

# WORKING PAPER

# 1-03

## Network industries in Belgium

Economic significance and reform



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## Table of Contents

	Preface	1
	Executive summary	3
	Introduction	7
I	A horizontal analysis for Belgium	9
	A. The analysis network industries	9
	1. Concept and policy issues of network industries	9
	2. The reform of network industries	12
	3. The policy relevance for Belgium	15
	B. Network industries in Belgium	15
	1. Economic significance	16
	2. Legislation and regulation	21
	3. Progress in market opening	23
	4. Performance of the network industries	30
II	Telecommunications	35
	A. The telecommunications sector in Belgium	35
	1. The telecommunications sector	35
	2. Sector structure	37
	3. Legal Framework	40
	4. Progress in market opening	42
	B. Specific topics concerning telecommunications	45
	1. Universal service, access, and public interest	45
	2. Welfare effects	46
	C. Annex	48
III	Electricity	51
	A. The electricity sector in Belgium	51
	1. Sector structure	51
	2. Legal framework	53
	3. Progress in market opening	55

B.	Specific topics concerning electricity	57
1.	Access to the network	57
2.	Public Service Obligations	58
3.	Welfare effects	59
4.	Other topics	61
IV	Gas	63
A.	The gas sector in Belgium	63
1.	Sector structure	63
2.	Legal framework	64
3.	Progress in market opening	66
B.	Specific topics concerning gas	67
1.	Access to the network	67
2.	Public Service Obligations	67
3.	Welfare effects	68
4.	Other topics: long-term security of natural gas supply	71
V	Postal services	73
A.	The postal sector in Belgium	73
1.	Sector structure	73
2.	Legal framework	75
3.	Progress in market opening	77
B.	Specific topics concerning the postal services	77
1.	Universal service obligations	77
2.	Public service obligations	78
3.	Welfare effects	79
VI	Railways	81
A.	The railway sector in Belgium	81
1.	Sector structure	81
2.	Legal framework	83
3.	Progress in market opening	85
B.	Specific topics concerning the railways	86
1.	Access to the network	86
2.	Public service obligations	87
3.	Welfare effects	88
4.	Other topics: modal split	89
VII	References	91

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## Preface

Since the reform of network industries is currently a topic of interest in the context of market reforms and the completion of the internal market at the EU level, the Federal Planning Bureau (FPB/BfP) has begun to analyse the evolution of these industries in Belgium. Firstly a competence in telecoms and energy was built up, followed later by railways and postal services. Initiatives were also taken to build an integrated framework for the study of network industries. This would allow for simultaneous and 'horizontal' analyses of network industries in Belgium. At present the analysis is limited to five industries. These are the four industries mentioned above, but with energy subdivided into electricity and gas.

This paper is the first result of the horizontal approach. It gives a 10-15 page introduction to each of the five industries, placing the emphasis on their structure, legislation, market opening and market performance. It begins with a general synthesis, giving a brief introduction to the concept of network industries and policy issues, and providing a horizontal benchmarking analysis for the five industries.

This paper has been written by several authors so there will inevitably be differences in style and emphasis. Nevertheless, comparability between the chapters is guaranteed through the use of a division into sections and subsections that is as uniform as possible. Jan van der Linden wrote the synthesis (Chapter I) and, together with Patrick Vandenhove, the chapters on postal services (V) and railways (VI). Chantal Kegels and Mary van Overbeke wrote the chapter on telecoms (II). Dominique Gusbin wrote the chapters on electricity (III) and gas (IV).

We owe special thanks to Bruno Hoornaert who gathered most of the figures for the chapters on electricity and gas. We would also like to thank Joost Verlinden for his supervisory work and his valuable comments. Finally our thanks go to Marleen Keytsman and Adinda De Saeger for their work on the layout of this paper.

Brussels, January 2003.





## Executive summary

Network industries are industries whose activity involves conveying people, products or information from one place to the other via some kind of physical network. They include transport networks, information networks and utility networks. Network industries basically consist of three types of activity: upstream activities involving the production of core products such as equipment and means of transport; infrastructure activities involving the construction, maintenance and operation of the physical network; downstream activities involving the delivery of network services to final consumers. Network industries have specific characteristics from an economic point of view. Three of these are particularly notable, the last one also from a social perspective.

The first characteristic is the existence of network externalities. This means that the benefit that a user derives from the network is determined not only by the use of the network as such, but also by the total number of users. Other types of externality may also occur, but these are not specific to network industries. The second characteristic is the possible existence of natural monopolies in the infrastructure network. This means that it is not always efficient to have more than one network, thus placing the single network in a monopoly position. The third characteristic is the delivery of services of public interest. From an economic perspective this relates to the need to convey people, products and information. From a social perspective it relates to the fact that many network services are considered as basic needs to which all citizens have the right of easy and affordable access.

Network industries require a lot of attention during the present period. One important reason for this is the fact that EU policy is focusing on opening the markets in these industries, particularly telecoms, electricity, gas, postal services and railways. For many years most of these industries have been legal or *de facto* monopolies at the national level and have thus been protected from domestic and foreign competition. One of the basic aims of the EU, however, is the creation of an internal market for goods and services. In order to achieve this aim it is necessary to open up the national markets to international competition. Moreover, the EU has recently set itself a target 'to become the most competitive and dynamic knowledge-based economy in the world'. This requires the completion of the internal market and, where applicable, market reforms. The latter is needed in particular in the network industries.

Network industries play a crucial role in the economy because the conveyance of persons, products and information is essential for the production of goods and services. Network industries that work efficiently contribute to the efficient functioning of other industries and thus to the competitiveness of the whole economy. It is therefore important for economic policy to create the conditions under which network industries work efficiently. These conditions, however, are strongly in-

fluenced by the economic and social characteristics of network industries, particularly natural monopolies and public-interest aspects.

In a natural monopoly, a market without government intervention may behave in such a way that the public interest is not served. Network industries therefore demand special attention from governments. In the past, this has led to the creation of legal or *de facto* state-controlled (and often state-owned) monopolies that produced both the infrastructure and downstream activities. In the EU context, however, the existence of such monopolies was not compatible with the internal market, which is one of the basic objectives of the Treaty of Rome. They may also hamper the efficient functioning of the network industries. This efficient functioning can be regarded as a way of achieving the objective of the Lisbon strategy to create the most competitive and dynamic economy in the world. Hence from both EU and national perspectives, initiatives have been taken to reform certain network industries.

The reforms are generally focused on the following areas, although there are different emphases in each industry: separation of infrastructure from downstream activities; ensuring equal access for downstream service providers; control of access and interconnection pricing; adequacy of investment programmes; phasing of reforms; safeguarding of the public interest. A market regulator is generally nominated. This market regulator may monitor the market, control and approve prices, grant licences and act as an arbitrator. The regulator plays a crucial role in shaping the conditions to allow a market to function efficiently. At the EU level, one must be aware that more competition at the national level may well be coupled with a higher market concentration at the EU level. Monitoring of possible market power is therefore also an area to which the EU must pay attention.

This paper gives an overview of five Belgian network industries: telecoms, electricity, gas, postal services and railways. As we have seen, market reforms are a current topic in these industries. The aim of this paper is to indicate the economic significance of these industries, describe their structure and relevant legislation, and indicate bottle-necks in the way they work at present.

The five network industries together produced 13.5 billion euro of value added in 2001, which is 5.7% of Belgium's GDP. The industries employed 144,000 persons, which is 4.2% of the Belgian total. Since 1995 value added growth in the network industries has been significantly higher than GDP growth, whereas employment growth has been significantly lower. In absolute terms, net employment creation only amounts to 2,200 jobs in six years. These changes imply a significant increase in productivity, which has especially been the case in telecoms, electricity and gas.

As we have already indicated, the economic significance of these industries is not limited to the sectors themselves but extends to the whole economy. The backward impact refers to the value added created by those activities that supply inputs to the network industries. The forward impact refers to the activities that use the outputs from the network industries. As we have indicated, this includes virtually all economic activities so that network industries are crucial for the economy.

The economic reforms were initiated by the EU through a number of directives that typically prescribed a calendar for the gradual opening up of the markets. In Belgium this calendar is followed strictly in most cases. In some cases it is accel-

erated. Only in the case of railway passenger services has the EU not yet set a calendar.

One important aspect of the reform is the separation of infrastructure from downstream activities. Given the economic characteristics of these networks (the natural monopoly), this is relevant for electricity, gas and railways. In Belgium, however, the separation is not complete in any of these three industries. In the cases of electricity and gas a legal separation has been decided: separate transport network operators are created, while the creation of distribution network operators is under way. The electricity incumbent, however, still has a significant stake in both network operations and downstream activities, and also in upstream activities (electricity generation). In the case of the railways the separation only involves a separation of accounts.

As regards the phasing, the process of market opening is complete in the case of telecoms. In gas and electricity, about half of the market is now open. In postal services and rail freight, significant steps will be taken in early 2003. As regards the level of competition, significant competition only exists in mobile telecoms and courier services. In the remaining markets that have been opened up (fixed telecoms, electricity, gas and rail freight), the incumbent companies still have dominant or very dominant market positions.

One expected outcome of the market reforms is a positive impact on prices and quality, which determines the impact on users (both industrial and domestic) and on competitiveness. Given the early stage in the opening up of these markets, no evidence of this can be provided, except in the case of telecoms. Based on harmonised price index data from Eurostat, there has in fact been a 15% fall in prices since the opening of this market in 1998. Quality has been improved, for example, through the large-scale digitalisation of the network.

Finally, in each of the network industries there are changes associated with the opening of the market that require specific attention from policy makers. In the case of telecoms, Belgacom, the incumbent, still has a dominant market position. It is indicated by the regulator (BIPT/IBPT) as having significant market power, which implies that price control must take place. Furthermore, agreements are made for competitors' access to the networks for interconnection, broadband access and the unbundling of the local loop. The market regulator therefore still has significant work to do in order to avoid monopolistic behaviour.

In the case of electricity and gas the incumbent Electrabel, a private company, also has a very dominant position. It has significant stakes in all segments of both markets, including upstream activities (electricity generation). Furthermore, there is uncertainty about access tariffs for electricity, congested cross-border electricity transport capacity, and many customers are bound to long-term contracts with the incumbent. Government attention is therefore required in order to improve the conditions for the creation of a competitive market.

In the case of the railways there is a separation of accounts, as required by the EU. This does not, however, guarantee independence between infrastructure and downstream activities because the incumbent, NMBS/SNCB, has still maintained its unity. An independent body was therefore created to manage network access, but efforts are still needed to secure independence when new train operators enter the market. Another serious obstacle is the lack of interoperability with foreign networks, a problem which must be dealt with at the European level.

In the case of postal services there do not seem to be any significant obstacles at present. In the part of the market that has been opened up, sufficient competition is in place. The incumbent, De Post/La Poste, is modernising its production process. Through management contracts with De Post (and also with Belgacom and NMBS), the State safeguards the public interest by imposing public service obligations, while compensating for the costs involved.



## Introduction

Network industries have certain features because of which they require special attention from policy makers. The presence of externalities and natural monopolies may lead to market failures. These features may, themselves, already necessitate government intervention. Moreover, network industries serve the public interest because they deliver services that are essential for the functioning of the economy and they play an important social role. To maintain competitiveness and social values, any intervention should, therefore safeguard the public interest.

In the past, government intervention in network industries has typically meant the creation of legal or *de facto* monopolies at the national level, in many cases state-owned. They have operated the networks and delivered network services to end-users. For several reasons, however, this situation has not proven to be sustainable. It did not fit with the creation of the EU internal market. The absence of competitive incentives may have led to inefficiencies, and thus to a suboptimal contribution towards competitiveness. Technological developments have led to changes in the economic features, and thus in the need for and type of intervention.

