kumar, Adv/FM, Railway Board, Shri M.K.Reddy, EDPM, Railway Board, Shri Mukesh Nigam, ED/Coaching, Railway Board, Shri Naveen Kumar Shukla, ED/PP- Convener.

Survey of International Experience & Railway Reforms: Chair: Shri M.Ravindra, Former Chairman, Railway Board . Shri Raghu Dayal, AITD, Shri Jit Sondhi, Shri Rajiv Memani, Managing Director, Ernst & Young, Shri.Adil Zainulbhai, MD, Mc Kinsey & Company India, Shri S.K.Mishra, ED/T/PPP, Shri Naveen Kumar Shukla, ED/PP – Convener, Special Invitee: Representative of Country-Head, World Bank.

Capacity Planning and Resource Mobilization: Chair: Shri S.B.Ghosh Dastidar, Former Member Traffic, Railway Board. Shri R.K.Sinha, Director (Finance), DFCCIL, Shri TCA Srinivas Raghavan, Shri Amrit Pandurangi, Price Waterhouse Coopers, Dr.Ram Singh, Professor, Delhi School of Economics, Shri Vinay Singh, ED/Works, Railway Board, Shri Naveen Kumar Shukla, ED/PP, Shri Cherian Thomas, IDFC, Representative of Finance Directorate, Railway Board, Representative of Planning Commission and Ministries of Finance, Shipping

and Rural Development, Shri M.Madhusudan Rao, ED/Planning – Convener.

Strategic Planning, Organisational & HR Challenges: Chair: Shri R.Gopal Krishnan, ED, Tata & Sons. Shri R.K. Jain, CAO/FOIS, Prof. Sekhar Chaudhury, Director, IIM, Kolkata, Prof. S. Mani Kutty, IIM, Ahmedabad, Shri R.Mukundan, ED(E)N, Railway Board, Shri S.K. Mishra/ED/T/PPP – Convener.

Technology and High Speed Rail: Chair: Shri M. Ravindra, Former Chairman, Railway Board. Shri R.R.Bhandari, Ex.Member, Mechanical, Railway Board, Adv/Mech/Project, Railway Board, Shri R.M.Lal, AM/Electrical, Railway Board, Shri Rajeev Jyoti, CEO/Bombardier, India, TTCI, USA- Britto Raj Kumar, Shri S.K.Jain, CAO/Const, WR, Representative of DRDO, Shri Jit Sondhi, Shri A.K.Gupta, Advisor(T&E)/RITES, Shri Sumant Chak,, Shri Madhusudan Rao, ED/P, ED/E&R- Convener.

Information Technology: Chair: Shri Saurabh Srivastava. Shri R.K.Jain, CAO/FOIS, Representative of Chairman, ISRO/or Mr.Pai of Infosys, Ms.Achla Sinha, ED/Statistics & Economics, MD, CRIS, Shri Gopal Krishnan, Sr.DCM, Western Railway, Mumbai, R.B Das, ED/C&IS - Convener

Determination of full- costs, Accounting System and Tariff: Chair: Professor S.Sriraman, University of Mumbai . Adv/Rates, Railway Board, Adv/TT/M, Railway Board, Ms.Achla Sinha, ED/Statistics and Economics, Shri Raghu Dayal, AITD, Representative of Ministry of Finance, Representative of Finance Directorate of Railway Board, Dr.R. Badri Narain, GM/UTS, CRIS - Convener

Multi-modal & Non-Bulk Traffic: Chair: Shri R.N.Agha, Former Member Traffic. Shri Anil Kumar Gupta, MD, CONCOR, Association of Container Train Operators (ACTO), Representatives of Ministry of Shipping, Commerce, Road Transport and Highways and Planning Commission, Ms. Suhash Kumar, Adv/FM, Shri H.D.Gujarati, ED/TT/S – Convener.

International rail linkage: Chair: Shri Raghu Dayal, AITD. Shri Sumant Chak, AITD, MD/CONCOR, Shri Naveen Kumar Shukla, EDPP, S.K.Das, ED/TT/F- Convener

Land use optimization: Chair: Shri Sudhir Chandra, Former Member Staff. Shri S.K.Jain, CAO/C/WR, Ms. Samantha Bastian, ED/L&A-I (Convener)

2. ROADS

WORKING GROUP

Chair: Secretary, Ministry of Road Transport and Highways. Shri S. Sundar, Member, NTDPCC, Shri

D.P. Gupta, Member, NTDP, Shri B.N. Puri, Member Secretary, NTDP, Chairman, National Highways Authority of India, Director General (Roads), Ministry of Road Transport and Highways, Principal Secretary (Transport), Government of Andhra Pradesh, Principal Secretary (PWD), Government of Assam, Joint Secretary (Road Transport), Ministry of Road Transport and Highways, Joint Secretary (Rural Roads), Ministry of Rural Development, Professor Geetam Tiwari, Indian Institute of Technology, Delhi, Shri Partha Mukhopadhyay, Centre for Policy Research, New Delhi, Shri Athar Shahab, Dy. MD, IDFC Projects and Chairman, CII Roads Committee, Shri O.B. Raju, MD, GMR Highways Pvt Ltd, Bengaluru, Shri Parvesh Minocha, MD, Transportation Division, Feedback Ventures, Representative of the Department of Financial Services, Representative of IT Sector, Advisor (Transport Research), Ministry of Road Transport and Highways – Convener

SUB-GROUPS

Estimate the growth in road freight /passenger traffic by 2020 and 2030 and Intermodality issues:

Chair: Shri B.N. Puri, Member Secretary, NTDP. Shri M.M. Hasija, Adviser (Statistics), Ministry of Road Transport & Highways, Transport Research Wing, Dr. Anupam Khanna, Principal Adviser, NTDP, Shri Jatin Sarkar, General Manager (Economics & Transport), RITES, Convener.

Road capacity (National/State Highways, Expressway) upto 2020 and 2030; Investment requirement; Mode of financing; Road Pricing (Tolling); PPP policy framework; Implementation Issues; Land acquisition and rehabilitation and; Consolidation and preservation of road assets.

Chair: Shri A.V. Sinha, Director General (Roads Development) & Special Secretary, Ministry of Road Transport and Highways. Shri D.P. Gupta (Retd. DG, Roads), Director Roads & Highways, Shri Athar Shahab, Deputy Managing Director, IDFC, Projects, Shri O.B. Raju, MD, GMR Highways Ltd., Shri R.J. Chand, Ernst & Young Pvt. Ltd., Shri Vinayak Chatterjee, Chairman, CII Urbanisation & Future Cities Council, Shri Parvesh Minocha, MD, Transportation Division, Feedback Ventures, Shri V.L. Patankar, Member (Projects), NHAI, Shri J.N. Singh, Member (Finance), NHAI-Convener.

Energy, environment, technology, modernization of trucking industry and R&D and sustainable transport:

Chair: Dr. Surajit Mitra, Additional Chief Secretary (PWD & Water Resources), Government of Assam. Prof. Geetam Tiwari, TRIPP, IIT, Delhi, Shri Anupam Khanna, Principal Adviser, NTDP, Shri R. Balasubramanian, Director, Central Institute of Road Transport, Pune-Nashik Road, Pune, Shri Partha Mukhopadhyay, Centre for Policy Research, Shri S.R. Marathe, Director, Automotive Research Association of India (ARAI).

Road Safety and HRD: Chair: Shri S.K. Puri, Additional Director General (RD), Ministry of Road Transport & Highways. Shri Saroj K. Dash, Joint Secretary (T&A), Ministry of Road Transport and Highways, Shri S.P. Singh, Principal Secretary (Transport Department), Govt. of Andhra Pradesh, Prof. Geetam Tiwari, TRIPP, IIT, Delhi, Shri Arvind Kumar-Convener, Adviser (TR), Transport Research Wing, Shri D.P. Gupta (Retd. DG, Roads), Director Roads & Highways, Shri Kamlesh Kumar, Chief Engineer-Convener, Ministry of Road Transport and Highways.

IT and Data Issues: Chair: Shri Arvind Kumar-Convener, Adviser (TR), Transport Research Wing, Ministry of Road Transport and Highways. Shri Mahesh Chandra, Deputy Director General, National Informatics Centre (NIC), Shri A.S. Verma General Manager (IT & data issues), NHAI, Shri K. Sen Sarma, Director (TRW), Convener, Ministry of Road Transport & Highways, Transport Research Wing

Public Transportation and Seamless Freight and Passenger Movement:

Chair: Shri Saroj K Dash, Joint Secretary (T&A), Ministry of Road Transport and Highways. Shri S.P. Singh, Principal Secretary (Transport Department), Govt. of Andhra Pradesh, Shri Arvind Kumar-Convener, Adviser (TR), Transport Research Wing, Ministry of Road Transport and Highways, Shri Partha Mukhopadhyay, Centre for Policy Research, Shri H.M. Naqvi, Head Research & Consulting Division, Central Institute of Road Transport, Pune-Nashik Road, Pune, Shri K. Sen Sarma, Director (TRW), Convener, Ministry of Road Transport & Highways, Transport Research Wing

Rural Roads: Chair: Dr. P.K. Anand, Joint Secretary, Ministry of Rural Development. Representative from State Governments/NRRDA, Convener: Director, (Projects), National Rural Road Development Agency

3. CIVIL AVIATION

WORKING GROUP

Chair: Secretary, Civil Aviation. Shri M Kannan, Economic Adviser, Ministry of Civil Aviation, Convener, Shri K. L. Thapar, Chairman, AITD, Shri Cyrus Guzder, Chairman, AFL Group, Shri B. N. Puri, Member-Secretary, NTDP, Shri Arvind Jadhav, Managing Director, Air India Limited, Shri E. K. Bharat Bhushan, Director General, Directorate General of Civil Aviation, Shri V. P. Agarwal, Chairman, Airports Authority of India, Dr. Shashanka Bhide, Senior Fellow, National Council for Applied Economic Research (NCAER), Shri Rakesh Gangwal, Former Chairman and CEO, US Airways Group, M/s. Inter-Globe Aviation Ltd., Capt. G. R. Gopinath, CMD, M/s.

Deccan Cargo & Express Logistics Pvt. Ltd., Shri Sanat Kaul, Chairman, International Foundation for Aviation and Aerospace Development, Shri Sanjay Reddy, MD, (GVK, Mumbai & Bengaluru International Airports), The Secretary, Department of Financial Services, Shri U. G. Krishna, GM, ECTI, Wipro Limited, Shri Kapil Kaul, CEO- Indian Subcontinent & Middle East, Centre for Asia Pacific Aviation (CAPA), Dr Rajat Kathuria, International Management Institute, Shri G. K. Malhi, CoSCA, BCAS

SUB-GROUPS

I. Economic Advisor, Ministry of Civil Aviation, Smt. Savitri, Director, DGCA, New Delhi, Shri S. Raheja, Member, Airports Authority of India, Shri Kapil Kaul, CEO- Indian Subcontinent & Middle East, Centre for Asia Pacific (CAPA), Shri Amitabh Khosla, International Air Transport Association, Dr. Rajat Kathuria, International Management Institute, Shri Arvind Jadhav, Managing Director, Air India Limited, Prof. P. S. Senguttuvan, M/s. Delhi International Airport Limited (DIAL).

