

# Reforming Railways

Learning from Experience

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## Foreword

The European rail market has been the subject of major reform over the last two decades. But there are major differences across Europe. Some countries started on this process almost 20 years ago whilst, in others, reforms have begun only recently. Also, several different basic models are emerging and there are many contrasting views on what remains to be done to create a competitive rail sector.

In our daily work in Brussels, we regularly meet national rail experts. But there are few people who have a comprehensive overview of developments across Europe as a whole. The sheer pace of reform and the fact that much material only appears in the national language make it difficult to keep up.

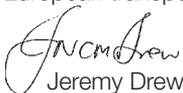
In this book, we try to bridge this gap, by inviting distinguished national experts to write an overview on reforms within their country. In particular, we asked them for their opinion on what has worked, and what has not. We are honoured to publish the work of one CEO, the Chairman of UIC, two former ministers of transport, two senior administrators, ten senior academics and five consultants of international repute. Inevitably, given the differences in backgrounds and cultures, the chapters differ in emphasis, approach and conclusions. Such diversity only reinforces the importance of countries organizing their rail markets based on their own political and commercial realities.

We are pleased to include four chapters on reforms outside the European Union. The greatest successes of reform have arguably been in the United States and Japan, whilst Latin America has the most experience in concessioning. With the exception of Russia, the reforms in these countries are all based on strikingly different models of reforms to those being applied in the European Union.

Within Europe, this book also shows the differences in the political and economic conditions between member states – particularly between East and West. These have led to a variety of solutions and results. To recognize these differences is the first step towards making reforms which suit all conditions, not just those in Western Europe.

This book is relevant to the European political process. Our view – also reflected in many of the chapters below – is that whilst much progress has been made on introducing competition within the European rail freight market, far less progress has been made in introducing a socially efficient pricing system across the transport modes. Indeed, important amendments to the principles of tolling trucks in Europe (Eurovignette Directive) were first discussed in the 1990s and included in the Commission's 2001 White Paper on transport, but member states are still not allowed to charge heavy goods vehicles for the external costs that they cause. Also, in many member states, there is inadequate investment in rail infrastructure.

Despite these problems, we remain confident in the future of the European rail industry. It will take time – but the pressure to serve the customer, and to reduce the influence of governments on internal management processes, will translate into better products provided at lower cost. Increasing road congestion and concern about climate change will also favour rail. Moreover, the enlargement of Europe creates new opportunities for the rail freight market as trade grows based on a new division of labour in Europe. If complemented by a more modern infrastructure and proper pricing between the modes, rail will play a central role in the European transport market of the future.



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## Introduction

*Jeremy Drew<sup>1)</sup>*

This book begins with four chapters on rail reforms in countries and regions outside Europe. It then contains seven chapters on countries in Western Europe and four in Central and Eastern Europe. This introduction reviews the general messages that emerge from these chapters. It considers why reforms have been necessary, how reforms have been implemented and, finally, the evidence as to which reforms have been most successful or which have not. This chapter contains sections from the introductory chapter, written by Edward Calthrop, in the first edition of this book entitled “Reforming Europe’s Railways – An assessment of progress” (CER, 2005). Most of the other chapters in this book are updates of chapters in the earlier edition.

### **Why were reforms necessary?**

The traditional organisational structure for most of the world’s railways in the post-war period was that of a vertically-integrated monopoly owned by the public sector. Given the high fixed costs associated with providing infrastructure and the importance of providing affordable and attractive public transport to all income groups, basing a national rail service on a publicly-operated monopoly seemed to make sense. This is partly because it was assumed that the railway as a whole was a natural monopoly (average cost falls with output). In the USA and Canada, tight regulation of prices and services provided by private companies was usually seen as the solution. However, over the last 30 years, all these assumptions and solutions have been fundamentally challenged. Considering the starting point, it is impressive how much progress has been made in reforming railways in such a wide variety of ways.