Driven by the EU and in some cases also by national initiatives (such as in the UK), a process of market reform began in the late 1980s. One basic element of this reform is the gradual opening up of the markets, which is currently taking place in electricity, gas, postal services and railways. For telecoms, the opening of the market has already been completed, but policy makers still need to devote attention to this sector. In general, natural monopoly positions, principally in infrastructure, are regulated in order to secure efficient pricing and fair access. The public interest is safeguarded through the imposition of universal or public service obligations.

This paper provides a first analysis of the five network industries mentioned above in Belgium. It gives an introduction into the concept and economics of network industries, indicates the economic significance of the five industries in Belgium and gives an analysis of each of the industries separately. This analysis includes an introduction to the sector structure, legal framework and specific features of the industries. Progress in market opening, the incidence of obstacles to effective competition and current market performance are also analysed.

Chapter I offers a synthesis. It provides a conceptual framework, discusses the economic significance and performance of the industries and gives an overview of the current situation in the area of market reform. One advantage of this synthesis (and of the whole paper as well) is its horizontal focus. In the past few years the Federal Planning Bureau has already built up an area of competence in the analysis of individual network industries. In this paper, the network industries

are put together in a comparative framework. This framework makes it possible to offer a consistent overview and to provide benchmarking of the network industries in Belgium. This horizontal framework will be adopted in the future for other, more specific studies.

Chapters II-VI respectively give more detail on the telecoms, electricity, gas, postal and railway sectors in Belgium. The order of the chapters is determined by the diminishing level of market opening: telecoms is currently the most open and the railways are the least open of these sectors in Belgium. Each of the five chapters briefly describes the present structure of the sector and the legal framework. The current situation with regard to the opening of the market is then discussed, with the emphasis on obstacles which exist at present. Specific themes such as access to the network, network interconnection, universal service and public service obligations are highlighted. Finally, an indication of market performance is given in terms of developments in prices and quality.





# A horizontal analysis for Belgium

## A. The analysis network industries

### 1. Concept and policy issues of network industries

Network industries are industries which activity it is to convey people, products or information from one place to the other via a physical network of a certain kind. This includes transport networks (road, rail, etc.), information networks (mail, telephony) and utility networks (electricity, gas, water). Physically, the network is built up of nodes and links. Nodes are distinguished into entry/exit and switching nodes. At the entry/exit nodes, flows of people, products or information enter or leave the network. At the switching nodes, the flows are switched into the desired direction. The links, evidently, connect the nodes and may, for example, take the form of pipelines, wire, railtrack, and, more abstract, air slots and postmen's rides.

Basically, three types of economic activity are distinguished in network industries (see Bergman *et al.*, 1998): upstream, infrastructure and downstream activities. *Upstream* activities concern the production of core products such as transport equipment, but also of gas, natural or manufactured, and electricity. Except for gas extraction (or import) and electricity generation, upstream activities are usually not considered in the analysis of network industries. *Infrastructure* activities involve the development, maintenance and operation of the network itself. *Downstream* activities concern the provision of network services to final users. The precise distinction between infrastructure and downstream activities is not the same for all network industries. For example, the transmission of electricity is part of the network operations for electricity, whereas the downstream activities are limited to purchases and sales. For the railways, however, the running of trains is part of the service provision, whereas the infrastructure activities are limited to (simply stated) maintenance and traffic control.

It was for long considered expedient that network industries had to be organised as state-protected, national monopolies. From an economic and social point of view, network industries indeed have specific characteristics that justified this belief. The characteristics were considered market failures (Ilzkovitz *et al.*, 1999) that necessitated intervention. This intervention often meant nationalisation of the whole industry by accommodating all activities into a state monopoly, although private monopolies also occurred. The most important characteristics are (see also Bergman *et al.*, 1998; Ilzkovitz *et al.*, 1999; IEL, 1999):

1. *Network externalities*: Several types of externalities may occur in network industries. Typical for network industries, however, are the so-called club and congestion externalities (see IEL, 1999), where the utility of the service

for one customer depends on the total number of customers. Club externalities work out positively, for example in the outreach of telecoms networks. Congestion externalities work out negatively, for example by crowded roads and trains. Other externalities, such as noise and pollution, also occur, but are not typical for network industries.

2. *Natural monopoly*: Building up the network infrastructure usually requires massive investments, whereas the downstream activities have in many cases relatively low cost. In other words, there are high fixed and low marginal costs. Fierce economies of scale can be reaped and duplication of the network or parts of the network is often inefficient. When such a case applies, infrastructure operations is considered a natural monopoly.
3. *Services of general interest*: Last but not least, network industries often serve the public interest, both from an economic and a social perspective. For production and consumption of goods and services, there is a necessity for the conveyance of persons, products and information. So, well functioning network industries contribute to economic efficiency and competitiveness. From a social point of view, certain services of network industries are considered as basic needs: telephony, Internet, transport, mail and electricity.

Table 1 gives a typology of network industries according to the occurring externalities and monopoly elements. It is based on IEI (1999). For simplicity, the typology is limited to the industries discussed in this paper, see also Section 3 below. IEI also include air transport, local urban transport and water utilities. IEI distinguishes networks with one-way and networks with two-way traffic. The latter require more complicated nodes. For further explanation on the terminology, the reader is referred to IEI (1999).

**TABLE 1 - Main conceptual characteristics of network industries**

		One-way		Two-way		
		Electricity	Gas	Telecoms	Postal services	Railways
Externalities		Indirect club externalities		Direct and indirect club externalities	Indirect club externalities	
		Kirchhoff law		Congestion externalities		
		Need for dispatching			Need for coordination	
Nodes	Upstream	Competition in production	Competition in storage possible			Multimodal competition in dispatching
	Network	Not storable	Storable at nodes			Stations are monopolies
	Downstream	Distribution monopolies		Switch from monopoly to multitechnological competition		Multimodal competition
Links	Infrastructure	No duplication		Possibilities for duplication		No duplication
				Imperfect competition	Competition	
	Substitutes	Partial substitution		Low substitution	Strong substitution	

Source: IEI (1999).

As regards externalities, it is indicated that club and congestion externalities occur in almost all cases. Club externalities work directly when the number of connected people itself is a source for higher utility. They work indirectly when the number of connected people allow for a widespread availability of network facilities such as postboxes and bus-stops. Congestion externalities only occur at fixed capacity levels. They may be solved when investment plans turn out to be economically and socially feasible. Natural monopoly elements occur in energy and railway networks, and in water supply, airports and local public transport as well. Table 1 gives a differentiation by showing that the natural monopoly does not need to hold for the whole network. It may hold in some segments (links, up-stream nodes, *etc.*), whereas it does not hold in other segments.

Another important element is substitutability. A network industry is not a market in itself, but part of a larger market, where substitution with the products of other network industries is possible. The most evident example is the railway industry, which has to compete against other means of transport. For the other network industries there is (partial) substitution possible as well. Gas and electricity are substitutes for heating and cooking. Postal services and telecoms are partial substitutes for certain messages. In a number of cases, one may choose between a letter, a phone-call, a fax and an email. In other cases, for example for parcels, no choice is possible.

Although the present paper does not adopt the approach of considering the individual network industries as part of a larger market, this phenomenon must be kept in mind when reading. Because of the more complicated market analysis and the need for standardised production measures across industries, it is a subject for specific research. Only in the chapter on railways (Chapter VI), a separate section is devoted to this phenomenon. It makes use of passenger and tonne kms as standardised production measures across all means of transport.

As mentioned, it was in the past considered expedient that network industries had to be organised as state-protected national monopolies, which often implied nationalisation of the whole industry. In the past two decades, however, the thought on the economic organisation of network industries has become more differentiated. Three major reasons are given here. First, because of the inherent absence of competitive incentives, the monopoly structure often led to inefficiencies in production and excessive use of public funds. Second, technological progress influenced the above characteristics in such a way that the justification of a monopoly could be questioned. For example, technological progress might allow for efficient duplication of networks, thereby making the natural monopoly no more existent (see *e.g.* IEL, 1999). Last but not least, the occurrence of national monopolies was not compatible with the internal market and the competitiveness of the EU economy. For these reasons it became clear that reform of the network industries had to be considered. The main aim of the reform was to introduce open entry and competition where feasible. The reform should also regulate market segments where a natural monopoly applies and safeguard the public interest.

## 2. The reform of network industries

### a. The European context

The current process of market reform, although justified from a mere national context as well, was driven by EU initiatives that were taken since the end of the 1980s. Two developments determine this quest for reform: the creation of the internal market and the Lisbon strategy.

The *creation of the internal market* is one of the major aims of the Treaty of Rome. The internal market would contribute to the welfare of and, ultimately, a closer (peaceful) union among the peoples of Europe. The contribution to welfare was based on the theories of international trade and economic integration, which show that an elimination of trade barriers will give a net increase of consumer and producer surplus in the countries involved (see *e.g.* Molle, 1990, and Van der Linden, 1998).

In the creation of the internal market, special attention is required for the network industries. Due to the strong intervention at the national level the EU markets were patchworks of protected national monopolies. In this constellation consumers were captive to an incumbent and could not purchase from potential, more efficient suppliers. Partly for this reason, the EU has taken initiatives that led to the issue of a series of directives since the early 1990s. These directives stipulated the gradual market opening of most network industries, a process that will at least last until the end of the present decade. For four of the five network industries selected for this paper the opening of the market is presently going on. For the fifth, telecoms, the market has already been opened but account of dominant market positions of (former) incumbents and sizable entrants has still to be taken.

The creation of the internal market is focused on the internal development of the EU, the focus of the *Lisbon strategy* is external. The focus of the Lisbon strategy is on the competitiveness of the EU on the world market. This is voiced by a new strategic goal, 'to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion'.<sup>1</sup> This goal includes the completion of the internal market and the structural reform of markets.

Although it is not explicitly stated in the Conclusions of the Lisbon summit, special attention is required for the network industries. It has been mentioned that network industries serve the public interest. An element of this is the conveyance of people, products and information. If the conveyance functions efficiently, it contributes to an efficient production of goods and services, and thus to the competitive economy the EU aims at. Therefore, structural reform is needed to create European network industries with the least possible number of market distortions. Of course, well functioning markets are not only an element of the Lisbon strategy, but also another reason behind the issue of the market opening directives.

A follow-up of the directives and the Lisbon summit is foreseen. One can mention the initiatives concerning specific sectors: regular reports on the implementation of the telecommunications package; benchmarking reports on the implementa-

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1. Presidency Conclusions of the Lisbon European Council, 23 and 24 March 2000, Paragraph 5.

tion of the internal electricity and gas market; the Community rail market monitoring scheme.<sup>1</sup> Furthermore, the Broad Economic Policy Guidelines (BEPG) in general and the Cardiff-process in particular look at the functioning of product markets, with an emphasis on network industries in both cases, see *e.g.* EPC (2002) and Ministry of Economic Affairs (2002).<sup>2</sup>

## b. Ingredients of the reform

As mentioned, reform was considered to serve the European case, but also to overcome inefficiencies and adapt to changed (technological) circumstances. The challenge of this reform is to introduce competitive behaviour while safeguarding the public interest and avoiding monopolistic behaviour. Although the design of the reform differs per country and industry, there are common elements, which are partly prompted by EU regulation. A number of these elements concern the infrastructure: separation of infrastructure and downstream activities; access to the infrastructure; interconnection of networks; investments and maintenance. Other important common elements are: the phasing of the reform; the safeguarding of the public interest; the need for regulation.

- As regards the *separation of infrastructure and downstream activities* it has been mentioned that there are network industries with a natural monopoly for infrastructure or parts of the infrastructure. For downstream activities a competitive market may then be possible. When there is a vertically integrated monopolist, however, the downstream activities of this incumbent company may get a more favourable network access than those of market entrants. Therefore, the reform aims in many cases for the creation of an independent network operator by separating the incumbent into infrastructure and downstream activities. This separation may be on an accounting, legal or ownership basis. The latter of these should normally give the strongest guarantee of independence.
- As regards *access to the infrastructure*, network operators under a natural monopoly have monopoly power over the downstream service providers. To enter the network with their services the downstream service providers pay an access fee and obtain the right to use the infrastructure under given conditions. However, under monopoly power the access fee may be too high, and the conditions more favourable for one than for another service provider. The latter may especially be the case when the network operator also acts as a downstream service provider, which is often the case for the (former) state monopolies.
- The issue of *network interconnection* is related to the previous issue. It applies to cases where the natural monopoly does not hold and several competing networks may thus exist. This is, for example, the case in telecoms. A telecoms network operator must compete to attract end-users. Once he has attracted his customers, he has monopoly power over other network operators, when they wish to reach his customers. In that case, the other operator must have access to his network, and he may exert market power over that operator. This is the issue of network intercon-

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1. See EC (2001b,c, 2002a,c) for recent follow-up reports.