II. Director (P), Ministry of Civil Aviation, Director (S), Ministry of Civil Aviation, Shri Lalit Gupta, Director, DGCA, New Delhi, Shri Cyrus Guzder, Chairman, AFL Group, ALF House, Dr. Rajat Kathuria, International Management Institute (IMI).

III. AS&FA, Ministry of Civil Aviation, Joint Secretary (N), Ministry of Civil Aviation, Shri R. P. Sahi, JOG (Retch), DGCA, New Delhi, ED (Training), Airports Authority of India, Shri Arvind Jadhav, Managing Director, Air India Limited, Dr. T. S. Shaikh, J. R. D. Institute of Aviation Management, Shri Tomar, M/s. Kingfisher Airlines Ltd.

IV. Joint Secretary (P), Ministry of Civil Aviation, Dr. Anupam Khanna, Consultant, NTDP, Dr. Kota. Harinarayanan, Emiritus, Professor, National Aerospace Laboratories, Bangalore, Dr. A. R. Jpadhya, Director, National Aerospace Laboratories, Bangalore, Dr. Prodipto Ghosh, The Energy and Resource Institute (TERI), Shri Somasundaram, Member, Airports Authority of India, Shri Amitabh Khosla, International Air Transport Association, Ms. Harpreet Singh, Air India Ltd

V. Joint Secretary (N), Ministry of Civil Aviation, Shri G. K. Malhi, CoSCA, BCAS, Shri M. S. Bali, Spl. DG (CISF), CGO Complex, Lodhi Road, New Delhi, Shri Arvind Deep, Joint Director IB (MHA), S. Shri D. S. Mathur, Director (Security), Air India Ltd., Shri Gyaneshwar Singh, GM (Security), Airports Authority of India, Shri S. I. S. Ahmed, Security Head, M/s. Delhi International Airport Limited (DIAL), Shri Rajiv Jain, President, M/s Mumbai International Airport Limited.

VI. Joint Secretary (S), Ministry of Civil Aviation, Shri E.K. Bharat Bhushan, Director General of Civil

Aviation, Shri G.S. Malhi, CoSCA, BCAS, Shri V.P. Agarwal, Chairman, Airport Authority of India, Air Marshall V.K. Verma (Retd.), Director, Indira Gandhi Rastriya Uran Academy (IGRUA), Shri R.P. Sahi, JDG (Retd.), Director General of Civil Aviation.

4. PORTS AND SHIPPING

WORKING GROUP

Chair: Shri K.Mohandas, Secretary, Ministry of Shipping. Shri Bharat Sheth, Chairman, Great Eastern Shipping Company, Shri B.N. Puri, Member Secretary, NTDP, Dr. S.B. Agnihotri, DG(Shipping), Dr. Anup K. Pujari, Director General Foreign Trade, Additional Member (Planning), Rail Bhavan, Shri S. Hajara, Chairman & Managing Director, The Shipping Corporation of India Ltd., Shri Rakesh Srivastava, Joint Secretary (Ports) Ministry of Shipping, Shri B.K. Sinha, Chairman & CEO, Gujarat Maritime Board, Shri Anil K. Gupta, Managing Director, Container Corporation of India, Shri S.K. Puri, Additional Director General (Roads), Ministry of Road Transport & Highways, Shri Jimmy Sarbh, Sarbh Consultancy, Mr. Krishna Kotak, G.M. Bakshi & Co., Shri Thomas Netzer, Director, McKinsey & Company Inc., Shri Arvind Kumar-Convenor, Adviser (TR), Transport Research Wing, Additional Co-opted members were Shri R. Kishore, President, Indian Private Ports & Terminal operators Association, CEO & Director, Vizag Seaport Pvt Ltd., Shri Mark S. Fernandes, Chairman, Shipping & Aviation Committee, Indian Merchant Chamber, Prof. G. Raghuram, Indian Institute of Management, Ahmedabad, Prof. S.C. Mishra, Director, National Ship Design & Research Centre (NSDRC), Shri Suresh Kumar Kantholy, General Manager (ODC), Crimson Logic India Pvt.Ltd, Shri Pradeep Roy, Financial expert, Smt Bhupendra Prasad, Chairperson, Inland Water Authority of India (IWAI), Shri A. Janardhan Rao, Managing Director, Indian Ports Association.

SUB-GROUPS

Cargo Traffic, Port Capacity, Investment requirements and review of processes and operation in the Port sector: Chair: Shri Rakesh Srivastava, Joint Secretary (Ports), Ministry of Shipping. Shri Arvind Kumar, Adviser (TR), Transport Research Wing, Dr. Archana Mathur, Economic Adviser, Ministry of Petroleum and Natural Gas, Shri A. Janardhan Rao, Managing Director, Indian Ports Association, Representative of Ministry of Power, Shri R. Kishore, President, Indian Private Ports & Terminal operators Association, CEO & Director, Vizag Seaport Pvt Ltd., Capt. S.C. Mathur, Chief Nautical Officer, Gujarat Maritime Board, Shri Jatin Sarkar, General Manager (Economics & Transport), RITES, Shri M.M. Hasija, Adviser (Statistics)-Convenor, Ministry of Road Transport & Highways, Transport Research Wing

Rail Road Connectivity with Ports to look into current status of Port Connectivity, contain-

er/freight traffic flows and future connectivity requirements. Chair: Additional Member (Planning), Railway Board. Shri S.K. Puri, Additional Director General (Roads), Ministry of Road Transport & Highways, Shri Anil K. Gupta, Managing Director, Container Corporation of India, Shri A. Janardhan Rao, Managing Director, Indian Ports Association, Shri B. Poiyaamozhi DA (Ports) –Convenor, Ministry of Shipping.

Data: Chair: Shri Arvind Kumar, Adviser (TR), Transport Research Wing. Shri A. Janardhan Rao, Managing Director, Indian Ports Association, Shri Suresh Kumar Kantholy, General Manager (ODC), Crimson Logic India Pvt.Ltd, Shri J.Murgadas, GM(ERP), Shipping Corporation of India Ltd., Shri M.M.Hasija, Adviser (Statistics)-Convenor, Ministry of Road Transport & Highways, Transport Research Wing

R&D and Technology evolution in Shipping, energy requirements and initiatives to put the shipping sector on a sustainable low carbon path and promote energy efficiency, emission reduction and environment protection: Chair: Prof. S.C.Mishra, Director, National Ship Design & Research Centre (NSDR). Shri Suresh Kumar, Chief Ship Surveyor, DG, Shipping, Mumbai, Shri J.V.S. Rao, Executive Director, Shipping Corporation of India (SCI), Shri D.J.Basu, Deputy Director, Development Adviser Ports Wing-Convenor, Ministry of Shipping

IT to examine broad areas of IT investment and interface with users: Chair: Shri Janardhan Rao, MD, IPA. Shri J.Murgadas, GM(ERP), Shipping Corporation of India Ltd., Shri Suresh Kumar Kantholy, General Manager (ODC), Crimson Logic India Pvt. Ltd, Shri Rajiev Puri, Deputy Director, IPA –Convenor

Existing framework of PPP, Private financing and bench marking of Indian Shipping and Port operations/practices and efficiency parameters. Chair: Shri Thomas Netzer, Director, McKinsey & Company Inc. Shri Pradeep Roy, Prof G. Raghuram, Indian Institute of Management, Ahmedabad, Shri A. Janardhan Rao, Managing Director, Indian Ports Association, Smt. Geetu Joshi, Director, Ministry of Shipping, Shri C.S. Venkatraman, Secretary, TAMP-Convenor, Tariff Authority For Major Ports

Status of shipping and requirement, review of processes and operation in shipping, human resource requirement of the maritime sector and related policy issues and regulations: Chair: Dr. S.B. Agnihotri, DG(Shipping), Directorate General of Shipping. Shri S. Hajara, Chairman & Managing Director, The Shipping Corporation of India Ltd, Director General Foreign Trade, Ministry of Commerce, Shri Arvind Kumar, Adviser (TR), Transport Research Wing, Shri Jimmy Sarbh, Sarbh Consultan-

cy, Mr. Krishna Kotak, G.M. Bakshi & Co. Sapt Building, Shri Mark S. Fernandes, Chairman, Shipping & Aviation Committee, Indian Merchant Chamber, Shri Bharat Seth, Chairman, Great Eastern Shipping Company, Shri V.K.Sharma, Chief Controller Chartering, Ministry of Shipping, Shri C. Rathina Das, Deputy Director General, DG Shipping, Directorate General of Shipping –Convenor.

Inland Waterways to look into status, growth in cargo traffic and its composition, future scenario; infrastructure; technical and regulatory issues related to its operation and potential. Chair: Smt Bhupendra Prasad, Chairperson, Inland Water Authority of India (IWAI). Shri Sunil Kumar, Vice Chairman, IWAI-Convenor, Inland Waterways Authority of India, Shri Jimmy Sarbh, Sarbh Consultancy, Shri Krishna Kotak, G.M. Bakshi & Co., Shri Suresh Kumar, Chief Ship Surveyor, DG, Shipping, Mumbai, Shri G.S.Bhalla, Sr Vice President, The Shipping Corporation of India Ltd

5. URBAN TRANSPORT

WORKING GROUP

Chair: Dr. Sudhir Krishna, Secretary, Ministry of Urban Development, Government of India. Shri B. N. Puri, Member Secretary, NTDP, Planning Commission, Shri R. Gopalan, Secretary, Deptt. of Financial Services, Shri Manu Kumar Srivastava, Principal Secretary, Urban Development, Govt. of Maharashtra, Shri Rajiv Chaudhry, Executive Director (WP), Ministry of Railway, Shri P. S. Kharola, Commissioner, Department of Commercial Taxes, Karnataka, Shri S. Sunder, Distinguished Fellow, The Energy and Resource Institute (TERI), Shri B.I. Singal, Director General, IUT, Prof. Dinesh Mohan, Transportation Research & Injury Prevention Programme (TRIPP), Indian Institute of Technology, New Delhi, Prof. Sudhir Chella Rajan, Department of Civil Engineering, India Institute of Technology, New Delhi, Prof. CSRK Prasad, Head Transport Division, NIT, Warangal (AP), Prof. Geetam Tiwari, Associate professor – TRIPP, Indian Institute of Technology, New Delhi, Prof. H. M. Shivanand Swamy, Professor and Associate Director, Centre for Environmental Planning & Technology (CEPT) University, Ahmedabad, Dr. Ashwin Mahesh, Indian Institute of Management, Bengaluru, Shri S. N. Sahai, MD & Chief Executive Officer, DIMMTS Ltd., Shri K. Ramchand, Director, M/s ILFS, Shri Vinayak Chatterjee, MD & CEO, M/s Feedback Ventures, Shri Ajai Mathur, MD, UMTC, Shri C. N. Raghupati, Vice President, M/s Infosys, Shri. S. K. Lohia, Convenor, OSD (UT) and EO Joint Secretary, Ministry of Urban Development, Government of India

SUB-GROUPS

Need Assessment: Prof. Shivanand Swamy, CEPT, Shri S.Sunder, TERI, Prof. Dinesh Mohan, IIT Delhi,

Prof. Geetam Tiwari, IIT Delhi, Shri Ajai Mathur, MD, Urban Mass Transit Company, Prof. C.S.R.K Prasad, NIT, Warangal, and Prof. Sudhir Chella Rajan, IIT, Madras.