As is clear from the chapters in this book, reform was driven in many countries by rail’s inability to compete with other modes of transport, particularly road transport. The rapid expansion of motorways, which reached its peak in Western Europe during the 1970s and in Central and Eastern Europe over the past 15 years, has reduced road transport times and costs dramatically. This was accompanied by a sudden increase in permitted weights and dimensions for heavy goods vehicles, following EU’s Directive 96/53 which was transposed into national legislation in 1997.

Apart from high speed rail, which only makes sense in certain corridors, there have been no comparable changes for the railways and this has made it increasingly difficult for rail to play its optimum role in the transport system. This has ultimately meant that many railway companies, particularly their freight businesses, have run into traffic decline and financial difficulties. At the same time, there has usually been political support for promoting rail as an environmentally friendly alternative to road and air transport, and an increased role for rail is seen by many as a way to reduce the external cost of the transport system. This has taken on a new urgency with the growing concern about climate change – rail is the only mode for which it would be relatively easy to break dependence on fossil fuels, which are rapidly depleting and whose use is a major cause of greenhouse gas emissions (CER 2008a). These concerns have led and continue to lead many countries to reform their rail sectors.

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<sup>1)</sup> The author would like to thank Chris Nash, Gunnar Alexandersson and Johannes Ludewig for their comments on this chapter.

The chapters on the United States/Canada and Japan show that reforms there were driven by crises in which railway companies became bankrupt. The massive social cost and economic disruption caused by these crises highlights the importance of embarking on reform before crises occur. In Germany, in contrast, it was fear of bankruptcy following re-unification that led to reforms and, because these reforms were well planned, a crisis was thereby avoided.

In Western Europe, the market share of most railways began to decrease in the 1950s. This reflected in an underlying shift in the economy away from traditional heavy industry – to which rail had been well suited – towards a service and retail economy, combined with increasing car ownership and road building. In Central and Eastern Europe, by contrast, the decline in rail transport occurred much later but was much more abrupt and severe, and concentrated on the period of intense economic reform beginning in the early 1990s. Rail's share of the freight market in Central and Eastern Europe will soon fall to the level of Western Europe unless drastic action is taken.

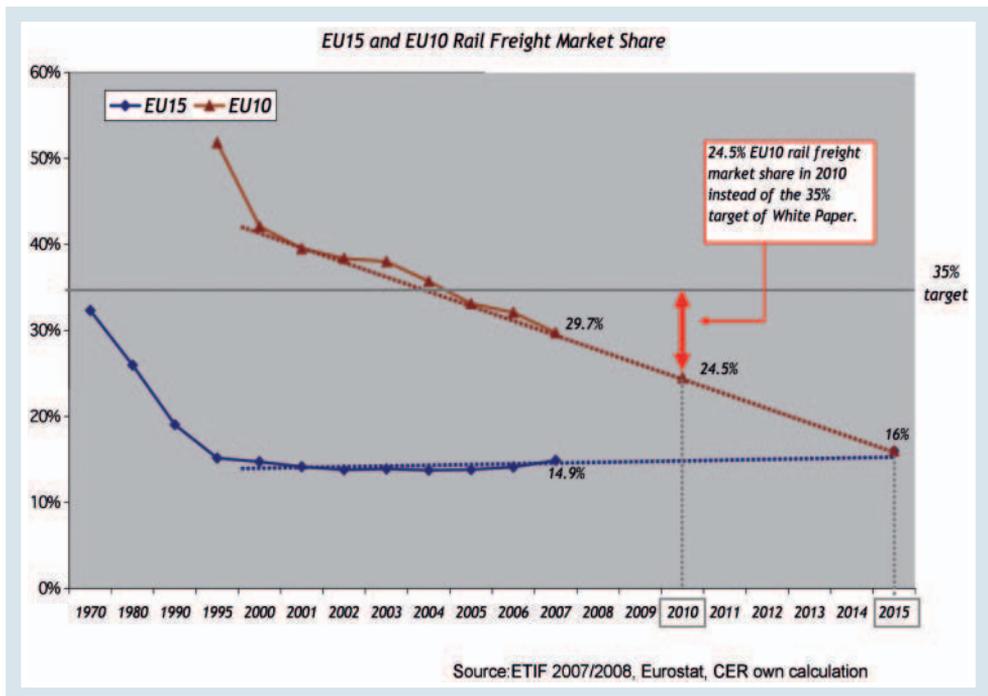


Figure 1: Rail freight trends and the White Paper target

There has been much discussion about the reasons behind the rail sector's difficulties in competing with other modes, highlighting political involvement. Two issues stand out in particular.