2. The Cardiff-process is initiated at the Cardiff European Council of June 1998. It concerns the preparation of annual monitoring reports on the reforms of goods, services and capital markets for each member state. The FPB contributes to the preparation of the Belgian Cardiff report.

nection.<sup>1</sup> IEI (1999) and Laffont & Tirole (2000) give extensive theoretical analyses of the access and interconnection issues for telecoms.

- The *investments in and maintenance of infrastructure* poses serious questions for policy makers and market regulators. Optimal investment levels are required in order to avoid the occurrence of over- or underinvestments. Social cost-benefit analyses indicate *ex ante* whether the invested amounts are to be outweighed by the social benefit. Optimal levels of access prices are important for an optimal development of the network, taking into account the social cost-benefit analysis.
- In many cases the reform is *phased over a certain number of years*. Bergman *et al.* (1998) divide the time path into three phases: the first phase is the initial situation of monopoly; the second is the gradual transfer of monopoly to competition; the third is the ultimate situation of competition. So, in the second phase the market is being opened. This is done gradually to prepare the incumbent, the potential entrants, the customers and other stakeholders such as trade unions in a gradual way to the new situation. Bergman *et al.* state that not all industries may ultimately enter the third phase.
- The *safeguarding of the public interest* is done by imposing universal or public service obligations (USO and PSO, respectively). Both are often entangled, although there is a clear distinction (see Ilzkovitz *et al.*, 1999). The concept of USO is well defined and relate to minimum service levels of good quality, available for all citizens and at an affordable price. The concept of PSO is less accurately defined and has a wider scope than USO. Public services refer to all cases where government considers market failures to be such that the private sector alone will not serve the market efficiently (Ilzkovitz *et al.*, 1999). These cases may range from defence and justice via education and health to network industries. They basically include the well defined universal services. USO and PSO can be imposed and financed in several ways. For network industries they may be imposed on certain companies, either by law or contracts. They may, however, also be auctioned among interested parties. Financing may be done by direct government transfers or by funds that are fed by user levies.
- For all the above elements, a certain level of (new) *market regulation* is crucial. When the network operator has market power, pricing and access conditions must be monitored on cost-orientation and equal treatment. This holds in particular when the network operator also acts as a downstream service provider, in other words, when there is no (full) separation of infrastructure and downstream activities. As argued by Bergman *et al.* (1998), during the second phase of market opening there is a trade-off between industry-specific market regulation and generic antitrust policy. In the third phase the latter would be sufficient. Also the imposition and financing of USO and PSO demand for regulation.

Therefore, in virtually all network industries there is an official regulator having tasks that are specific for the industry and for the stage of market opening the industry is in. Evidently, the role of this regulator is crucial in shaping the optimal conditions for the working of the market. To play this role in effectively the regu-

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1. Other implications of interconnection are given in *e.g.* Bergman *et al.* (1998). The issue is especially relevant for telecoms. Note that for gas and electricity, the notion of interconnection is used for cross-border connection between national networks. In this case the issue is rather one of capacity (assignment) for import and export flows.

lator must fulfil certain conditions. It must have technical competence on operation the network. It must have sufficient means to carry out its tasks. It must have sufficient information. Last but not least, it must be independent. Typical instruments in the hands of the regulator are control, licensing, arbitrating and capacity assignment. These instruments are to be used for ensuring sufficient competition and equal access, and safeguarding the public interest.

To conclude, network industries have specific economic characteristics that require government intervention. In the past this often meant the creation of protected (state) monopolies. Inherent inefficiencies, technological progress and European integration brought about a process of reform. In this process economic analysis, both fundamental and applied, plays an essential role. It should provide government with sufficient input to take balanced decisions.

### 3. The policy relevance for Belgium

In this report the structure of and latest developments in five Belgian network industries are described. An important element of this description is the identification of the obstacles that still exist and prevent an efficient functioning of the industries. The report adopts a horizontal approach, which allows for a thematic benchmarking of the network industries. For a horizontal approach at the EU level, see EC (2001a).

The analysis is limited to five industries: telecoms, electricity, gas, postal services and railways. Other network industries, such as air transport, water transport, the road network, water supply and local public transport are not considered. For the five industries, market reform is currently a topic of interest because of the developments discussed earlier. Technological developments do in some cases reduce the extent of natural monopoly. This is not the case for water supply, where the natural monopoly is considered to remain very important. Furthermore, the EU demands for reforms in these industries. This is not the case for road, air and water transport, where the markets are already sufficiently open.<sup>1</sup> Finally, the five sectors basically fall under federal authority<sup>2</sup>. This is not the case for local public transport, which falls under regional and local authority.

## B. Network industries in Belgium

This section gives an overview of five network industries in Belgium: telecoms, electricity, gas, postal services and railways. The emphasis is on the size and growth of the sectors, regulation, market opening and market performance. In five consecutive chapters each of the sectors is dealt with in more detail. These chapters put more emphasis on the structure of the industries, legislation, competition issues, network access and the public service issue.

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1. In these three industries there may, however, still be points of attention for (EU) policy, for example in the assignment of slots on major airports.  
2. Exceptions are the electricity and gas sectors, which partly fall under regional authority.

## 1. Economic significance

The economic significance and growth of the five selected network industries is indicated in terms of value added and employment. For both, their contribution to the Belgian total and Belgian growth is shown. Growth is also given in terms of physical output, which is in principle the purest growth indicator because there is no 'noise' of changes in cost and relative prices. Finally, it is indicated that the economic significance of network industries goes beyond their own output and growth: network industries are important for virtually all economic activities.

### a. Direct significance: size and growth of the network industries

Value added created in the five selected network industries constitutes 5.7% of Belgian GDP, employment constitutes 4.2% of Belgian employment (see Tables 2 and 4, respectively). These shares have remained more or less stable since 1995. When measured in prices of 1995, however, the value added share increased to almost 7% in 2001. Contrary to the total Belgian economy, real value added growth has been stronger than nominal growth. The reasons for this are the relatively favourable price developments in telecoms and electricity, to be discussed in Section 4 below. Telecom prices showed a more than 10% decrease, electricity prices remained stable. For the other network industries, real value added growth was below nominal growth.

**TABLE 2 - Value added creation of network industries in Belgium (million euro)**

	1995	2001		Real growth (average per year)
		Constant prices	Current prices	
Network industries	10,907	15,045	13,455	5.5%
GDP	190,125	222,382	235,816	2.6%
Share in GDP	5.7%	6.8%	5.7%	

Source: INR/ICN (calculation based on national accounts).

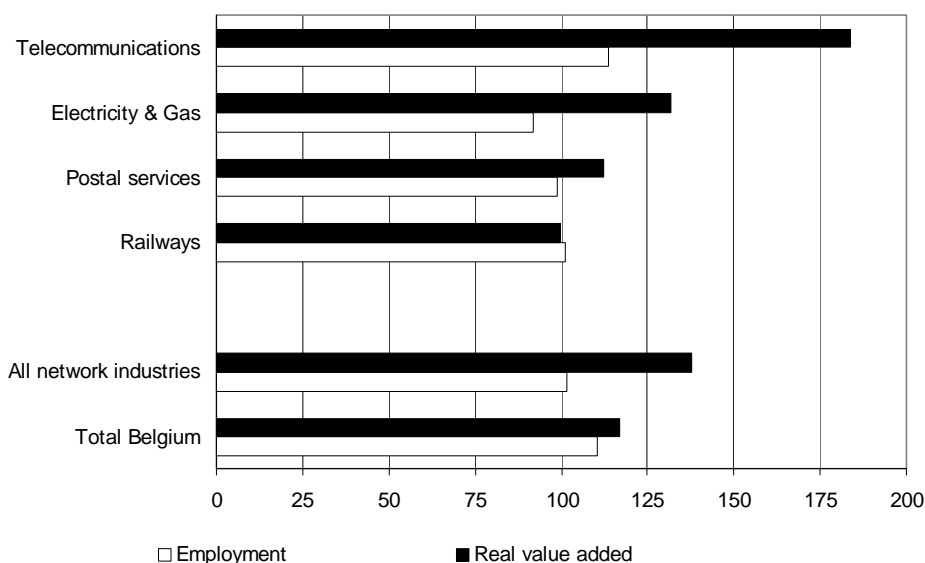
**TABLE 3 - Real value added growth of network industries in Belgium (1995-2001)**

	Telecommunications	Electricity & Gas	Postal services	Railways	Total
Average per year	10.7%	4.7%	2.0%	-0.1%	5.5%

Source: INR/ICN (calculation based on national accounts).

During 1995-2001 the five network industries made a strong contribution to the Belgian economic growth. The real value added growth of the five industries together was on average 5.5% per year (38% in six years, see Figure 1), whereas for real GDP this was only 2.6% (17% in six years). The strong growth was induced by telecoms and energy, see Table 3 and Figure 1. The growth of the postal services was of the same order as GDP growth, and value added growth at the railways stagnated since 1995. In particular telecoms had a strong growth, 11% per year on average, which implies an almost doubling of value added during six years.



**FIGURE 1 - Growth of network industries in Belgium (2001, 1995 =100)**

Source: INR/ICN (calculation based on national accounts).

In both the total Belgian economy and the network industries, value added growth was stronger than employment growth, which indicates a growth in labour productivity.<sup>1</sup> The difference, however, was significantly more marked in the network industries, where employment grew only 2% in six years and value added grew 38%. Just as for value added, telecoms and energy were the principal contributors.

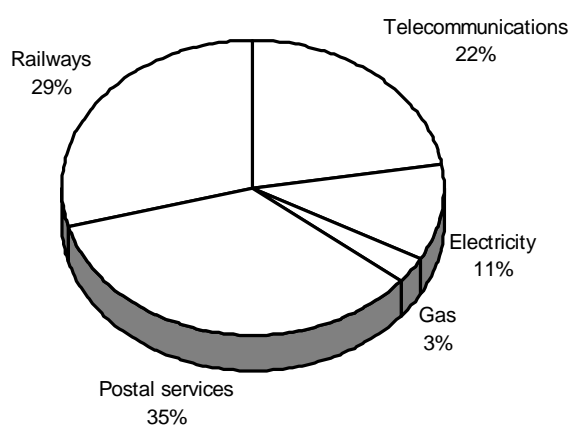
In 2001, employment in the five network industries was 143,900 persons, see Table 4. This was 2,200 more than in 1995, which implies a contribution of only 0.7% to the total Belgian employment growth of 327,000. Only for telecoms there has been a significant growth, on average 2.2% per year, which is a net growth of about 650 jobs per year. For the other sectors, employment has remained constant or has fallen since 1995. These outcomes underline the productivity growth, in particular in telecoms and energy, where value added growth strongly outweighed employment growth. In sum, employment growth of the five industries together was 0.3% per year, compared to 1.7% for the total Belgian economy. Note that these employment figures refer to employees only, the self-employed are not included. In the network industries, however, there are relatively few self-employed. In the postal sector there may be a few hundred of self-employed couriers, but this is very small when compared to a total employment of over 50,000. Also in telecoms there may be a number of self-employed.

1. Note that employment is measured here in number of persons. A more precise measurement would be obtained by applying employment data in terms of hours worked. This is, however, not available from the given source.

