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THE NOTE

The Asian Institute of Transport Development has, since its inception, been following important national developments closely. It has, from time to time, sought to make interventions in public policy by undertaking unfunded research. The objective has been to focus attention on critical national issues. In 1998, it published the findings of its study on the pension problem of the Indian Railways. The study brought out the true dimensions of the financial burden that increasing pensionary payments have for the railways' finances and the enormous implicit debt that has accumulated over the years.

Working on the same premises, the present study seeks to focus attention on the production units owned and operated by the Indian Railways. It traces the historical developments, brings out the need for change in the context of the parlous financial position of the railways and lays down the broad contours for reshaping the units. The objective is to alter their existing technology acquisition paradigm and to reposition them as centres of technological excellence in a competitive globalised market. Another equally important objective is to help the railways to concentrate their attention and resources on their core activities.

This study has been carried out with inputs from : C.M. Khosla, S.N. Mathur, Satish Bahl, P.K. Malik, S. Kasy Aiyar, Farooq Jung, Jitender Sondhi, T.C. Kausar, T.C.A. Srinivasa-Raghavan. It has benefited from the reports of the various expert groups and committees and the extensive academic and institutional literature.

K. L. Thapar
Director

EXECUTIVE OVERVIEW

The Problem

1. The railways are critical to the process and pace of economic development. Indian economy has enormously benefited from its catalysing role. It has, however, been clear for the last two decades, that unless Indian railways constantly re-invent themselves they will be left behind in the race. Be it market share, technology, efficiency, costs or whatever, the writing on the wall has been clear.

2. Presently, the railways seem to lack not just a clear strategy but even a clearly stated purpose. Somehow, the organisation has gradually gone into a state of comatose indifference to its own fate and, by extension, to that of the economy and the nation.

3. Today, the railways are on the verge of a financial crisis. The loss of market share to road transport, lack of operational flexibility, especially in pricing, high and unrequited costs, a huge pension liability, poor investment decisions which have been driven by political or other considerations, have all combined to bring the railways to the brink of virtual disaster.

4. The financial position has reached its nadir. The railway budget for 2000-01, carries deferment of dividend liability of Rs.1,500 crore. The balances in the various funds have been nearly wiped out. Despite increase in the capital-at-charge, the provisions for depreciation have sharply declined: Rs.1,677 crore in 1999-2000 as against Rs.2,388 crore in 1992-93.

5. The operating ratio (percentage of working expenses to gross earnings) has gradually deteriorated and is estimated at 98.8 per cent in 2000-01. Even this figure is dressed up, since it does not reflect the full measure of IR's financial liabilities. While the revenue growth has been flat at 13 per cent annually during the last decade, the costs have increased to the extent of 16-18 per cent.

6. The pension liabilities have mounted to alarming proportions and an enormous implicit debt has accumulated over the years. The share of pensions in the working expenses has risen from 4.65 per cent in 1981 to nearly 13 per cent in 2000.

7. The system is excessively overmanned. The outgo on the staff wages and pensions has reached alarming proportions and accounts for 52 per cent of the annual revenues.

8. The system is run down and huge arrears of renewals and replacement have built up; track renewals alone require Rs. 15,000 crore. The technology freeze is

taking its toll; the asset failure rate is 7-10 times higher than other railway systems in the world. The network is overstretched in the critical corridors and capacity constraints are acutely felt.

9. The budgetary support from the central government has declined: from a peak of 75 per cent in the Fifth Plan to 25 per cent in the ongoing Ninth Plan. The railways have been forced to raise a part of their capital in the market on high interest-bearing loans. This shift away from loans in perpetuity to loans, which require to be repaid, has all but devastated railways' finances. Lease payments have gone up from 0.42 per cent of ordinary working expenses in 1987-88 to nearly 11 per cent in 2000-01.

10. Renewals, capacity build-up and technology upgradation would require massive resources. To mobilise them is not an easy task, more so, when it has to be accomplished in of an environment of falling budgetary support, growing competition, declining market share and political profligacy.

11. There are several causes which have contributed to this situation. These can be grouped broadly into the basic, macro-causes and the proximate, micro-level factors. The basic causes are : monopoly, ownership by the government and politics; the proximate factors are : organisational ethos, mindsets and management failures.

12. Government ownership has become a major hurdle and politics has increasingly intervened in pricing and allocative decisions. This has led to misallocation of resources and also to high losses. For instance, during the 1990s, almost Rs.10,000 crore have been spent on gauge conversion without there being any new traffic generated.

13. Over the last 8 years, tariffs for passenger services have increased by just 9 per cent annually whereas the costs have gone up by 15 per cent per annum. Yet, because of the political sensitivity of the issue, there has been great reluctance to increase fares to at least the levels where they could cover costs. The subsidy amount in 1999 was Rs.4,165 crore, up from Rs.1,462 crore in 1990; an increase of 185 per cent.

14. The IR's ratio of average passenger fare to the average freight tariff is amongst the lowest in the world while the freight tariff rates are among the highest in the world. This hurts the competitiveness of the Indian economy in a growing globalised environment.

15. There is a high degree of vertical integration which is the bane of all monopolies. The railways are performing in-house a whole range of activities. These include catering, manufacturing, designing, running hospitals and schools, and so on.

This has gradually diverted the railways' attention from their core business of transportation.

16. As a monopoly, IR does not feel the pressure to change with the times, since it is able to sell every unit of its output, regardless of quality. This is especially true of passenger services.

17. The tenures at the policy-making level are generally too short, sometimes as short as one year. Compounded over a period of time, the effect has been one of poor attention to long-term issues.

18. There is an urgent need to create an arms-length relationship between the government and the railways and run the latter as a commercial entity. It is equally necessary to unbundle its activities and hive off those which have no relevance to its core activities.

19. Any number of committees and expert groups have gone into the various issues and come up with any number of suggestions as to what the railways need to do and how they must change. Yet, nothing significant has happened.

20. There is now a glimmer of hope. The Minister for Railways in her recent budget speech announced that "in today's fast changing world, with emerging new technologies and financing opportunities, Indian Railways must attune itself to the new realities. The relevance of the existing organisational structure, regulatory arrangements, functional modalities and, above all, its role in the changing scenario needs to be looked afresh".

21. The Ninth Five Plan document also makes some specific recommendations, which, if implemented, should help to bring about a measure of desired change.

- The rationale for continuing with the present vertically integrated monolithic structure needs to be re-examined in the 21st century environment.
- Integrated monopolies should be unbundled.
- Various manufacturing units of the railways should be spun off into separate companies and their costing and pricing should be determined on commercial principles.

The Solution

22. The fortunes of the railways, after having suffered sharp decline for three decades, are once again in the ascendant. Almost every country has rediscovered the virtues of the railway system. It remains socially the most efficient way of meeting the growing needs of the economy and the people. The revival is largely the result of revulsion against pollution caused by cars and trucks, and the traffic congestion

on the roads. The railways have also acquired capability for higher speeds, thereby spanning long distances in much shorter time.

23. The major industries, all over the world, have been undergoing massive structural changes. At its most basic level, this has meant a return to core competence through the process of unbundling or undoing vertical integration.

24. In the case of railways, restructuring has had two common features – reversion to the core business and introduction of competition as a motive force for improving performance. Assets and services that were not essential to train operations have been divested to enable the management to focus on the 'core' business of speedy haulage, whether of passengers or goods.

25. While different railways have adopted different approaches, there have, nevertheless, been several common features. These are :

- Creating an arms-length relationship between the railways and the government;
- Defining the appropriate business centres and spinning off non-core business;
- Inducting management with commercial skills to create customer-focused organisation; and
- Introduction of competition as a motive force for improving performance.

26. Several restructuring models have been adopted: separation of infrastructure in European countries, atomisation and sale in a hundred odd pieces in the UK, outright sale as a single whole in New Zealand, concessioning in the South American and African countries, deregulation and facilitating restructuring in the US, unbundling and creating competitive units in China, etc. All of these approaches have their unique features.

27. There are several lessons to be learnt from these international experiences. These are:

- There is no single 'right approach'. Each country needs to evolve its own solution.
- The change in most countries was too late. Slowly, the governments recognised the imperative to change and forced the railways to improve customer service and become commercial entities.
- Post-restructuring, the railways improved their performance on several fronts, such as customer service (price, quality), safety, market share, investments, and productivity.
- Involving the labour unions in common understanding of the criticality of the situation helped to smoothen the process.

The Assets

28. IR's production units were set up to meet the objectives of developing indigenous capabilities and conserving scarce foreign exchange. At that point of time, the private sector was neither willing nor able to make the heavy investments in capital and technology required for the purpose.

29. Vertical integration became the norm. India embraced the idea eagerly because it was the global trend and also because it fitted in with its economic compulsions and the ideological imperatives of the day.

30. Five production units were set up during the period 1950-90 : Chittaranjan Locomotive Works, Chittaranjan, 1950; Integral Coach Factory, Perambur, 1955; Diesel Locomotive Works, Varanasi, 1961; Wheel & Axle Plant, Bangalore, 1984; Rail Coach Factory, Kapurthala, 1985.

31. These units are managed, as departmental undertakings of the Ministry of Railways, unlike public sector undertakings which, though owned by the government, are autonomous corporate entities. The Ministry of Railways provides the funds through the railway budget and the accounts are audited by the Comptroller and Auditor General of India.

32. The units have to follow the policies laid down by the Railway Board in the matter of procurement of materials, plant and machinery leaving them with no autonomy in decision-making. When other countries have already moved to 'just in time' stock inventories, IR's obsolete procurement policies are decades behind.

33. The managerial personnel are integrated with the various disciplines of Indian Railways. Due to this, there is excessive mobility at the managerial levels at the cost of continuity which is so vital for the development of what is called 'institutional knowledge' out of which innovations and growth take place. The non-managerial staff are, however, unit specific and seek their career advancement there itself.

34. The Railway Board decides on the number and types of locomotives, coaches and wheels & axles to be manufactured each year, and the production units formulate their production programmes accordingly. The specifications, designs and testing of rolling stock are done by RDSO. However, the production units have strengthened their own design facilities and capabilities thereby diluting the role of RDSO.

35. The initial binds, which were the raison d'etre for setting up these units have since lost their validity. The industrial base in the country has acquired the capability for producing high quality equipment. The ancillary industry has significantly developed to produce quality products at competitive prices. The private sector that was earlier reluctant to invest in capital-intensive industries is now willing to do so. It has also developed managerial and entrepreneurial skills.

36. These developments provide a great measure of confidence that the country can now move to its next phase of industrial development in a competitive environment and the production units can emerge as centres of technical excellence at par with the international manufacturing units.

37. At present, both Indian Railways and its production units are at the crossroads. The monolithic structure of IR is no longer relevant or sustainable. Its core competence has got diluted to a degree where its very role is threatened in the transport sector. At the same time, its production units suffer from several constraints. Some of these constraints are inherent in the IR's vertically integrated structure, while others are the making of the production units themselves.

38. Because of its weak financial position, IR has not been able to make even essential investments in plant and machinery. No wonder, 49 per cent of the Integral Coach Factory's (ICF's) plant and machinery has outlived its economic life; 16 per cent of the machinery is over 40 years old.

39. Overaged and obsolete equipment require frequent maintenance and additional staff. It is, therefore, not surprising that ICF deploys 2631 maintenance staff as against 476 in Rail Coach Factory, Kapurthala. ICF has, in fact, remained trapped in a time-warp since the late 1950s.

40. Similarly, at the Wheel & Axle Plant, most of the machines have outlived their economic life, causing heavy down time and low quality output. Much of this is true of other production units as well. All have remained roughly at the same levels of technology at which they were started.

41. The pace of technology upgradation has been painfully slow. It has taken twenty years to start the process of technology transfer in the case of new generation of diesel locomotives and a similar time-frame for the upgradation of the design of coaches

42. The production units continued with the technology and designs initially procured only with some incremental improvements. In the bargain, they have suffered from technology stagnation for prolonged periods which affected their export potential. The report of the Expert Committee clearly brings out this constraint.

43. Over the years, the units have also developed their own types of vertical integration. For example, the older plants have continued to produce components, which could be easily outsourced and that too at competitive rates. The additional staff, thus deployed, has become an unbearable burden.

44. There is absence of business principles in the pricing of the products. The 'transfer price' does not include profit or even the cost of capital. This practice, in

effect, means that all elements of commercial costs that normally determine market price go unreflected. This makes benchmarking difficult and reduces cost accountability.

45. The process of reform that was begun in 1991, somehow bypassed the railway production units, whereas it should have been made an integral part of it. Time is both ripe and opportune to hive them off into independent enterprises under a corporate structure.

46. The corporatisation will not dilute the social role of the railways. IR will continue to play that role because, as things stand, the PUs never had any social role to play. Indeed, their contribution to the national effort would increase if they were made more efficient by becoming the main vehicles of technology acquisition.

47. The small problems relating to excise duty and sales tax on the rolling stock supplied by its manufacturing units can be taken care of in different transparent ways, including granting of exemption by the government.

48. The trend towards globalisation provides an opportunity to improve efficiency and productivity. The production units can no longer be sheltered. There is a compelling need to rapidly reshape them for extreme competitive preparedness and support their transition from an era of regulation and protection to the environment of a fully globalised market of the twentyfirst century.

49. While unbundling, care needs to be taken to prevent the emergence of single buyer, single seller monopolies as they distort the notion of equilibrium price. This can best be done through globalisation, since it is inconceivable that the rest of the world would not be having competing suppliers. The way to prevent the emergence of bilateral monopolies, therefore, is to first allow international firms to bid for IR's requirements and then to permit them to set up production facilities in the country through the creation of joint ventures.

The Opportunity

50. Currently, multinationals dominate the rail equipment industry. While the main suppliers are from the European Union, North America and Canada, the Asian suppliers have also started entering the market. Japanese suppliers have the technology to compete in passenger rolling stock segment and the South Korean manufacturers are among the most efficient producers of car shells in the world. China and India are other major manufacturers, but presently, their production is almost entirely for the home market.

51. Europeans are the dominant force in the passenger coach manufacturing industry, with the Japanese having pre-eminence in the multiple units. The US is the

leading manufacturer of diesel locomotives, while the Europeans are mostly geared towards the production of electric locomotives.

52. Major industries including rail equipment industry have been undergoing structural changes as a result of domestic market developments and globalisation. The process has been largely driven by three factors: technology, capital and competitive pressure.

53. The structural changes have resulted in the rationalisation and consolidation of the manufacturing activities. This process has been further strengthened by the technological complexity of the products and the need for a large enough market to support research and development.

54. The technological intensity of even the most mundane production processes is increasing. The technology cycles are shortening which leads to rapid obsolescence of equipment. Most importantly, because of the increasing technological complexity, railways, the world over, have begun to ask for complete solutions. This has created a niche for integrated players who are able to provide complete solutions, not just products.

55. The reforms in the national railways have strengthened the competitive impulses. The service providers are increasingly basing their decisions on life-cycle costs. They are also looking for different options like leasing of equipment. On their part, the suppliers are giving extended warranties for the equipment and even contracting capacity, e.g. supply of tractive power paid by hourly use.

56. All national railways have hived off their production units into independent enterprises. The historical relationship along national lines between the manufacturers and the railways have also weakened. As a result, there is a marked trend towards globalisation as ownership, capital and product markets are getting integrated.

57. The challenge for the rail equipment manufacturers is to survive and grow in an increasingly competitive environment. These enterprises need to:

- Cooperate with operators on the definition of standards, based on life-cycle cost data, to achieve economies of scale;
- Establish strategic alliances with operators;
- Provide innovative services to meet the requirement of operators that want to contract out these services;
- Continue to strengthen and improve R&D programmes;
- Improve productivity to reduce costs;
- Find new markets to allow fixed costs to be spread over more units of production; and
- Move production to lower cost countries.

58. The Indian Railways has not so far been a participant in this process of technology upgradation in spite of its R&D organisation. It habitually shops abroad for technology at discrete time intervals. When the technology cycle was longer, this did not matter much. But as these cycles have shrunk, IR has become asynchronous with the rest of the world. Indeed, the technology used by the Indian Railways today is way behind that of the developed countries.

59. Corporatisation of production units will facilitate joint ventures with the leaders in technology. To them the benefit lies in accessing a stable and large market. Over time, the joint ventures could become production bases for export.

The Method

60. The railways are no strangers to the process of corporatisation, disinvestment or setting up of joint ventures with strategic partners. They have set up several enterprises under a corporate structure where their share of equity holding has gradually declined. In fact, they have also resorted to disinvestments. Presently, they are in the process of involving a strategic partner from the private sector to set up a new corporation. IR has, thus, been experimenting with a wide spectrum of corporate structures.

61. The underlying objective in all these cases has been to distance from the rigid bureaucratic system of the government and gain from the freedom and flexibility inherent in a corporate structure. For the purposes of the present study, the case of the Container Corporation (CONCOR) is of considerable interest, since, in this case, a segment of IR's operations was transferred along with assets to a newly constituted corporate body.

62. The company was set up with a paid-up share capital of Rs.5 crore, later increased to Rs.65 crore. Initially, the government held all the shares, but subsequently reduced its holding by divesting 37 per cent of the equity in two tranches. The divestment yielded Rs. 365 crore which amounted to more than five times the paid-up equity capital.

63. During 1999-2000, it earned a profit of Rs. 141 crore and even paid a dividend of Rs. 29 crore to the Indian Railways. There cannot be a better example of a success story : while the parent organisation is reeling under deficits, the spun off unit is making sizeable profits and even contributing to railways' revenues. The lesson to be drawn is that government structures are not conducive to commercial activities.