Firstly, railways were traditionally managed as part of a government ministry, with few incentives for managers to meet market requirements. To make things worse, management had to deal with often conflicting incentives from different branches of government: ministers representing transport, finance, industry, labour, regional development and even defence all had interests in the rail sector, not to mention constituency politicians, including local mayors, all of whom had a strong interest to promote local interests over national ones.

Secondly, in many cases, politicians have required railways to improve and expand railway infrastructure and services without necessarily wanting to pay for this. Faced with insufficient funds, yet unable to alter politically-determined service patterns and tariffs, railways have had little choice but to accumulate debt. This has been a major driving force behind the reform of railways across the world in recent decades.

Governments remain, nevertheless, important strategic players in the rail market. But their strategic goals need to be clear, consistent and properly funded. As discussed in the chapter on Switzerland, railways there have benefited from operating within a favourable and extraordinarily consistent political environment with few changes of ministers or transport policy. Internalisation of external cost for road transport and major investment in railways, partly with the proceeds, has stabilised rail's already high rail market share in freight (40%) and increased its share of passenger transport to more than 15%.

This is in stark contrast to much of the rest of Europe and, indeed, to much of the rest of the world. The chapters in this book bear testimony to the almost continual process of reform in many countries. Whilst a step-by-step process, based on a long-term but adjustable plan, is probably the best way of reaching objectives, reforms in several countries give the appearance of trying to hit a 'moving target' – one reform leads to unintended consequences, which further reforms try to address. But there is often no coherent government strategy towards the transport sector as a whole. Indeed, there is a danger of the same thing happening at EU level as new legislation is introduced before the last has been properly enforced and given time to have its effect. To be effective, any changes in legislation should be based on adequate experience and sound research (Nash et al, 2009).

This takes us on to another important factor driving reform in recent years in the European Union and in nearby countries, which is European Union legislation. Three packages of rail directives over the past decade have been adopted at the European level and are reproduced and summarised in a recent book (CER, 2008b). The main ultimate objectives of these packages and previous directives are to require member states to establish rules which allow open access to railway infrastructure and fair competition between railway undertakings for freight and international passenger services, in the context of a single market for railways in the European Union, and to ensure the financial viability of companies operating in the rail sector.

## How to reform?

The chapters in this book demonstrate the complexity of railway reforms and how much they have varied between countries. A forthcoming publication of the World Bank will set out in detail all the various considerations. That said, in the European context, there are four major issues that directly concern rail reform and that we discuss further below:

- How to liberalise the rail market by introducing non-discriminatory intramodal competition;
- How to organise the relationship between the state and railway management;
- How to deal with historic debt and prevent new debt from building up;
- How to involve the private sector.

A related issue is that of intermodal competition. Whilst this does not directly concern rail reform, changes in the competitive environment have caused many of the recent problems

for rail. This may get even worse if proposals to further increase weight limits for heavy goods vehicles are passed and the Eurovignette Directive is not revised to allow charges to be imposed for the external costs of heavy goods vehicles.

## Liberalisation

In the European Union and some other parts of the world, particularly Australia, a major feature of rail reforms has been liberalisation to allow new entrants to compete with each other and usually with incumbent operators.<sup>2)</sup> In the European Union and those adjacent countries which follow the same rules, the freight market was fully liberalised in January 2007 and international passenger services in January 2010. Liberalisation of domestic passenger services is currently under discussion within the Commission. All member states have opened up access for freight. Some have already done so also for passenger services, but the chapter on the Netherlands shows that the original intention there, of developing competition in the market for passenger services, had to be abandoned in favour of competition for the market (franchising). There are now wide variations in the details of market opening in different member states (Alexandersson, 2009, pp. 46–47).