**TABLE 4 - Number of persons employed in the Belgian network industries**

Sector	1995	1998	2001	Change 1995-2001	Average per year
Telecommunications	28,306	28,625	32,202	3,896	2.2%
Electricity & Gas	21,098	20,751	19,430	-1,668	-1.4%
Postal services	50,875	50,339	50,348	-527	-0.2%
Railways	41,419	39,813	41,878	459	0.2%
Total network industries	141,698	139,528	143,858	2,160	0.3%
Total Belgium	3,138,650	3,259,492	3,465,683	327,033	1.7%
Share in total employment	4.5%	4.3%	4.2%	0.7%	

Source: INR/ICN (calculation based on national accounts).

**FIGURE 2 - Employment shares of the Belgian network industries (2001)**

Sources: INR/ICN and Figas (2000, 2001).

The largest sector in terms of employment is the postal sector, with a total of 50,300 persons in 2001. The major part of this is employed at the postal incumbent, the remainder at the courier services. Evidently, this is a very labour intensive sector. Railways and telecoms follow, with each roughly 25% of the total employment of the five network industries (see also Figure 2). Note that the railway employment includes the construction of railway lines and some smaller activities of the incumbent that are not related to railway transport proper. Electricity and gas together constitute the smallest sector in terms of employment. Because most of the distribution companies are involved in electricity and gas together, it is hard to give separate numbers. On the basis of disaggregated industry data for 2000 and 2001, however, it may be stated that about 80% of industry employment can be assigned to electricity and 20% to gas. These approximate employment shares are applied in Figure 2.

In the above, growth of the network industries was given in terms of output and employment. Table 5 gives growth in terms of physical output. This actually is the purest form of growth measurement as it is plainly based on the number of products made. Only for telecoms there was no adequate data. The data available for

this sector referred to number of minutes called, which covers only part of the telcoms output, and was only given up to 1997. For railways, on the contrary, a distinction between passengers and freight could be made. Since 1995 the output of the network industries has grown, see also Figure 3. The growth was especially strong for gas: on average almost 5% per year between 1995 and 2000. This is followed by electricity and passengers, where the annual growth was about 3%. The growth of rail freight and domestic postal services has been weakest.<sup>1</sup> For postal services declines are even expected in the future because of the growing use of electronic transmission of documents. For freight the weak growth implies a falling market share when compared to other means of overland transport, which showed much stronger growth rates.

**TABLE 5 - Physical output growth of network industries in Belgium and the EU (1995-2000)**

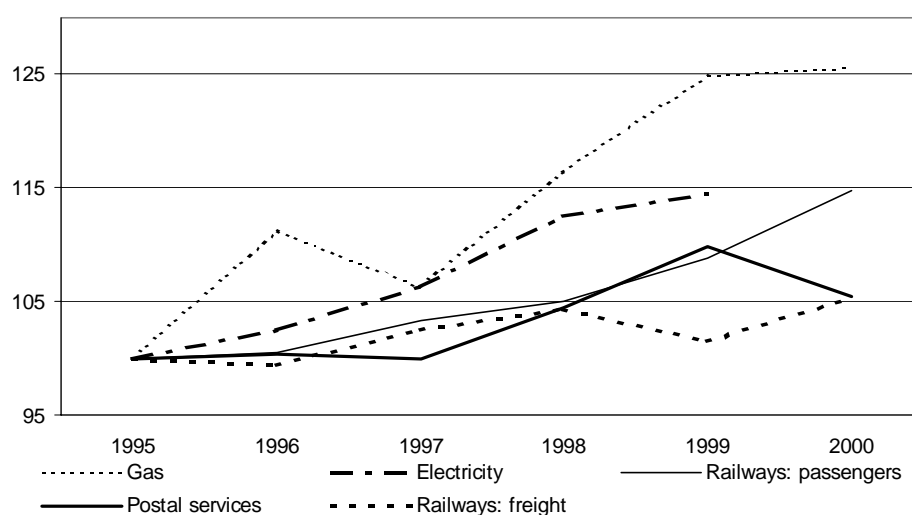
Unit	Electricity*	Gas	Postal services**	Railways	
	GWh	GWh	Number of items	Passengers	Freight
Average per year:					
- Belgium	3.4%	4.7%	2.1%	2.8%	1.0%
- EU15	2.2%	4.7%	2.6%	1.7%	3.9%
Belgian share in EU15, 2000	3.4%	4.1%	3.7%	2.6%	2.9%

Sources: UPU (post), NMBS/SNCB (rail Belgium) and Eurostat (other).

\* 1995-1999;

\*\* Limited data availability: domestic items only, EU15 without Austria, Sweden and Finland.

**FIGURE 3 - Physical output growth of network industries in Belgium (1995=100)**



Sources: UPU (post), NMBS/SNCB (rail Belgium), Eurostat (other).

1. With international mail for Belgium included, annual growth was even lower: 1.1%. For EU15, however, no data on international mail was available.

For the majority of network industries the 1995-2000 growth has been stronger for Belgium than for the EU as a whole. Moreover, the share of Belgium in the network industries at EU level is in most cases larger than the share of the Belgian economy in the EU. Since the Belgian GDP was 2.9% of the EU GDP in 2000, Belgium has a larger share for two and an equal share for a third network industry. For gas, the high 4.2% share is caused by the fact that there are countries that have hardly any gas infrastructure, such as Greece and the Scandinavian countries, whereas in the large countries France and Germany, the share of households connected to the gas network is lower than in Belgium. Moreover, gas is an increasingly used primary energy source for electricity production in Belgium. For electricity the share is only a little larger than the GDP share, for freight it is equal. Only for passengers the share is (somewhat) lower because the spatial structure, traffic policy and consumers' attitudes are traditionally more car-oriented than in many other countries.

#### b. Indirect significance: impact upon other industries

In the above, the economic significance of the network industries was indicated by their own size and growth. In fact, the economic significance extends to all other activities in the economy. The size and growth of the network industries themselves is often labelled as the direct impact. The effect upon other activities is the indirect impact. This indirect impact may run in the backward and forward direction. This latter distinction refers to the supply of inputs to the network industries and the use of outputs of the network industries, respectively.

In the backward direction the impact extends to the supply chain of inputs for the network industries' products. This includes not only the suppliers to the network industries, but also the suppliers of the suppliers, *etc.* The backward impact is measured by the industries' own value added plus the value added created in the supply chain. By definition, this is equal to the production value, which is given in Table 6 and is closely related to industry turnover. However, only part of the indirect value added is created in Belgium. This is due to the high level of openness of the country. This holds in particular for primary energy sources such as gas, which are hardly available in the country. Instead, important sources of indirect value added created in Belgium are trade and transport margins and other services rendered to business.<sup>1</sup>

**TABLE 6 - Production value of network industries in Belgium (million euro)**

	1995	2001		Real growth (average per year)
		Constant prices	Current prices	
Production value	16,530	28,043	29,597	9.2%
Direct value added	10,907	15,045	13,455	5.5%
Indirect value added*	5,623	12,998	16,142	15.0%

Source: INR/ICN (calculation based on national accounts).

\* Created in Belgium and abroad.

Equally or more important than the backward significance may be the forward impact. This is less straightforward but not impossible to measure. In this for-

1. Besides value added, the backward impact can be measured in terms of employment.

ward direction, the impact extends to all activities that make use of the network industries' outputs. Except maybe for railways the forward impact thus extends to all economic activities. Efficiently producing network industries serve the country's competitiveness and the country's attractiveness for foreign investors. At the EU level it was especially for this reason that the Lisbon summit emphasised the role of structural reform for competitiveness and growth. It once more underlines the need for a close monitoring and analysis of network industries, both quantitatively and qualitatively.

**TABLE 7 - Network density in Belgium (2000)**

Definition of density	Telecommunication networks				
	Fixed network Number of main telephone lines per 100 inhabitants	Mobile network Number of subscriptions to cellular mobile services per 100 inhabitants	Gas network* Number of connections per 100 households, for heating and other purposes	Post offices Number of permanent post offices per million inhabitants	Railway network Metres of track per km <sup>2</sup> land surface
Density:					
- Belgium	51	52	58	135	114
- EU15	56	63	48 - 53	227	47
Source	Eurostat	Eurostat	Figas	UPU	UIC

\* 2001

An indicator of the potential of forward impact may be network density, as given in Table 7. It shows the extension of the national network, of course without any indication of prices and quality of the services. The Belgian network density, or penetration, is compared to the EU average. For fixed and mobile telephony the penetration is behind the EU penetration. However, the number of connections via the TV-cable is relatively high in Belgium. Also note that, although there are only 50 fixed lines per 100 inhabitants, virtually all *households* are connected to the network. The same holds for electricity, for which no numbers are given in the table. For reasons given earlier in this chapter, penetration of gas connections is above the EU average. For postal services and railways, finally, the numbers reflect the extremely high population density of Belgium. Because of the high density, less outlets are needed to have a post office nearby for all citizens. Also because of the high population density a dense railway network is required.

## 2. Legislation and regulation

In the framework of Bergman *et al.* (1998), many network industries are in the second phase of liberalisation, characterised by a combination of monopoly and competition. This demands for a kind of legislation and regulation that is very specific to the respective industries. It is not the purpose of this section to give an overview of the legislation. For this, the reader is referred to later chapters. Rather, this section will discuss some common elements regarding the regulation of network industries in Belgium. These are the EU framework, the legislation on state-owned enterprises, universal and public service obligations, and market regulation.

Market opening of network industries is promoted by the EU because it contributes to the creation of the internal market and the structural reform of the economy. Therefore, the EU has taken initiatives to open the markets of all five network industries discussed in this paper. It did so in the form of directives and recommendations. In EU law, a directive is a legal document that is binding for all member states, but must be transposed into national law to become effectively into force. A recommendation is not binding. The directives on market opening set ultimate dates before which certain steps have to be taken, but member states have the freedom to move earlier. In Belgium, the ultimate date is adopted in most cases, in only a few cases an earlier date was decided on (see also Section 3d below).

Apart from the obligations that proceed from the EU directives there is an important law in Belgium that applies to several state-owned enterprises, including the telephone, postal and railway incumbents. It is the 21 March 1991 Act Concerning the Reform of Specific Public Enterprises. This act lays down the administrative and legal independence of the incumbents from the Government. It also prescribes the conclusion of management contracts with the Government. These contracts must be renewed every five years and lay down the rules and conditions under which the incumbent must carry out its PSO. The present set of contracts covers 2002-2006, although for railways the negotiations are still going on. Another important element to note is the initiation to establish the regulating body for post and telecoms, BIPT/IBPT.<sup>1</sup> In the course of the 1990s the act was amended a few times, when this was necessary to become compatible with EU directives.

As mentioned above there is a distinction between universal and public service obligations (USO and PSO). USO are often harmonised and prescribed at the EU level. Typical for network industries are that each citizen should be able to make a phone call, send and receive letters, light his dwelling, and transport himself. Hence, there are USO for telecoms, postal services and electricity. For gas and railways there are generally no USO because there are other means for heating and transport than gas and trains alone. Examples of universal services outside the network industries are medical care and basic banking services.

Contrary to many other countries Belgium, and also France, have precise definitions of PSO in their administrative law (Ilzkovitz *et al.*, 1999). For PSO, there is also a role for the railways and gas sector. For example, the PSO includes a minimum number of passenger services and network investments for railways, or non-interrupted supply requirements and network investments for gas. For the sectors that fall under the 21 March 1991 Act, PSO are imposed by this act and the management contracts mentioned above. The assignment of PSO is not limited to the incumbent alone. PSO may also be granted to other companies. The management contracts typically include an annual subsidy for uncovered costs. For the energy sectors, PSO is imposed by specifically designed law. Payment of uncovered costs is guaranteed by the establishment of specific funds, which are fed by the users of gas and electricity.

As mentioned earlier, the second phase of liberalisation requires tailor-made regulation at industry level, upheld by a specifically assigned market regulator.

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1. BIPT = Belgisch Instituut voor Postdiensten en Telecommunicatie (in English: Belgian Institute for Postal Services and Telecommunications); IBPT = Institut Belge des Services Postaux et des Télécommunications.