64. The transfer of multimodal operations segment to CONCOR, which was a core activity of the railways gives two clear messages. One, that a segment of IR's activities can be hived off, provided it is well-defined. Two, that such spinning off can be beneficial both for the railways as also for the new organisation. These

messages give confidence that corporatisation of IR's production units would also be a success story.

65. Corporatisation of production units would just be an interim phase leading to the formation of a joint venture with a strategic partner. Management contract, concessioning, public offering of stock are not considered suitable options, as these would not help in continuous induction of cutting edge technology.

66. Restructuring has to be a planned exercise with various stages clearly identified. It would be judicious to start the process with just one production unit which is comparatively more amenable to structural changes. It is, therefore, recommended that Rail Coach Factory (RCF), Kapurthala should be taken up in the first instance. This factory has several positive features that would facilitate the process of restructuring.

67. It is the youngest of the PUs and, therefore, not fully entrenched in traditional and inflexible work culture of a government enterprise. It is not excessively overmanned as compared to other units and, therefore, easier to deal with. It has modern production facilities that will attract private participation. It has a demonstrated capacity to absorb sophisticated technology and adopt international practices. It has received ISO 9001 certification for quality control.

68. The transition of RCF from a departmental unit to a corporatised entity would entail extensive financial restructuring. This will typically involve cleaning up the balance sheet, deciding on the treatment of state-guaranteed obligations, setting up of financial systems and preparing new financial statements in accordance with the generally accepted accounting principles.

69. No legal or regulatory problems are anticipated in the changeover. The activities are well defined, so also the assets. The regulatory framework is well in place. The Commission of Railway Safety – an independent body – is well-equipped to deal with issues relating to introduction of new rolling stock.

The Workforce

70. It is well known that overmanning is most pervasive in enterprises that have been operating as state monopolies and these typically include the infrastructure enterprises. This has been the result of lack of hard budget constraints, absence of competition and extension of political patronage.

71. Overmanning has serious implications for the growth of an industry where the capital/labour ratio has always been critical for determining its productivity and efficiency. Over the last quarter of the 20th century, this ratio had shrunk as the size of the workforce had expanded without a *pari passu* increase in investment. Overall

the impact was vastly lower levels of capital and labour productivity and economic efficiency.

72. When the problem was finally recognised, the equity issues inherent in job cutbacks forced governments to work out schemes which would compensate the workers for the loss of their jobs. Thus were initiated many schemes like social security nets, golden handshakes, voluntary retirement, retraining, temporary succour, etc.

73. Indian Railways is a state monopoly and is grossly overmanned; the estimates vary between 20-25 per cent. The degree of overmanning in the railway workshops is as high as 30 per cent. In the case of the production units, the level of overmanning is equally high; 50 per cent in the case of the older units.

74. A comparative analysis of the manpower positions of ICF, Perambur and RCF, Kapurthala provides a telling snapshot of the prevailing situation. Whereas Perambur employs nearly 15,000 staff, Kapurthala employs only 7,000, though both produce the same number of coaches annually.

75. Technology and outsourcing has made all the difference. Kapurthala uses vastly superior technology and outsources substantially. The result is that its direct labour costs are kept far lower than those at Perambur which is overmanned by about 50 per cent.

76. Diesel Locomotive Works at Varanasi uses 33 man-years of direct labour for the production of each locomotive. The labour input per electric locomotive at Chittaranjan is also of the same order. In comparison, China uses 12-15 man-years and the developed countries about 6 man-years only.

77. The present staff strength of all the production units of Indian Railways put together is around 50,000. Viewed in the context of the IR's total workforce which is around 1.6 million, the magnitude of any labour redundancies and change of status consequent upon the restructuring ought to be relatively insignificant.

78. The age profile of the workforce in the production units is such that it should be relatively easy to offer a combination of incentives by adopting what is called a 'cafeteria approach' wherein alternative menus are available to choose from. All employees of the railway production units can be offered a choice of joining the corporatised unit or continuing with IR or retiring with attractive severance payments.

79. Large-scale redundancies are usually best handled by governments prior to disinvestments to minimise labour resistance, enhance the assurance that a social safety net will be provided, and increase the value of the enterprise. Employment

guarantees while privatising, although used in some countries, are not a good solution especially in the case of enterprises with severe overstaffing.

80. Disinvestments can proceed smoothly if governments make early efforts to develop a labour strategy that secures employee support for change and provides a social safety net. This calls for involvement of workers and labour unions in the reform process and enhancing their participatory role and value.

81. Labour restructuring should not be allowed to become a deterrent to the larger process of restructuring of the production units which is necessary to improve their efficiency and productivity. Indeed, labour restructuring is necessary to improve the efficiency and competitiveness of state enterprises – regardless of whether corporatisation and disinvestment is involved.

82. The burden that these enterprises are imposing on the society is simply too heavy to bear. Continued government support for state enterprises comes at the expense of society as a whole, diverting scarce resources to benefit a small number of citizens, rather than to social sectors that benefit the overall economy and the poor.

Chapter 1

THE PROBLEM

1.1 There is a famous French saying that the more things change, the more they remain the same. Indian Railways, as might be expected, is the exception that proves the rule. Here things don't change; nor do they stay the same. It has been clear for the last two decades, that unless the railways constantly re-invent themselves they will be left behind in the race. Be it market share, technology, efficiency, costs or whatever, the writing on the wall has been clear.

1.2 The fact that the railways are critical to the process and pace of economic development cannot be gainsaid. Indian economy has enormously benefitted from the catalysing role of railways. Much of its development over the last 150 years can be traced to the development of the railway system. Indeed, after independence, this trend has become even more pronounced. The railways account for nearly one per cent of GDP and are the largest employers supporting a workforce of 1.6 million persons or 6 per cent of the total workforce in the organised sector. The railways have also done a yeoman's service in bringing about balanced and equitable regional development in the country. Given their importance in the overall economy, it is vitally important that the system be kept in good financial and technological health. It is a matter for concern that enough attention is not being paid to these aspects.

1.3 Most worryingly, the railways seem to lack not just a clear strategy but even a clearly stated purpose. Apart from the general objective of moving people and goods between different destinations in the country, the railways do not appear to have any other objective, such as profitable growth, customer service, operating efficiency, financial discipline and technological development. Somehow, over the last decade or so, an organisation that consciously sought to meet all the above criteria for judging its performance, has gradually gone into a state of comatose indifference to its own fate and, by extension, to that of the economy and the nation. To change this attitude is the biggest challenge facing the railways.

1.4 Today, the railways are on the verge of a financial crisis. Indeed, by some yardsticks they are already in the middle of one. The loss of market share to road transport in the freight business, lack of operational flexibility, especially in pricing, high and unrequited costs, a huge pension liability, poor investment decisions which have been driven by political or other considerations, have all combined to bring the railways to the brink of virtual disaster.

1.5 The budgetary support from the central government has declined over the years. From a peak of 75 per cent in the Fifth Plan, it has progressively dropped in the successive Plan periods and presently stands at 25 per cent. Given the financial position

of the country, it is unlikely that the level of support will increase appreciably in the future. To add to its woes, the internal generation of funds has also gone down. The operating ratio (percentage of working expenses to gross earnings) has deteriorated over the years and is estimated at 98.8 per cent in 2000-01.

1.6 Market borrowings through Indian Railway Finance Corporation Ltd. (IRFC) have significantly increased over the years; as a result, there is a debt-service-burden of Rs. 2,600 crore (annual interest and lease charges). Besides, there are huge unfunded pension liabilities. All this is putting an unsustainable financial burden on the Indian Railways. The railway budget for 2000-01, in fact, carries deferment of dividend liability of Rs.1,500 crore. If the current trend continues, by the year 2003, the railways could have an operating deficit of nearly Rs 4,000 crore. It is clear that this is unsustainable, especially if budgetary subventions continue to decline.

1.7 IR's capital fund has almost been wiped out. The position of other funds is also disturbing. The table below brings out the sharp deterioration.

Balance as on ..... (Rs. in crore)

Name of the Fund	31.03.1998	31.03.1999	31.03.2000
Depreciation Reserve Fund	1434.27	676.72	76.72
Pension Fund	930.32	313.36	113.36
Railway Capital Fund	1200.64	262.88	62.89

Source : IR's Budget Documents, 1999-2000.

1.8 The financial squeeze is felt across the system. The railways have failed to make adequate provisions for depreciation. In 1992-93, a provision of Rs.2388 crore was made for this purpose which came down to Rs.1,677 crore in 1999-2000. This is despite the increase in Capital-at-Charge from Rs.17,712 crore to Rs.29,610 crore over the same period. As a result, IR is unable to fund the renewals and replacement programme. Huge arrears have built up; the track renewals alone need Rs.15,000 crore.

1.9 The pension liabilities have mounted to alarming proportions and an enormous implicit debt has accumulated over the years. Currently, IR has over a million pensioners and this number would continue to grow for some years to come. The share of pensions in the working expenses has risen from 4.65 per cent in 1981 to nearly 13 per cent in 2000. This growing debt alone could cripple the railway finances over time.

1.10 The system is run down and huge arrears of renewals and replacement have built up; track renewals alone require Rs. 15,000 crore. The technology freeze is taking its toll; the asset failure rate is 7-10 times higher than other railway systems in the world. The network is overstretched in the critical corridors and capacity constraints are acutely felt.

1.11 Renewals, capacity build-up and technology upgradation would require massive resources. To mobilise them is not an easy task, more so, when it has to be accomplished in an environment of falling budgetary support, growing competition, declining market share and political profligacy.

1.12 In any organisation there can be several reasons for inertia, ranging between individual attitudes, organisational ethos, ownership, politics, competition or the absence of it, etc. Usually, however, all these are not found to be present at the same time. The Indian Railways are unique in that their insurmountable inertia is due to the simultaneous presence of all these factors.

1.13 What's more, usually it is possible to rank the contributory factors in their order of importance. In the case of the railways, however, each cause is as important as the other. This has an important bearing on policy because for anyone wishing to bring about change, it becomes difficult to know where to begin. It also allows the no-changers and the status-quoists in different parts of the railways to say that unless others change, their changing alone would not make things better. It also becomes possible for them to point out that they see no reason why they alone should be asked to change when no one else is changing. In the resultant wrangling, it is change that has become the casualty.

1.14 However, an attempt is made below to rank six important factors that are inhibiting change in the railways. These factors can be grouped broadly into the basic, macro causes and the proximate, micro level factors.

1.15 The basic causes are:

- Monopoly
- Ownership by government
- Politics

1.16 The proximate factors are:

- Organisational ethos
- Individual attitudes or mindsets
- Management failures

Basic Causes

1.17 *Monopoly* : The Indian Railways is a monopoly. Monopolies, the world over, restrict output so that they can charge higher prices. The consequence generally is high profits. But here in India, since the government owns the railways, politics intervenes in a big way in pricing and allocative decisions. This has led to misallocation and also to high losses, which is perhaps another first of its kind – a monopoly running up losses.

1.18 Apart from this economic and financial outcome, another more damaging aspect is the absence of pressure to change with the times. As a monopoly – that too one that

operates in an environment of excess demand which tends to be highly inelastic – the railways are able to sell every unit of their output, regardless of quality. This is especially true of passenger services which now account for over 70 per cent of operations (ton km + passenger km), but only 26 per cent of revenues.

1.19 Trucking has provided fierce competition to the railways as a result of which there has been steady erosion of market share, down from 90 per cent in 1951 to just about 40 per cent now. Even this 40 per cent is made up largely of bulk goods that cannot be transported easily on trucks. Worst still is the high freight tariff which restrains railways' competitive capacity.

1.20 The IR's ratio of average passenger fare to the average freight tariff is amongst the lowest in the world. The ratio for India is 0.28 compared to 0.87 in Malaysia, 1.15 in China and 1.43 in Korea. In terms of purchasing power parity (PPP) the freight tariff per NTKM in India is US$0.062 compared to US$0.022 in USA, US$0.016 in Russia and US$0.021 in China. The reason for this is that profits from freight are necessary to cover losses on passenger services. This, however, hurts the competitiveness of the Indian economy in a growing globalised environment. The irony is that the system which hitherto served as an instrument of economic growth has now become an inhibiting factor in the economic development of the country.

1.21 There is a strong possibility that the oil and gas transport business, hitherto being handled by the railways, may shift to the new pipelines that are on the anvil. This could reduce the market share of the railways even further. This has to be seen in the context of the fact that over the last ten years, revenue growth has been flat at 13 per cent annually. In contrast, costs have increased dramatically. The increase has been especially sharp in the last two years at 18 per cent. But what is truly alarming is that 52 per cent of the annual revenues of the railways are now being used for paying staff wages and pensions.

1.22 Productivity remains low compared to other countries. Though this can somewhat be explained by the high proportion of mixed traffic on the system, the fact remains that the Indian Railways are excessively overmanned. This aspect has been discussed in detail in the last chapter of this report.

1.23 Another problem is the high degree of vertical integration which is the bane of all monopolies. This has gradually diverted the railways attention from their core business of transportation. At present, the railways are performing in-house a whole range of activities. These include catering, manufacturing, designing, running hospitals and schools, and so on. There is absolutely no reason why these activities cannot be hived off, leaving the railways to focus on their core business of moving goods and passengers.

1.24 Ordinarily, faced with stiff competition, as in the case of goods traffic, it would have been reasonable to expect the railways to respond to the challenge. But thanks to the two other factors mentioned above – ownership by the government and politics –

the railways have not so far shown any signs that they are taking steps that will bring out any change.

1.25 If the railways have to survive as a financially and operationally vibrant organisation – which they must for the long-term health of the economy – they have no option but to change. But in order to achieve that, two essential steps need to be taken.

1.26 First, there has to be a decline in the extent of government ownership so that operational decisions can be insulated from politics. Second, simultaneously, competition has to be introduced not from roads and pipelines alone, but also from other firms offering a package of services including, eventually, train services.

1.27 *Government ownership* : The Indian Railway system was not always in government hands. It was only about a 60 years ago that it came under government ownership. There were several excellent reasons for it and, given the way the railways functioned until about 15 years ago, government ownership did not appear to be a major obstacle to change. In fact, taking an overall view, in the first three decades after independence, state ownership was a positive feature as the state alone was in a position to undertake the huge investments that were needed.

1.28 The emergence of fiercely competitive populism combined with ill-digested economics since then, however, has taken its toll. For instance, during the 1990s, almost Rs 10,000 crore have been spent on gauge conversion without there being any new traffic generated. This shows how government ownership has become a major hurdle, not just because of pursuit of populism but also because of faulty procedures for decision-making and parliamentary oversight.

1.29 It may be mentioned that, over the last 8 years tariffs for passenger services have increased by just 9 per cent annually whereas the costs have gone up by 15 per cent per annum. Yet, because of the political sensitivity of the issue, there has been great reluctance to increase fares to at least the levels where they cover costs. The subsidy amount in 1999 was Rs.4,165 crore, up from Rs.1,462 crore in 1990, thereby registering an increase of 185 per cent.

1.30 As though this was not disturbing enough, the railways have faced pressure from another quarter, and have thus been caught in a pincer. The other prong of the pincer has come from the government's insistence that the railways raise their capital in the market on interest bearing loans. Few realise it, but this shift away from loans in perpetuity to loans, which require to be repaid by way of lease charges, has all but devastated railways' finances. The situation becomes all the more grim when it is found that lease payments have gone up from 0.42 per cent of ordinary working expenses in 1987-88 to nearly 11 per cent in 2000-01.

Lease Charges as Percentage of Ordinary Working Expenses

(Rs. in crore)

Year	Lease payment to IRFC	Lease payment for OYW and BOLT	Total lease payment	Ordinary working expenses	Total market borrowings	Lease payments as percentage of ordinary expenses
1987-88	25	–	25	6003	720	0.42%
1991-92	626	–	626	9209	5115	6.80%
1996-97	1448	21	1469	16186	11278	9.08%
1999-2000	2400	211	2611	25790	23290	10.12%
2000-01(BE)	2780	234	3014	28115	26958	10.72%

Note : OYW : Own Your Wagon; BOLT : Build Operate Lease & Transfer
BE : Budget Estimate

1.31 This is not all. A stage has reached when fresh borrowings are being used just to service old debt of lease charges. Such funds as are made available by the government as budgetary subventions are ill-spent on unproductive schemes. As mentioned earlier, over the last decade, almost Rs.10,000 crore has been spent in this manner. Thus, the downhill slide continues.

1.32 The problem of parliamentary oversight flows from the use of public funds voted by the Parliament. It ensures that the top management adopts a risk-averse approach to important financial decisions. When combined, the effect is one of near-total policy paralysis. The government, therefore, has to reduce its day-to-day role in the railways.

1.33 There is urgent need to create an arms-length relationship between the government and the railways and run the latter as a commercial entity. It is equally necessary to unbundle the activities and hive off those which have no relevance to the core activities.

1.34 *Politics* : In the face of large-scale poverty in the country, there has to be an equity dimension attached to the supply of infrastructure services. Otherwise, large numbers could get excluded from the market and this is simply not a viable option in a democracy. It is because of the equity dimension that the government has not only retained ownership but also tended to increasingly intervene in pricing and labour market decisions. Taken together, both have tended to impede change, as there is more to be gained, politically speaking, from the status quo than from change. The effort, therefore, has to be to build a system of incentives that will make the political leadership perceive greater gain from change than from the status quo.