To ensure all railway undertakings have fair access to infrastructure, some structural change is required in the industry, particularly the establishment of an infrastructure manager with at least separate accounts from any railway undertaking and prohibition of cross subsidies (to prevent subsidies from the public sector being used to support competing commercial operations) and distinct divisions within any single undertaking (to prevent discrimination) – see Directive 2001/12. Two basic structural models have emerged. In the first, the infrastructure manager is completely separated from any railway undertaking. In the second, the infrastructure manager is part of the same company as a railway undertaking but must provide non-discriminatory access to new entrants. The French model, which provides for separation of key responsibilities for infrastructure investment and timetabling, but not for infrastructure maintenance, is arguably a hybrid of the other two.

The debate over integration versus separation is still alive in Europe today and is reflected in the chapters of this book.<sup>3)</sup> There are two main issues with complete separation. First, infrastructure managers do not have a direct relationship with customers and this means that decisions on investment in infrastructure are more likely to be made on political than on commercial grounds. Second, it can be difficult to manage the relationships within a fragmented industry. It takes time – and sometimes mistakes – for the various parties to develop an effective working relationship. On the other hand, vertical integration requires stronger regulation to establish fair competition (Nash et al, 2009) and this also takes time to establish.

In practice, these different models have all been made to work and to allow competition to develop. However, irrespective of which basic model is chosen, it is clear that a competitive rail service requires an effective interface between operations and infrastructure, both in investment and operational planning and in dealing with real-time disruption.

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<sup>2)</sup> An exception is passenger services in Britain where the incumbent (British Rail) was not allowed to compete for franchises.

<sup>3)</sup> These differences also occur within countries. For example the Chapter on Switzerland reflects the views of its authors from SBB, the largest operator, but the second largest operator BLS has quite different views, particularly on vertical separation.

## The relationship between state and management

In reforming most state-owned rail companies in Europe, there has been a general trend to giving management greater entrepreneurial freedom to respond to changing market demands. This complements moves to liberalise the railway market since state-owned companies will be unable to compete with new entrants if they lack this freedom. State railway administrations have been 'corporatised' to form state-owned companies operating under commercial law, in which the state acts only in its capacity as shareholder. This means that the Board and CEO have control over appointments, all day-to-day operations and most aspects of strategy and planning.

A key issue is the extent of financial support provided by the state to the railways, particularly for investment in infrastructure. Overall support is quite considerable in Western Europe, amounting to €38 billion in 2001 (NERA, 2004), but much of it is to compensate for expenditure required by the state, such as those in meeting public sector obligations. In Central and Eastern Europe, in contrast, support is minimal and railways there are usually not even fully compensated for their public sector obligations.

If access charges are based on marginal cost, as required to optimise the use of the railways, infrastructure managers would not be able to cover even their maintenance costs, not to mention the costs of investment in replacement and expansion. Yet, as noted by Nash et al (2009, "there is a need for targeted investment on a major scale to raise rail productivity and quality". State (or EU) support is therefore required to ensure adequate investment, particularly until the external costs of less sustainable modes of transport are internalised.

## The burden of debt

In reviewing the chapters below, it is interesting to note how individual governments have tackled the issue of high historic debt. Several different approaches are discussed in the chapters below. Firstly, separation in some cases has allowed the RU to begin life without historic debt. Secondly, some countries created separate entities to finance new infrastructure, as noted in the chapter on Italy. Thirdly, in some countries – notably Germany – a substantial portion of the historic debt was taken back by the government (admittedly along with a number of assets).

In other cases, the historic debt has been left within the holding structure – thus, in principle, having little direct effect on the operating units within the holding – but with a view to privatising parts of the group in order to repay the debt. And finally, in some cases, the debt has just been reallocated. In France, for example, the historic debt relating to infrastructure was allocated to the infrastructure manager (IM), whilst all other debts remained with the RU.