Typical tasks are monitoring of market power, price control, quality control, security control and capacity assignment. For post and telecoms, the BIPT/IBPT is in charge. For gas and electricity there are regulators at the national and regional levels. At the national level the CREG regulates the generation and transport of electricity and the transport and storage of gas.<sup>1</sup> At the regional level there are three regulators for the distribution of electricity and gas, see Chapters III and IV. For the railways regulatory tasks are still carried out by the Administration and the incumbent, but proposals for the establishment of an independent regulator are made.

### 3. Progress in market opening

Before the gradual market opening started, most network industries in Belgium were characterised as legal monopolies. For telecoms, postal services and railways there were state-owned incumbents. These companies had the exclusive rights to serve their markets, and had close links with the Government. Only for telecoms there was already some room for establishing public networks by other companies, though under strict conditions. For energy the structure was somewhat more complicated, but still monopolistic. Generation and transport were in the hands of private incumbents for electricity and gas. Distribution was (and still is) in the hands of some tens of intermunicipal companies owned by municipalities, but in which the electricity incumbent also has a significant stake.<sup>2</sup> Each intermunicipal company basically had the exclusive rights to serve its own area.

Because of the different natures of the five industries, the opening of the market will ultimately lead to a different structure for each of them. For electricity and gas there will be independent network operators, both at the national and local levels. Downstream activities only consist of sales and purchases in a market with open entry for Belgian and foreign companies. For railways the unity of infrastructure and downstream activities will be retained, which necessitates the establishment of an independent body for capacity assignment. The downstream activities consist of train operations in a market with, for the time being, open entry only in freight and cross-border passenger transport.

For post and telecoms there is no need for independent network operators because, given the prevailing cost conditions, duplication of networks can be done without loss of efficiency. For telecoms the stage of an effectively competitive market (the third phase of Bergman *et al.*, 1998) may be reached in the foreseeable future when the dominance of the incumbent no longer needs the special attention it requires now (see Chapter II). For postal services there is competition in the presently opened segments of the market. This competition will be extended to the market for all items above 50 grammes, and in a later stage for the total sector.

Note that, somewhat paradoxically, more competition at the national level may be coupled with a higher market concentration at the EU level. From the national perspective, the opening up of a monopoly may attract entrants and thus invoke competition. From the EU perspective the removal of the patchwork of national monopolies may lead to a market with only a limited number of pan-European

1. CREG = Commissie voor de Regulering van de Elektriciteit en het Gas, Comité de Régulation de l'Électricité et du Gaz, Commission for the Regulation of Electricity and Gas.
2. The incumbent has a stake in the so-called 'mixed intermunicipals'. The other intermunicipals are labelled 'pure intermunicipals' and fully owned by the participating municipalities.

suppliers. This process is typically started by national players that seek to extend their market by strategic alliances or mergers with foreign players. This tendency may lead to a market concentration at the EU level that must be monitored on monopolistic or oligopolistic behaviour.

Because of the different natures and ultimate aims, it is hard to develop a common indicator to analyse the present state of market opening at the national level. In other words, questions as ‘which sector is furthest in market opening?’ and ‘in which sector is the strongest, or weakest, effective competition?’ are not relevant. Nevertheless, attempts are made in this section to make a horizontal comparison the state of market opening in Belgian network industries. This is done by three qualitative indicators.

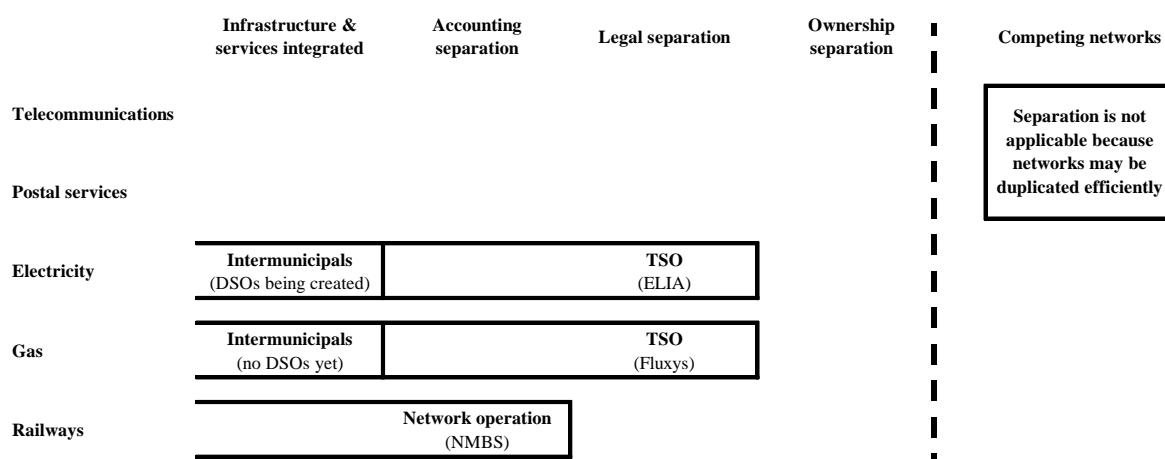
First, the separation of network operations from downstream activities is a crucial condition in some industries. This separation may take place in several stages. Therefore, the first qualitative indicator shows the stage of separation. Second, the market opening is usually phased out over a number of years. During that period, the amount of customers that is effectively free to choose its supplier increases step-by-step. Therefore, the second indicator shows the proportion of the market that is opened for competition. Third, the level of effective competition depends on the market structure after the market opening. Often, the incumbent remains dominant for a certain period of time. Therefore, the third indicator shows a stylised market structure of the opened segments of the market. Finally, a brief calendar for further market opening until 2008 is given. This calendar is based on the present EU legislation and its transfer into Belgian law.

#### **a. Independence of network operations**

When the network infrastructure is considered a natural monopoly, market opening demands for a separation of infrastructure operations from downstream service provision. Although the precise identification of natural monopolies may be a subject for detailed research, the infrastructures for electricity, gas and railways are considered a natural monopoly. In the past this also held for the telephone network, but due to technical progress duplication is now possible in an efficient way. To guarantee fair competition in downstream service provision, the network operator must be *independent* from any downstream supplier. If there is no independence the network operator might favour the incumbent at the cost of the new entrants. In that case the regulator must have appropriate powers to guarantee equal treatment of entrants.



FIGURE 4 - Separation of network operations



Source: FPB/BfP.

There are several stages of separating network operations from downstream services, each with a higher level of independence. For the Belgian network industries this is shown in Figure 4. Four stages are distinguished and the opportunity of competing networks is addressed explicitly.

1. The starting-point is the situation where infrastructure and downstream services are integrated. This is still the case for the intermunicipals in gas and electricity. However, the so-called 'distribution system operators' (DSO) are being nominated, and separation of sales activities is under way.
2. The first real stage of separation is separation of accounts, so network operations and service provision remain activities of the same company. This is the case for railways, and considered insufficient to create a really independent network operator. Therefore, the task of capacity assignment (determining which train operators may where and when ride) will be granted to an independent regulating institution.
3. The next stage is legal separation, where network operations are placed in a separate entity, but remain at least partly owned by the incumbent. This is the case for the 'transport grid' of gas and electricity. The transport grid is the network connecting power plants, gas terminals and foreign networks to the local distribution networks. For the transport grids of gas and electricity, legally independent 'transport system operators' (TSO) have recently been established.
4. The last stage is the full (legal and economic) independence of the network manager. Without judging whether it is really necessary to reach this stage, it does presently not occur in the Belgian network industries.
5. Beyond the last stage, the existence of more than one network is possible where a natural monopoly no longer prevails. In this case, competition *between* networks may occur. Such competing networks exist in telecoms and courier services. For postal services in the reserved area (all items up to 350 grammes or five times the standard tariff) competing networks are also feasible, but the whole operation is still exclusively granted to the postal incumbent.

To conclude, the separation of network operations from service provision is furthest for energy transport, followed by railways and energy distribution,

respectively. For telecoms and courier services, competing networks exist. Of course, these competing networks need not be attained by network industries in which there is a natural monopoly.

### **b. Level of market opening**

The market opening of a network industry is usually phased out over a number of years. As mentioned before, this is done to prepare the respective stakeholders in a gradual way to the new situation. For gas and electricity the phasing is based on consumption level, with large industrial customers being the first, and households the last to become eligible. For the other industries the phasing is based on type of service, but still in such a way that large customers are the first to be able to take advantage of the market opening. For example, for railways it is freight to become liberalised before passengers. For postal services it was parcels and express mail to be liberalised before ordinary letters and postcards.

Only for telecoms the market opening has been legally completed. For domestic passenger train services there are no plans for market opening yet. The other sectors are in intermediate stages. This is shown in Figure 5 where the vertical white line marks the thresholds between captive and eligible customers as for December 2002. On the left side of that line it is indicated which percentage of the market is still captive, and in which segments there is still captivity. On the right side the opened segments are indicated, together with a prudent indication of the prevailing market structure. The further a bar reaches to the right, the more competition there is in the downstream market segment.

- As already mentioned the telecoms market is completely opened, so there is nothing on the left side of the white line.
- In the gas market all customers connected to the transport grid and using more than 5 million m<sup>3</sup> per year are eligible. This already includes 58% of the market in terms of gas volume, 42% left captive. As will be discussed in the next section and Chapter IV, however, only a few customers presently purchase their gas from an entrant.
- In the electricity market all customers using more than 20 gigawatt-hour (Gwh) per year were eligible in 2002. In the Flanders region this threshold had already been lowered to 1 Gwh. Together, this includes 52% of the market in terms of electricity volume, 48% left captive. However, only a limited number of eligible customers purchase their electricity from entrants. As shown by Figure 5, further steps in market opening were taken in January 2003.
- For postal services, the eligibility threshold is based on the weight or price of the item sent. When the weight *or* the price is above the threshold, the customer is free to choose his postal service. In 2002 the thresholds were 350 grammes and five times the standard tariff. In January 2003, they were lowered to 100 grammes and three times the standard tariff. For Belgium, there is no data on the proportion of the market volume that is opened, but for the EU as a whole it is very small.
- For railways, finally, eligibility is limited to combined transport and international co-operatives. Admitted operators may run their trains on specifically assigned lines and hours. Again there is no data on the proportion of the market volume that is opened, but for domestic passenger services this is surely nil.

To conclude, when looking at Figure 5 the sectors are ordered according to a decreasing level of market opening: from telecoms via energy and postal services to railways. A given level of market opening, however, does not necessarily lead to the switch of a significant amount of customers to the new entrants. In other words, a given level of market opening does not yet guarantee a low level of market concentration. Nevertheless, potential competition may induce a dominant incumbent to exert competitive instead of monopolistic behaviour.

FIGURE 5 - State of market opening in Belgian network industries

	Captive	Threshold*	Incumbent with near-monopoly	Incumbent with dominant position	Oligopolistic market	Competitive market
Telecommunications	0%		Local loop Incumbent almost 100%	Other Incumbent has SMP		Mobile network Two operators with SMP
Gas	42% Transport Distribution	5 mio m <sup>3</sup>	Transport (2 large users in 2001)			
Electricity	48% Transmi & Distri (Flanders, however:	20 GWh 1 GWh)	Transmission & Distribution (3% in 2001, grown in 2002)			
Postal services	?% Reserved area	350 grs				Courier services (express and parcels)
Railways	?% Freight 100% Passengers	limited	Assigned lines (1 entrant in 2002)			

Source: FPB/BfP.

\* Eligibility threshold as of December 2002.

### c. Market structure of opened segments

In an opened market, several market structures may be observed, each with a different level of competition. For the Belgian network industries this is shown at the right side of the white line in Figure 5. Four market structures are distinguished, but, as shown, intermediate forms also show up. The distinction is not so much based on the market structure in terms of number of suppliers or market concentration. The distinction is rather based on market behaviour in terms of monopolistic or competitive behaviour. In terms of the structure-conduct-performance model (SCP) the emphasis is more on conduct than on structure.