1.35 However, it would be wrong to assume that it is only the equity dimension that impels political behaviour in respect of the public sector, of which the railways is a part. There is also the presence of extensive opacity and lack of transparency in decision-making. This is a major factor impeding change as, once again, there is more to be gained from the existing system than from changing it.

Proximate Causes

1.36 *Organisational ethos* : This is perhaps the most important of the proximate causes for the resistance to change within the railways. Basically, it comprises a non-commercial, governmental ethos which tends to view the organisation and its role without much commitment to either the financial bottomline or the users. The system, as organised, is engineering led, where the commercial functions have the last priority.

1.37 *Individual attitudes* : This problem is compounded by the fact that being a government monopoly, the attitude of a railway employee is that he is doing a favour to the customer by providing the service. This comes out most starkly in his dealings with the public. There is, in other words, a sense of power permeating the employees that is completely antithetical to the culture of a service oriented organisation.

1.38 *Management failures* : The tenures at the policy-making level are simply too short, sometimes as little as one year. Compounded over a period of time, the effect has been one of poor attention to long-term issues and, perhaps crucially, the advantage residing with the political leadership which has been able to manipulate or bully the apex body.

1.39 Presently, the system operates in a state of denial in every sense of the term. Any number of committees and expert groups have gone into the various issues and come up with any number of suggestions as to what the railways need to do and how they must change. Yet, nothing significant has happened.

1.40 There is now a glimmer of hope. The Minister for Railways in her recent budget speech announced that "in today's fast changing world, with emerging new technologies and financing opportunities, Indian Railways must attune itself to the new realities. The relevance of the existing organisational structure, regulatory arrangements, functional modalities and, above all, its role in the changing scenario needs to be looked afresh".

1.41 The Ninth Five Plan document also makes some specific recommendations, which, if implemented, should help to bring about a measure of desired change.

- The rationale for continuing with the present vertically integrated monolithic structure needs to be re-examined in the 21st century environment.
- Integrated monopolies should be unbundled and separate organisations should be created which could be made responsible for each distinct unbundled component.
- Various manufacturing units of the railways should be spun off into separate companies and their costing and pricing should be determined on commercial principles.
- Private sector should be allowed relatively easy entry into those segments which are potentially competitive.

Annexure 1

Figure 1 : Appropriations to the Pension Fund

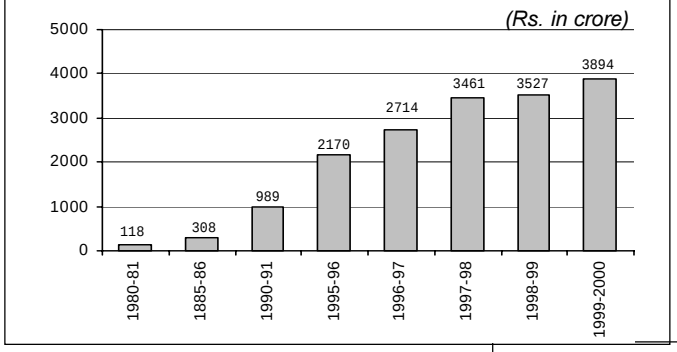
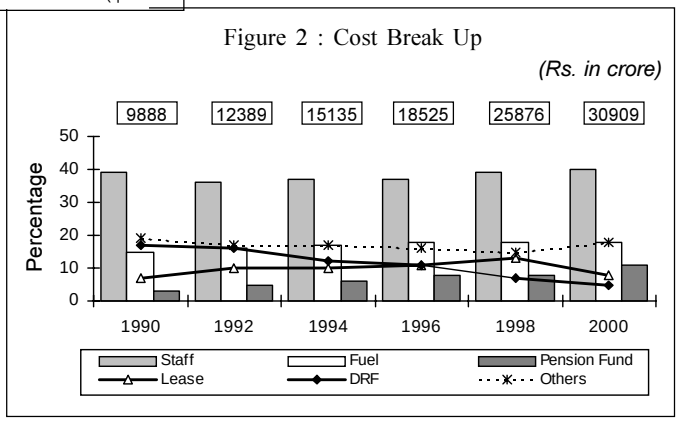
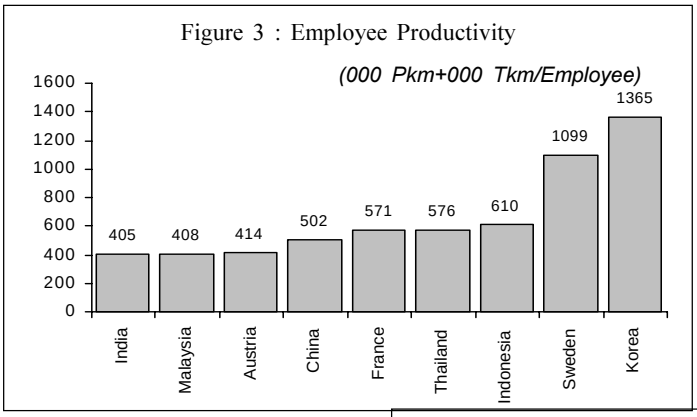


Figure 2 : Cost Break Up



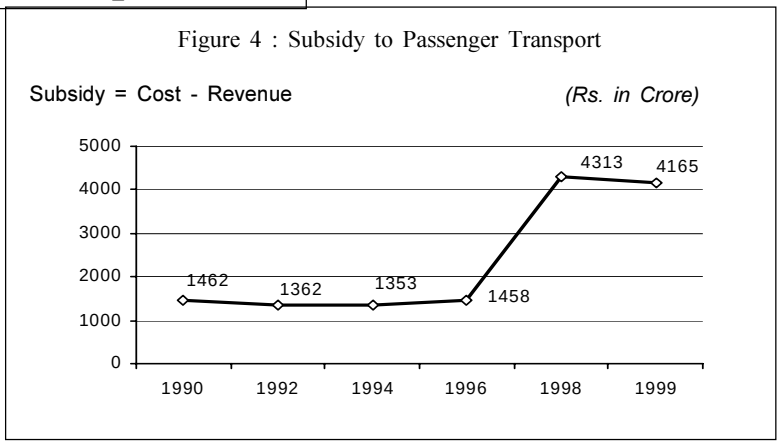
Source : Indian Railway Accounts

Figure 3 : Employee Productivity



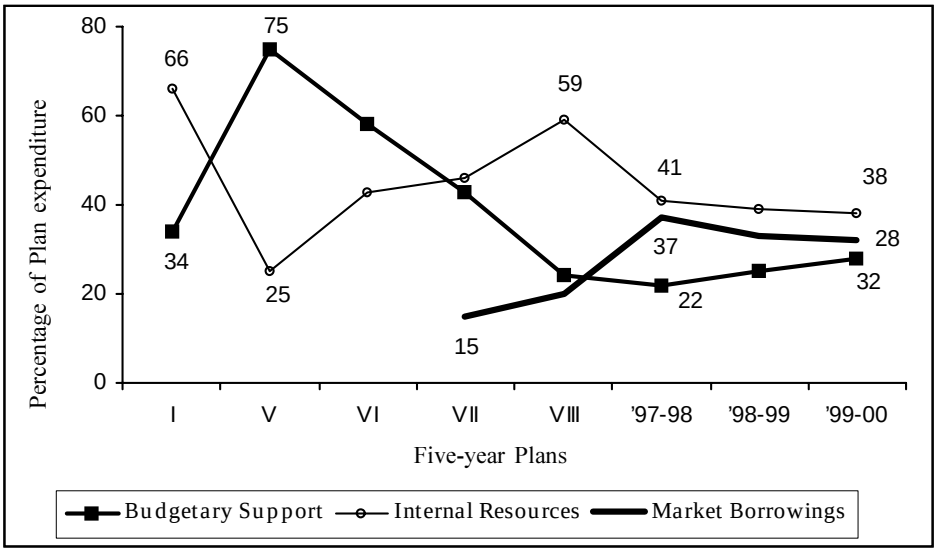
Source : The World Bank

Figure 4 : Subsidy to Passenger Transport



Source : Indian Railways

Annexure 2


Percentage of Plan expenditure
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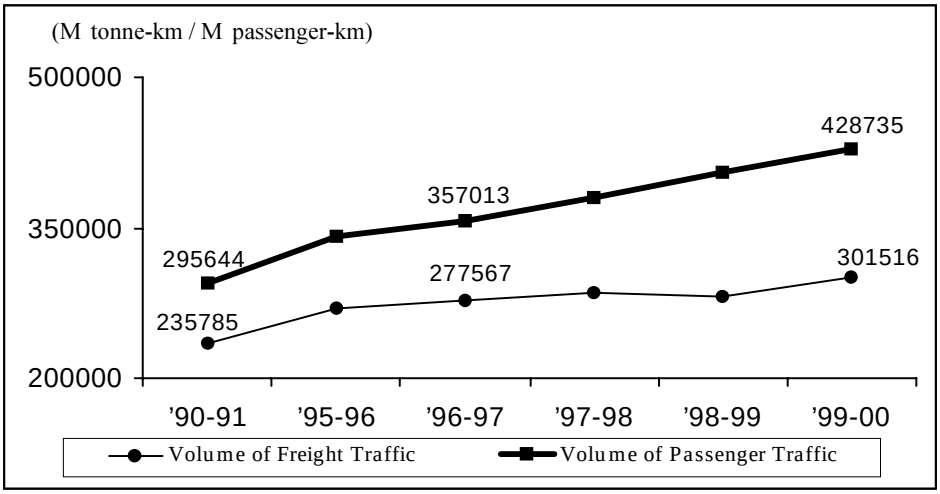
40
20
0
66
75
59
41
38
34
25
37
28
22
32
15
I
V
VI
VII
VIII
'97-98
'98-99
'99-00
Five-year Plans
Budgetary Support
Internal Resources
Market Borrowings


(M tonne-km / M passenger-km)
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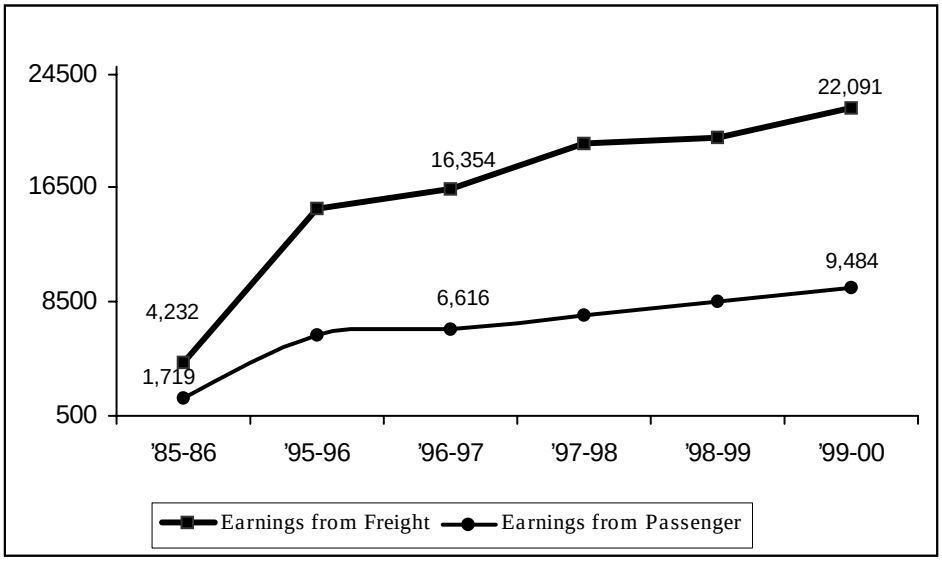
350000
200000
428735
357013
295644
301516
277567
235785
'90-91
'95-96
'96-97
'97-98
'98-99
'99-00
Volume of Freight Traffic
Volume of Passenger Traffic


24500
16500
8500
500
22,091
16,354
9,484
6,616
4,232
1,719
'85-86
'95-96
'96-97
'97-98
'98-99
'99-00
Earnings from Freight
Earnings from Passenger

Chapter 2

THE SOLUTION

2.1 Future historians, if asked to trace the main developments in world transportation in the 150 years from 1850 to 2000, will probably point to the rise and decline of the railways. But if we extend the period a little, say, to 2010, they will be persuaded to contend with another factor, namely, the resurgence of the railways. The trend is not yet fully discernible but it is becoming clearer with every passing year. The fortunes of the world's railway systems, after having suffered sharp decline for three decades, are once again in the ascendant. Almost every important country has rediscovered the virtues of the railway system. Be it Europe or Japan or China or East Asia, the story is the same: revitalise the rail system, for that is the only way of providing a sustainable solution to the long-term transportation needs of common people and business firms.

2.2 The realisation has, however, been slow in coming. It was not until the railways everywhere found themselves with their backs to the wall – losing market share, deep in debt and objects of public derision – that they decided to change. Reinforcing this desire for change was the gradual realisation that transportation by rail remained socially the most efficient way of meeting the growing needs of the economy and the people; all that was needed was to initiate the changes that would make rail transport economically more efficient. As more and more societies and governments came to appreciate this, the renaissance of the railways gained momentum. Today, it has become unstoppable.

2.3 The social optimality of the railways is so evident that it is a wonder that so many governments allowed them to slip into disaster in the first place. Provided they can be made to operate efficiently – not an easy task unless there is a deep restructuring of both the method and the mindset – there is no greater cost-effective, environment friendly, and convenient mode of transportation. The changing lifestyles comprising the growth of suburbs, the revulsion against pollution caused by cars and trucks, and the traffic congestion in cities, have all worked to activate governments into reviving their rail systems. Besides, all the world's major industries and the firms they comprise, have been undergoing massive structural changes. In this scenario, the railways could not be left untouched by the phenomenon of change.

2.4 At its most basic level, this change has consisted of what is called a return to core competence through the process of unbundling or undoing vertical integration in large firms. This process has, to a great extent, been driven by the enormous integration of financial markets since the eighties and the policy decisions by national governments to reduce their financial exposures in railways, making way, instead, for private investment. As financial markets have integrated, ever-increasing volumes of investible funds have become available across borders. At the same time, because of the increase in competition amongst fund managers world-wide, two other developments have taken place. One is the narrowing of rates of return. This has followed as a natural obverse to

the swelling of volumes. The other is the consequent demand from investors for greater transparency and more comprehensive information about the activities of firms. Taken together, the impact of these developments has been that, over the years, the process of unbundling has gained momentum.

2.5 By making adequate capitalisation and technology acquisition contingent on loss-making businesses being either shut down or sold off, investors have succeeded in undoing the practice of vertical integration which had become the norm in the 30-year period that followed the end of the Second World War. The railways, all over the world, have not been an exception to this trend, though they have been slow in responding to these changes. All national railways have increasingly come to recognise the need for restructuring and undoing vertical integration. The result is that there has been a large-scale process of consolidation relating to the core business of the railways in the last two decades. Overall, the process has been driven by the need for speed and the imperatives of hauling ever-increasing loads over longer distances. Needless to say, technology has been the key factor in this process of making trains run faster and enabling them to pull heavier loads.

2.6 Railway restructuring, the world over, has had two common features – reversion to the core business and introduction of competition as a motive force for improving performance. Every successful restructuring effort, therefore, entailed segmentation of assets and services into 'core' and 'non-core' categories. Assets and services that were not essential to train operation were divested to enable the management to focus on the 'core' business of speedy haulage, whether of passengers or goods.

2.7 Railway systems are highly complex. No two systems are alike in their geographic reach and the socio-economic environment of their operations. As such, there are no general solutions to the problems faced by them. However, in all cases where restructuring has been attempted, the underlying idea has been to reduce railways' dependence on government funding. The ultimate objective has been to gradually ensure the working of the railways on commercial lines. But while different railways have adopted different approaches towards this objective, there have nevertheless been several common features. These are :

- Creating an arms-length relationship between the railways and the government;
- Defining the appropriate business centres and spinning off non-core business;
- Inducting management with commercial skills to create customer-focused organisation; and
- Introduction of competition as a motive force for improving performance.

2.8 Here, it would be instructive to study some of the most successful restructuring experiences in this area. In the following paragraphs we examine the restructuring efforts of the railways in five countries, namely, Britain, United States, Germany, Japan and China.

Britain

2.9 After the rigours of the Second World War, the state-owned British Rail had made heavy investments in modernisation. However, by 1960, it became clear that competing modes of transport were changing the travel habits and rethinking about the railway structure was called for. The Beeching Report on reshaping of British Railways, released in 1962, recommended the closure of many railway lines, passenger stations and freight terminals. At the same time, a separate report on workshops recommended bringing together of all workshops as a division of British Railways, under a single management. It further recommended privatisation of workshop capacity, closure of 21 out of 37 workshops, extensive investment in the remaining 16 to modernise them, and a reduction of the workforce from 62,000 to 40,000.

2.10 In 1970, a subsidiary company of British Railways was formed and all the workshops of British Railways were placed under this company, named, British Rail Engineering Ltd. (BREL). New legislation enabled BREL to compete in overseas markets, but even so, many of BREL's facilities remained under-utilised. This resulted in the closure of several manufacturing units. In 1981-82, British Rail initiated competitive bidding for all its rolling stock requirements, resulting in a new commercial relationship between BR and BREL where the latter had to secure contracts on commercial basis. This arrangement did not last very long, and a Report on Railway Finances recommended total segregation of manufacturing activities from British Rail – in effect, privatisation.