These measures in reducing historic debt and, consequently, financial charges determine the ability of a company to invest in expansion and modernisation, to finance in the necessary restructuring and therefore to compete with other RUs. Those member states, which reduced the debt of their national railway undertakings early on, are now at an advantage, given the increasing restrictions imposed by the EU's state aid guidelines.

In some of the member states that have joined the Union since 2004 and in some of the neighbouring pre-accession states, the problem for incumbent railway undertakings with historic debt is aggravated by new debts made necessary by under-compensation for

imposed public service obligations. This affects their competitiveness against other railway undertakings and their overall budgetary situation, particularly their financial flexibility regarding investments. It also limits their access to credit or means that credit comes with high-risk premiums. This weakens the incumbent in both intra- and intermodal competition.

The absence of state funding, together with declining traffic, means that many infrastructure managers are having to borrow even more to meet the requirements of government for which they often do not pay in full (Nash et al, 2009).

### **Involving the private sector**

Apart from new entrants as railway undertakings, either under passenger franchises or open access for freight or passenger, involvement of the private sector has been quite limited. Private ownership of infrastructure has been particularly short-lived. In Britain, the infrastructure manager, Railtrack, which had been privatised in 1996, was placed in administration in 2001 and replaced by Network Rail, a “not-for-profit” company. In Estonia, the main (integrated) operator EVR, which had been privatised in 2001, was renationalised in 2007. Both cases indicate the difficulties of private ownership of infrastructure since infrastructure remains a natural monopoly, at least in the European context of complex networks and, to accommodate growth, rail infrastructure requires major lumpy investment in assets with long lives and little alternative use (they therefore represent sunk costs). In Britain, one problem was the difficulty of incentivising Railtrack to make sufficient investment. Tighter regulation might have resolved these problems but the chapter on Germany shows that privatising infrastructure has now been ruled out there.

Involving the private sector is often motivated by the need to invest without recourse to public funds. It can be problematic for infrastructure projects since both the private and public sector try to avoid taking on risks, as explained in the chapter on Italy and it is often difficult to ensure that there is identifiable incremental revenue arising from rail schemes. However, some private financing has also been used or is planned for infrastructure projects which involve minimal interfaces with the existing network – in Britain (e.g. High Speed One linking London to the Channel Tunnel), Sweden (e.g. the Arlanda Airport Link) and France (e.g. the proposed high speed line between Tours and Bordeaux). Private ownership has worked well in rolling stock leasing, particularly for passenger transport in Britain and for freight wagons more widely (including increasingly in Russia) – this is because it is relatively easy to develop competition in these markets.

In other cases, private sector involvement is designed to introduce private sector management discipline and competition. The chapters on Sweden and Britain show that problems have also occurred with franchising although privatisation of rail freight in Britain has been a success, again because of competition.

### **Have reforms been successful?**

The reforms have allowed intra-rail competition to develop in freight in many countries: the market share of new entrants in the rail freight market has now reached 35% in Sweden, 25%

in Romania, 23% in Poland, 21% in Germany, and 12% in both Italy and France (Nash et al, 2009)<sup>4</sup>). There are also signs that competition will develop in international passenger services.

However, the objective is not to introduce intramodal competition for its own sake but to improve efficiency. There are a number of studies of the impact of reforms on productivity but they are often contradictory and generally inconclusive (Nash et al, 2009). However, Wetzel (2008) evaluated the sources of productivity growth in European railways since reforms began and concluded that average productivity growth was 39% between 1990 and 2005 (more than 2% per year). Whilst this article does not show that reform directly affected productivity (as this would be difficult to model), it does indicate that rail productivity has grown at an acceptable rate over the early period of reforms.