1. In the least competitive case the incumbent has a near-monopoly. This means that competitors are very small and very few in number and the market virtually is a monopoly. This is still the case in most of the Belgian network industries. In telecoms, a negligible number of lines in the local loop has been fully 'unbundled'. The local loop connects homes and offices with the nearest telephone-exchange. It is a part of the network that must be passed by most users. In the railway sector there is only one entrant, offering no more than 4 or 5 trains per week. In the gas sector, as mentioned, only two customers switched to an entrant. For electricity, there is somewhat more competition. Note that this refers to the downstream activities. For electricity also the upstream activities (electricity generation) are relevant.<sup>1</sup> Here the incumbent together with a small state-

1. This is not shown in Figure 5.

owned company also have a near-monopoly, possessing 97% of the market.

2. In the second case, the incumbent is still dominant, but there can be no more talk of a (near-)monopoly. The electricity sector is moving to this stage. The market share of the entrants was 3% in 2001 and has been grown during the 2002. In long-distance and international telecoms, there are already tens of entrants. The market share of the incumbent, however, is still such that the company got from the regulator the indication as having 'significant market power' (SMP).
3. The third case is oligopoly. In this case there are few entrants and the dominance of the incumbent has shrunk significantly. However, there is still some form of market power. For example, a dominant supplier may determine prices in a monopolistic way, or there may be cartelisation among the suppliers.<sup>1</sup> In mobile communication the first two conditions hold but competition among the three operators is fierce. Therefore, this segment is classified under the fourth case.
4. The final case is the competitive market. This case is best approached for mobile communications and courier services. As mentioned above, the three mobile operators show competitive behaviour, although two have the indication of SMP. Five worldwide operating courier networks serve about 60% of the Belgian market that is not served by the incumbent. The remaining 40% is served by a few hundred small courier services.

To conclude, the incumbent companies are dominant in the Belgian network industries. This is partly caused by the fact that effective market opening, even in telecoms, is still in its early stages. Furthermore, some incumbents are defending their historically privileged position, for example by insufficient independence between infrastructure and downstream activities or by pricing strategies such as dumping or squeezing. Nevertheless, incumbents have to change their strategy to make a stand against potential competition.

#### **d. A programme for further market opening**

As already introduced in Section 2, the market opening of network industries is prescribed by EU directives, and transposed into national law. In most cases the opening takes place on the ultimate dates set by the directives. Figure 6 gives a stylised calendar for the planned market opening during the next five years. At the beginning of each bar the eligibility threshold as of December 2002 is given (see also Figure 5). The step-by-step reductions of these thresholds are then read rightward until the date of full market opening.

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1. In the economic literature, these situations are referred to as 'Stackelberg behaviour' and 'collusion', respectively.

FIGURE 6 - Calendar for further market opening in Belgium

	2002	2003	2004	2005	2006	2007	2008	
<b>Electricity:</b>								
	<b>EU: non-household</b>					<b>EU: all</b>		
Transmission	20 gwh	10 gwh						
Flanders	1 gwh	High-tens.	All					
Brussels	20 gwh	10 gwh	High-tension			All		
Wallonia	20 gwh	10 gwh	High-tension			All (in acc. with EU)		
<b>Gas:</b>								
	<b>EU: non-household</b>					<b>EU: all</b>		
Transport	5 mio m <sup>3</sup>						All	
Flanders	Power plants	1 mio m <sup>3</sup>	All					
Brussels	Proposals exist, but with unknown contents yet					All (in acc. with EU)		
Wallonia	As soon as proposals adopted: Power plants & 1 mio m <sup>3</sup>					All (in acc. with EU)		
<b>Postal services</b>	350 grs	100 grs (in accordance with EU)			50 grs (in accordance with EU)		0-50 grs?	
<b>Rail:</b>								
Freight	Assigned lines	TERFN (in accordance with EU)				All? (in acc. EU)?		
Passengers							None?	

Source: FPB/BfP.

For telecoms the market opening is completed so there is no need for discussion here. For electricity and gas the situation is rather complicated because decisions have to be taken at two political levels: at the federal level for transport, and at the level of the three regions for distribution. For postal services and railways the situation is less complicated. More detail per sector is given below.

- According to a recent agreement in the EU Energy Council the electricity sector for non-household customers must be opened by 1 July 2004 at the latest, and for household customers by 1 July 2007. In Belgium market opening takes place earlier. This holds in particular for Flanders, where full market opening will already be attained by mid 2003. In Wallonia, however, the decision for households still has to be taken.
- For gas, basically the same holds as for electricity, both at the EU and Belgian levels, but with differences for Brussels and Wallonia. In both regions proposals for market opening are made and the EU scheme will normally be followed. In Wallonia partial market opening will take place as soon as the proposals are adopted: all power plants and the customers using more than 1 mio m<sup>3</sup>. In Brussels, the conditions for opening are not known yet.
- For postal services a step-by-step reduction of the eligibility threshold to 50 grammes is set by a recent EU directive. The opportunities for a full market opening in 2009 are being investigated by the EU. A Royal Decree to implement this directive in Belgium has been approved by the Government.

- For railways the only market opening prescribed by the EU concerns freight traffic. On 15 March 2003 this must take place on a specifically defined network of main lines, named Trans European Rail Freight Network (TERFN). On 1 January 2008 market opening must be total. The Government is still working on implementing decrees, but it is expected that the EU calendar will be followed. Decisions on the liberalisation of passenger services will be taken by the EU at a later stage.

To conclude, in most cases the Government follows the final dates set by the EU. For gas and electricity some earlier dates are set.

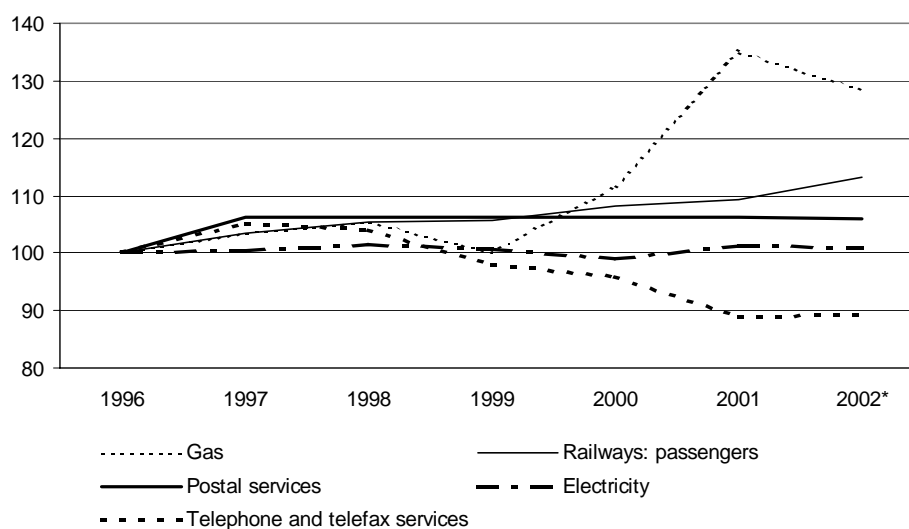
#### 4. Performance of the network industries

A basic aim of market reform is the improvement of market performance. When a legal or *de facto* monopoly is gradually replaced by a competitive market it is expected that prices will fall, quality may improve and productivity may increase. Note that the latter effect may imply an initial fall of employment. In the long run, however, better conditions for growth may be created because of increased competition, and have a positive effect on employment. Another aim, from the EU point of view, is the creation of an open internal market rather than a patchwork of nationally segmented markets. This may also increase market performance. Although it may be too early to isolate the impact of the reform on market performance, this section gives a brief overview of the recent developments in prices, quality and productivity. For examples of analytic applications, see Blöndal & Pilat (1997) and ECB (2001).

The evolution of consumer prices for network services is given in Figure 7. These data come from the Eurostat harmonised indices of consumer prices (HICP) and do therefore not include prices for industrial users. Moreover, the HICP seem to be based on incumbents' prices alone and not on entrants' prices.<sup>1</sup> In that case the prices may be an overestimation of the actual average market prices. The HICP is the only source available that gives price indicators which are conceptually consistent for all sectors (or correctly stated in the HICP framework: goods and services) and member states. Data from other sources show (see later chapters) that the evolution for industrial users is generally similar, although the price levels may be lower.

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1. Two examples of this presumption are given. First, in the monthly time series of HICP for telephone and telefax services, Belgacom price reforms are easily traced. Second, the almost perfectly horizontal graph for postal services shows the unchanged tariff structure of De Post since 1997. Therefore, it is unlikely that entrants' prices are already included in the determination of the price indices.

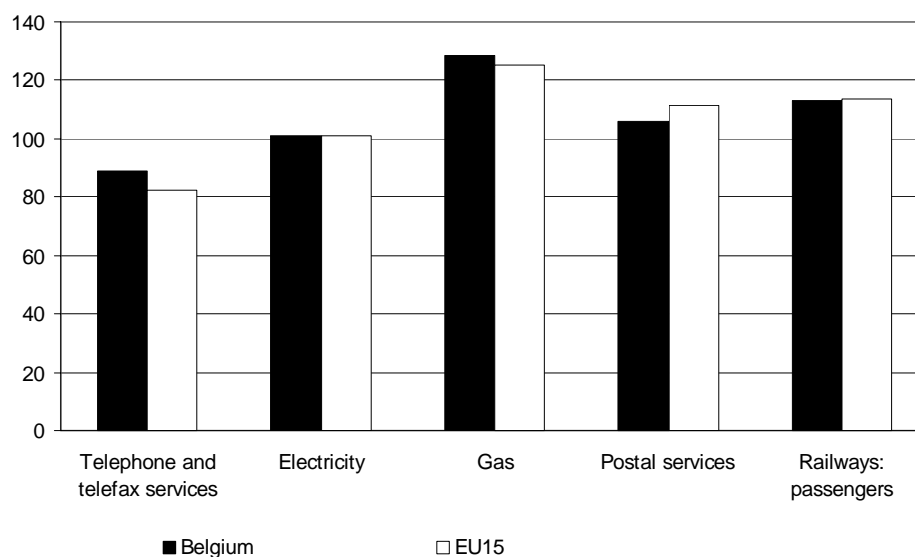
**FIGURE 7 - Price developments in the Belgian network industries**

Source: Eurostat.

\* January - September.

The price evolution of network services has traditionally been strongly controlled by the Government. This allows for the adoption of pricing policies that serve the public interest. By doing so, government may attain, for example, social and environmental objectives. The early state of liberalisation has made no change in this yet. Hence, governmental price control is the major factor behind the evolution given in Figure 7. The only exception is telecoms. From the 1998 opening of the market up to now, there has been an average price decrease of 15% for all consumer services. This price decrease was dominated by the incumbent, which had to make a stand against some tens of market entrants. For electricity, the downward effect of a price reform was counterbalanced by the upward pressure of fuel prices. For postal services, no tariff changes occurred between 1997 and November 2002. The price increase for railways (passengers only, where no market opening has taken place!) has been moderate. The marked changes for gas reflect the traditional connection to oil prices, but there is also a downward effect of a price reform.

There are no fundamental differences to the EU average price evolution, see Figure 8. The only exceptions may be telecoms and postal services. For telecoms the effect of the market opening seems somewhat weaker than the EU average. This is, however, caused by the fact that there was a 5% price increase in Belgium in 1997, whereas the EU average already fell almost 3% that year. Since 1997, the EU average fell by a further 16%, which is about the same as in Belgium during that period. For postal services the difference to the EU evolution is caused by the Belgian tariff stabilisation.

**FIGURE 8 - Price developments in the Belgian versus EU15 network industries, 2002\* (1996 =100)**

Source: Eurostat.

\* January - September.

The evolution of quality is not easy to analyse because the quality of a service has many aspects. Examples of quality measures are the number of faults on the telephone network, the number of letters delivered the next day and the number of trains arriving in time. In a recent report (CE, 2002), the European Commission asked the citizens of the 15 member states how they perceived the quality of PSO. Questions were asked concerning the quality in general and prices in particular. Moreover, the Commission wanted to get an idea on how citizens perceived recent changes in quality. For the study, citizens were divided into three groups: higher social, lower social and 'sensitive' groups. For the purposes of the present paper, two network industries are important: telecoms and electricity.