Financing mechanism for UT needs: Shri Vinayak Chatterjee, MD, M/s Feed Back Ventures, Shri K. Ramachandaran, MD, ITNL, Shri S.N. Sahai, MD, DIMTS, Prof. Shivanad Swamy, CEPT, Ahemdabad, and Shri P.S.Kharola, Commissioner, DoCT, Bangalore.

Energy & Environment: Shri S.Sunder, TERI, Prof. Sudhir Chella Rajan, IIT, Madras.

Capacity Building: Prof. Ashwin Mahesh, IIM, Bangalore, Prof. Dinesh Mohan, IIT, Delhi, Prof.C.S.R.K Prasad, NIT, Warangal, and Prof. Ashwin Mahesh, IIM, Bangalore.

IT Applications: Prof. Ashwin Mahesh, IIM, Bangalore, Shri C.N.Raghupathi, Infosys, Prof. R. Shivanandan, IIT, Madras, and Shri S.N.Sahai, MD, DIMTS.

Accessibility, Safety & Security. Prof. Geetam Tiwari, IIT, Delhi, Shri B.I.Singal, DG, IUT, Prof. C.S.R.K Prasad, NIT, Warangal, Prof. Dinesh Mohan, IIT Delhi, and Shri E. Sreedharan, MD, DMRC.

Institutional Framework: Shri S. Sunder, TERI, Shri Ajai Mathur, MD, UMTC, Shri S. N. Sahai, MD, DIMTS, Prof. Shivanand, CEPT, Ahemdabad, and Shri P. S. Kharola, Commissioner, DoCT, Bangalore.

6. NORTH EAST

WORKING GROUP

Chair: Shri Vivek Sahai, former Chairman, Railway Board. Chairman, Inland Waterways Authority of India, Director General (Roads), Ministry of Road Transport and Highways, Lt. Gen. M.C. Badhani, VSM, DG, BRO, Shri Rohit Nandan, Joint Secretary, Ministry of Civil Aviation, Shri Harsh Vardhan Shringla, Joint Secretary (BSM), Ministry of External Affairs, Executive Director (Projects), Rail way Board, Prof. Mahendra P. Lama, Vice Chancellor, University of Sikkim, Shri U.K. Sangma, Secretary, North Eastern Council, Dr. Manoj Singh, Advisor, Transport, Planning Commission, Representative of Central Board of Excise and Customs, Representative of Asian Institute of Transport Development

7. INTEGRATED STRATEGY FOR BULK TRANSPORT OF ENERGY AND RELATED COMMODITIES IN INDIA

WORKING GROUP

Chair: Shri P. Uma Shankar, Secretary, Ministry of Power. Shri Pradeep Bhatnagar, Additional Member (Traffic), Railway Board, Shri H.D. Gujarati, Executive Director, Railway Board, Shri Shailesh Kumar Singh, Joint Secretary, Ministry of Coal, Shri Arvind Kumar, Economic Advisor, Ministry of Shipping, Shri Udai Pratap Singh, Joint Secretary, Ministry of Steel, Dr. (Ms) Archana S. Mathur, Eco-

conomic Advisor, Ministry of Petroleum and Natural Gas, Shri Nitin Gokarn, Joint Secretary, Ministry of Road Transport and Highways, Dr. Nalini Bhat, Advisor, Ministry of Environment and Forests, Shri Manoj Ahuja, Principal Secretary, State Government of Orissa, Shri S. Bhattacharya, Principal Secretary, State Government of Andhra Pradesh, Shri Navneet Sehgal, Principal Secretary, State Government of Uttar Pradesh, Ms Neerja Mathur, Chief Engineer, Central Electricity Authority, Shri Harry Dhaul, DG, IPPAI, Shri S S Ramgarhia, Director, Petrofed, Shri Dileep Bhat, President, Jindal Steel Ltd, Shri Major Singh, CEA, Dr. Anupam Khanna, Principal Advisor, NTDPCC, Convener and Shri Sudhir Kumar, Joint Secretary, Ministry of Power, Co-Convener.

SUB-GROUPS

Demand Scenarios: Chair: Shri Major Singh, Chief Engineer. Shri D.N. Prasad, Director, Ministry of Coal, Shri Sukhvair Singh, Director, Ministry of Petroleum & Natural Gas, Shri A.S. Firoz, Chief Economist, ERU, Ministry of Steel, Shri Rama Rao, Director, GRID, Govt. of Andhra Pradesh, Shri S.K. Agarwal, Director Finance, Department of Energy Government of Uttar Pradesh, Dr. Ritu Mathur, Associate Director, Modelling & Economic Analysis Division, The Energy and Resources Institute (TERI), Shri Bibhu Biswal, Independent Power Producers Association of India (IPPAI), Dr. Anoop Singh, Associate Professor, Energy, Infra. & Finance, IIT Kanpur, Shri Vikas Singhal, Head-Power & Fuel, ICF International.

Location of Production Facilities & Transfer Sites: Chair; Ms. Neerja Mathur, Chief Engineer, IRP Division, Central Electricity Authority. Shri D.N. Prasad, Director, Ministry of Coal, Shri N.R. Dash, Director, Ministry of Steel, Shri Arvind Kumar, Adviser (Transport), IDA Building, Shri P.L. Ahujarai, Director (PLA), Ministry of Environment & Forests, Shri Raghavendra Upadhyay, Senior Vice President, Independent Power Producers Association of India (IPPAI), Shri S.K. Chand, Senior Fellow, The Energy and Resources Institute (TERI), Dr. Anoop Singh, Associate Professor, Energy, Infra. & Finance, IIT Kanpur, Shri A.K. Varshney, Director, P&C (Parliament work), Ministry of New and Renewable Energy, Shri Vikas Singhal, Head-Power & Fuel, ICF International

Optimizing Fuel and Electricity Delivery System Networks: Chair: Shri Ranjan Jain, Adviser (Infrastructure), Railway Board, Ministry of Railways. Shri M.M. Hasija, Adviser (Transport), Ministry of Shipping, Shri Nitin Gokaran, Joint Secretary, Transport Bhawan, Ministry of Road Transport & Highways, Shri Manoj Ahuja, Commissioner-cum-Secretary, Department of Steel & Mines, Government of Orissa, Shri D.J. Pandian, Principal Secretary, Energy, Government of Gujarat, Shri Ramesh Kumar Khanna, Principal Secretary, Department of Energy, Government of Tamil Nadu, Shri Pradeep

Jindal, Director, System Planning & Project Appraisal, Central Electricity Authority, Shri D.N. Prasad. Director, Ministry of Coal, Professor Yogesh K. Agarwal, Chairman, Decision Science, IIM Lucknow, Shri Vikas Singhal, Head-Power & Fuel, ICF International

Oil & Gas Pipelines & Terminals: Chair: Shri Vivek Kumar, Joint Secretary, Ministry of Petroleum & Natural Gas. Shri M.M. Hasija, Adviser (Transport), Ministry of Shipping, Shri Ajay Mishra, Pr. Secretary, Infrastructure & Investment Department, Government of Andhra Pradesh, Shri Anil Jain, Special Commissioner, Government of Madhya Pradesh, Shri Sukhbir Singh, Director, Ministry of Petroleum & Natural Gas, Shri S.P. Gupta, Director (Finance)/(I/C), Petroleum Planning & Analysis Cell (PPAC), Ministry of Petroleum & Natural Gas, Government of India, Prof. Priyadarshi Shukla, IIM, Ahmedabad, Shri P.K. Pal, Executive Director (Project Development), GAIL India Limited, Shri Rakesh Jain, Associate Director, Feedback Infrastructure Services Private Limited, Shri P. Raghvendra, Reliance Industries Limited, Shri S.N. Sukhwal, Deputy General Manager (Corporate Planning & Economic Studies), Shri Rahul Gautam, Dy. General Manager (Project Development), GAIL India Limited, Shri S.K. Jha, Chief Projects Manager (System), Pipelines, Shri Prabal Ghosh, Research Analyst, Integrated Research and Action for Development (IRADe)

Material Transport Needs of the Iron & Steel Industry: Chair: Shri Udai Pratap Singh, Joint Secretary, Ministry of Steel. Sanjay Misra, Adviser (Transport & Economics), RITES, Shri Arvind Kumar, Adviser (Transport), Ministry of Road Transport and Highways, Shri D.N. Prasad. Director, Ministry of Coal, Shri Dileep Bhatt, President, Corporate Affairs, Jindal Steel Limited, Shri Chanakya Choudhary, Tata Steel

ANNEX P.4

WORLD BANK TECHNICAL ASSISTANCE

1. LIST OF PAPERS SUBMITTED BY THE WORLD BANK

Railways (Mr. Paul Amos):

Summary Paper on Railways

1. Freight Railways Governance, Organizations and Management: An International Round-up
2. Passenger Railway Institutions and Financing: China, Germany, Japan and Russian Federation

Highways (Mr. Clell Harral)

Summary Paper on Highways by Kumares C. Sinha and Samuel Labi (Purdue University) and

Clell Harral (Harral Winner Thomson Sharp Klein, Inc.)

1. Road Asset Management by Clell Harral, Graham Smith and William D.O.Paterson.
2. Government Policies to Encourage Energy-Efficient Vehicles on Roads by Kumares C. Sinha, Mohammad H. Arman, and Samuel Labi
3. Cost-Effective Standards for Different Types of Roads by Kumares C. Sinha, Samuel Labi and Menna Noureldin.
4. Intelligent Transportation Systems: Kumares C. Sinha, Samuel Labi, and Eleni Bardaka
5. Institutional and Regulatory Frameworks for Free Movement of Commercial Highway Vehicles Across States/Provinces by Kumares C. Sinha, Samuel Labi, and Bismark R.D.K. Agbelie
6. Traffic-Based Benchmarks for Widening Of National Highways versus Construction of Expressways by Kumares C. Sinha, Samuel Labi, and Qiang Bai
7. Direct Charging Mechanisms for Highway Use by Kumares C. Sinha, Samuel Labi, and Mohammad Arman
8. National Transportation Planning: Lessons from the U.S. Interstate Highways by Marlon G. Boarnet, Departments of Planning Policy, and Design and Economics, University of California, Irvine, and School of Policy, Planning, and Development, University of Southern California
9. Improving Road Safety Performance: Lessons From International Experience by Tony Bliss and Jeanne Breen
10. PPP in Transport: An Evaluation And Lessons From Twenty Years Of Experience-by Jose Luis Guasch

Ports & Shipping (Mr. Marten van den Bossche):

1. India Port Sector Policy Review Study: Policy papers, case study and capita selecta draft report by Marten van den Bossche , Eric van Drunen , Katrien Dusseldorp , Johan Gille and Hans Vogelhaar

Urban Transport (Mr. Ken Gwilliam)

Summary Paper on Urban Transport

1. Overview Paper-The Issues for India
2. Financing Urban Transport
3. Costs of Externalities
4. Energy Efficiency in Urban transport
5. Developing public transport
6. Institutions for urban transport
7. Intelligent Transport Systems-Applications in urban areas
8. Case Studies in Urban Transport Development

2. DETAILS OF INTERNATIONAL CONFERENCES

February 6-8, 2012: Practitioners' Workshop: National Transport Development Policy Committee (NTDPC)