2.11 In 1988, major steps were initiated for the privatisation of BREL. A holding company, BREL (1988) Ltd. was set up to manage the package of assets which had been segregated from British Rail and identified as the entity to be sold. After a process of competitive bidding, the assets were sold to a consortium which included management of the existing company. The major shareholders were ABB and the British construction group, Trafalgar House. In 1992, ABB bought 40 per cent of Trafalgar shareholding in BREL Ltd. Consequently, BREL Ltd. is now within the ABB family as ABB Transportation Ltd. with two business units : the rail vehicle group and the customer support group.

2.12 Three rolling stock companies (ROSCOs) were formed out of the British Rail in 1994 and later privatised in 1996. What had prompted the formation of these companies was the mismatch between the timeframes of the contractual period of the operating franchises (7 years) on British Railways and the life of the new rolling stock (30 or 40 years). By leasing rolling stock to operating franchisees the ROSCOs were expected to provide continuity of rolling stock ownership over changing franchise terms. The main functions of ROSCOs were : (a) to finance the acquisition and refurbishment of rolling stock; (b) to own and supply rolling stock under operating leases to passenger train operating companies; and (c) to be responsible for heavy maintenance services.

2.13 Between 1996 and 1999, two of the ROSCOs were acquired by banks and the third by a private company which also controlled two train operating companies. However,

all the three ROSCOs have performed well financially. They have been successful in lowering maintenance costs through competition, rescheduling of maintenance to reduce its frequency, and integration of light and heavy maintenance. Contractual arrangements have been made with the train operating companies so that ROSCOs provide competitive lease rates by utilising tax benefits which they receive on account of asset ownership. The ROSCOs are also able to raise cheap finance due to their good credit rating. The prices of new rolling stock fell by 25-35 per cent between 1996 and 1998. For instance, the high-tech 'Networker' EMU built in the last years of British Rail cost £1 million per vehicle whereas the 'Electrostar' EMUs are being built at a cost of £750000.

2.14 The operating portion of the British Rail was broken into four main components of track, rolling stock, maintenance and train operations and sold in almost 100 pieces during 1995-98. The government did not expect any increase in traffic following privatisation, but it has been dramatic between 1995-96 and 1998-99; passenger km increased by 17 per cent and revenue tonne km of freight by nearly 30 per cent. The estimated profits of the components that BR was split into were £1.1 billion in the financial year 1998. However, growth has led to major problems of congestion on the railways and deterioration in punctuality and reliability, as there is insufficient capacity to deal with the increased traffic volumes. The complexity of contractual relationships between the large number of agencies now involved in running the railway system and the maze of regulations has been overwhelming. The major benefit of BR privatisation has been that BR is no longer a continuous drain on the treasury; the traffic has increased and the customer is better off.

United States

2.15 As the 1970s began, the US railroad industry was near collapse. Six railroads in the Northeast and two in the Midwest were bankrupt, and no railroad was earning enough to maintain or replace its assets. The rail market share for freight had plunged by 18 percentage points in two decades and the share of the inter-city passenger traffic had nearly vanished. The US faced the threat of losing a vital player in its transport industry.

2.16 Diversification of the US economy caused a shift to higher quality modes, such as trucks. Rise of the auto and rapid advances in jet engines affected the railway's share in long-haul passenger traffic. Pervasive regulations limited the railroads' ability to manage their businesses. Rigid safety and labour regulations increased costs. Inter-state highway system and domestic waterways deprived the railroads of profitable traffic. Imposed cross-subsidies from freight to passenger services drove freight traffic further into the non-competitive range.

2.17 The first response, creation of Amtrak, was to relieve the private railroads of the public burden of passenger services and to try to regenerate passenger services by putting them under dedicated, 'as if for profit', management. Amtrak operates a 40,000 km national rail passenger system and receives Federal and state subsidies for doing so. Amtrak pays the freight railways for the costs of operating over their tracks. The objective

of removing deficits from freight operations was clearly met. However, the goal of creating a self-sustaining passenger system was not met. Amtrak continues to incur losses.

2.18 In the second step, the bankrupt Northeastern railroads were nationalised in 1972, rehabilitated with Federal money, pruned of excess tracks and labour, and eventually reprivatised in 1987. In addition, the Midwest bankrupts were liquidated, with a few tracks sold to other railways and the rest closed. Redundant workers received compensation for their loss of employment in both regions.

2.19 The third step was deregulation of railways (1981), trucks (1982) and airlines (1979). With few exceptions, railroads were allowed to set prices and offer services in line with market demand and without interference from government.

2.20 Taken together, these three steps have transformed the US freight railroads. Since 1981, ton-km have risen by 51 per cent, average tariffs have fallen by over 50 per cent in real terms, accident rates have fallen by two-thirds, and earnings have risen to near-record levels. At the end of the century, the US freight railroad system is the largest and most efficient in the world, and despite the highest wages of any rail system, charges the lowest tariffs.

Germany

2.21 During the years following the Second World War, Railways faced serious competition from road transport which gained an ever-increasing market share. A major dimension was added to the history of German Railways when Reichsbahn of East Germany merged with Deutsche Bundesbahn (DB) of West Germany, following the unification of the country in 1989. Even after unification, the government-owned and bureaucratically managed Deutsche Bundesbahn could do little to halt the trend of declining freight and passenger traffic. Freight marketshare declined from 60 per cent in 1950 to 29 per cent in 1990, and the passenger marketshare declined from 36 per cent to just 6 per cent during the same period. Consequently, the German Railways turned into a loss-making nationalised industry which was dependent on government subsidies to the tune of billions of marks.

2.22 In 1989, an independent commission comprising members from trade, industry, politics, academics and railwaymen was appointed to suggest ways to bring about a turnaround in the fortunes of the railways. Based on the recommendations of the commission, the German government passed the legal package of reforms in 1993. In January, 1994, Deutsche Bahn Aktiengesellschaft (DB AG) was established with the Federal Republic of Germany as its sole shareholder.

2.23 The main objective of the reform was to transform the state-owned entity into a private enterprise whose managers would run it in accordance with business principles. The longer-term goal of this transformation was to make the railway competitive and fit for the capital market, with the prospect that it could then go public.

2.24 For this purpose, the assets of the (West German) Deutsche Bundesbahn and the (East German) Deutsche Reichsbahn were merged to form a new "Federal Railway Fund" (Bundeseisenbahnvermogen or BEV). The operating units were then carved out from the BEV, organised into the DB AG, and completely freed of debt by the state. The new enterprise was subdivided into four units (rail network, short-distance passenger traffic, long-distance passenger traffic, freight traffic) operating on their own responsibility with their own profit and loss statements, to which a fifth unit (station installations) was also added later.

2.25 In 1999, during the second stage of the reform, which was planned to take around 10 years, these units were transformed into independent public limited companies with DB AG as the holding company. To ensure the Group's cohesion, the executive board chairman of the five companies occupy seats on the holding's executive board, and the executive board chairman of the holding also serves as the chairman of the supervisory board of each of the companies.

2.26 The railways now receive compensation for the non-commercial services rendered by them. For example, it receives contractually defined compensation for transport services in densely populated areas, which typically cannot be provided without heavy losses. In such cases, public funds are used to purchase the transport services from the railways at cost.

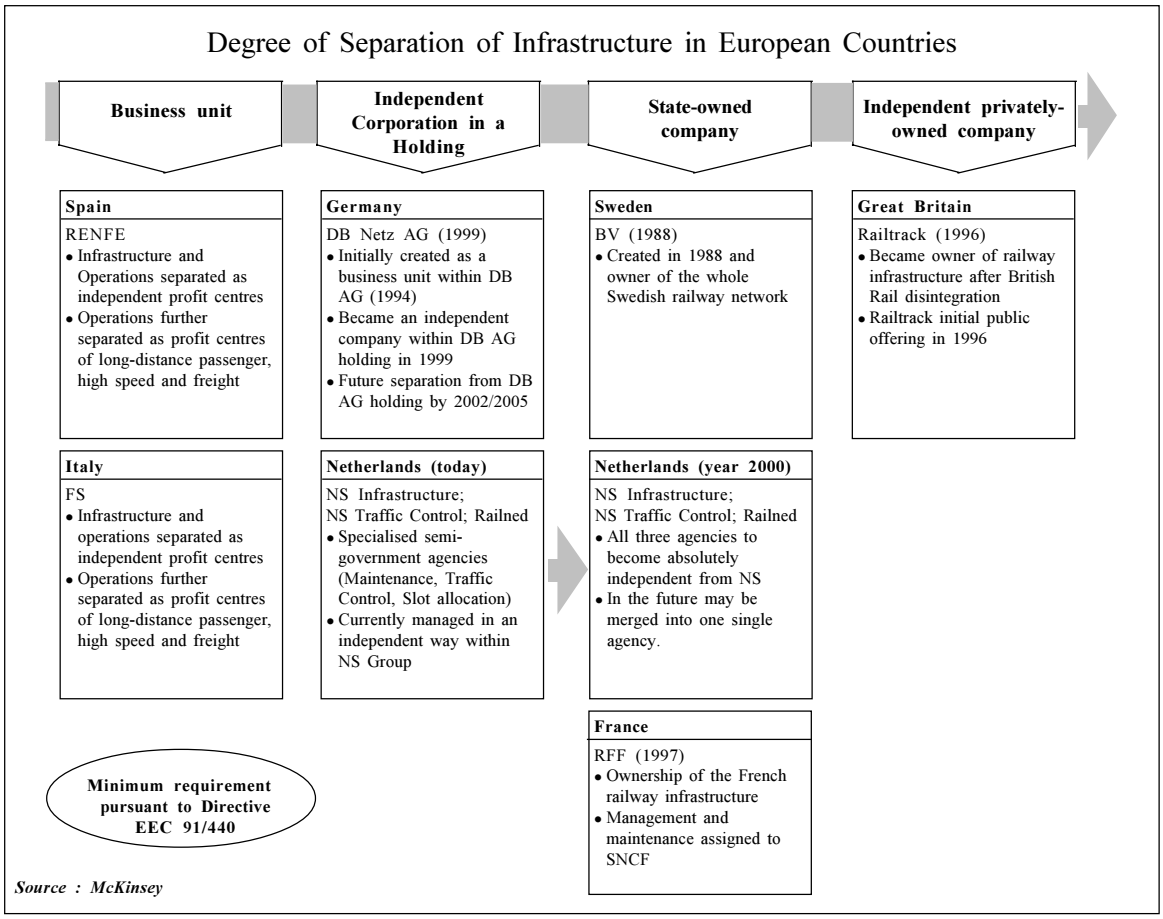
2.27 Although the reform process is still on, a measure of success has been achieved since it started in 1994. The number of employees has been reduced by approximately half. Thanks to the mutual cooperation of the management and personnel representatives, these reductions have been achieved without social tension and without compulsory redundancies. In return, productivity within the enterprise has been increased by over 100 per cent.

2.28 Since the railway's transformation into a public limited company, DB has reported a positive operating result every year. Both passenger and freight traffic have increased markedly in absolute terms. Initially, it was assumed that the holding could be dissolved one day and that the companies would each go public individually. Recently, however, there has been increasing acceptance of the idea that DB should remain a single entity and go public under the banner of a unified brand.

2.29 The essential features of the German Railways reform could, thus, be summarised as follows :

- DB AG was distanced from the political interference
- A public limited company was formed with the Federal Republic of Germany as its sole shareholder.
- The company was discharged of its old debts.
- DB AG was released from its non-profit making obligations.
- Separation of transport services and infrastructure was introduced.

- Interest-free credits were provided by the Federal Government to fund extensions of the network.
- The production of locomotives, freight cars and passenger coaches which was already in the private sector continued as such.
- Separate viable business units were created operating under a holding company.
- The holding company continues to be responsible for the strategic orientation of the group of companies, personnel, finance and legal affairs.
- There is increasing acceptance of the idea that DB should remain a single entity.

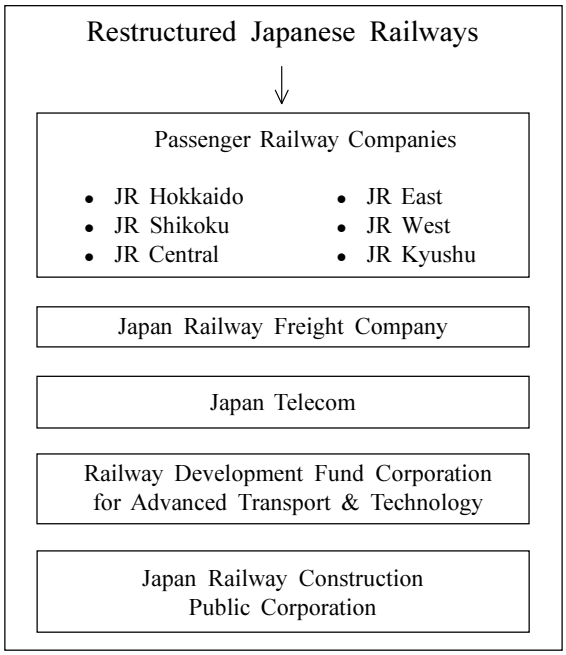


Japan

2.30 The railway's share in the transport sector had steadily declined over the years. In 1985, this share had come down to 38.5 per cent for passenger transport and 5.0 per cent for freight transport. At the same time, Japan National Railway (JNR) started incurring massive operating losses. The deteriorating position was largely due to : the public corporation system with its bureaucratic organisation, an inefficient management, strained management-labour union relationship, and vulnerability to political intervention. In 1983, the Commission for the Rehabilitation of the Japanese National Railways Reform was set up. Its recommendations were accepted in June 1986.

2.31 In 1987, JNR was split into seven operating units, known as Japanese Rail (JR) Companies – six regional passenger railway companies and one freight company covering the entire country. This regional separation was possible because Japan is an island country with three major metropolitan areas, and the fact that the great bulk of passenger transportation is concentrated within each region. However, the high-speed networks were divided along major routes and not on regional basis because the majority of these passengers are long-distance travellers. Finally, the freight company covered the entire country because regional division was not feasible.

2.32 Of 310 billion dollars of JNR's debt, 39 per cent, or 121 billion dollars, was assigned to the three major passenger railway companies (equivalent to the value of assets given to them). The remainder of the debt, amounting to 189 billion dollars, was assigned to a newly created organisation known as the Japanese National Railway Settlement Corporation. The newly created companies turned over to the Settlement Corporation all land and other assets to be used by the Settlement Corporation to pay off the JNR debts. Any debt remaining after the liquidation of assets was to be 'shouldered by the public'. The JNR telephone network, its computer facilities, and the JNR technology research centre were organised into separate companies.



2.33 The main features of the Japanese reform process were :

- A horizontal separation of regional services;
- Separation of passenger and freight services;
- Vertical integration of predominant operations and infrastructure;
- A lump-sum annual subsidy for low-density networks; and
- Competition to promote efficiency.

2.34 Privatisation has been far more successful than what was initially expected. The world's most deficit-ridden enterprise has been reborn as one of the most profitable business in Japan. In fiscal 1986, the final year under the old regime, JNR lost 11.3 billion dollars. By contrast, in fiscal 1997, the seven JR Group companies registered recurring profits of 1.8 billion dollars. Compared to the original restructuring plan that projected annual fare increases in the 3-6 per cent range, the JR companies have hardly ever raised taxes other than to include taxes during the final ten years of operation. In contrast, JNR (before restructuring) had raised its fares by a total of 76 per cent.

2.35 In 1979, JNR employed 420,000 workers. Presently, the seven JR companies are operating with a workforce of 185,000. The procurement cost of the rolling stock and other facilities have gone down by 20-30 per cent. The subsidies have been eliminated. Instead, the JR Group companies have paid 1.7 billion dollars in taxes to the government. For the purposes of comparison, JNR received an amount of 12.5 billion dollars in loans and subsidies from the government in 1991.

China

2.36 Significant reforms are taking place in Chinese railway system. The objective of reforms is to establish a modern enterprise system that has "a clear distinction of production and ownership, clear demarcation of ownership and responsibility, and separation between governmental function and enterprise function". The network has been divided into 14 regional structures which have recently been converted into autonomous legal entities. The Ministry of Railways has been distanced from the operational railways. Indeed, each entity is now required to pay to the Ministry some annual fees for the assets allocated to it. Furthermore, an attempt is being made to demarcate the passenger services as separate enterprises. Four such enterprises have been formed on four different railways. The process is still in a state of flux. For the present, separation of infrastructure is not being contemplated. It is being kept as a part of the dominant service, be it freight or passenger.

2.37 All non-core activities (including manufacture and repair of rolling stock, construction, design, etc.) have been transferred to "Enterprises" which operate as independent commercial entities or even private companies. For example, the Dalian Railway Sub-bureau was reorganised and converted into the Dalian Railway Limited Liability Company. Similarly, the Guangzhou-Schenzen Railway Company was reorganised into the Guangzhou-Schenzen Limited Shareholding Company and is now listed on the international market. The Guangzhou Railway bureau has been converted into a group company.

2.38 Rolling stock manufacture and repair units are now managed by a holding company, LORIC which will soon be split into two companies to provide competition and will also be moved out of the Ministry of Railways. Thus, in future, rolling stock will be procured by the autonomous railway enterprises. Multiple buyers and at least two local suppliers (foreign suppliers may also step in later) will, thus, provide a competitive environment.

2.39 Massive staff reductions are being effected. The goal is to reduce the workforce by nearly one-third in the first phase. To induct new technology and also to bring in new investment, joint ventures with foreign collaboration are being set up.

Conclusions

2.40 Railways, all over the world, have been facing serious challenges in the last two decades and have had to effect suitable structural changes in one form or the other.