The evidence in this study was based on European averages but there is also evidence that rail traffic has grown fastest in those countries, such as in Germany, Britain and Sweden, which reformed early and comprehensively and where this has been accompanied by adequate investment in the rail sector and a reasonably level playing field with other modes. However, where reform has been carried out in isolation without these other conditions being met, as has occurred particularly in Central and Eastern Europe, liberalisation has instead been accompanied by reduced rail traffic levels and modal share. The chapter on France also demonstrates the difficulties that can arise when reforms are delayed.

Looking outside Europe, getting regulation right is found to be key: experience in the United States demonstrates the dangers of over-regulation of tariffs, services and market entry/exit and the benefits of relaxing this, whilst concessioning in Latin America did not lead to adequate investment in infrastructure. The chapter on Japan shows that traffic has grown since privatisation (despite the stagnant economy) and that the railways have been transformed from massive recipients of subsidies to major sources of tax. Finally, the chapter on Russia shows that the government there has so far rejected both vertical separation and open access, but there are now many private wagons on the network and Russian Railways are establishing freight subsidiaries (which own wagons) and are in the process of partially privatising them.

## Conclusions

The rail market in Europe is undergoing a process of fundamental reform, directed in the beginning by some Member States, but increasingly by European legislation. However, there is clearly no one 'off-the-shelf' model that can simply be applied to a country wishing to reform – rather it is striking that countries have adopted very different approaches. Even within the broad camps of 'integrated' and 'separated' railways, very different institutional structures are emerging.

It is interesting to compare the conclusions that different authors draw from reforms in their country. Nearly all authors conclude that reforms have improved matters – but that mistakes have been made along the way, and further improvements can be made. The interdependency of the European rail system as a whole remains an important aspect.

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<sup>4</sup>) Great Britain also has a competitive freight market with about nine competitors but, because all incumbent railway undertakings were privatised (and bought by two companies which are still in the market), the 100% share of new entrants is misleading.

Reform is seen as a necessary, but not a sufficient condition for the growth of the market share of rail. Several authors argue that organisational reforms in the rail sector were not placed within the context of an integrated transport policy, notably with regard to pricing between modes and infrastructure. Rather, it was simply assumed that rail reforms per se would increase market share. The result has been that ex-ante expectations of reforms – at least in terms of improving modal split - have often not materialised. Indeed, in Central and Eastern Europe, where liberalisation has not been accompanied by other reforms, both traffic levels and rail modal share have declined. Nevertheless, rail reform has brought demonstrable benefits where they took place in the right context. If planned and implemented well, rail reform can form an important element in revitalising the transport system in Europe.