MONDAY, FEBRUARY 6, 2012

8:30-9:30 Registration & Coffee

Plenary Session:

Chair: Dr. Rakesh Mohan, Chairman, NTDP

9:30-9:45 Opening remarks
Dr. Rakesh Mohan,
Chairman, NTDP

9:45-10:00 Welcome address
Mr. Hubert Nove Jossierand, Operations
Adviser, World Bank

10:00-10:20 Key Note Speaker : Developing Sustainable Transport Infrastructure in India
Mr. B. K. Chaturvedi, Member, Planning Commission

10:20-10:50 Overview of Integrated Transportation Planning - EU TENT experience
Mr. Mathew Arndt, Head of Division of Road and Rail, European Investment Bank

10:50-11:00 Vote of Thanks
Mr. B. N. Puri, Member Secretary, NTDPC

11:00-11:30 Coffee Break

Session on Highways, PPPs and Safety:

Chair: Mr. S. Sundar, Member, NTDP, Co-Chair: Mr. D.P. Gupta, Member NTDP, Facilitator: Dr. Kumaresh C. Sinha and Mr. Anil Bhandari

11:30-12:30 Presentation on Highways: International Lessons and comment on the resource papers presented by the Bank
Mr. Nazir Alli, CEO, South Africa National Road Agency Limited & Mr. William Dachs, Ex Head of PPP Unit, National Treasury, South Africa

12:30-1:30 Lunch Break

1:30- 1:45 Highlighting the key issues relevant for long term planning in the highway sector India – presentation by the Bank Consultants
Dr. Kumares C. Sinha, Director, Joint Transportation Research Program of Purdue University and the Indiana Department of Transportation & Mr. Anil Bhandari, Ex Highway Advisor, World Bank

1:45-1:55 Highlighting the key issues relevant for Road safety in India – presentation by the Bank Consultant
Mr. Tony Bliss, Ex Lead Road Safety Specialist, The World Bank

1:55-2:05 Highlighting the Key Aspects of Regulatory Framework for Developing Highway Infrastructure through PPPs in

India – presentation by the Bank Consultant/Staff

Mr. Jose Louis Guasch, Senior Regional Adviser in the LAC region, The World Bank

2:05-4:30 Open Forum – Discussion on Key Issues in the Highway Sector
Session (Moderated by the Chair)

TUESDAY, FEBRUARY 7, 2012

Session on Urban Transport

Chair: Secretary, Urban Development Ministry, Co-Chair: Prof. Dinesh Mohan, Member, NTDP, Facilitator: Mr. Ken Gwilliam

9:30-9:50 Key Note Speaker: Issues and Challenges in Urban Transport Sector in India
Mr. Arun Maira, Member, Planning Commission

9:50 – 10:30 Presentation on Urban Transport International Lessons and comment on the resource papers presented by the Bank
Mr. Dayo Mobereola, Director, Lagos Metropolitan Transport Authority, Nigeria

10:30 – 11:00 Presentation on Urban Transport International Perspectives
Mr. F.Q. Partida, Project Manager, Mass Transport, National Development Bank of Infrastructure, Mexico

11:00-11:15 Highlighting the key issues relevant for long term planning for the urban transport sector India – presentation by the Bank Consultant
Mr. Kenneth Gwilliam, Visiting Professor at the Institute for Transport Studies, University of Leeds

11:15-11:30 Coffee Break

11:30-1:00 Open Forum – Discussion on Key Issues in the Urban Transport Sector
Session (Moderated by the Chair)

1:00-2:00 Lunch Break

Session on Railways

Chair: Chairman, Railway Board, Co-Chair: Mr. M. Ravindra, Member NTDP, Facilitator: Mr. Paul Amos

2:00-3:00 Presentation on Passenger and Freight Railways: International Experience and comment on the resource papers presented by the Bank
Mr. John Thomas, Rail Regulation Specialist, Arcadia, United Kingdom

3:00 – 3:15 Highlighting the key issues relevant for long term planning in India – Freight and Passenger Railways - Presentation by the Bank Consultant
Mr. Paul Amos, Consultant to the World Bank

3:15-3:30 Coffee Break

3:30-5:00 Open Forum – Discussion on Key Issues in the Railway Sector
Session (Moderated by the Chair)

5:30 onwards Informal Reception

WEDNESDAY, FEBRUARY 8, 2012

Session on Ports

Chair: Ms. Rani Jadhav, Chairperson, TAMP, Co-

Chair: Mr. K. L. Thapar, Member NTDP, Facili-

tator: Mr. Marten Van Der Bossche

9:30-10:15 Presentation on Port Regulation – International perspective
Mr. Christiaan Van Krimpen, International Legal Counsel

10:15 – 10:45 Presentation on Ports: International Perspective on long term Port Planning
Mr. John DM Koppies, Koppies and Stevens BV, Nederland

10:45-11:00 Highlighting the key issues relevant for long term Port planning in India – Presentation by the Bank Consultant
Mr. Marten Van Der Bossche, Chairman, ECORYS, Nederland

11:00-11:30 Coffee Break

11:30-1:00 Open Forum – Discussion on Key Issues in the Port Sector
Session (Moderated by the Chair)

1:00-2:00 Lunch Break

Session on Intermodal transport and Concluding Session

Chair: Dr. Rakesh Mohan, Chairman, NTDP

2:00-2:45 Presentation on Intermodal Coordination: International Best Practices
Mr. Stephen Perkins, Head of Research Centre, International Transport Forum (ITF)

2:45- 3:30 Presentation on Intermodal-Coordination, US Experience
Mr. Rakesh Tripathi, Director of Transportation Planning, Texas DOT, USA

3:30-4:30 Presentation of Key findings from the workshop and Way Forward -
Dr. Rakesh Mohan, Chairman, NTDP
Mr. Ben L. J. Eijbergen, Lead Transport Specialist, World Bank
Members/Member Secretary, NTDP

4:30-4:45 Concluding Remarks
Mr. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission

JUNE 15, 2012

Workshop on “Developing Integrated Strategy for Bulk Transport of Energy and other Key Commodities in India”: National Transport Development Policy Committee (NTDP)

Venue: Multi-Purpose Room, India International Centre (Main)

Agenda

FRIDAY, JUNE 15, 2012

9:00-9:30 Registration & Coffee

Plenary Session:

Chair: Mr P. Uma Shankar, Secretary , Ministry of Power

9:30-9:45 Opening remarks

Mr. P. Uma Shankar, Secretary, Ministry of Power

9:45 – 10:00 Welcome address

Mr. Hubert NoveJosserand, Operations Adviser, World Bank

10:00-10:45 Setting the Context – Medium- and Long-Term Issues in Transport of Energy & Bulk Commodities in India
Dr. Anupam Khanna, Chief Economist, NASSCOM and Convener, Working Group on Bulk Transport, NTDP

10:45-11:00 Coffee Break

Session on International Experiences in Integrated Transportation Planning for Bulk Commodities - I:

Chair: Mr S.K. Srivastava, Secretary, Ministry of Coal; Discussant: Mr Ranjan Jain, Advisor (Infrastructure), Railway Board

11:00-11:45 Presentation on International Lessons in Bulk Transport of Energy and Related Commodities from the United Kingdom

11:45-12:00 Questions & Answers
Mr. Paul McMahan, Office of Rail Regulation, UK

12:00-12:45 Presentation on International Comparison of Bulk Transport by Rail
Questions & Answers

12:45- 1:00 Mr. Ralph Jahncke, Chairman, Trancare AG, Germany

1:00-2:00 Lunch Break

Session on International Experiences in Integrated Transportation Planning for Bulk Commodities - II:

Chair: Mr. A.S. Bakshi, Chairman, Central Electricity Authority; Discussant: Mr H.D. Gujrati, Executive Director (TTS), Railway Board

2:00-2:45 Presentation on International Lessons in Bulk Transport of Energy and Related Commodities from China

2:45-3:00 Questions & Answers
Dr. Zhaoguang Hu, Vice President, State Grid Energy Research Institute, Republic of China

3:00-3:15 Coffee Break (During Session)

3:15-4:00 Presentation on Lessons for India from Other Major Coal Transporting Countries
Questions & Answers

4:00-4:15 Mr. Ralph Jahncke, Chairman, Trancare AG, Germany

Concluding Session:

Chair: Dr Rakesh Mohan, Chairman, NTDP

SOUTH-SOUTH TOUR TO SOUTH AFRICA

NTDPC - South-South tour to South Africa		
Schedule - March 19 to March 28, 2012		
Time	Official/Dept. to be met	Venue
	Team	
	Monday March 19, 2012	
	Fly to Addis from New Delhi by Ethiopian Airlines ET 689, leaving 0245 AM, Reaching Johannesburg at 13:20 PM, stay in Sheraton Pretoria Hotel	
	Tuesday March 20,	
3:00 PM	Meeting with Deputy Minister, Ministry of Transport	Ministry of Transport, Pretoria
7:00 PM	Dinner Hosted by SANRAL	
	Wednesday, March 21, 2012	
9:00 AM	Meeting with SANRAL Management Team	SANRAL Office, Johannesburg
11:00 AM	Visit to SANRAL Overload Control Center	SANRAL Overload Control Center
12:30 PM	SANRAL multi-lane toll system and ITS, Working	SANRAL Central Corridor Station
4:00 PM	Back to Pretoria	
	Thursday, March 22, 2012	
7:00 AM	Travel to Expressway N4, proceed to Malelane and visit Kruger National Park, stay the night in Nelspruit	Leaveslodge Hotel
	Friday, March 23, 2012	
8:00 AM	Meet CEO MCLI (and officials from	MCLI office, Nelspruit
9:00 AM	Proceed to Maputo, Working Lunch	
3:00 PM	Return to Nelspruit	Stay the night in Nelspruit in Leaveslodge Hotel
	Saturday, March 24, 2012	
	Return to Johannesburg by Road, Fly to Capetown by SA 347, stay in Taj Hotel Cape Town , departure 15:05 PM, Arrival in CT 1715	
	Sunday, March 25, 2012	
	Monday, March 26,	
9:00 AM	Meeting with CEO, Port Regulator	Indian Delegation
11:00 AM	Visit to cape Town Port	Indian Delegation
	Tuesday, March 27, 2012	
	Fly to Johannesburg by SA 316 Departing from Capetown at 08:50 a.m., arriving in Johannesburg at 10:50	
	Fly to New Delhi via Addis, ET 808, departing J'burg 14: 20 PM	
	Wednesday, March 28, 2012	
	Arriving in Delhi at 9:10 AM	