Several models have been adopted: separation of infrastructure in European countries, atomisation and sale in a hundred odd pieces in the UK, outright sale as a single whole in New Zealand, concessioning in the South American and African countries, deregulation and facilitating restructuring in the US, unbundling and creating competitive units in China, etc. (All these have several elements in common – sticking to core business and introduction of competition as a motive force for improving performance. Besides, most of these railways have opted to move away from state ownership to private ownership.) All of these approaches have their unique features. There is no single "right approach". However, there are several lessons to be learnt from these international experiences. These are:

- The change in most countries was too late. They were denied the opportunity to change by the governments and incumbent management for a long time. Slowly, the governments recognised the imperative to change and forced the railways to improve customer service and become commercial entities.
- It was important for the railways to be run as independent corporations and not as a government department.
- The non-core activities were spun off into separate entities
- Almost all governments inducted fresh talent and external professionals in the top management of railways.
- Post-restructuring, the railways improved their performance on several fronts, such as customer service (price, quality), safety, market share, investments, and productivity.
- Involving the labour unions in common understanding of the criticality of the situation helped to smoothen the process. The governments and railway managements in some countries, such as Germany, involved the labour unions significantly to ensure their commitment to the transformation process, others, like Britain, did not. In Britain, the unions remained unconvinced about the scope and timing of restructuring, and the railways faced several problems on that score.
- While the principles common to all railway restructuring can be agreed upon quickly, deciding on the detailed organisation model needs careful consideration. The restructuring of British Rail, for example, in which the railroad was split in over 100 companies, was considered a hasty process by many. Other countries like Germany have adopted a more cautious approach with a 10-year restructuring model involving all stakeholders, leading to a smoother transition.

2.41 India is currently in a high growth phase. The acceleration of the economy has just begun. The creation of an efficient transportation support system is essential to sustain this growth. This can only be achieved by turning the Indian Railways into a

technologically modern railway system. Drawing upon the experiences of other countries, Indian Railways would need to define the principles behind a successful restructuring and also spell out the parameters of the future organisation that will be required to achieve this. This would not only be beneficial for the railways but would also help the growth of the national economy. A beginning could be made with the hiving off of the production units. The chapters that follow discuss the rationale and the need for the same in detail.

Chapter 3

THE ASSETS

3.1 The manufacturing units were set up at a time when it had become necessary to develop indigenous manufacturing capacity. Under the British regime, technology and the materials embodying that technology, whether it was rails or locomotives, were imported from Britain. But after independence, it was felt that time had come for the country to become self-reliant. In the ordinary course of events, the private sector would have been expected to take up the challenge. But as the Bombay Plan of 1944* had made clear, this sector was neither willing nor able to make the heavy investments in capital and technology required for the purpose.

3.2 In the early years after independence, the possibility of foreign exchange shortages had also become real. Therefore, in order to meet the twin objectives – that of developing indigenous capabilities and conserving scarce foreign exchange – the Indian Railways were entrusted with the task of setting up and managing their own production facilities. Vertical integration thus became the norm, partly out of necessity and partly because at that time it was widely considered an ideal form of organising a business. India embraced the idea eagerly because it was the global trend and also because it fitted in not only with its economic compulsions but also the ideological imperatives of the day.

3.3 Five production units were set up during the period 1950-90. The Chittaranjan Locomotive Works (CLW) was the first unit established in 1950 in collaboration with a consortium of British manufacturers. It went into production in 1950. With the decision to phase out steam locomotives, CLW switched over to the manufacture of electric locomotives. The first electric locomotive was turned out in 1961. Since 1998, production of 3-phase 6000 HP electric locomotives has also commenced under transfer of technology agreement with Adtranz, Switzerland.

3.4 The Integral Coach Factory (ICF), Perambur was the next unit set up in 1955 in collaboration with Swiss Car and Elevator Manufacturing Corporation Ltd., Zurich, for the manufacture of all welded, all steel, lightweight integral coach shells. Production of coach shells commenced in 1955. Although the factory was initially set up to manufacture shells only, it was subsequently expanded in 1962 to produce fully furnished coaches.

3.5 The third unit to come up was the Diesel Locomotive Works (DLW), Varanasi in 1961 in collaboration with ALCO, USA for manufacture of broad-gauge locomotives, and with Montreal Locomotive Works, Canada for metre-gauge diesel locomotives. The first broad gauge locomotive rolled out in 1964 and the metre gauge in 1968. To upgrade the present generation of diesel locomotives, a transfer of technology agreement has recently been signed with General Motors, USA for manufacture of locomotives of 4000 HP.

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* *Plan submitted by the Industrialists.*

3.6 The Wheel & Axle Plant (W&AP), Bangalore was the fourth unit established in 1984 in collaboration with Griffin Wheels Co., USA for manufacturing cast steel wheels and with Amstead Industries International, USA for producing forged axles. The production commenced in 1985.

3.7 The Rail Coach Factory (RCF), Kapurthala was the last unit to be set up in 1985 and the first coach based on ICF design rolled out of the factory in 1988. Recently, transfer of technology contract has been signed with Linke Hoffman Busch (LHB), GmbH, Germany for production of all metal, lightweight, high-speed coaches of new design.

3.8 Some key facts and figures about IR's various production units are given in the Annexure.

3.9 All the PUs are owned by the Government of India and, as such, are managed as departmental undertakings of the Ministry of Railways. This status differentiates them from the public sector undertakings (PSUs) which, though owned by the government, are autonomous corporate entities. The staff working in the production units are government employees, which is not the case with the PSUs. The funds for the production units are provided through the railway budget as approved by the Parliament. The accounts are audited by the Comptroller and Auditor General of India (CAG).

3.10 Administratively, each of the PUs is placed under the charge of a chief executive officer, designated as General Manager, who reports to the Railway Board through the Member (Mechanical). The managerial personnel are integrated with the various disciplines of Indian Railways. The non-managerial staff are, however, unit specific and seek their career advancement there itself.

3.11 The PUs do not have labour unions unlike the other establishments of IR. However, they do have staff councils consisting of elected and nominated staff members. These councils, among other matters, bring up issues relating to staff grievances and welfare. The essential staff are provided with housing facilities. Other benefits include provision of schools and medical facilities for all the staff members and their families.

3.12 The Railway Board decides on the number and types of locomotives, coaches and wheels & axles to be manufactured each year, and the production units formulate their production programmes accordingly. The preparation of specifications and designs and testing of rolling stock is done by RDSO. The latter also helps in the evaluation of products and designs outsourced from outside suppliers/collaborators and in developing indigenous capabilities. However, with the passage of years, the production units have strengthened their own design facilities and capabilities thereby diluting the role of RDSO in this area.

3.13 The products manufactured at PUs are supplied to the Indian railways at, what is termed as the 'transfer price'. This price is worked out on actual cost basis. It, however,

does not include the cost of capital, the profit element and share of administrative charges (RDSO, Staff College and Railway Board). Furthermore, production units do not extend any warranties. Only in the case of orders executed for customers other than IR these charges are included and warranty is also extended for which a separate charge is levied.

3.14 The production units have amply succeeded in fulfilling their stated objectives – self-sufficiency and indigenisation. They have also played a catalytic role in the development of ancillary industries. Indeed, the forward and backward linkages have contributed to the industrialisation of the country and even helped in area development. However, the initial binds which were the *raison d'etre* for setting up these units have since lost their validity. Indeed, the continuance of PUs as part of the Indian railways has now become an anachronism.

3.15 The industrial base in the country has acquired the capability for producing high quality equipment. The ancillary industry has significantly developed to produce quality products at competitive prices. The private sector that was earlier reluctant to invest in capital-intensive industries is now willing to do so. It has also developed managerial and entrepreneurial skills. These developments provide a great measure of confidence that the country can now move to its next phase of industrial development in a competitive environment and the production units can emerge as centres of technical excellence at par with the international manufacturing units.

3.16 At present, both IR and its production units are at the crossroads. The monolithic structure of IR is no longer relevant or sustainable. Its core competence has got diluted to a degree where its very role is threatened in the transport sector. At the same time, its production units suffer from several constraints. Some of these constraints are inherent in the IR's vertically integrated structure, while others are the making of the production units themselves.

3.17 As brought out in chapter 1, the financial position of the Indian Railways has reached its nadir. It has not been possible for IR to make even essential investments in plant and machinery of the production units. Take the case of ICF. Its need-based requirement for plant and machinery is approximately Rs. 20 crore per year at present-day cost, for a period of 5 years. This would just enable the unit to bring back its core machinery and plant into proper fettle. Against this, the railways could allocate only Rs.3.35 crore annually over the last 5 years. No wonder, 49 per cent of the ICF's plant and machinery has outlived its economic life; 16 per cent of the machinery is over 40 years old. Table below brings out the stark realities.

Age Profile of Plant and Machinery
(ICF, Perambur)

Age (Years)	**0-5**	**6-10**	**11-15**	**16-20**	**21-25**	**26-30**	**31-35**	**36-40**	**41-45**	**Total**
No.	82	270	322	177	71	66	63	95	206	1352
Overaged Machines										662
Percentage of Overaged Machines										49%

3.18 The situation is leading to a crisis which seriously threatens ICF's capability to manufacture quality products. Overaged and obsolete equipment require frequent maintenance for which additional staff, not ordinarily required has had to be employed. It is, therefore, not surprising that ICF has 2631 maintenance staff as against 476 deployed in Rail Coach Factory, Kapurthala. ICF has, in fact, remained trapped in a time-warp since the late 1950s.

3.19 Similarly, at the Wheel & Axle Plant, Bangalore, most of the machines have outlined their economic life, causing heavy down time and low quality output. The unit has not been allotted adequate funds for the replacement of the worn-out machines. Much of this is true of other production units as well. All have remained roughly at the same levels of technology at which they were started.

3.20 Over the years, the production units have also developed their own types of vertical integration. For example, the older plants continue to produce components, which could be easily outsourced and that too at competitive rates. The result is high cost of production and low levels of productivity. As such, the staff deployed has become an unbearable burden for the parent organisation. Insofar as the PUs are concerned, this matters little to them as the transfer price takes care of these costs.

3.21 Since PUs do not have their own managerial cadres, the managers are provided out of the general railway pool. Moreover, their assignments are not on a permanent or a long-term basis. As such, there is excessive mobility at the managerial levels at the cost of continuity which is so vital for the development of what is now called 'institutional knowledge' out of which innovations and growth take place.

3.22 There is absence of business principles in the pricing of the PUs' products, since the transfer price does not include profit or even the cost of capital. This practice, in effect, means that all elements of commercial costs that normally determine market price go unreflected. This makes bench-marking difficult and reduces cost accountability. It shields the management from any meaningful comparisons or pressures of cost accountability. At the same time, it does not provide any incentives to perform better.

3.23 The availability of capital without a price tag has blurred the PUs' cost consciousness and financial accountability. In addition, the sheltered market for their products and absence of competition do not provide them any motivation for improving quality and upgrading technology which is way behind international standards. They have, by and large, continued with the technology and designs initially procured by them only with some incremental improvements. Even when there is need for technology upgradation, the inherent delays in government procedures make it difficult to achieve this objective.

3.24 Time is of essence in business decisions. A government department, however, by its very nature is not geared for taking quick decisions. Two examples will illustrate this point. It was recognised about two decades ago that the design of diesel locomotives

manufactured at DLW had become obsolete and import of technology was essential. Notwithstanding the fact that there are only two choices available globally, it took twenty years to start the process of technology transfer with the result that the first new locomotive is yet to come out of the factory. Again, more than two decades back, it was recognised that the design of ICF coaches was obsolete, but the decision on the upgradation of design through transfer of technology was taken only recently, and the first new coaches are only being produced now at RCF, Kapurthala.

3.25 The production units have to follow the policies laid down by the Railway Board in the matter of procurement of materials, plant and machinery leaving them with no autonomy in decision-making. Procurement of many materials which are required in bulk is being done by the Railway Board which often leads to delays in placement of orders/supply of materials, thus affecting the production process adversely. When other countries have already moved to 'just in time', stock inventories, IR's obsolete procurement policies are decades behind.

3.26 PUs have suffered from technology stagnation for prolonged periods. This has naturally affected their export potential. Indeed, the report of the Expert Committee* clearly brings out that obsolescent technology has been a crucial factor in preventing the PUs from competing in the global market. The procedures should provide better access to uninterrupted flow of technology which would enhance the competitive advantage of the rolling stock manufactured by these units.

3.27 Time has, therefore, come for the production units to be hived off from the Indian Railways. The first step in this direction is to corporatise them. This suggestion is also born out of the realisation that the process of reform that was begun in 1991, somehow bypassed the railway production units, whereas it should have been made an integral part of it. It is felt that corporatisation will make capitalisation easier as the risk would get fully identified. Under the present dispensation, there is no way in which a potential investor can find out how risky the investment will be. This poses an artificial constraint on the level of funds these units can access. In turn, this has hindered their development.

3.28 Business organisations adopt structures that are aimed at maximising profit and market share. While the latter may not be very important in the case of the railway production units, profit will be. Consequently, these organisations will have to become 'leaner and meaner'. Corporatisation will help them in realising this objective. At the same time, corporatisation will encourage the growth of expertise within these firms. The management will improve as the managers would begin to get a greater stake in the organisation.

3.29 Apprehensions have been expressed in certain circles that corporatisation could go against the social objectives of the railways. These fears are, however, misplaced.

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* *Report of the Expert Committee on Rolling Stock Export Promotion, July 1999.*

The fact is that if the production units are spun off, the social role of the railways will not be diluted at all. IR will continue to play that role because, as things stand, the PUs never had any social role to play. Indeed, their contribution to the national effort towards fulfilling social obligations would increase if they were made more efficient by becoming the main vehicles of adopting latest technology.

3.30 At present, IR is exempt from payment of excise duty and sales tax on the rolling stock supplied by its manufacturing units. Once the PUs are corporatised, IR will no longer enjoy the benefit of these exemptions. This will result in an increase in the cost of procurement of rolling stock to IR. The higher cost could, however, be offset by greater efficiency of operations and qualitative improvements in the items manufactured due to upgraded technology arising from increased competition in the restructured PUs. This will result in reduced maintenance costs over the life of the assets and IR will be better off in the long run.

3.31 Another option would be for the government to exempt IR from excise duties and sales tax. This would maintain the status quo, while having the merit of making the cost of the hidden subsidy, which IR currently receives, explicit. It will also enable pricing to be more scientific and transparent. The amount of tax forgone will become a separate item in the budget of the government and can be attributed to social costs.

3.32 It needs to be recalled that India's obligations as a member of WTO and the increasing trend in the country towards globalisation poses a definite threat to the hitherto sheltered existence of the PUs. The gradual dismantling of protectionist barriers like custom duties, subsidies, etc. has opened up Indian markets to foreign products and Indian products to foreign markets. IR will become increasingly exposed to products of manufacturers from other countries with superior technology and lower life-cycle costs at competitive prices. In the face of this development, IR can no longer afford to maintain a protectionist attitude towards its PUs; they must face competition and improve their efficiency and productivity if they wish to survive.

3.33 There is a compelling need to rapidly reposition Indian companies for extreme competitive preparedness and support their transition from an era of regulation and protection to the environment of a fully globalised market of the twentyfirst century. The direction of flow of value, whether into or out of the country will depend upon the relative competition of Indian companies. There is an imperative need for accelerated reforms with the objective of creating a climate that makes investment rooted in the soil of India productive and internationally competitive.

3.34 However, it is not as if converting these units into independent companies will be without its minor hiccups. Chief amongst them is the fact that each new company will be faced with a single buyer who can – as happened in the case of the ancillaries that were initially set up around the Bharat Heavy Electricals Ltd. (BHEL) factories and Tisco factories – run into pricing and cash-flow difficulties. There is always a tendency on the part of the single buyer to drive prices down to rock bottom, sometimes

even below cost and at times withhold payments. Both these factors prove to be ruinous for the suppliers.

3.35 The pricing problem in the case of the railway production units could be compounded by the fact that each of them will be producing a unique item. This could create bilateral monopolies – single buyer, single seller – in which the notion of equilibrium price vanishes, since the idea of an equilibrium price is itself a consequence of competition.

3.36 While unbundling, this aspect needs to be kept in sight and measures taken to prevent the emergence of such bilateral monopolies. This can best be achieved through globalisation, since it is inconceivable that the rest of the world would not be having competing suppliers. The way to prevent the emergence of bilateral monopolies, therefore, is to first allow international firms to bid for IR's requirements and then to permit them to set up production facilities in the country through the creation of joint ventures.

Annexure

Railway Production Units : Some Key Facts and Figures

Chittaranjan Locomotive Works (CLW)	
Capital at Charge	Rs. 211.57 crore
Production Output	165 electric locomotives
Staff Strength	16,517
Turnover	Rs. 862 crore
Annual Wage Bill	Rs. 134.11 crore
Integral Coach Factory (ICF)	
Capital at Charge	Rs. 114.53 crore
Production Output	1057 coaches
Staff Strength	14,681
Turnover	Rs. 516.17 crore
Annual Wage Bill	Rs. 142.40 crore
Diesel Locomotive Works (DLW)	
Capital at Charge	Rs. 84.14 crore
Production Output	161 diesel locomotives
Staff Strength	7,441
Turnover	Rs. 466.08 crore
Annual Wage Bill	Rs. 69.14 crore
Wheel and Axle Plant (WAP)	
Capital at Charge	Rs. 210.17 crore
Production Output	99,688 wheels; 51,055 Axles, 38,624 wheel-sets
Staff Strength	2219
Turnover	Rs. 300 crore
Annual Wage Bill	Rs. 20.32 crore
Rail Coach Factory (RCF)	
Capital at Charge	Rs. 431.82 crore
Production Output	1087 coaches
Staff Strength	7111
Turnover	Rs. 370.40 crore
Annual Wage Bill	Rs. 60.90 crore

Source : Documents of the Ministry of Railways.