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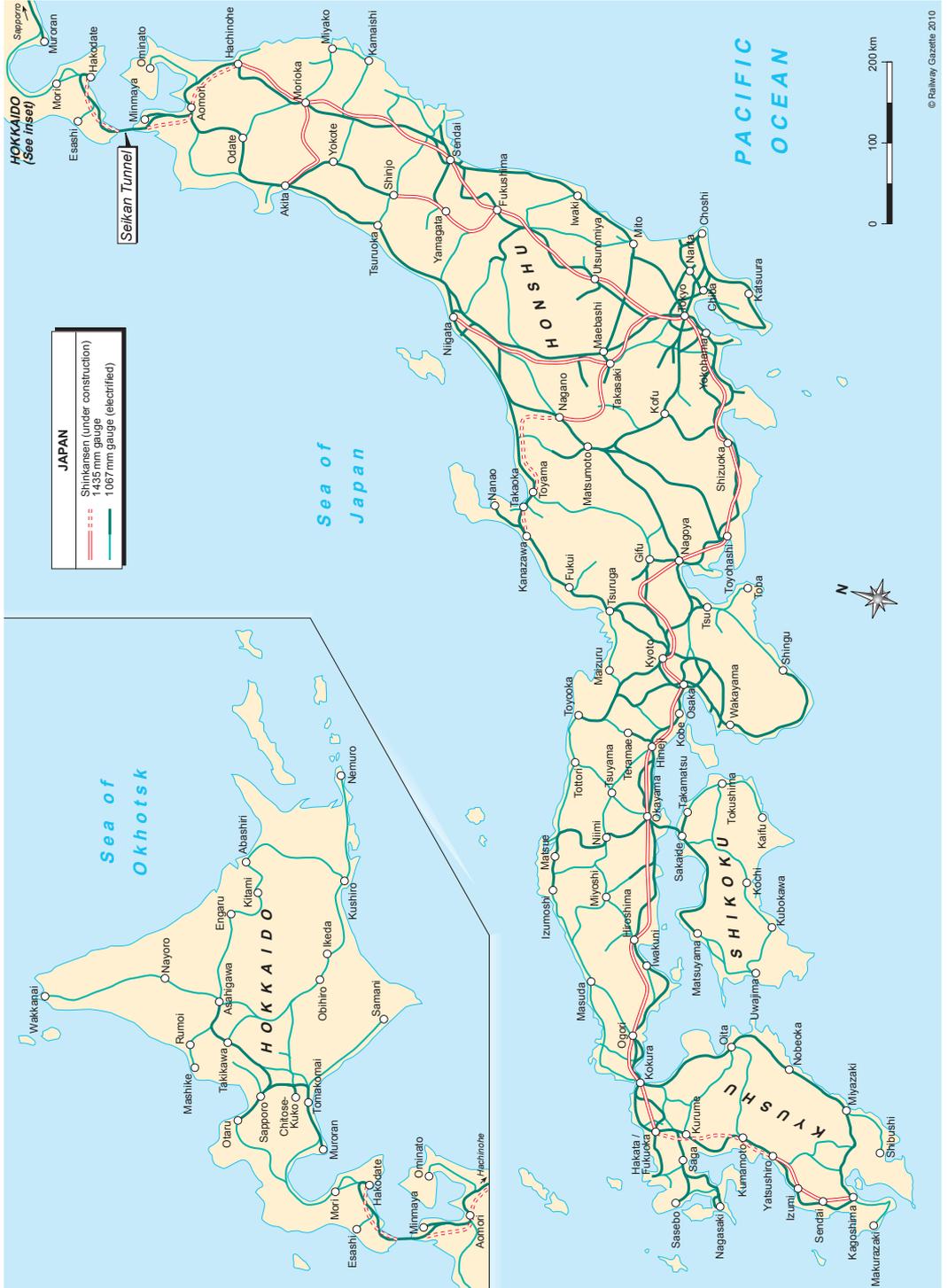
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# Part A

## Outside the European Union



CER



Source: Railway Gazette International

# 1 Japan

*Yoshio Ishida*

Area <sup>a)</sup> (km <sup>2</sup> ) 377,944			
	2008		2008
Population on 1/1/2009 <sup>a)</sup> (million)	127.69	Freight tkm <sup>c)</sup> (billion)	22.3
GDP <sup>a)</sup> (€ billion)	3,313.3	Passenger-km <sup>c)</sup> (billion)	402.9
Length of line <sup>b)</sup> (1000 km)	20.1	Modal share – passenger <sup>c)</sup> (%) Modal share – freight <sup>c)</sup> (%)	30.6 % 6.0 %

<sup>a)</sup> European Commission, Energy and Transport in Figures, Statistical Pocketbook 2010  
<sup>b)</sup> The Economist, Pocket World in Figures 2010\*, data for 2007  
<sup>c)</sup> Official 2008 data was not yet available at the time of publication  
<sup>c)</sup> OECD/ITF 2010, Trends in the Transport Sector 1970–2008

## 1.1 Introduction

In April 1987, the Japanese National Railways (JNR) was divided and privatized into one freight railway and six passenger railways, known as the JR Group, including JR East.

The unprecedented reforms, which included the breakup and subsequent privatization of JNR and were implemented prior to similar reforms in many other countries, are considered today to be of the most challenging but also one of the most successful policies in Japan to date. The success of the reforms can be unquestionably attributed to the careful construction and full deliberation of the policies, along with the complete support of the Japanese Government and Diet (parliament) at the time. Nonetheless, the concerted efforts of the employees of the seven new railway companies, from executives to front-line staff, must also be given full credit for their endeavors to increase revenue and decrease costs, under the firm resolution “to create new railways by ourselves”.