ANNEX P.6

LIST OF PARTICIPANTS AT CONSULTATIONS WITH STATE GOVERNMENTS**1. STATE CONSULTATION AT PATNA ON OCTOBER 8 - 9, 2012**

NAME OF THE OFFICER	DESIGNATION	MINISTRY/DEPARTMENT/ ORGANISATION
NTDPC		
Shri K.L. Thapar	Member	NTDPC
Shri D.P. Gupta	Member	NTDPC
Shri B.N. Puri	Member Secretary	NTDPC
Shri M.M. Hasija	Adviser	Ministry of Shipping
Shri Shri R.K. Pandey	Chief Engineer	Ministry of Road Transport & Highways
Shri Davendra Singh	Director	Ministry of Railways
Shri Dipankar Khasnabish		Infosys
Dr. Krishna Dev	Consultant	NTDPC
Ms. Shruti Jain	Consultant	NTDPC
Government of Bihar		
Shri Vrishin Patel	Hon'ble Transport Minister	
Shri R.K. Mahajan	Pr. Secretary, Transport Govt. of Bihar	
Shri Pratyaya Amrit	Secretary	Road Construction Deptt., Bihar
Shri Udai Kumawat	Administrator	BSRTC
Shri N.P. Yadav	Joint Secretary	Transport Department, Patna
Md. Reyazuddin	Executive Engineer	BRRDA, Rural Works Department, Bihar, Patna
Shri Chandra Shekhar		Road Construction Deptt., Bihar
Shri Babban Ram		Road Deptt., Bihar
Dr. Neena Jha	ADPRO	Govt. of Bihar, Patna
Government of Chhattisgarh		
Shri Sanjay Singh	Jt. Tpt. Commissioner	Chhattisgarh, Raipur
Government of Jharkhand		
Shri A.K. Sinha	Secretary to Transport Commissioner	
C.B. Sahu	Programme-cum	
Government of Odisha		
Shri S. Mahapatra	Commissioner & Spl. Secretary, C&T Deptt.	
Ministry of Railways		
Shri Neeraj Ambastha	Chief Transport Planning Manager	
Ministry of Civil Aviation		
Shri Arvind Dubey	Director, AAI	
Ministry of Shipping		
Shri Gurmukh Singh	Director	IWAI, Patna
Shri K.K. Sahoo		IWAI, Patna
Urban Development Department, Bihar		
Shri S. Siddharth	Secretary	Urban Development Department
Shri A.K. Singh	Joint Secretary	UD & HD
Stakeholders from State of Bihar		
Shri T.K. Sinha	Hony. Secretary	Automobile Association of Eastern India, Patna
Shri Anand K. Sinha	Hony. Joint Secretary	-do-
Shri Amit Mukherjee	Member	-do-
Shri Jagannath Singh		Bihar Motor Transport Federation, Patna
Shri Dharendra Bhati		Bihar Motor Transport Federation, Patna
Shri Prabhat P. Ghosh	Director	Asian Development Research Institute, Patna
Shri Bhanu Shekhar Prasad Singh	President	Bihar Truck Owner's Association, Patna
Shri Shashi Shekhar	Member	-do-
Shri Arun Kumar	Principal	NINI (IWAI)
Shri Uday Shankar Singh	President	-do-
Shri Irfan Alam	Founder	Sammaan Foundation

2. STATE CONSULTATION AT MUMBAI ON FEBRUARY 4 - 5, 2013

NAME OF THE OFFICER	DESIGNATION	MINISTRY/DEPARTMENT/ ORGANISATION
NTDPC		
Shri B.N. Puri	Member Secretary	NTDPC
Shri D.P. Gupta	Member	NTDPC
Shri Vivek Sahai	Member	
Shri Cyrus Guzdar	Member	NTDPC
Shri SK Lohia	OSD (UT)	M/o Urban Development
Shri M.M. Hasija	Adviser	Ministry of Shipping
Shri Anil Devli	CEO	INSA
Shri Kripakaran		Infosys
Dr. Krishna Dev	Consultant	NTDPC
Shri Honey Gupta	Consultant	NTDPC
Government of Maharashtra		
Shri Gulabrao Deokar	Hon'ble Transport Minister	
Shri JK Banthia	Chief Secretary	Government of Maharashtra
Dr. SK Sharma	Pr. Transport Secretary	Government of Maharashtra
Shri VN More	Transport Commissioner	Government of Maharashtra
Ms. K Vijaya Laxmi	Addl. Chief	MMRDA
Government of Madhya Pradesh		
1. Shri Anthony Desa	Addl. Chief Secretary	Government of MP
4. Government of Goa		
1. Shri Arun Desai	Director (Transport)	
Government of Gujarat		
1. Shri JP Gupta	Transport Commissioner	
UT of Dadra & Nagar Haveli and Daman & Diu		
1. Shri KT Parmar	Assistant Director, Transport	
Stakeholders from State of Maharashtra		
1. Shri Nitin Dossa	Executive Chairman	Western India Automobile Association
2. Shri Shirish Deshpande	President	Mumbai Grahak Panchayat
3. Shri Malkit Singh Bal	President	All India Motor Transport Congress
4. Shri Shashank Rao	President	Mumbai Autorickshawmens Union
5. Shri AL Quadros	General Secretary	Mumbai Taximen's Union
6. Shri Anil Garg	President	Bus Owners Association
7. Shri Prem Singh	President	Mumbai Taxi Association
8. Shri Ashok Datar	Chairman	Mumbai Environment Social Network
9. Shri Akshay Mani	Project Manager, Urban Transport	Embarq India
10. Shri Madhav Pai	Director	Embarq India
11. Shri Bhavesh Patel		Manavata
12. Shri Shailesh Goyal	Member Zonal Railway	
13. Shri Sudhir Badami	Transport Consultant	
14. Shri Daljeet Singh	President	Maharashtra Transporter's Welfare Association
15. Shri DS Naik	Secretary	School Bus Owner Association
16. Brahma Kumaris	Transport & Travel Wing	Brahma Kumaris

3. STATE CONSULTATION AT UT OF CHANDIGARH ON MAY 27, 2013

NTDPC

Shri K.L. Thapar	Member	NTDPC
Shri B.N. Puri	Member Secretary	NTDPC
Shri D.P. Gupta	Member	NTDPC
Shri M.M. Hasija	Adviser	Ministry of Shipping
Shri OP Shemar	Adviser	M/o Road Transport & Highways
Shri Devendra Singh	Ed/Planning	Ministry of Railways
Dr. Krishna Dev	Consultant	NTDPC
Shri Honey Gupta	Consultant	NTDPC

NAME OF THE OFFICER	DESIGNATION	MINISTRY/DEPARTMENT/ ORGANISATION
Government of UT of Chandigarh		
Shri Ajoy Sharma	Special Secretary (Tpt.)	Govt. of Chandigarh
2. Shri MM Sabharwal	Joint Secy. (Transport)	Govt. of Chandigarh
3. Shri Balbir Singh Dhol	Secy, STA	Govt. of Chandigarh
4. Shri Sanjay Gaur	Executive Engg.	M/oRT&H Regional Office, Chandigarh
5. Shri Mahesh Kumar	EIC, PW(B&R)	Govt. of Chandigarh
6. Shri SP Parmar	GM, CTU, Chd	Govt. of Chandigarh
Government of Haryana		
1. Shri Bhupendra Singh	Addl. Transport Commissioner	Govt. of Haryana
2. Shri NK Garg	Chief Engg,	ULB, Govt. of Haryana
3. Shri AK Bhardwaj	DSP Traffic, Highways (Karnal)	Govt. of Haryana
4. Shri Rakesh Sharma	Traffic & Highways, Karnal	Govt. of Haryana
5. Shri Gurmeet Singh		Govt. of Haryana
6. Shri Mandeep		Govt. of Haryana
7. Shri Jitender Singh	Sr. Town Planner	T&CP Deptt., Govt. of Haryana
8. Dr. Parveen K. Garg	Director, Health Service	Govt. of Haryana
9. Shri Deepak Bhardwaj	Chief Ground Instructor (HICA)	Haryana Institute of Civil Aviation
10. Capt. Kamal Kishor	Executive Director	Haryana Institute of Civil Aviation
11. Shri Naresh Kumar	Admn. Officer	Haryana Institute of Civil Aviation
12. Shri SB Boora	CE,	PWD, Govt. of Haryana
13. Shri Satish Kumar Ruhil	Jt. State Transport Controller	State Tpt., Haryana
Government of Himachal Pradesh		
1. Ms. Shubhra Tiwari	Addl. Secy. (Transport)	Govt. of Himachal Pradesh
Government of Jammu and Kashmir		
1. Shri MM Kakroo, IAS	Secretary, Transport	Govt. of J&K
2. Shri JS Tandon	MD, J&K SRTC	Govt. of J&K
Government of Punjab		
1. Shri A. Venu Prasad	Secretary, Civil Aviation, Punjab	Govt. of Punjab
2. Shri Amarपाल Singh	Addl. Secretary, Transport	Govt. of Punjab
3. Shri Harmail Singh	Addl State Tpt Commissioner	Govt. of Punjab

4. STATE CONSULTATION AT JAIPUR, RAJASTHAN ON AUGUST 1, 2013

NTDPC

Shri K.L. Thapar	Member	NTDPC
Shri B.N. Puri	Member Secretary	NTDPC
Shri S Sundar	Member	NTDPC
Shri DP Gupta	Member	NTDPC
Prof Dinesh Mohan	Member	NTDPC
Dr. Krishna Dev	Consultant	NTDPC
Shri Honey Gupta	Consultant	NTDPC
Shri Kripakaran		Infosys

Government of Delhi

Shri Raj Kumar Singh	Addl Transport Commissioner	Govt of Delhi
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Government of Rajasthan

Shri RP Khandelwal	Secretary,	PWD
Shri Naresh Pal Gangwar	CMD	RSRTC
Shri GL Rao	CE (R)	PWD
Shri GP Meena	CTPM/NWR	Railways
Shri SP Mishra	Addl Transport Commissioner	Govt of Rajasthan
Shri JC Mohanty	Pr Secretary	PWD
Shri Viswas Jain	MD, CEG	
Shri Vishram Meena	ED	RSRTC
Shri Mukul Raj	Addl Transport Commissioner	Govt of Rajasthan
Shri Gormmal	PRO	Govt of Rajasthan
Dr UN Pandey	MS	RSPCB

NAME OF THE OFFICER	DESIGNATION	MINISTRY/DEPARTMENT/ ORGANISATION
Shri RRD Kirori	CEG Limited	
Ms Preeti Mathur	OSD, JSTSL	
Ms Suchi Sharma	MD	JCTSL
Shri Suresh Singhal	FA, Transport Deptt	Govt of Rajasthan
Shri Ravindra Yadav	Dy. Transport Commissioner (Modernisation)	Govt of Rajasthan
Shri RC Yadav	Dy. Transport Commissioner (Tax)	Govt of Rajasthan
Shri Satveer Yadav	Dy. Transport Commissioner	Govt of Rajasthan
Ms Nidhi Singh	Dy. Transport Commissioner	Govt of Rajasthan
Shri DS Rathore	Addl Transport Commissioner	Govt of Rajasthan
Shri Ravindra Joshi	Addl. Transport Commissioner	Govt of Rajasthan
Government of Uttar Pradesh		
Shri BS Bhullar	Pr. Secretary, Transport	Govt. of Uttar Pradesh
Shri Rajnish Gupta	Transport Commissioner	
Government of Uttarakhand		
Shri SK Singh	Dy. Transport Commissioner	Govt of Uttrakhand