Notes : 1. *Turnover is based on credits in the Workshop Manufacturing Suspense A/C.*
2. *Annual Wage Bill does not include TA, contribution to pension, PF, etc.*
3. *All figures pertain to 1998-99.*

Chapter 4

THE OPPORTUNITY

4.1 For the last two decades, the world over, major industries have been undergoing structural changes as a result of domestic market developments and globalisation. At its core, the process has been driven by three factors: technology, capital and competitive pressure. The rail equipment industry has also not been immune to these changes. It is a very large industry and it will cater to an estimated annual requirement worldwide of about 7,000 locos and 10,000 coaches during the first decade of the millennium (2000 to 2009).

4.2 Currently, multinationals dominate the industry. While the main suppliers are from the European Union, North America and Canada, the Asian suppliers have also started entering the market. Japanese suppliers have the technology to compete in passenger rolling stock segment and the South Korean manufacturers are among the most efficient producers of car shells in the world. China and India are other major manufacturers, but presently, their production is almost entirely for the home market.

4.3 Europeans are the dominant force in the passenger coach manufacturing industry. The Japanese companies have a pre-eminence in the manufacture of multiple units. The US is the leading manufacturer of equipment for the heavy-haul freight service. General Motors and General Electric predominate in the diesel locomotive segment, while the European industries – Adtranz, Siemens and Alstom – are mostly geared towards the production of electric locomotives.

4.4 The last two decades have witnessed significant changes in the industry. These changes largely relate to rationalisation and consolidation of the manufacturing activities. Large firms have merged to create still larger entities, who have then proceeded to acquire smaller firms. This has also involved moving production activities to lower cost locations, sometimes even into new geographical areas. The other drivers of change have been the technological complexity of the products and the need for a large enough market to support research and development. This process is likely to sustain for some years to come.

4.5 The reforms taking place in the national railways, the world over, have major implications for the rail manufacturing industry. One such reform relates to transition from monopolistic, single national railway to a variety of ways of organising the provision of rail services – management contracts, franchising, privatisation, etc. This trend inherently has a positive impact because it leads to resurgence in the use of railways and consequentially greater investment in hardware. Another reform is the development of internationally accessible infrastructure. This trend is beneficial both for the railways as also for the manufacturers of rail equipment.

4.6 The above-mentioned developments would, however, result in greater competitive pressures both on the manufacturers and the rail service providers. The latter would have to become more cost-conscious. Hence, they would look for hardware at competitive prices. Manufacturers will have to meet increased competition by reducing their cost of production. They will have to abandon cosy monopolies with hitherto privileged customers. The service providers would also look for life-cycle costs thereby minimising their operating costs. Wherever feasible, they may even like to take rolling stock on lease and just run the trains.

4.7 The railways would, thus, have a wider choice of products at lower prices and an opportunity to turn greater competition between suppliers to their own advantage. The product costs have, in fact, gone down not just throughout Europe but worldwide. As a shelter from this situation, individual suppliers would often tend to form consortia. In the ultimate analysis, the number of suppliers competing in the railway market depends on the size of orders and the technological requirements.

4.8 The perceived size of the market is, however, an imperfect guide for the manufacturing industry. Many countries with major railways have only limited funds to invest at present. For example, it is estimated that the Indian Railways, which carries the largest number of passengers in the world, will require US$80 bn during the period 2000-2010 to cater to the demand on the principal inter-city routes alone. Given the financial position of the Indian Railways, and the resources crunch faced by the Government of India, only a fraction of this amount is likely to be available. Thus, the market size may ultimately depend on the investment capacity of the railways itself.

4.9 There are several other crucial changes taking place in the railway business, which need to be taken note of. The technology intensity of even the most mundane production processes is increasing. The technology cycles are shortening which leads to rapid obsolescence of equipment. New concepts, like the modular concept for the rolling stock, are being developed. Most importantly, because of the increasing technological complexity, railways, the world over, have begun to ask for complete solutions.

4.10 This means that the railways would tend to focus primarily on operations with everything else being left to the equipment supplier who undertakes, contractually, to provide the upkeep associated with the products supplied by him. This has created a niche for integrated players who are able to provide complete solutions, not just products. Some of the leading system integrators today are Adtranz (now part of Daimler Chrysler), ALSTOM, Siemens Verkehrstechnik (SVT), Bombardier Transportation and Ansaldo Breda.

4.11 The transfer of responsibility to suppliers also involves the operators seeking more guarantees from the suppliers. The traditional one-year guarantees are being replaced by extended warranties or even by contracting for capacity – with tractive power purchased by the hour – as in the US and Europe. In the case of the latter type, the supplier takes responsibility for maintenance and overhaul and invites penalties for train delays and failures. Given that maintenance costs represent the largest proportion of

costs over the lifetime of a product, they may be expected to have a major influence on product choice.

4.12 Increasingly, all national railways have come to recognise the need for restructuring and undoing vertical integration. Trade liberalisation has made it more difficult for countries to shelter uneconomic home manufacture from international competition. Therefore, to make a successful entry into the international market, the production units have had to upgrade technology, garner financial resources and develop global marketing expertise. R&D has become very costly. Many western countries have found such large investments unaffordable as they can be sustained only by large volumes of production – volumes which can satisfy the requirements of several countries.

4.13 In most countries, rail operations and rolling stock manufacture had historically been organised along national lines, with railways typically procuring their rolling stock from domestic suppliers. This pattern is now being changed through initiatives to open up markets to international competition. While competition has been generated by the internationalisation of procurement, it has also been driven by the effort of some governments to increase competition (this is more pronounced in the European Union); the railways' need for cost reduction; and mergers and acquisitions, leading to domestic suppliers being taken over by a few large international groups.

Joint Ventures Inject New Technology in China

China is very keen to update its manufacturing base and introduce the latest technology both in terms of production and products. A key to achieving this is through the establishing of join ventures with foreign railway equipment manufacturers.

By November 1998, China had set up 218 joint ventures and collaborative ventures in the railway sector. This injected foreign investment worth $US 257 million for the 12 months up to November 1998, which was $US59 million or almost 30 per cent more than in the previous 12 months.

The world's major rail vehicle producers have established joint ventures in China. Adtranz has joined forces with Changchun Coach Plant to produce modern metro cars and EMUs and upgrade technology. Adtranz also has a joint venture with Shenyang Railway Signal Factory. Alstom and Shanghai Electric Corporation are producing IGBT based traction equipment. Bombardier Transportation has a joint venture with Sifang Rolling Stock Plant to build passenger coaches. Siemens and Zhuzhou Electric Locomotive Plant are developing a new generation of electric locomotives.

There are also several joint ventures to produce components. For example, SKF and Nankou Rolling Stock Plant set up Beijing Nankou SKF to produce roller bearings. ABC Railways Products (now ABC Naco), United States, and Datong Rolling Stock Plant are producing monobloc cast steel wheels.

Source : International Railway Journal

4.15 There is, therefore, a marked trend towards globalisation as ownership, capital and product markets are integrated. For example, European and North American suppliers are forming joint ventures and working out other cooperative arrangements to make

inroads into the markets in other regions of the world. In a recent development, Bombardier Transportation has formed a joint venture with Sifang Power (Quingdao) Transportation Ltd. (a subsidiary of LORIC) and Power Pacific Corporation of Canada for supply of inter-city coaches. Under the terms of agreement, Bombardier will transfer certain technologies to China and contribute its expertise in advanced manufacturing techniques and managerial methods. Sifang will provide land for the new plant along with support services and its specialised know-how. For Bombardier, it is an important breakthrough into the Chinese market. To the Chinese Railways, the joint venture offers exactly what it wants – locally produced passenger rail vehicles with continuous access to new generation technologies that can compete with the best in the world.

4.16 Some countries have been much faster at opening up their markets than others. For example, the Heathrow Express in UK uses SVT rolling stock for which the electrical work was carried out in Germany and the mechanical work in Spain; and the Arlanda Line in Sweden has used ALSTOM, despite its having no manufacturing facilities in Sweden. On the other hand, to meet the domestic content rules of USA, some companies have established their assembly plants in the US – Bombardier, for instance, has invested in its plant at Plattsburgh, New York; Kawasaki has a plant in Yonkers, New York; and, Siemens produces light rail vehicles in California.

4.17 The impact of opening up of the rolling stock market is illustrated by the procurements made by the franchisee transport operating companies in the UK. For instance, Adtranz (part of German/US corporation but with several factories in the UK) won about 25 per cent and Bombardier (Canada) about 20 per cent of the orders for passenger rolling stock, and General Electric Transportation System (US) won a major order to supply diesel locomotives to English Welsh & Scottish Railways (EW&S).

4.18 Railways are also responding to market changes by demanding innovative products. For example, EW&S, which operates the UK's freight railways, is purchasing new rolling stock from North American suppliers because only they meet its requirements in terms of reliability and delivery time scales. There is also a continued shift towards standardised products based on modular designs. For example, in the locomotive and freight wagon markets, the North American railway supply industry produces low cost, standardised equipment, which allows economies of scale to be achieved. The result is that costs of locomotives and wagons are less than half the costs of EU producers. This is well illustrated by the fact that between 1990 and 1995, only 12 per cent of locomotive sales by the Electro Motive Division of General Motors (EMD) and General Electric Transportation Systems (GETS) were outside the US. This proportion has, however, grown rapidly and has, in fact, doubled since 1995.

4.19 Till the 1980s, manufacture of rolling stock (locomotives and passenger coaches) was widely dispersed over a large number of companies. In the last two decades, mergers and acquisitions have changed the situation. A very small number of multinationals now control bulk of the market for rolling stock. Three giant conglomerates - Adtranz, Siemens and ALSTOM – dominate the European market and the exports from Europe. In North America, it is the General Motors and the General Electric which rule the global market

for diesel locomotives, while Bombardier controls more than 50 per cent of the market for passenger rolling stock. The table below shows the principal features of some of the important manufacturers of rolling stock in terms of their growing mass.

Principal Features of Certain Groups in the Rail Transport Equipment Sector

Group	Transport Division		Mergers – Acquisitions/Alliances	
	Turnover (billion ECU)	Number of employees	Alliances	Acquisitions
ALSTOM (Formerly GEC-ALSTHOM)	3.5	27,000	Bombardier, *Canada* Fiat Ferroviaria, *Italy* Tarmac, *UK*	Telecite, *Canada* Konstal, *Poland* Hornell, *US* Mafersa, *Brazil* De Dietrich, *France*
Siemens Transportation Systems (SVT)	2.5	13,400	EMD, *US* Joint Venture (various companies), *China* Railcare, *UK* Adtranz, *Germany*	ISAF, *Romania* TGB, *Germany* Matra, *France* Krauss-Maffei, *Germany*
Adtranz (Diamler Chrysler)	3.3	24,000	GETS, *US* Talgo, *Spain* Siemens, *Germany* Joint venture with Changchun Car Co., *China*	Interlogic Control Engg., *UK* Dunakeszi, *Hungary* Schindler Waggon, *Switzerland*
Bombardier	1.9	15,000	Power Corporation, *Canada* Sifang Works, *China* GM EMD, *US* Greenbrier, *US*	DWA, *Germany*

4.20 The suppliers also need to have a local factory to supply national railways, principally to reduce labour costs and to meet local content requirements as in the case of USA. This has led to acquisition of different specialised companies by the dominant players; thus, Bombardier (Canada) purchased Deutche Waggonbau, DWA (Germany), a major wagon and coach manufacturer, in 1998; Adtranz purchased Dunakesi (Hungary), a coach manufacturer, in 1997; and SVT increased its share in Krauss – Maffei (Germany), a locomotive manufacturer, from 25 to 75 per cent, in 1999. International acquisitions by US companies have also been used to extend the shelf life of products and to introduce more efficient practices. In this scenario, the workforce is almost completely provided by the host country; only at the higher managerial levels the representation is international.

4.21 The challenge for companies in the rail equipment industry will be to survive and grow in an increasingly competitive environment. To increase their revenue, these companies need to :

- Provide innovative services to meet the requirement of operators that want to contract out these services;

- Establish strategic alliances with operators;
- Develop the ability of the industry to raise the finance necessary to fund railway development, mainly through developing links with the banks;
- Continue to strengthen and improve R&D programmes;
- Improve productivity to reduce costs;
- Find new markets to allow fixed costs to be spread over more units of production;
- Move production to lower cost countries; and
- Cooperate with operators on the definition of standards, based on life-cycle cost data, to achieve economies of scale and reduce the cost of tendering for contracts.

4.22 It is evident from the foregoing discussion that if India wishes to keep pace with international developments and upgrade the technology levels of the Indian Railways, it will have to follow the global trend. The production units of the Indian Railways have done quite well till now but the time has come for them to change. They must join the mainstream, rather than remain insulated from what is happening elsewhere in the world. For if India chooses not to change along with the rest of the world, it runs the risk of being left behind in the race for capital, technology and market share.

4.23 The Indian Railways has not so far been a participant in this process of technology upgradation in spite of its R&D organisation. It habitually shops abroad for technology at discrete time intervals. When the technology cycle was longer, this did not matter much. But as these cycles have shrunk, IR has become asynchronous with the rest of the world. Indeed, the technology used by the Indian Railways today is way behind the developed countries.

4.24 The restructuring will enable an overall rise in the technology levels of the major transportation system in the country. The need for this cannot be gainsaid any longer. Nor can the country afford to neglect the opportunity to alter its technology acquisition paradigm. So far, this has consisted of acquiring technology as a buyer; but a changeover will help it become part of the process of technology development as an insider, rather than as a mere sporadic shopper. The importance of this is self-evident.

4.25 Corporatisation of production units offers an attractive route for achieving these objectives. Such a changeover will enable the production units, as separate corporate entities, to form joint ventures with the international leaders in technology who, in any case, are looking for new, stable and large markets. The singular advantage that India offers to them is the large size of its domestic market so that they can be assured of a flow of orders. Simultaneously, these joint ventures will be able to leverage the strong domestic markets to become production bases for export. China has already adopted this strategy and India, if it wishes to stay in the game and become a major player in the market for railway equipment, needs to do the same.

Chapter 5

THE METHOD

5.1 Corporate structure is not a new experience for the Indian Railways. During the last three decades, several public sector undertakings have been set up by IR as autonomous entities. These include : Rail India Technical and Economic Services Ltd. (RITES); IRCON International Ltd.; Indian Railway Finance Corporation Ltd. (IRFC); Container Corporation of India Ltd. (CONCOR) and Konkan Railway Corporation (KRC). While the first three are fully owned by the government, in the case of the remaining two, IR is presently the principal shareholder only – CONCOR, 63 per cent and Konkan Railway Corporation, 51 per cent.

5.2 The functions performed by each of the above organisations are briefly described below:

5.3 RITES provides consultancy services in the fields of railways, roads/highways, airports, ports and harbours and information technology, among others. It is also engaged in exporting rolling stock and railway related equipment.

5.4 IRCON is a railway construction company operating both in India and abroad. It has also diversified into other construction activities, such as roads, buildings, bridges, flyovers, etc.

5.5 IRFC mobilises funds from the capital market, banks and other financial institutions for the Indian Railways, since government rules do not permit direct borrowing by IR.

5.6 CONCOR provides multimodal transport logistics both for the domestic and international freight. It also manages cargo handling terminals, i.e. Inland Container Depots (ICDs) and Container Freight Stations (CFSs).

5.7 KRC, having completed the construction of the 760 km west coast railway line, now manages and operates this network. The corporation was constituted with the equity participation of state governments.

5.8 Recently, two new public sector undertakings have been constituted. These are : Indian Railway Catering and Tourism Corporation Ltd. (IRCTC) and Mumbai Rail Vikas Corporation (MRVC). The former is fully owned by IR, but the latter is a joint venture with Government of Maharashtra, with IR holding 51 per cent of the equity. IRCTC will focus on providing catering services and value-added services for tourists, both domestic and foreign. MRVC will focus on commercial exploitation of railway land and air space and for the development of rail infrastructure in Mumbai.

5.9 IR is all set to constitute a special purpose vehicle (SPV) called Pipavav Rail Corporation Ltd. (PRCL) for providing broad gauge rail connectivity to Pipavav Port. This would be its first strategic partnership with a private sector firm viz. Gujarat Pipavav Port Ltd. (GPPL). The railways and GPPL will both hold 50 per cent equity in the project. The new company would be entitled to rights and obligations

under the Railway Act. It would construct the project and manage it. The railways, on their part, will operate the service on behalf of PRCL.

5.10 The creation of these organisations provides a useful insight into the emergence of a new policy framework. It also demonstrates that the railways are no strangers to the process of corporatisation, disinvestment or setting up of joint ventures with strategic partners. Over the years, they have moved away from the 100 per cent equity holding pattern followed in the initial stages and have also resorted to disinvestment of their equity holding. They are now in the process of involving a strategic partner from the private sector to set up a new corporation. IR has, thus, been experimenting with a wide spectrum of corporate structures.