On the whole, Belgium gets higher marks than the EU average for the two network industries from nearly all social groups. All 15 member states are put in four groups, see Table 8. Belgium was classified in the second group. The Commission points out, however, that Belgian citizens showed a more differentiated picture in their interviews. In the case of telecoms, for example, Belgian citizens have the impression that the quality of service is insufficient and that they do not have a real choice of operator. The market reforms are seldom mentioned by Belgian citizens as of major importance. They indicate that they have the impression that reforms are hardly noticeable.

**TABLE 8 - Satisfaction of citizens in PSO**

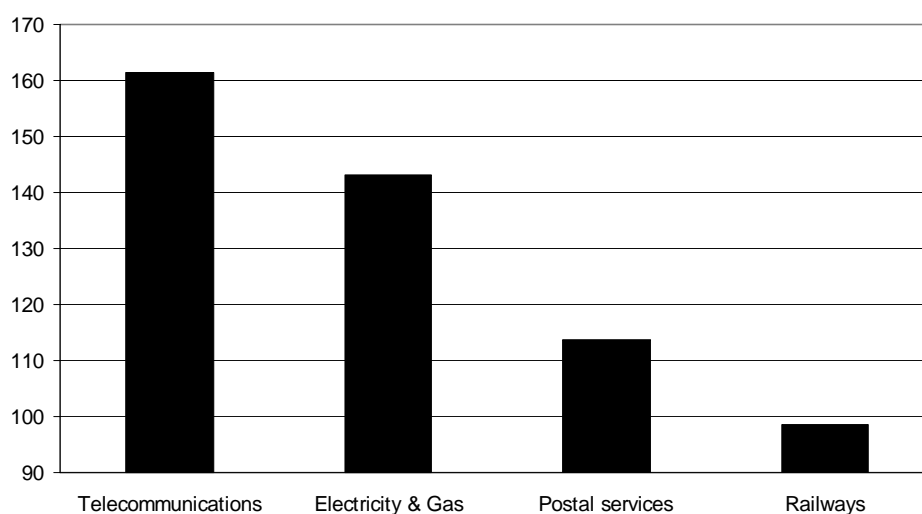
Level of satisfaction	Countries
General satisfaction	Finland, Portugal
Relatively small number of criticisms	Sweden, Austria, Belgium, Luxembourg, France, Spain
Major criticisms	Great Britain, Denmark, the Netherlands, Ireland
Unsatisfactory situation	Germany, Italy, Greece



Source: CE (2002).

The evolution of productivity, finally, is given in Figure 9. This clearly gives a confirmation of the picture already given in Figure 1. The strong value added growth and weak employment growth for telecoms and energy imply an annual productivity increase of 7% and 8%, respectively. Also for postal services there was an increase of about 3.5% per year. For railways there was no productivity growth. Note, however, that employment is measured in number of persons. A more precise measurement would be obtained by applying employment data in terms of hours worked. This is, however, not available from the given source.

**FIGURE 9 - Labour productivity in the Belgian network industries, measured in real value added per worker, 2000 (1995=100)**



Source: INR/ICN (calculation based on national accounts).





## Telecommunications

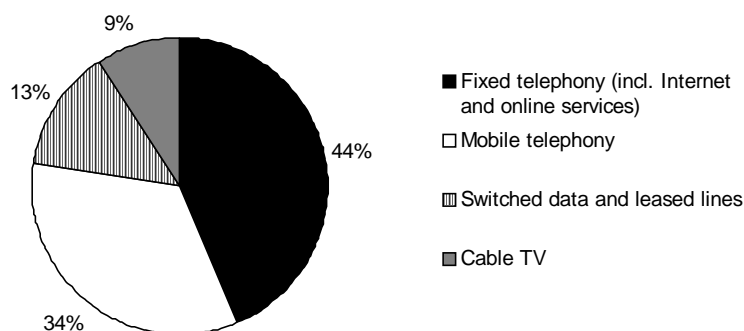
### A. The telecommunications sector in Belgium

#### 1. The telecommunications sector<sup>1</sup>

Telecommunications services are known as carrier services. They include telephone services, mobile telephone services, switched data and leased line services, Internet and on-line services, and cable TV services. According to EITO (2002), the carrier services worldwide market value represents 775 billion euro and should have grown by 6% annually in nominal terms during 2000-2002. The value of the Western European market reached 217 billion euro in 2000. The most buoyant segments in Western Europe have been Internet and on-line services (+40% in 2000) and mobile telephony services (+38%). On the other hand, the market value of other telephone services (fixed telephony exclusive from Internet) has decreased for the last two years (partly due to price drops).

The trends of the Belgian market are quite similar to those of other Western European countries. For all carrier services, a slowdown of the market growth is expected for 2002 (4%, whereas growth was still 12% in 2000). As the peak of mobile services growth is now behind us, Internet and on-line services are by far the most dynamic part of the market. Figure 10 gives a segmentation of the BLEU market for 2002.<sup>2</sup>

**FIGURE 10 - Belgium/Luxembourg market segments of carrier services (2002)**



Source: EITO (2002).

The share of the producing sector in the Belgian economy is close to the OECD-average. According to the OECD, telecommunications services have contributed to

1. This section will focus on telecommunications services only and will not include the production of telecommunications equipment which is usually considered a part of the telecommunications sector.  
 2. The EITO figures cover the Belgium-Luxembourg Economic Union (BLEU).

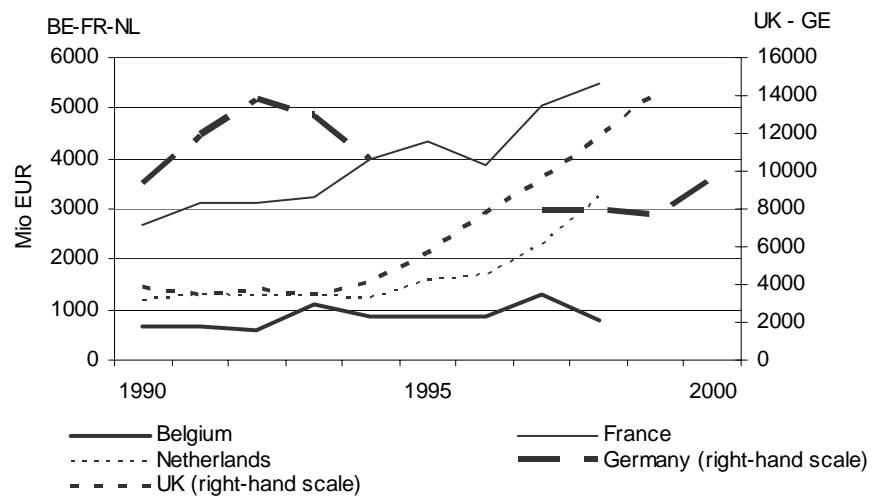
2% of the GDP and 1% of total employment in 1997 (last available figure at international level).

During the second part of the nineties, Belgian telecommunications services have grown rapidly: between 1995 to 2000, value added has increased by nearly 10% on average per year; during 1995-1999, total receipts from all telecommunications services have grown by 46.2% to 4,822 million euro; the number of firms has more than doubled since 1995 (from 223 to 587 in 2000). The incumbent (Belgacom) still dominates the entire sector. In 1999, 70% of the sectorial value added was created by Belgacom and its subsidiaries and 75% of the people employed in telecommunications services worked for Belgacom. Other important firms in the sector are SWIFT, Mobistar, Telenet, Telindus, Coditel and Global One. Some of these are active in cable TV (Telenet, Coditel) or financial data transmission (SWIFT).

The evolution of employment in the Belgian telecommunications services sector has been different to what was observed in other industrialised countries. Employment has initially declined in most countries, which was caused by high productivity gains linked to network digitalisation. In Belgium, employment has continued to rise at the sectorial level until 1996 even though productivity gains have also been substantial. Recent figures show that the declining trend has been reversed in most countries: from 1996 to 2000 and due to the arrival of new operators, employment in the telecommunications sector has risen significantly in most European countries. In Belgium, the upward movement has been limited: the significant increase in 1998 (+2,800) has been partly compensated by a 1999 decrease (-1,200) and the rebound of 2000 is nearly offset by a recent fall.

A striking fact of the telecommunications services sector of the BLEU is the importance of external trade. According to OECD data for 2000, the BLEU was the third largest exporter of telecommunications services, with an estimated trade surplus of 900 million US dollar. Different factors may account for this good performance: the intensive use of the Belgian network by foreign users, which may be due to the many international organisations located in Brussels; the development of ADSL services by firms located in Belgium, such as Alcatell Antwerp; the importance of the Luxembourg financial market.

**FIGURE 11 - Telecommunications services: investments in tangible goods**



Source: Eurostat.

The provision of telecommunications services demands for large investments in R&D and new infrastructure. As can be seen in Figure 11, the level of investment in tangible goods carried out by the telecommunications sector has rapidly increased during the nineties. This happened in the most advanced countries such as the UK, France and the Netherlands. In Belgium, the investment level has only slightly increased, reaching 800 million euro in 1998, which is the most recent available figure. However, more recent data on the evolution of the infrastructure could suggest that investments have been much higher since 1999.

## 2. Sector structure

### a. Telecommunications networks

Telecommunications networks are legally defined in Chapter 7 of the 21 March 1991 Act Concerning the Reform of Specific Public Enterprises, and include three categories:

- public networks,
- non-public networks,
- other telecommunications networks.

A public telecommunications network is defined as a telecommunications network that is totally or partly used to provide telecommunications services to the public. The operator of such a network has to obtain a license delivered by the Minister of Telecommunications, and on the proposal of BIPT.<sup>1</sup> The conditions required to obtain this license are determined by Royal Decree.<sup>2</sup> On 1 June 2002, 49 operators held such a licence.

Concerning the network capacity, 424,327 km of optical fibres and 26,620,325 km of raw copper were installed in Belgium by the end of 2001. Since 1997, the digital access to the Public Switched Telephone Network (PSTN) reaches almost 100% (99.9%).

The other telecommunications networks cover:

- mobile networks,
- trunking,
- private radiocommunication networks,
- others.

Currently, three operators are owner of a license to operate a mobile network: Belgacom Mobile, Mobistar and Base (KPN-Orange). Two frequency networks are used: Belgacom Mobile and Mobistar deliver their services on 900 MHz while Base does so on 1800 MHz. Belgacom Mobile is a subsidiary of Belgacom, which owns 75% of the capital. The other 25% belongs to the British operator Vodafone. Mobistar is a subsidiary of France Telecom Mobile, via the Orange group. Since September 1998, the shares are quoted on the Brussels stock exchange. Base is totally held by the Dutch operator KPN Mobile, which has acquired 50% of the shares previously held by France Telecom. Since April 2001, the sharing of anten-

1. BIPT = Belgian Institute for Postal Services and Telecommunications, the market regulator for the telecommunications sector.

2. Royal Decree of 22 June 1998.

nas sites to the three operators is imposed by law. This is done in order to minimise the potential negative effects on public health.

Trunk networks are communication networks via radio. They allow communication inside a closed group of users. Four trunk networks are currently active in Belgium.

## **b. Telecommunications services**

### *i. Fixed networks*

Vocal telephony is one of the most important telecommunications services and is mainly based on the PSTN analogue network. Interested candidates have to obtain an authorisation from the Minister of Telecommunications that allows the exploitation of a vocal telephone service. The requests are examined by BIPT in function of the conditions given in the 21 March 1991 Act. These conditions cover, among others, the economic and technical capacities of the candidates. At the end of September 2002, 32 operators were owner of such an authorisation.