5. STATE CONSULTATION AT BANGALORE, KARNATAKA ON AUGUST 26, 2013

NTDPC

Shri S Sundar	Member	NTDPC
Shri B.N. Puri	Member Secretary	NTDPC
Shri D.P. Gupta	Member	NTDPC
Shri Vivek Sahai	Former Chairman	Railway Board
Prof Dinesh Mohan	Member	NTDPC
Ms Archana Srivastava	ED/Plg/LRDSS	
Shri Raj Kumar Singh	Director (UT)	Ministry of Urban Development
Shri OP Shemar	Adviser	M/o Road Transport & Highways
Shri Devendra Singh	ED/Planning	Ministry of Railways
Dr. Krishna Dev	Consultant	NTDPC
Ms Shruti Jain	Consultant	NTDPC
Shri Dipankar Khasnabish		Infosys
Shri Kripakaran		Infosys
Shri Ramesh K Sharma	AAO	NTDPC

Government of Andhra Pradesh

1 Shri G. Anantha Ramu	Commissioner (Transport)	Govt of Andhra Pradesh
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Government of Karnataka

Shri SV Ranganath	Chief Secretary	Govt of Karnataka
Shri Rajkumar Khatri	Pr Secretary, IDD	Govt of Karnataka
Shri SK Pavithra	Superintendent Engg.	Office of KRDCL, Bangalore
Shri B. Chandapur	Under Secretary (EAP)	PWD
Shri Shivananda	Dy Chief Engineer	BMRCL
Shri C. Jayaram	Director (Project)	BARL
Shri Shailendra Singh	Special Officer, DLLT	UDD
Ms V Manjula	Pr Secretary, Planning	Govt of Karnataka
Shri NRN Sinha	KSIDC	
Shri Anjum Parwez	MD	BMTC
Shri MB Burji	Addl Secretary	KPWD
Shri PS Kharola	MD	BMRCL
Shri Rabi Satav	PPP (E) in IDD	ADB
Shri Manivannam P	CPO	Karnataka State Highway Improvement Project
Shri SN Srivastava	CS, HMRDC	K-RIDE
Shri G. Sreedhar Rao	Consultant	K-RIDE
Shri Pon. Semhalmathan	Assistant Secretary	State Transport Authority

Government of Kerala

Shri Alex Paul	Joint Transport Commissioner	Govt of Kerala
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Government of Tamil Nadu

Shri R Radhakrishnana	Joint Transport Commissioner	Govt of Tamil Nadu
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CONSULTATIONS WITH THE STATE GOVERNMENTS

REGIONAL CONSULTATIONS

States have a crucial role in assuring a healthy, comprehensive, and integrated transportation system in India. Therefore, the NTDPCC organized 5 state level regional meetings in Patna, Mumbai, Chandigarh, Jaipur and Bengaluru, with the objective of building a common understanding on issues, interests, and concerns and to solicit inputs from the State Governments and other stakeholders on the formulation and implementation of the policy framework.

ISSUES HIGHLIGHTED AND THE WAY FORWARD:

A Roads Transport

CURRENT IMPEDIMENTS:

- a) Environmental, forest & wildlife clearances: Many projects face substantial delays in receiving environmental, forest or wild life clearances and permission to cut trees.
 - b) Need for a Regulator: India's Roads & Highways sector needs a regulator. Current arrangements at the centre and states (MORTH, NHAI, MPRDC, PWD etc.) can result in conflict of interest as the rule making body is also the implementing body and there is no independent assessment of its performance. Key functions of the proposed regulator can include tariff setting, regulation of service quality, assessment of concessionaire claims, collection and dissemination of sector information, setting service-level benchmarks, etc..
 - c) Tolling Issues relating to Private Parties: Leakages in toll collections because of presence of alternate routes to various stretches is a major issue.
 - d) Tolling Issues relating to Users: In 6-laning projects, users are required to pay the full toll rates applicable for 4/6 lane roads even during the upgradation, despite significant deterioration in the quality of service during that time.
 - e) Financing of Projects: An underdeveloped bond market has forced PPP road projects to mainly depend on debt from commercial banks.
 - f) Land Acquisition: Land acquisition is a long-drawn out process. There is no framework that outlines the role of a state government in providing assistance to NHAI in acquiring land.
 - g) Lack of consolidation and preservation of road assets: Lack of regular maintenance and repair, has qualitatively impaired the road network.
 - h) Institutionalization of a database system: The current data collection system for the road sector on topics like the road inventory, bridge inventory, condition of roads, bridges and other structures, road cost, traffic carried and accidents etc. is mainly ad-hoc. This hampers decisions-making processes in planning for road development and its regular maintenance.
- i) Inter-disciplinary coordination: There is lack of synergy between the planning authorities, implementation authorities, and authorities responsible for monitoring projects.
 - j) Inadequate road network coverage: The National Highways constitute only 2% of the road network of India, but carry nearly 40% of the total traffic, leading to severe congestion. Thus, freight travels only a third of the distance in India as compared to the developed countries.
 - k) Poor road quality: It is estimated that less than 10% of the road network is motorable. Large stretches of National Highways are two-laned which reduces their traffic-handling capacity.
 - l) Human resources: The construction and ongoing maintenance of Indian roads is severely limited by a shortage of skilled professionals. Hardly any ITIs or training centers impart training to workers, equipment operators and work supervisors.

THE WAY FORWARD:

- a) Toll pricing: Fixation of user fees should be based on the additional benefits accruing to the users due to construction/upgradation of the infrastructure. A study should also be done to assign costs of building and maintaining roads to different types of vehicles.
The existing policy of fixation of toll rates needs to be reviewed. The policy of reduction in the rate of tolling after the recovery of capital cost for public funded projects or after the expiry of the concession period for private investment projects needs to be reviewed.
The tolling system should be standardized by using RFID based tolling for electronic toll collection and by allowing a single toll card for toll payment across major toll plazas. Electronic Toll collection (ETC) system needs to be progressively introduced.
A "Congestion Pricing" policy may be adopted for levying additional toll, especially for Heavy Goods Vehicles (HGVs), depending upon the number of axles and emission class.
- b) Alternate revenue mechanisms: These include: a) advertisement rights, b) Real estate development along the Highway Corridor, c) Way side amenities, and d) fees from Right of Way (ROW) users like optical fiber, mobile towers etc.
- c) Capacity Development: Enhance cross-functional understanding of implementation agencies through training and development programs; develop capacity in NHAI to raise resources, vendor management, concessionaire management and project implementation; training policy to focus on training at entry and on job site, and provide periodic refresher courses; encourage engineering and technical institutions to attract students in highway engineering profession.
- d) Faster Implementation of Projects can be done by using technological solutions for real-time

project monitoring, taking timely necessary corrective actions, faster decision making, etc.

- e) Advanced Traffic Management System (ATMS) can be introduced progressively, especially on 4-lane National Highways and National Expressways, to enhance safety and comfort of road users.
- f) Environmental Aspects: A rational timeline should be prescribed for processing and finalizing the various mandatory clearances. MoEF may consider enhancing the powers of its Regional Offices for granting forest clearance. Conditions for forest clearance should be standardized. Resurfacing, strengthening and widening should be allowed on the existing roads where no diversion is involved. Once approval is granted for doing surveys on an alignment, the proposal should not be rejected subsequently on other grounds.
- g) Rehabilitation & Resettlement (R&R) of project affected people: A uniform R&R policy should be evolved for all types of projects, applicable both for the Central Sector and the State Sector. For green-field expressway projects a separate framework is required considering the vast socio-economic implications, land severance issues, land use changes, environmental issues etc. The project-affected people can also be involved as stake holders in such projects.
- h) Consolidation and preservation of Road assets by involving the Private Sector is required. "Pavement Preservation Strategy" has to be evolved on priority. "Pavement Management System" (PMS) and "Bridge Management System" (BMS) also need to be developed.
- i) Maintenance of database: An integrated Road Information System (RIS) should be established and periodically updated both at the Central and the State levels.
- j) A Comprehensive Master Plan should be developed for network development of NH, SH, MDR & ODRs of 20-25 years with a nodal department for development of each component.

BARRIERS TO ROAD FREIGHT MOVEMENT

- a) Multiple check points: Truck operators deal with a number of different agencies (including Sales Tax, Regional Transport Officer, and Excise) for either obtaining clearances for carrying goods or paying certain charges. These checks are generally conducted at different points resulting in more than one detention, which contributes to lower average speed and higher fuel consumption. This adversely affects inter-state road transport as compared to freight/cargo transport by the railways, aviation and even inland transport, which do not face such rigorous en route checking. This has also thwarted the formation of single common market in India.
- b) Road transport sector is subject to myriad levies/taxes (both Central and State) with no provision

of set-offs in many taxes/levies. These levies/taxes include: (i) taxes on vehicle purchase, (ii) taxes on operation of motor vehicles, fuel taxes, motor parts, tyres and tubes, etc., (iii) Sales tax/VAT, (iv) Registration and Transfer fees, license/permit fees, etc. High incidence of these fees/taxes erodes the competitiveness of domestic manufactures.

SUGGESTED MEASURES TO OVERCOME BARRIERS IN FLOW OF ROAD FREIGHT MOVEMENT

- a) Integrate Tax administration with inter-State road freight and passenger movement through online communication network system at national, regional and local levels. This will help move towards border-less and paper-less movement of freight traffic across borders. Checking / verification work can be done through electronic surveillance and computerization.
- b) Adopt the concept of "Green Channel", currently being implemented in Gujarat. Freight with single destination accounts for a large proportion of consignment and this proportion is likely to increase with increasing containerization. Such road cargo could be accorded "Green Channel" treatment provided necessary papers are prepared and sent to the check post in advance. Introduction of smart cards for vehicle registered ("Vahan") and driving license ("Sarathi") will be a pre-requisite. Development of National Registers for vehicles and the traders, who are frequent users of Check Posts, will also be required.
- c) Adopt "Single Window Clearance System" for all authorized charges/clearances both at origin and at Check Posts. The Andhra Pradesh approach for computerization of the Inter-State Check Posts (ICPs) may be adopted. Use of a common software has ushered in a Single Window Checking Facility covering 8 major departments at 5 ICPs on National Highways (NHs) bordering adjoining States.
- d) Freight agents and brokers are important actors in the trucking industry. They have now been brought under the purview of legislation, Carriage by Road Act, 2007. This provides for registration/accreditation of brokers and freight agents.
- e) Abolish requirement of a transit pass.
- f) Amend MV Act, removing penalty payment clause and retaining only removal excess load from the trucks. Install WIM (Weigh-in-Motion) to identify violators. The colour of truck number plate of inter-State vehicles should be different from the intra-State vehicles to help segregate goods vehicles and reduce the intermediate checking of inter-State freight movement.

ISSUES CONCERNING SEAMLESS ROAD PASSENGER MOVEMENT

- a) Lack of uniformity in motor vehicle taxation including taxation for various passenger trans-

port vehicles like tourist taxis, maxi cabs, All-India tourist buses, etc.

- b) Problems faced by private service vehicles and educational institutional buses transporting workers and students respectively between neighbouring States.
- c) Issue of Inter-State Agreements for Stage Carriage buses.
- d) Absence of holistic transport planning including non-availability of benchmarks for bus operations in India, assessment of passenger and goods travelled demand on a regular basis.
- e) Absence of inter-modal integration in terms of common ticketing, transfer stations, etc.
- f) Problems affecting State Road Transport Undertaking (SRTUs) including recurrent losses resulting from various internal and extraneous factors.