5.11 The underlying objective in all these cases has been to distance from the rigid bureaucratic system of the government and gain from the freedom and flexibility inherent in a corporate structure. For the purposes of the present study, the setting up of the Container Corporation is of considerable interest, since, in this case, a segment of IR's operations was transferred to a newly constituted corporate body. It is worth noting that this step was taken for the first time in the corporate history of the railways. It involved transfer of assets, including inland container depots along with plant and machinery, land, buildings, etc. The staff working at the ICDs were given the option either to join the new organisation on deputation or to continue with IR. A number of them later got absorbed in the company on the completion of their deputation period.

5.12 The company was set up with a paid-up share capital of Rs.5 crore, which was later increased to Rs.65 crore. Initially, the government held all the shares but subsequently reduced its holding by divesting 37 per cent of the equity in two tranches. The divestment yielded Rs. 365 crore which amounted to more than five times the paid-up equity capital. During 1999-2000 it earned a profit of Rs. 141 crore and even paid a dividend of Rs. 29 crore to the Indian Railways. There cannot be a better example of a success story : while the parent organisation is reeling under deficits, the spun off unit is making sizeable profits and even contributing to railways' revenues. The lesson to be drawn is that government structures are not conducive to commercial activities.

5.13 There now exists a healthy relationship between IR and CONCOR. CONCOR negotiates haulage charges for the services provided by IR. The agreement also includes a penalty clause for the non-realisation of the agreed operational targets. CONCOR has a progressive marketing strategy and exercises all the freedom to fix its tariff. It has developed its own infrastructure, has even acquired rolling stock for its container services. The organisation has ambitious expansion plans. During the short span of its existence, it has emerged as a premier multimodal organisation in the country, functioning on purely commercial lines.

5.14 It may be noted that the multimodal operations were a core activity of the railways. As such, transfer of this activity has two clear messages. One, that a segment of IR's activities can be hived off, provided it is well-defined. Two, that such spinning off can be beneficial both for the railways as also for the new organisation. These messages give confidence that corporatisation of IR's production units would also be a success story; more so, because these units are engaged in a totally non-core but well-defined activity.

5.15 Here it may be clarified that corporatisation of production units would just be an interim phase. It would subsequently lead to disinvestment and adoption of some suitable model for restructuring in the follow-up phase. Indeed, there are several models that have been adopted in different countries. These are: management contract; concessioning; public offering of stock; and joint venture with a strategic partner. Their main features are described below :

Management Contract

5.16 In this system, the ownership continues to rest with the government, but the management rests with the private contracting agency which has the necessary expertise and management skills and runs the unit for a fee or a commission or for a combination of both. By retaining ultimate ownership and/or the right to supply, the government controls the policy and thus can find a way to allocate risks to those who can bear them. This model is best suited where the prime consideration is provision of right management skills in a state enterprise.

5.17 It does not, however, resolve the important issue of infusion of private capital, and, with ownership retained by the government, many of the limitations of a state-run organisation would also not be overcome.

Concessioning

5.18 This term covers leasing, franchising and concessions (including BOT projects) and involves an agreement for constructing or rehabilitating infrastructure, operating and maintaining a facility or service for a fixed period. The concessionaire (the party receiving the concession) covers investment costs, bears commercial risks and pays the government for the concession rights.

5.19 A state enterprise may have to be suitably restructured before transferring it to private hands. The aim of restructuring is to reduce the risk for private sector operators (so that they can obtain finances more easily), enhance a company's future viability, and generally create conditions in which a concessionaire can work effectively. The continuing government ownership and control, however, inhibit quality international investors from bidding for concessions.

Public Offering of Stock

5.20 The equity share of the government can be offered to the public for sale through a public issue or a book-building process. This has already been done in the case of several PSUs, the more notable ones being the Steel Authority of India Limited (SAIL), Bharat Heavy Electricals Limited (BHEL) and the Indian Oil Corporation (IOC). The advantage (from the government's point of view) of this system lies in that it is transparent and the depth of disinvestment can be controlled through the extent of equity ownership offered to the public. The disadvantage, however, lies in the fact that the price realised depends on the existing performance of the unit and the confidence it inspires in the investors regarding its potential future profitability. This system works best where the enterprise is already well-established, has a good track record of performance, and has also shown the capacity to thrive in the face of competition.

Joint Venture with a Strategic Partner

5.21 Simply put, the concept is to establish a joint venture with a strategic partner – one that has the capacity to infuse the necessary finance, technological and managerial skills and commitment to Indian market – to whom the government transfers a substantive stake. Such a mode of disinvestment has several advantages. It has the flexibility to accommodate special interests of either party. For example, the government may wish to lay down a condition of no retrenchment of staff for a specified period of time, or the strategic partner may want an assurance that in the event of the government undertaking any further dilution of its equity holdings in the future, the strategic partner would have the first right of purchase. Compared to the other methods, this one provides a relatively easy route for induction of private capital.

5.22 It may be emphasised that any model which is chosen for restructuring the IR's production units should have the capability to : infuse capital, induct cutting-edge technology and resource managerial skills. For the production units, where infusion of private capital is one of the major considerations, a management contract will not be suitable. Concessioning may be a better option inasmuch as the investment and risks are taken care of by the concessionaires, but the retention of ownership by the government tends to dissuade private investors. The public offering of stock may be helpful in acquiring more capital, but it does not help in improving managerial skills, employee productivity or quality of products. It is felt that in the case of production units aspiring to become vehicles of technology acquisition, the joint venture with a strategic partner would possibly be the best option.

5.23 As mentioned elsewhere, there has been a global trend towards consolidation through mergers and acquisitions. This has resulted in a few large companies dominating the world market and also introducing new technologies in their products. They are able to do so because of their vast resources and the ability to continuously invest in research and development. Indian railways will necessarily have to depend on such organisations for technological inputs if it wants to keep pace with the improvements in designs and technology elsewhere in the world. It would, therefore, be prudent to look for a strategic partner from amongst global enterprises. This will not only provide IR with modern rolling stock but will also encourage the restructured production units to develop the potential for exports.

5.24 There is no gainsaying the fact that to be successful the process of restructuring of PUs has to be a planned exercise with various stages clearly identified. It would be judicious to start the process with just one production unit which is comparatively more amenable to structural changes. It is, therefore, recommended that Rail Coach Factory (RCF), Kapurthala should be taken up in the first instance. This factory has several positive features that would facilitate the process of restructuring. These features are:

- It is the youngest of the PUs and, therefore, not fully entrenched in traditional and inflexible work culture of a government enterprise.
- It is not excessively overmanned as compared to other units and, therefore, easier to deal with.
- It has modern production facilities that will attract private participation.
- Being young, its assets would lend themselves to realistic valuation.
- It has an on-going transfer of technology agreement with LHB, Germany and, thus, a demonstrated capacity to absorb sophisticated technology and adopt international practices.

5.25 It may be mentioned that RCF is one of the two units (the other being ICF) manufacturing similar products. It will, therefore, be easier for IR to absorb any temporary setback that may occur during the restructuring of this unit.

5.26 RCF was established in 1988 in response to the need for augmenting the overall manufacturing capacity for passenger coaches, as the capacity of ICF had already been fully utilised. Meanwhile, the demand for coaching stock had substantially increased both on incremental and replacement account. RCF was also aimed at manufacturing newer generation of rolling stock with latest plant and machinery. The stated objective was to achieve 100 per cent improvement in productivity as compared to ICF.

5.27 RCF has succeeded in achieving these objectives. Its manpower is half that of ICF with its annual production being of the same level. Besides conventional coaches, it has also turned out a wide mix of coaching stock of other types, such as overhead equipment car, oscillograph car, track recording car, high speed IRY/IR20 power car. It has met the defence requirement for special type coaches. To its credit, it has evolved totally new shell and bogie designs suited to specific conditions.

5.28 Recently, Indian Railways has entered into a contract with LHB of Germany, for transfer of technology in the design and manufacture of new generation of coaches and for providing assistance in the manufacture of these coaches. RCF has been nominated to receive this technology on behalf of IR. LHB is required to supply 24 coaches of different types. The bogies for these coaches will be supplied by FIAT of Italy. The production plans envisage use of improved technology in metal cutting, metal forming and fabrication, and painting techniques. The manufacturing system will get streamlined with the use of sophisticated machines. This will further enhance overall productivity of the unit.

5.29 The transfer of technology contract with LHB is to be valid for 10 years after which it is planned to eventually phase out the old design coaches. RCF has also signed a Memorandum of Understanding (MoU) with Siemens for manufacture of light rail vehicles needed for mass rapid transit systems in metropolitan cities. A similar MoU with Hyundai of South Korea and Mitsubishi of Japan is also under consideration. To strengthen its capacity in interior décor, an MoU with Temoinsa has been signed. This company is a world leader in interior coach design.

5.30 RCF was set up with an initial capacity of 1000 coaches per year. Presently, the facilities are also being provided for manufacturing 300 coaches of LHB design per annum. The unit has been able to manufacture to its full rated capacity. In 1998-99, it produced 1087 coaches of 23 different types (AC and Non-AC). The year-wise outturn is given in Annexure 1.

5.31 In order to evaluate the potential of RCF in the context of its proposed restructuring, a SWOT analysis of this unit has been carried out which is presented in the Table. A SWOT analysis is like a strategic balance sheet of an organisation where strengths can be thought of as competitive assets and weaknesses as competitive liabilities and where opportunities and threats are future assets or liabilities, respectively.

SWOT Analysis

Category	Strengths	Weaknesses	Opportunities	Threats
Legal	• An independent and established judicial system			
Government Policy	• Dealing with sovereign agency	• Delayed processes participation	• Liberalised climate for private sector	
Institutional Structure	• Relatively free from obsolescence • No benchmarks for comparison with international performance standards • Limited budgetary independence	• Not exposed to local political pressures.	• Potential for competition	• Product cost-effective • Modern production facilities. • Good outsourcing neighbouring facilities. • ISO 9001 certification
Management	• Highly competent and hierarchy • Inadequate autonomy • Limited accountability • Lack of exposure to market forces	• Rigid bureaucratic		• experienced professionals
Labour	• No Unions • Weak incentives	• Overstaffed		• Highly skilled labour
Commercial Attractiveness	• Assured market for products • Absence of commercial accounting and pricing practices	• Dependence on single customer	• Export potential from China and other South-east Asian countries	• Export initiatives • Modern manufacturing facilities • Cheaper labour compared to developed countries • Technical flexibility for product diversification

5.32 The analysis brings out several features that would encourage favourable response from the investors. RCF has modern production facilities and has the technical flexibility for product diversification. It is endowed with skilled and competent human resources. It has an assured domestic market and potential for exports, especially to neighbouring countries. It has excellent outsourcing facilities from nearby ancillary units. It has also received ISO 9001 certification for quality control. It has, thus, a great potential for turning out competitive international products.

5.33 The transition of RCF from a departmental unit to a corporatised entity will have implications far beyond a change in the legal status. It would entail both regulatory and financial restructuring. Financial restructuring, for example, will typically involve cleaning up the balance sheet, deciding on the treatment of state-guaranteed obligations, setting up of financial systems and preparing new financial statements in accordance with the generally accepted accounting principles. This would also require determining of the equity capital and the debt-equity ratio of the new company. In addition, there would be need for establishing the asset base, asset valuation, seed capital and short-term financing well in advance of the setting up of the corporation.

5.34 The government may decide to hold the entire equity capital or allow the state governments and financial institutions to participate in the equity. Another option could be to offer upto 25 per cent equity to private entrepreneurs, while the government/financial institutions hold the balance 75 per cent share. In view of the high value of its assets, both tangible and intangible, there is every likelihood of the new company raising capital through issue of shares on premium.

5.35 The new company need not be overly dependent on orders from the Railways. It can cater to the needs of other customers as well, both within and outside the country. Indeed, it can become a base for exports. The export earnings could be utilised for leveraging additional funds from the financial markets. The opportunities are, thus, immense both in the domestic and international markets.

5.36 Corporatisation of RCF would represent the first but an important step towards the goal of disinvestment in railway production units. Since corporatisation signifies a major change from the traditional functioning of the production units, it may engender uncertainty among those who would be directly affected by it. It will, therefore, be necessary that this changeover is brought about after due preparation and in a transparent manner. In case it is successfully achieved in RCF, and there is no doubt about it, the way to successful change in other units would be fully assured.

5.37 In this process of restructuring, no legal or regulatory problems are anticipated. The activities are well defined, so also the assets. The regulatory framework for safety is already in place. The Commission of Railway Safety is an independent body and is well-equipped to deal with issues relating to introduction of new rolling stock. For the present, there is apparently no need to set up a separate regulatory mechanism to promote competition and to protect consumer interests. The issues regarding monopoly pricing have already been dealt with in an earlier chapter.

Annexure 2

Methodology Overview of Corporatisation

Enterprise Restructuring Goals

- Create Appropriate Business Charters
- Transfer Assets and Obligations
- Establish Effective Organisation Structures
- Develop Appropriate Strategies, Processes, and Structures
- Improve Resource Allocations
- Promote Productivity and Efficiency

Key Tasks

1. *Investigate the Quantitative Aspects of the Enterprise*

In order to gain a comprehensive understanding of the enterprise's assets and operations, its quantitative aspects should be investigated. Particular attention should be paid to resource adequacy and opportunities, value created and destroyed, cost structure, staffing, and investment allocations.

2. *Investigate the Qualitative Aspects of the Enterprises*

In order to gain a comprehensive understanding of the enterprise's assets and operations, its qualitative aspects should be investigated. Particular attention should be paid to strategy, people, business processes, organisational structures, and technology.

3. *Select Enterprise Segments to be Corporatised*

The enterprise knowledge gained during the investigations of the enterprise's quantitative and qualitative aspects will help in selecting the enterprises to be corporatised. Based on this knowledge, a variety of decisions will be made such as how these enterprises will be organised, the scope of business reengineering, and how to transition existing contracts. Key to the success of these decisions will be : to select the right enterprise segments; resolve conflicting interests; solve difficult issues; and, establish economically viable enterprises.

4. *Develop Enterprise Segment Models*

Having selected the enterprise segments to be corporatised the next step is to determine the structure of the enterprise. The enterprise structure should be modelled to achieve a variety of goals consistent with the overall objectives of corporatisation. The model should attract inbound investment, stimulate competition, and prevent monopoly abuse.

5. *Identify Assets and Obligations to be Transferred*

Many of the public sector enterprises which are to be corporatised need to change their legal status from extensions of the government into self-standing corporations whose equity capital is partly or wholly owned by the government. The way of doing this is to form a shell company with limited liability into which the assets to be disposed are transferred, with the government owning all shares.

The purpose of this is to create a company with an appropriate gearing ratio, which will facilitate its emergence as a joint stock company. Subsequently, there may be sale of all or part of the company's equity to the private sector.

6. *Assets Analysis*

In this phase, both tangible and intangible assets should be analysed, including shared assets and extraneous assets, and operating and non-operating assets. In order to make appropriate decisions, it is important that the enterprise's assets and operations are comprehensively understood. Additionally, it is critical that the decisions made result in the establishment of economically viable enterprises.

7. *Develop an Effective Change Management Programme*

When an entity undergoes a change, it is necessary to plan how the entity will inform its members and stakeholders about upcoming events and certain decisions being made. This change management programme should communicate the vision, change strategies, implementation plans, and results of change. Information should be communicated accurately and in time. The programme should provide feedback channels and foster commitment to the change event by creating an informed organisation. It is critical that the programme addresses key issues, such as transitioning displaced staff and creating the infrastructure required for change. That is, it must provide for information systems and hardware, management reports and employee training.

Chapter 6

THE WORKFORCE

6.1 Governments, the world over, have employed too many workers in their state enterprises. Many of these enterprises have, in fact, been used as vehicles for job creation and political patronage. Protection from competition, lack of hard budget constraints, and security of tenure of public sector positions have led to chronic overstaffing. In India, for example, state enterprises were estimated to be overstaffed by nearly 35 per cent in the early 1990s (Banerji and Sabot, 1994).

6.2 Overmanning has serious implications for the growth of an industry where the capital/labour ratio (K/L) has always been critical for determining its productivity and efficiency. Over the last quarter of the 20th century, this ratio had become smaller and smaller as the denominator had expanded without a pari passu increase in the numerator. In other words, there was a tendency to create jobs without making requisite investment in publicly owned enterprises. The result was a significant lowering of capital and labour productivity and economic efficiency. This was most pervasive in enterprises that operated as monopolies with heavy government subsidies and other forms of protection, and typically included the infrastructure enterprises.

6.3 It was in recognition of this fact that dozens of countries initiated a programme of restructuring during the latter half of the 1980s. The objective was to restore the balance in the K/L ratio so that it would become optimal once again. Had governments not been in dire fiscal straits, they might have sought to increase K without reducing L. Indeed, during the first half of the eighties, this was attempted by some countries, but with disappointing results. It, therefore, became clear that the only way to increase K was to involve private investors. The problem, however, was that if K had to be increased by involving private investment, L had to be decreased first. Investors were unwilling to put money into enterprises which were overmanned. Thus began the process of labour downsizing in a number of countries.

6.4 When the overmanning problem was finally recognised, the question arose: was it fair that workers who had nothing to do with management decisions be made to suffer the consequences of management failures? The equity issues inherent in job cutbacks forced governments to work out schemes which would compensate the workers for the loss of their jobs and livelihood. Social security nets, golden handshakes, voluntary retirement, retraining, temporary succour and many such schemes were initiated. Some of the methods adopted for carrying out labour downsizing are described in the following paragraphs.