In this chapter, providing JR East as an example, I will introduce the background behind the success of the JNR reforms.

## 1.2 General description of railways in Japan

First, let me offer an overview of railways in Japan. There are 205 railway companies in Japan, of which seven are in the JR Group, including JR East. In the fiscal year 2008, the length of the

railway operating network totaled 27,333 km, with passenger kilometers totaling 405.6 billion. In contrast to Europe, railway companies in Japan manage not only train operations but also infrastructure construction, possession, maintenance and management (please refer to Figure 1).

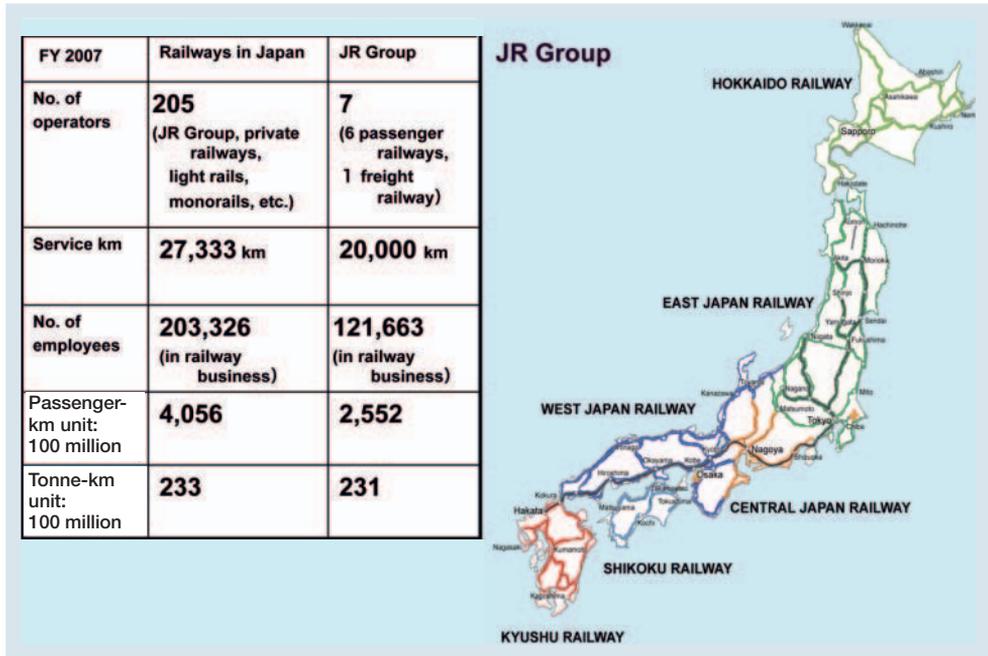


Figure 1: Railways in Japan

Accounting for 27 % of the total railway network in Japan, JR East's network comprised 7,527 operating line-kilometers. In fiscal year 2008, JR East's operating revenue was 2.7 trillion yen (€17 billion<sup>1)</sup>), with 127.6 billion passenger kilometers, and 16 million passengers using the network daily. JR East's railway business can be largely divided into Tokyo metropolitan transport, regional suburban and local transport, and intercity transport (high-speed railways), with these sectors contributing 67 %, 5 %, and 28 %, respectively, of JR East's FY2008 railway business revenue. Furthermore, the stations used by those 16 million daily passengers are JR East's largest asset, and, in order to increase revenue through the effective utilization of these assets, JR East operates various non-transport businesses such as restaurants and the sale of goods, food and beverages inside its stations. In addition to these operations, JR East's non-transport business includes real estate rentals and hotel operations in the spaces above and surrounding stations, as well as advertizing for commercial spaces in stations and on trains. On a consolidated basis, 71 % of the net operating income came from railway operations and 29 % from non-transport business (please refer to Figure 2).

<sup>1)</sup> Exchange rate 2008 € 1 = 160 yen.

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