RECOMMENDATIONS/SUGGESTIONS FOR IMPROVING THE SYSTEM

- a) Rationalization of tax structure in passenger transport: Taxation on different categories of vehicles should be harmonized to achieve uniformity in the taxation rates.
 - b) Inter-modal integration: For greater efficiency of the transport network, proper integration of different modes such as rail, bus, and other para-transit modes is essential with regard to: (i) transfer station(s), (ii) ticketing (iii) harmonization of arrival/ departure schedule, etc.
 - c) Guidelines for Inter-State Agreements: Entering into inter-State agreements, as required under Section 88 of the MV Act, is a long-drawn process and hampers smooth movement of passenger buses between States. Government of India could frame basic guidelines in this matter to facilitate speedy finalization of such agreements.
 - d) Seamless movement of passenger transport vehicles in line with the New National Permit System for goods vehicles: It is essential that All India Tourist Taxi Cabs, Maxi- Cabs, All India Tourist Buses and buses covered by Special Permits under Section 88(3) of MV Act, 1988 should also be subjected to uniform fees for free movement throughout the country.
 - e) Scientific assessment of passenger and goods travel demand: Traffic studies for major transport corridors can help assess demand for both passengers and goods. This can assist in a making a proper assessment of the requirement of bus fleet, bus frequency, augmentation of routes, and for building infrastructure for goods transport such as parking facilities, rest facilities for operators, weighing bridges, fuel stations, etc..
 - f) Framework for Competitive Public Bus Passenger Transport Services should be prepared, and should encourage: (a) competition in the market: this occurs where there is no restriction on entry, and (b) competition for the market: where entry is restricted, it is possible to increase competition for the right to service individual routes, for the
- sole right to provide a whole network or to undertake particular functions as a subcontractor to a monopolist operator.
 - g) Electronic toll collection (ETC) system can improve throughput at toll centers by 3 to 4 times, thereby significantly reducing waiting times and fuel consumption. Toll operators also benefit from lower personnel requirements and reduced leakages.
 - h) Para-Transit policy framework should be evolved.
 - i) Enforcement of higher fuel efficiency norms for vehicles could help address the twin problems of energy security and environmental pollution.
 - j) Fleet Modernization by replacing older vehicles with newer ones (with better technology and lower emissions) needs serious consideration. This can be done by giving incentives to owners of commercial vehicles older than 15 years to modernize their fleet, encourage owners of private vehicles older than 15 years to replace their vehicles through a suitable tax regime, a vehicle recycling policy, and improvement in the inspection and certification regime.
 - k) Encourage use of multi axle vehicles (MAV): MAV (gross tonnage including weight of truck of over 16.2 tonnes) are cheaper to operate compared to smaller trucks i.e. medium commercial vehicles and light commercial vehicles, by over 25%. The incremental cost of a MAV can be recovered in less than three years. Measures to promote the use of MAVs could be considered including excise duty reductions for MAVs similar to small and fuel efficient cars, stringent monitoring of overloaded trucks and enforcing pollution and safety norms.
 - l) Vehicle Safety Standards, Inspection & Certification: Mandatory checks are presently required only for commercial vehicles. Private vehicles are also required to be checked for fitness once in 15 years. All vehicles should be required to be tested for emissions at least once in six months. There should be a regular audit of pollution checking Centres. A Vehicle Inspection & Certification system should be put in place in a phased manner under PPP with strict supervision. Private vehicles also need to be brought into the regular fitness regime. A third party vehicle inspection programme can be considered, and the State Road Transport Authority could monitor and audit the system.
 - m) Ensuring passenger safety requires strict enforcement of road safety regulations focusing on proper driver selection, training and regulating their driving conditions and hours of work. There is a need to identify unregulated service providers like shared autos and set certain core standards. Smaller vehicles like three-wheelers should ideally serve as a complementary system or render feeder service to the public transport instead of supplementing it.

B. Railways

MAJOR ISSUES CONFRONTING RAILWAYS

- a) Capacity constraints: Indian Railways has suffered a steady decline in its share in freight and passenger traffic as its network is plagued by infrastructural and carrying-capacity constraints.
- b) Investment Planning: Investment in Indian Railways has to be sharply focused and directed towards removing capacity constraints and improving operations. Investment should be focused on total capacity creation including rolling stock, asset renewal, technology induction etc. This should be quantifiable in terms of incremental tonne kms.
- c) Project Execution: IR does not have good track record on funding and execution of projects. Available funds are spread thinly on numerous projects which are then left incomplete.
- d) Safety & Reliability of Operations: Failure of equipment and disruption to traffic on account of accidents continues to be a problem and affects operational reliability.
- e) Social and commercial objectives: For long-term sustainability, IR has to strike a balance between the commercial and the social parts of the business, which have to be kept distinct and separate and managed appropriately.
- f) Financial issues (cost, tariff and accounting): In the short run, most of the costs incurred by IR are fixed and therefore, the only option left is to expand volumes on a large scale.
- g) Tariffs: Passenger tariff-setting has to be made rational and attuned to business growth requirement. Freight tariff needs to be based on differentiation linked to type and quality of service offered. Setting fares for freight and passenger should consider the competition from other modes, provision of subsidy, and need for generation of surpluses for reinvestment.
- h) Accounting System: The present system of accounting does not assist decision making. For example, it gives little information on how to control costs, as accounts are kept on "heads of account" rather than on the basis of activities. There is no satisfactory way to figure out, for example, which are the paying lines and which are not; which trains yield how much; what is the cost of a marshalling operation, or the cost of overhaul of locomotives at each depot.
- i) Productivity: The wage costs are high and the productivity of employees as measured in terms of transport output (million of passenger-kms and freight-ton-kms per employee) is relatively low compared to USA, Japan, Russia and China. Similarly, NTKMs per wagon per day and transport output per route kms is low compared to Chinese and Russian Railways.
- j) Human Resource: HR functions in Indian Railways have traditionally evolved in the context of its being in the government. There is no mecha-

nism for attuning recruitment and training to the job requirements through rewards and incentives. Multiplicity of departments and services would need to be reviewed.

- k) Organization Structure: Railway is organized in terms of several functional departments. The staffing pattern does not match the skills required to build a technologically sophisticated, responsive and customer-focused organization. IR also performs a wide range of activities from manufacturing of coaches/locomotives to running of schools/hospitals. Each one of these activities needs to be examined afresh from the perspective of either retention or hiving off based on operational need for integration, and "make or buy" decision. There is also a need to empower heads of Zonal Railways to a higher degree and hold them accountable for not only operational, but also financial results.
- l) Research & Development: Indian Railways has not been in the frontier of developing or innovating railway technologies. The gap between the state-of-the-art and technology adopted in construction, maintenance and operation on IR needs to be bridged.

DESIRABLE PLAN OF ACTION

- a) Investment: Prioritization is needed in many areas viz. dedicated freight corridors, high capacity rolling stock, last mile rail linkages & improved port connectivity. Operationally urgent and quick pay-off projects that can ease capacity constraints the fastest need to be prioritized for full funding and time-bound execution.
- b) Development of logistics parks would also need to be taken up on priority to create matching terminal and handling capacity and facilitate integration of rail with other modes.
- c) Enhancing Project execution capabilities is critical for speedy capacity creation and improving returns on investments.
- d) Capacity constraints: The planning framework needs to change to ensure creation of capacity ahead of demand. In addition to removing bottlenecks that already exist, planning for future must be based on an in-depth analysis of the market trends. Planning should consider the service delivery strategy, prioritization of projects, requirement and mobilization of the resources and strengthening the organizational capacity for project execution.
- e) Replacement and renewal of assets: The present ad hoc approach in respect of appropriation to Depreciation Reserve Fund needs to be replaced by a rule-based approach.
- f) Safety and Reliability of operations: A comprehensive and holistic approach to planning and operation is needed to attain a state-of-zero accident as stated in Vision 2020.
- g) Social and commercial objectives: The commercial and social roles of IR should be kept distinct

and separate. The commercial part of the business has to be run with a clear set of objectives and judged by commonly accepted financial measures such as revenue, profit, return on capital and productivity of assets. The social part of the business would need to meet different goals and judged by parameters such as improvement in connectivity, service level, and efficiency of delivery/provision of projects/services.

- h) Cost structure: Viability in the short run dictates that the volumes expand at viable tariff levels. As larger volumes bring down unit cost of operations, it could lead to a virtuous cycle of even larger volumes. This, however, presupposes that capacity is not a constraint and that the services offered create value for the customers.
- i) Accounting System must be revamped to accurately reflect the cost of various activities.
- j) Productivity: Increase in axle load, better payload to tare ratio, higher trailing load and improvement in headway etc. could improve productivity relatively quickly.
- k) HR: To attract, nurture and retain talent in large numbers for growth in future, IR has to take a close look at its HR policies and practices. Recruitment of highly qualified PhDs from IIMs/IITs and lateral recruitment from market at suitable compensation should be considered.
- l) Research & Development: R&D projects need to be identified based on operational needs and potential financial returns. These need to be supported through allocation of the adequate resources along with clear-cut accountability for their completion. An annual performance audit of RDSO and the R&D projects needs to be instituted.
- m) Organizational Reforms: IR has to undertake a number of internal organizational reforms to speed up decision-making and bring about result-orientation even while retaining the departmental structure. This includes reorganization on business lines, separation of policy making and operational responsibilities at the Railway Board level, outsourcing/hiving off of certain activities, empowerment of Zonal Railways along with accountability, investment planning, increasing project execution capability, accounting separation on business lines, business process re-engineering, setting up independent tariff-setting and dispute resolution mechanisms for PPPs, etc.
- n) Information Technology: Business processes need to be reviewed and reengineered, wherever needed, before adoption of IT tools. Use of existing IT infrastructure needs to be optimized and adoption of relevant emerging technologies like cloud computing and crowd sourcing, systematically planned. There is a need for a comprehensive IT security system and change in management practices to take advantages of the investment in IT.

C. Civil Aviation

ISSUES FOR CONSIDERATION

- a) Route Dispersal Guidelines of 1994 serves a social need, but economically it results in losses for India's domestic airlines, since they must allocate their scarce resource, aircraft, to service routes that experience light passenger traffic. This also adversely impacts the entry of potential carriers, and creates a disincentive to further expand an airline's fleet and service. It skews the market towards large firms.
- b) Slot Allocation Policy: The rules of the slot allocation policy create barriers to entry for new entrants, thus limiting the number and range of air carrier service providers. Application of the grandfather rule, freeing-up of underutilized slots only every six months, the same carrier controlling slots that are utilized 80% or more during the following season, and banning trading of slots between carriers aggravate the anti-competitive results of this policy.
- c) Fleet and Equity Requirements for Domestic Passenger Air Service: These regulations also raise barriers to entry, limiting both the number and size of new market entrants.
- d) Airport Infrastructure: Poor airport facilities stand in the way of the development of the air transport sector and hinder overall economic growth.
- e) Anticompetitive Behavior and Pricing: Abnormally low fares are affecting the financial viability of the airlines. While a cartel erects barriers to entry into the market place, predatory pricing itself makes it unprofitable for new entrants and thus limits competition. In either case the long term viability of the industry is harmed to the detriment of consumers.
- f) Taxation and Pricing of Air Turbine Fuel (ATF): High fuel costs make it difficult for incumbent Indian airlines to grow and for new airlines to enter the market.
- g) Human Resource Development: Indian aviation needs to recruit and train people in large numbers. As other countries are competing for the same talent pool, this presents a problem.