Japan

6.5 In the case of Japanese National Railway (JNR), the Japanese government and the JNR Reform Commission calculated that the workforce required for all the new

(privatised) companies would be 2,15,000 persons as against 2,76,000 employees working in JNR in 1985. The government asked 20,000 employees to retire and made sure that a special law entitled them to premium retirement benefits. At the same time, the government asked its own agencies and the local governments to help these persons find jobs. The 41,000 people expected to become redundant were to be transferred to the JNR Settlement Corporation where they were to receive help in finding new jobs within three years. The Settlement Corporation provided job guidance, training and education, and employment coordination. It completed the placement programme by March 1990.

Malaysia

6.6 A policy decision was taken that (a) no staff of the privatised enterprise may be retrenched within the first five years of privatisation, except on disciplinary grounds; (b) staff redundancy, if any, will be resolved through normal attrition, redeployment and expansion of activities; (c) affected personnel, upon privatisation, shall be offered a package of employment benefits on no less favourable terms and conditions of service than those enjoyed by them while in government service. Such personnel shall be given the option of joining or not joining the new company; those not wishing to join will be retired and given their rightful retirement benefits immediately; those wishing to join will be offered two schemes of service, one which replicates the government scheme of service and the other which is commercially oriented and under which the employees are entitled, among other things, to purchase the firm's shares and enjoy such bonuses as the firm's performance may warrant.

Pakistan

6.7 Employment is assured for one year after privatisation. Employees whose services are terminated after 12 months are entitled to unemployment benefits for two years.

Sri Lanka

6.8 Employment in privatised companies is protected for two years after privatisation.

Germany

6.9 Privatisation carried out by Treuhandanstalt contained a special employment clause requiring the private investor to guarantee the maintenance of a certain level of employment for a specific period. A special scheme has also been developed in Germany under which the employees would be asked to switch to private contractual arrangement. Those not willing to do so, would be taken over by an ad hoc employment company that would maintain the old contractual arrangements and lease the labour to one of the successor companies. In addition, the government would guarantee accumulated social benefits of the employees, particularly with regard to pensions.

Britain

6.10 There were generous redundancy payments for the surplus labour. Besides, employment opportunities were also available for the skilled personnel in the private

sector because of the increased activity of the competitors. Consequently, redundancies in the public enterprises were absorbed by the emerging private sector.

Chile

6.11 The government unilaterally abolished all restrictive practices (usually negotiated by the trade unions), such as large gang sizes, limited number of short shifts, and high overtime payments. In return, the workers were offered attractive compensation. The impact on workers was hard to assess as they received a relatively large initial lump-sum payment.

Mauritius

6.12 Unlike the government of Chile, the Mauritian government made an agreement with the unions that there would be no change in the work rule after the agreed layoffs were implemented (this was in the ports sector). Since then, however, the authorities have been struggling to maintain efficient operations with restrictive work practices, including no double shifts and obsolete gang sizes.

6.13 Compensation paid to the retrenched labour upon the restructuring of state enterprises in some of the developing countries is shown in table below.

Severance Payments in Selected Developing Countries

Country	Sector/ enterprise	Average length of severance payment	Average amount per worker (in $)	Financing
Argentina	Railways (FA) Telecoms (Entel) Steel (Somisa)	24 month's salary	12,000 25,000 15,000	Government, donors Government Government, commercial banks, donors
Bangladesh	Jute (BJMC)	36 month's salary	5,000	Government, donors
Brazil	Railways	18 month's salary	15,000	Government, donors
Ghana	General Food processing (TFCC) Textiles (GTP)	52 month's salary 14 month's salary 6 month's salary	1,423-2,486 2,258 744	Government Government Government

Source : The World Bank data

Indian Railways

6.14 It is well-known that IR is grossly overmanned; the estimates vary between 20-25 per cent. Recent studies in benchmarking carried out on comparable sections of IR with those of newly constructed west-coast railway line provide a valuable insight into the staff deployment. It was found that while for a section of 264 km, IR employs 1316 staff, Konkan Railway employs half the strength only – 677 staff. The staff reductions were achieved through paradigm shift in maintenance practices and technology

upgradation which involved an additional capital outlay of Rs.15 crore only. This clearly illustrates the extent of overmanning prevailing in IR.

6.15 A detailed study conducted by the RITES estimated that there was 30 per cent excess staff in the railway workshops. In the case of the production units, as would be seen later, the level of overmanning is equally high, particularly in the older units. Indeed, the report of the Committee to study the organisational structure and the management ethos of the railways (1995) observed that, "at the Integral Coach Factory, Perambur, it was seen that even down to the design and maintenance of machines, separate organisations based on various disciplines seemed to have grown, leading to overstaffing and lack of synergy".

6.16 IR has two passenger coach manufacturing facilities, the older one at Perambur in Tamil Nadu and the newer one at Kapurthala in Punjab. When investment in the latter was being planned, a comprehensive list of guidelines was drawn up. The section devoted to productivity in the guidelines was unambiguous: it aimed at a 100 per cent improvement in productivity as compared to the Perambur facility. As shown in Annexure 1, this norm has been adhered to. Whereas Perambur employs nearly 15,000 persons, Kapurthala employs only 7,000, though both produce the same number of coaches annually. There cannot be a more telling snapshot of the prevailing situation.

6.17 What has made the difference? Technology and outsourcing. Kapurthala uses vastly superior technology and outsources substantially. The result is that its direct labour costs are kept far lower than those at Perambur which, being the older unit, is overmanned by about 50 per cent.

6.18 Or, take the case of DLW, Varanasi which has an annual output of 150 diesel electric locomotives. It outsources most electrical equipment including rotating machines and control equipment. The total staff employed is 7441 out of which about 5000 are employed on locomotive production and the rest on services. Thus, 33 man-years of direct labour is used for production of each locomotive. The labour input per electric locomotive at Chittaranjan is also of the same order. In comparison, the labour input in the two factories of EMD (General Motors) at Le Grange (USA) and London in Ontario (Canada) is about 6 man-years per diesel electric locomotive. The factory of General Electric at Erie, Pennsylvania (USA) also uses about 6 man-years per diesel electric locomotive output. It is reported that in China, the labour input for the manufacture of diesel electric and electric locomotive is of the order of 12-15 man-years per locomotive.

6.19 The railway production units are, thus, unique in many ways. The capital/labour (K/L) ratio is far from optimal. Neither has K increased appreciably nor has L decreased to any significant extent. The result is poor productivity and dismal efficiency. What is galling is the fact that even emerging economies are doing better; more so, when India had a lead over them in the initial phase. Apparently, something has gone amiss.

6.20 The present staff strength of all the production units of Indian Railways put together is around 50,000. Viewed in the context of IR's total workforce which is around

1.6 million, the magnitude of labour redundancies – an estimated 20,000 employees – and change of status consequent to restructuring of the production units ought to be relatively insignificant. However, much will depend on how the sensitive aspects of these issues are handled.

6.21 It is worth noting that while many privatisations have been carried out with minimal labour protests, labour opposition to privatisation has been significant in countries and enterprises where overemployment is high and where state enterprise workers form a base of political support. Concerns about the effects that privatisation has on workers have been exacerbated by the lack of information on the mechanisms available to reduce the political and social costs of labour adjustments.

6.22 Where efficiency improvements require sizable labour force reductions, privatisation can proceed smoothly if governments make early efforts to develop a labour strategy that secures employee support for change and provides a social safety net, i.e. when efforts are made to :

- Involve workers and labour unions in the reform process.
- Ensure that workers share the gains of privatisation through mechanisms, such as employees' share ownership schemes.
- Compensate laid-off workers by providing severance payments and other income support.
- Help workers on a targeted basis to reintegrate into the labour market.
- Eliminate obstacles to private job creation.

6.23 One of the preliminary steps that the government should take is to enter into consultations with the labour unions and take them into confidence regarding all measures it proposes to take in respect of disinvestment and the reasons why it has been decided to disinvest. IR is fortunate in having responsible trade unions who have invariably been highly constructive in resolving any labour issues in the past. For example, the change from steam traction to diesel traction was a major restructuring exercise involving labour adjustment and it was carried out smoothly with the cooperation of the labour unions. The channels of communication with the unions need to be kept open in the case of corporatisation of production units also.

6.24 But communication alone will not do. It has also to be backed up by the offer of a workable set of options aimed at protecting workers' interests. Fortunately, as Annexure 2 shows, the age profile of the workforce in the production units is such that it should be relatively easy to offer a combination of incentives by adopting what is called a 'cafeteria approach' wherein alternative menus are available to choose from. A suggested package which could be offered to the staff is given below.

6.25 All employees of the railway production units can be offered a choice: to either join the corporatised unit or to continue with the Indian Railways in any of its other units. The choice of remaining with the corporatised unit would be subject to the consent

of the new management of the unit. Those opting to stay back with the Railways can be offered attractive severance payments to encourage them to retire. The Railways should also arrange training and rehabilitation assistance for those accepting severance payments. These schemes and payments should be funded out of the proceeds of the disinvestment in the production units.

6.26 These actions need to be taken in order to establish the government's bonafides in accepting responsibility for its staff and their interests. This would ensure a smooth passage for disinvestment, and pave the ground for similar action in other units. It is worth noting in this context that the World Bank has expressed an interest in funding the package that would help in restructuring the labour force in the production units. The Bank is already funding such schemes in some other countries, notably China.

6.27 It may be stressed that the employment guarantees while privatising, although used in some countries, are not a good solution especially in the case of enterprises with severe overstaffing because :

- when used in early stages of privatisation they set an undesirable precedent for the future. According to a World Bank Paper*, in Malaysia, the privatisation of Ketang Container Terminal, the first to provide a five-year employment guarantee, set the standard for future sales. Although this was not a major problem for Malaysia since many of its state enterprises were relatively efficient to begin with, such arrangements have created problems in Sri Lanka and other countries where overstaffing has been particularly severe.
- guarantees can deter investor interest. Even where buyers can be found (because of a correspondingly low price), the guarantees restrict the ability of new owners to improve performance. In such cases, the customer or the consumer is the ultimate loser.
- when investors have to absorb a large number of surplus staff (and thereby the cost of carrying them) or make severance payments to reduce their number, they discount the sale price accordingly, which results in lower sale price realisations. This leads to public allegation that state assets are being sold cheaply.

6.28 A key issue in these efforts is whether governments should restructure the labour force before privatisation or leave it to the new private investors. In companies with minimal to modest levels of overstaffing, restructuring can and should be left to the private investors. But large-scale redundancies are usually best handled by governments prior to disinvestments to minimise labour resistance, enhance the likelihood that a social safety net will be provided, and increase the value of the firm.

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* *Privatisation and Labour – World Bank Technical Paper No. 396 (1998).*

6.29 The cost of continuing with redundant labour, whether imposed by government or by labour union pressure, is often underestimated because disgruntled employees can extract a price in poor morale, inefficient operations, and inflexibility of service. In the case of Uruguayan reforms, for example, the government actually concluded that the railways will be better off if the surplus workers were paid to stay at home till alternative arrangements could be made for them than if they continued to report for duty to the railways.

6.30 However, while reducing staff one has to be very careful about working out the right mix of young and old as well as of people from inside and outside the organisation. A fresh input from outside with new ideas and abundant dynamism is necessary for giving a new direction to the organisation. It is, however, of no use to be too abrupt. On the other hand, it may be advantageous to plan transition period and not to lose too quickly the high quality professional experience acquired by the older staff.

6.31 Labour restructuring, despite its problems and difficulties, should not be allowed to become a deterrent to the larger process of restructuring of the production units which is necessary to improve their efficiency and productivity. Indeed, labour restructuring is often necessary to improve the efficiency and competitiveness of the state enterprises – regardless of whether corporatisation and disinvestment is involved. The burden that state enterprises are imposing on society is simply too heavy to bear. Continued government support for state enterprises comes at the expense of society as a whole, diverting scarce resources to subsidise loss-making operations that benefit only a small number of citizens, rather than to social sectors that benefit the overall economy and the poor.

Annexure 1

Manpower Position at the Integral Coach Factory (ICF), Perambur
(December 1999)

	Category		GP - A	GP - B	GP - C	GP - D	Total
a)	Workshop & Workshop Related						
	i. Directly engaged on manufacturing activities						
	Production Shops	Mechanical	8	15	6708	758	7489
		Electrical	4	4	797	37	842
		Total					8331
	ii. Maintenance Staff	Mechanical	3	17	1467	241	1728
		Electrical	1	7	397	39	444
		Civil	1	5	79	374	459
		Total					2631
	iii. Administration		2	7	87	119	215
	iv. Personnel & Establishment		4	4	310	18	336
	v. Accounts		4	11	300	32	347
	vi. Stores		10	12	344	335	701
	vii. Drawing Office		9	12	215	20	256
	viii. Others		3	4	863	273	1143
b)	IOW Staff for colony etc.		0	0	6	10	16
c)	Electrical Staff for colony etc.		0	0	79	10	89
d)	Medical		7	6	79	68	160
e)	Security		0	1	519	5	525
f)	Schools		0	0	0	0	0
g)	Miscellaneous		0	0	0	0	0
		Total					3788
	Grand Total		56	105	12250	2339	14750

Manpower Position of the Rail Coach Factory (RCF), Kapurthala

	Category		GP - A	GP - B	GP - C	GP - D	Total
a)	Workshop & Workshop Related						
	i. Directly engaged on manufacturing activities		26	21	3863	392	4302
	ii. Maintenance Staff	Mechanical	7	5	270	0	282
		Electrical	2	0	101	48	151
		Civil	3	2	38	0	43
		Total					476
	iii. General Administration		3	5	191	0	199
	iv. Personnel & Establishment		6	3	105	0	114
	v. Accounts		4	6	85	12	107
	vi. Stores		12	7	219	0	238
	vii. Drawing Office		9	3	240	0	252
	viii. Others		6	6	100	0	112
b)	Civil Engineering Staff for colony etc.		0	2	121	297	420
c)	Electrical Staff for colony etc.		2	1	95	14	112
d)	Medical		12	0	85	99	196
e)	Security		2	0	208	1	211
f)	Schools		0	0	0	0	0
g)	Miscellaneous		0	0	72	261	333
		Total					2294
	Grand Total		94	61	5793	1124	7072

Annexure 2

Age Profile of Workshop Technical & Artisan Staff
(RCF, Kapurthala)

Age Group	Supervisors Chargeman and above	Artisan Staff
Below 30 year	14	170
30 – 40 years	242	1840
40 – 50 years	114	1021
Above 50 year	50	412
Total	420	3443

ICF, Perambur

Age Group	Supervisors	Unskilled	Skilled artisan
Below 30 years	149	271	499
30 – 39 years	413	901	2065
40- 50 years	233	347	3294
Above 50 years	352	61	2590
Total	1147	1580	8448

Education Profile of Technical and Artisan Staff
(Kapurthala)

Qualifications	Number of Staff	
	Artisan	Unskilled
a) I.T.I passed or qualified trade apprentice (Railway or under Apprentices Act)	2789	32
b) Other than I.T.I Passed/Trade Apprentices		
i. Nil to Class 5	24	08
ii. Class 6 to 10	303	49
iii. Passed class 10 or above	327	14
– Diploma Holders	07	–
– Non-Diploma Holders	647	71
Total	4097	174

(Perambur)

Qualifications	Number of Staff	
	Skilled	Unskilled
a) I.T.I passed or qualified trade apprentice	1930	252
b) Other than I.T.I passed/Trade Apprentice		
i. Nil to Class 5	1275	148
ii. Class 6 to 10	3462	803
iii. Passed Class 10 or above		
– Diploma holders	304	23
– Non-diploma holders	1477	354
Total	8448	1580

ABBREVIATIONS

BE	Budget Estimate
BEV	Bundeseisenbahnvermogen
BHEL	Bharat Heavy Electricals Limited
BOLT	Build Operate Lease & Transfer
BR	British Railways
BREL	British Rail Engineering Ltd.
CAG	Comptroller and Auditor General
CFSs	Container Freight Stations
CLW	Chittaranjan Locomotive Works
CONCOR	Container Corporation of India
DB	Deutsche Bundesbahn
DB AG	Deutsche Bahn Aktiengesellschaft
DLW	Diesel Locomotive Works
DR	Deutsche Reichsbahn
EMD	Electro Motive Division of General Motors
EU	European Union
EW&S	English Welsh & Scottish Railways
GDP	Gross Domestic Product
GE	General Electric
GETS	General Electric Transportation Systems
GM	General Motors
GPPL	Gujarat Pipavav Port Ltd.
ICF	Integral Coach Factory
ICDs	Inland Container Depots
IOC	Indian Oil Corporation
IR	Indian Railways
IRCTC	Indian Railway Catering and Tourism Corporation Ltd.
IRFC	Indian Railway Finance Corporation
JNR	Japan National Railway
JR	Japan Railway
K/L	Capital/labour ratio
KRC	Konkan Railway Corporation
LHB	Linke Hoffman Busch
MoU	Memorandum of Understanding
MRVC	Mumbai Rail Vikas Corporation
OYW	Own Your Wagon
PPP	Purchasing Power Parity
PRCL	Pipavav Rail Corporation Ltd.
PUs	Production Units
RB	Reichsbahn
RDSO	Research Design and Standardisation Organisation
RITES	Rail India Technical and Economic Services Ltd.
ROSCOs	Rolling Stock Companies
SAIL	Steel Authority of India Limited
UK	United Kingdom
US	United States
W&AP	Wheel & Axle Plant
WTO	World Trade Organisation

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