KEY ENABLERS

- a) Development of heliports is important to support the growth of general aviation in India, especially in areas that cannot have runways for financial or terrain related challenges. There is a need to develop standardized route operating procedures for helicopters and a PPP policy for the development of heliports.
- b) Support infrastructure at airports in Tier 2/3 cities needs to be developed. This includes night-landing facilities, enhancement of passenger amenities and state support in statutory services (like security) to boost the GA industry. GA facilities at metro airports also need an upgrade in terms of separate terminal, parking space, etc.

- c) Upgradation of non-operational air-strips: Non-operational air strips need to be upgraded in places of economic significance such as ports, tourist places and industrial clusters.
- d) Regulatory framework for equitable treatment to General Aircraft (GA) operators: With the current traffic load of scheduled flights at metro airports, GA aircrafts, at times, get a lower priority compared to scheduled operators. MoCA and DGCA should hold consultations to review the existing regulatory and operational framework.
- e) Training Institutions should be set up for training of airport managers, air traffic controllers, navigation and communication engineers, airport security and fire-fighting personnel and they should be licensed by the Government.
- f) Regional airlines that connect areas from big business centres like Central and State capitals to other commercial centres should be promoted.
- g) Policy on air connectivity should be formulated. A plan to develop and construct landing strips at various places should be framed and implemented with State or Centre support.
- h) Burden of taxes and fees on regional airlines should be kept as low as possible for initial period of operations in order to make their operations financially viable. The possibility of granting tax holiday to new regional airlines should be considered. Central Government should consider launching incentive schemes to attract such airlines.
- i) Introduction of seaplanes for achieving air connectivity to remote and inaccessible areas that are suitable for landing of seaplanes should be considered.
- j) PPP model for the development/modernization of airports would be a very viable and practical model. Government should however retain an active stake and control, especially in policy matters, to make sure the public interest is not upstaged by commercial considerations.
- k) Development of Back-end Capabilities and Technologies: Private industrial manufacturers may be awarded product development programs. New technologies – for e.g. development of aluminum alloy sheets, bar-stock, extrusions, forgings – should be developed.

D. Shipping and Inland Water Transport

IMPEDIMENTS FACED BY THE PORTS, SHIPPING AND IWT SECTOR

- a) Inspections and Audits by the Navigational Safety in Ports Committee (NSPC) should be completed in a time, preferably within 60 days of port declaring its readiness for such audit.
- b) Rail-Road Connectivity for Ports is an important concern. State Highways/ Zilla Parishad roads need to be upgraded to NH standards.
- c) Inland Waterway Transport (IWT) sector needs to be encouraged for hinterland cargo movement.

Promote coastal shipping to connect entire coast-line.

- d) Inter port and intra port competition: Inter-port competition is constrained by hinterland economic activity, connectivity & inland transit costs. Intra-port competition can serve to mitigate the pricing power, but it may be constrained if ownership is concentrated.
- e) Financing of port infrastructure is a problem due to the long gestation period (15 years) for green field port projects.
- f) Land acquisition and environmental clearance involves significant delays.
- g) Scale of operations at Indian Ports is quite fragmented and small as compared to China.
- h) Draft limitations restrict large vessels accessing Indian ports which results in higher number of ship calls, increasing the congestion and the demand for berthing.

KEY RECOMMENDATIONS FOR THE PORTS SECTOR

- a) Capacity Creation: It may not always be possible to adhere to the recommended minimum gap of 30% between the installed capacity and the traffic to allow for proper maintenance of berths, equipment etc. A smaller gap does imply a short-term efficiency gain, but it would be better if the ports create capacity in excess of 30% of actual traffic over a period of time.
- b) Massive Mechanization: With the kind and size of vessels with higher parcel sizes calling at Indian ports, massive world-class mechanization is the need of the hour. Each berth should be equipped adequately with high capacity versatile Cranes, Conveyer Systems, Silos, Harbour Mobile Cranes, Grab Unloaders and Gantry Cranes.
- c) Development of Adequate Storage Areas is important for speedy clearance of cargo from the wharf to/from some other plot. Storage areas near a port allow the cargo to be cleared from the port faster and help achieve lower turnaround time. Provision of warehousing space near ports is also an incentive to attract traffic.
- d) Hinterland connectivity: Improvements in logistics network outside the port is important for improving the competitiveness of Indian ports. For example, for European ports, cargo is transported throughout Europe in an uninterrupted and smooth fashion. Indian Ports should have a minimum 4-lane road connectivity as well as double line rail connectivity.
- e) Cost Efficiency: Shipping lines charge that port charges at Indian ports are very high as compared to international ports. However, the factual position is that vessel related charges are perhaps higher in India, but cargo related charges are much lower.

KEY RECOMMENDATIONS FOR IWT

- a) Integration of waterways with other modes of transportation to form an efficient multimodal

transport network is the key to achieve sustainable development of IWT sector. This requires detailed mapping of waterways and industrial clusters and analysis of origin and destination of cargo to undertake development of suitable waterways as well as multimodal transport hubs in IWT corridors. b)

- P u b l i c investment in development of waterways could serve as an important economic lifeline for development of North Eastern (NE) region as its water resources are ideal for IWT.
- c) Policy support for creation of floating infrastructure i.e. barges/inland vessels is critical to attract private capital for development of IWT sector. An institutional arrangement wherein the risk on investment is shared through a PPP mode could be effective.
 - d) Extending mandatory intermodal share for cargo movements (currently mandated to all PSUs by PMO) to all public limited companies and creation of a suitable tradable instrument on the lines of Renewable Energy Certificate (REC) can serve as a significant policy support.
 - e) An institutional framework to appraise critical projects is needed for timely implementation.
 - f) For effective resolution of policy and administrative issues, setting up State Level Coordination Committees (SLCC) of various State Government agencies and IWAI under the State Chief Secretaries is of critical importance. Every riverine/coastal State should set up an IWT organization and to frame a long-term strategy for the IWT development.
 - g) Creation of adequate education and training facilities is necessary. IWT training facilities in the country are limited, and need to be expanded. The National Inland Navigation Institute (NINI) can function as the apex level training institute and Regional Crew Training Centers (RCTCs) can be set up at the State level.
 - h) Private Sector Participation in the development, maintenance and regulation of some stretches of rivers for inland water transport may be looked into. Power utilities should bear cost of construction and O&M of material handling at power plant end, as is the case with the facilities for unloading of railway wagon.
 - i) Dredging of Rivers would help develop the IWT.
 - j) Installation of world class mooring buoys is needed to facilitate imports/exports operations on a large scale at the anchorage.
 - k) Centrally sponsored schemes for the development of infrastructure should be started to promote IWT and for development of minor ports.

E. Urban Transport

KEY ISSUES IN THE URBAN TRANSPORT SECTOR

- a) Vehicular Emission: Metropolitan cities are facing serious environmental problem due to growing air pollution caused by fuels used in vehicles.
- b) Congestion: Traffic congestion in cities results in delays and higher pollution levels. High average age and poor maintenance of vehicles compounds the problem.
- c) Road Safety Issues: Pedestrians, bicyclists, motorcyclists, and non-motorized vehicle occupants are often the most vulnerable in Indian cities.
- d) Parking Problems: Haphazard parking contributes to higher levels of traffic congestion.
- e) Inadequate public transport: Public transport systems in India are generally inefficient, due to outdated technology, incompetent management, corruption, overstaffing, and low worker productivity. They also require increasingly large subsidies.

WAY FORWARD

- a) Promoting regional economies and compact townships: Regional economies that reduce the need for long-distance travel should be promoted. Similarly, building self-sufficient compact townships would reduce the need for short-distance travel within the cities.
- b) Focusing on public transport particularly bus transport: Passenger mobility in urban India relies heavily on roads. Rail based mass transport system should be planned in all cities with population more than 2 million. Urban transport plans should also emphasize setting up a modern and efficient bus transport system.
- c) Introducing variety of bus transport services: Segmentation of supply of bus transport system to provide different services for different people is required.
- d) Adopting optimal pricing strategies for transport services could effectively be used to encourage the public transport and restrict the use of private vehicles. Today, the operating cost of using the private vehicles is far less than the marginal social costs: this encourages people to use private vehicles. Government policies artificially lower not only the cost of vehicle ownership (through very low one time registration fee, low sales tax, etc.) but also the vehicle usage. Market based instruments such as annual registration fee, parking fee, road tax, fuel tax, congestion charges, etc. could be used to increase the (actual) marginal cost of private vehicle use to equal the marginal social costs of the same. Public transport could be promoted by abolishing annual motor vehicle tax and passenger tax on public vehicles.
- e) Enhancing transport coordination: To encourage people to use public transport, the transportation system should be seamlessly integrated across all modes. An authority to coordinate the operations of various modes is required with the objective of improving the efficiency of service delivery and comfort for commuters. A single ticket system, where commuters can buy a transport ticket that is valid throughout the public transport network

within the coordinating authority's jurisdiction, should also be developed and promoted.

- f) Demand side management measures, such as parking fee, fuel tax, congestion pricing, etc., should be implemented in conjunction with other transport planning, supply side management, and transport pricing measures.
- g) Supply side management measures, such as one way traffic system, improvement of signals, traffic engineering improvement measures for road network and inter-sections, bus priority lane, etc., could be used as short-term measures to ease traffic congestion. Medium-term measures like new road alignments, hierarchy of roads, provision of service roads, bye passes, ring roads, bus bays, wide medians, intersection improvements, construction and repair of footpaths and roads, removal of encroachments, etc. should be introduced at least in million plus cities. Long-term measures include technology upgradation and introduction of high speed, high capacity public transport system along high-density traffic corridors, etc.
- h) Encouraging green modes: Transport policy should encourage the need for developing green modes like bicycles, cycle rickshaws, pedestrians, etc. The safety concerns of cyclists and pedestrians have to be addressed adequately, by having a segregated right of way for bicycles and pedestrians. This will also help in improving traffic flow, increasing the average speed of traffic, and reducing emissions resulting from low vehicle speed.
- i) Strengthening urban institutions: The functional responsibilities for urban transport are fragmented among central, state and local level governments. Central government provides sub-

urban rail service through Indian Railways in four mega cities. MoRTH is responsible for the national highways, including the stretches within urban areas. State governments control local land use policies, motor vehicle and sales tax rates, bus transport systems, policies for private sector participation, etc. Most of the Urban Local Bodies (ULBs) rely heavily on capital grants from the states for almost all infrastructure projects as their own revenues are barely sufficient for meeting their current expenditures. Therefore, insufficient funds are available for operation and maintenance of existing assets which badly affects the service delivery. ULBs should be empowered to raise funds for developmental projects. They may also be authorized, through legislation, for overall coordination of activities relating to provision of transport infrastructure by various government agencies in urban areas.

- j) Innovative financing mechanisms using land as a resource: Alternative methods of financing need to be explored. The Central Government could encourage the levy of dedicated taxes to be credited to an urban transport fund and used exclusively to meet urban transport needs within the State. Such dedicated taxes could be in the form of a supplement to the petrol and diesel taxes, betterment levy on land owners or even an employment tax on employers. Revenues from a betterment levy along new high capacity public transport corridors could be included as a component of the financing plan for such new public transport systems. The commercial utilization of land resources, available with public transport service providers, is also recommended to raise additional resources.