Until 2000, the total number of connections to the telephone network (PSTN + ISDN + coaxial cable) had increased to result in a density slightly above one telephone connection for two inhabitants.<sup>1</sup> Since 2001, the total number of connections decreased mainly because of a sharp decrease in the number of PSTN connections. This could be an indication that mobile telephony is replacing fixed telephony as a vocal communication tool.

The number of public phone boxes offered across the country also influences the fixed telephony market share. Since January 1998, the exploitation of phone boxes is free, only a declaration at BIPT is required. By June 2002, 36 declarations had been recorded by the regulator. At the end of 2001, Belgium counted 16,736 phone boxes, which is 13% less than a year before.

Since January 1998, services of vocal telephony may also be delivered through coaxial cable connections used to transmit radio and TV signals. The number of these connections is rapidly increasing. Between the second semesters of 2000 and 2001, it showed a growth rate of 37%. At the end of 2001, there were 209,378 connections.

Besides vocal telephony, the other important service offered through the fixed network is the data switch, including the dynamic segment of Internet access. The access to this market is free, although a declaration at BIPT is needed by kind of data switch offered. At the end of 2002, 99 Internet services/access providers were recorded in Belgium, against 76 at the end of 2000 and only 18 at the end of 1998.

At the end of September 2002, the number of active Internet connections reached 1,556,718, which meant an increase of more than 22% in one year. The strongest increase had been recorded by broadband and leased line connections, in contrast

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1. ISDN = Integrated Services Digital Network.

to the decline recorded by paid PSTN and ISDN connections. Moreover, at the end of 2002, 51.9% of the total Internet connections occurred via DSL and TV-cable.<sup>1</sup>

The diffusion of Internet has also been encouraged by the liberalisation of domain name registrations in December 2000 and by the sharp reduction of domain name prices (from 25 euro to 10 euro) since June 2001.

#### *ii. Mobile networks*

The three operators offering vocal services on mobile networks are the same as the three operators that own a licence to operate a mobile network.

The number of mobile telephony users has rapidly increased in Belgium until 2000, with an annual growth rate of more than 80%. In 2001, the growth rate fell to 31%, which was due to the high degree of penetration that was reached. Between June 2000 and June 2001 Belgium improved its position among other EU member states. It rose from the last position to the 13th place, with 622 users per 1000 inhabitants against a European average of 687 users per 1000 inhabitants. By June 2002, the penetration rate reached 76%, with a total of 7,881,314 subscribers. Concerning the services offered, the most important growth has been recorded by data traffic through SMS (Short Message System) applications.

The licensing procedure for the third generation of mobile phones, UMTS (Universal Mobile Telecommunications System), was launched in 2001. By 15 March 2001, three operators had bought a licence. They paid an entrance fee of 150 million euro each. Only Belgacom Mobile paid slightly more. According to the Belgian license conditions, the three operators had to launch UMTS services by September 2003. Given difficulties in obtaining the building permits to set up antennas and high cost of investment, however, the Belgian Government has given an additional year, so the beginning of operations is currently scheduled for September 2004. Meanwhile services based on GSM of the second generation were continued to be extended.

On most of the modern mobile phones WAP (Wireless Access Protocol) is available. WAP allows for the use of rudimentary Internet applications offered on mobile networks. The development of GPRS (General Packet Radio Services) allowed WAP to be faster and more user-friendly. The I-mode is another service that allows for Internet surfing on mobile networks, for example for banking operations and shopping. The two first European countries where this technology is implemented are Germany (77,000 users) and the Netherlands (23,000 users). Belgium is the third country. The launching was realised by Base at the end of October 2002. The MMS (Multimedia Messaging) extends the technology of SMS with pictures, sounds, photos and video clips. The commercialisation of this service started in Belgium at the end of 2002, and at the initiative of Mobistar.

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1. DSL = Digital Subscriber Line. This technology includes ADSL (Asynchronous Digital Subscriber Line) and SDSL (Synchronic Digital Subscriber Line). In a near future, this technology is likely to be improved by VDSL (Very High-Speed Digital Subscriber Line).

### 3. Legal Framework

#### a. EU level

The legal framework concerning the opening of the telecommunications market has been established by European directives on licensing procedures, interconnection and the establishment of a competitive environment (97/13/EC, 97/33/EC and 97/51/EC, respectively). This general scheme has been specified by the European directive on the common regulatory framework for electronic communications networks and services (2002/22/EC) and several commission recommendations. Moreover, other European directives or recommendations treat some specific problems related to the liberalisation of this market: unbundled access to the local loop, universal service, personal data protection and protection of privacy.<sup>1</sup> The most important European decisions are summarised in Table 11, given in the Annex to this chapter, bottle-necks concerning their implementation are given in Table 12.

#### b. Belgian level

Belgacom and the Telephone and Telegraph Régie (RTT) have been created by law in 1930, as public interest institutions for the development of telecommunications infrastructure and services in Belgium.<sup>2</sup> The main modification of this act has occurred in the 21 March 1991 Act on public enterprises reform. This act abolishes RTT, gives Belgacom management autonomy and provides the general framework for opening up the telecommunications market.

The EU directives on market opening were transposed into Belgian law in 1998, providing for the conditions to create and operate a public telecommunications network.<sup>3</sup> This general framework has been modified in 2000, when the following was established:<sup>4</sup> unbundling of the local loop and obligations for Belgacom to publish reference offers concerning this unbundling (BRUO) and binary access (BROBA). In 2001, the procedure of UMTS license auctioning was fixed.<sup>5</sup> A bill on electronic communications, the transposition of EU directives on telecommunications into Belgian law, has to be adopted in 2003.

#### c. Role of the market regulator

The Belgian regulatory authority is the Belgian Institute for Postal Services and Telecommunications (BIPT). The role of BIPT is defined by the 21 March 1991 Act. It was established as a parastatal (type A) under the control of the Minister of Telecommunications.

In order to set up a fully independent regulator, a reform of BIPT was decided in 2002. This reform concentrates on BIPT's statutory position and organisational structure. The department in charge of preparing legislation and elaborating strategy will become part of the Administration. The remaining departments,

- 
1. 2887/2000, 2002/22/EC, 97/66/EC and 2002/58/EC, respectively.
  2. Act of 19 July 1930.
  3. Royal Decree of 22 June 1998.
  4. Royal Decree of 12 December 2000.
  5. Royal Decree of 18 January 2001.



which are in charge of market control and regulation, will constitute an independent regulatory body. A proposition has been formally approved by the Council of Ministers in September 2002, and by Parliament in December 2002.

The role of BIPT consists in promoting the well functioning of the telecommunications market. To play this role, the 21 March 1991 Act has given BIPT the mission to indicate operators that have Significant Market Power (SMP) on the following market: public fixed telephone services and networks, public mobile telephone services and networks, fixed vocal telephony, leased lines and the national market of interconnection. According to the act an operator is judged as having SMP when it has a 25% or more market share. The tariffs of an operator with SMP are under the control of BIPT.

One of the most important elements for promoting competition in telecommunications consists of interconnection conditions. The objective of the legal and regulatory framework about interconnection is to allow new entrants to connect their own network to that of the incumbent at competitive prices. BIPT has to control the annual Belgacom Reference Interconnection Offer (BRIO). Therefore, BIPT has begun the construction of a bottom-up cost model in collaboration with operators in 2001. This model is based on the different elements that constitute the network and is designed to improve the transparency of interconnection tariffs. The cost oriented principle followed by BIPT has led to substantial declines in the prices proposed by Belgacom. The bottom-up cost model has been used for the examination of the BRIO 2003 (sixth edition) at the end of 2002.

On the market of public fixed telephony services and networks and the market of vocal telephony, Belgacom has been declared as having SMP. Therefore, BIPT has to verify that the prices applied by Belgacom are cost oriented. In order to fulfil this mission, BIPT has received the external expertise of Bureau Van Dijk. Moreover, the universal service obligations (USO) imposed on Belgacom include the respecting of a price-cap mechanism. This price-cap consists of fixing an upper limit to the price evolution of a basket of services (connection costs, basic subscription, calls from subscribers and calls from public phone boxes). This limit lies a certain percentage above the annual inflation rate and is fixed by law, usually for several years.

On the mobile market Belgacom Mobile was judged for the first time as having SMP (serving more than 25% of the national interconnection market) in October 2000. This SMP status obliges Belgacom Mobile to base its tariffs for call termination on actual costs, which consequently meant decreases (overall reduction of more than 20% of the average level of termination charges). Since December 2001, a price-cap mechanism applies each year until 2004. This price-cap is designed to reach a total decrease of RPI-46% corresponding to the difference between the tariffs applied at the beginning of 2000 and the lower limit of the margin in which prices should be fixed, as results from the cost model. For the year 2002, Mobistar, the second mobile operator, was also declared as having SMP. Obligations in terms of tariffs, in order to prevent discrimination in interconnection prices between the operators, still have to be imposed.

Concerning the market of leased lines BIPT has started studying the market in 2001. From this study, it appears that out of 18 declared operators, 10 are effectively active on the Belgian market. Since December 2002, Belgacom has been judged as having SMP on all segments of the leased lines market.

BIPT is also in charge of the management of national numbering. In this field, the recently allowed portability of mobile numbers constitutes an important progress to improve competition between operators. This portability had to be effective by 1 September 2002, but the Minister delayed the implementation because of technical problems in maintaining the possibility to clearly identify the operator and telecommunications price for the final user. The portability became effective on 1 October 2002. During the first two months after this introduction, 35,000 users changed operator.

BIPT also controls the quality and tariffs of carrier preselect service providers. These controls have led to an average price reduction of 28% during 2002. Finally, BIPT has the mission of promoting informatics' security at the national level. The E-Security Team is the BIPT department in charge of monitoring and alerting for virus attacks.

#### 4. Progress in market opening

##### a. Entry, competition and market share

The opening of the market was closely connected to the substantial regulatory and institutional re-organisation of communication markets. The interaction of and feedback effects between technological progress and regulatory reform in the communication sector has influenced the behaviour of market players and created markets for new services (Internet services for example).

Since the formal opening of most telecommunications markets in 1998, the number of other licensed operators (OLO) has rapidly increased on public fixed network and vocal telephony markets. This evolution has occurred even though the telecommunications industry has experienced a worldwide slowdown.

**TABLE 9 - Number of telecommunications operators**

	12/1998	12/1999	12/2000	12/2001	9/2002
Public network operators	15	27	39	46	48
Vocal telephony operators	15	21	33	31	32
Leased lines operators	7	13	25	27	n.a.
Mobile telephony operators	2	3	3	3	3

Sources: BIPT (2001, 2002) and CCT (2002).

However, the rapid increase in the number of operators is not necessary synonymous to an increase in competition and may hide situations that are very different according to the kind of service market considered. In striking contrast to the long-distance and international telecommunications markets, the market entry in the local markets has not substantially reduced the incumbents' market share in OECD countries, with the exception of Canada and the UK. The entrants' share of local access lines remain minor, even in the many countries at the forefront of market liberalisation (the USA and Finland for example). The reason for the incumbents' dominance in the local market is clearly not the lack of market entrants, but the strategic behaviour of the incumbent operators concerning ac-

cess charges. Indeed, the incumbent may set access charges for its network such that the OLOS' margins with the end-user tariffs are so small that it is not profitable to provide services through the incumbent's network. This is the prize squeeze strategy. This strategy shows that local loop unbundling (LLU) itself is not sufficient to create effective competition. Moreover, the incumbents usually respond to the market entry by increasing their efforts to enlarge their customer base (through non-price strategies such as advertising). Given the high customer loyalty on this market and the network effects, this is a sensible strategy to deter profitable entry even in new markets such as mobile telephony. Therefore, policy actions are necessary to promote effective competition.

According to BIPT, 100% of the Belgian population had the choice between 2 operators and 40% between three to five operators for national communication in 2001. This put Belgium at the tenth position in the EU, far behind Denmark, Sweden, the UK, Ireland, Portugal and Austria where 100% of the population had the choice between more than five operators. Concerning international communication, 40% of the Belgian population had the choice between more than five operators and everyone between at least three operators. This also means a low position since twelve countries of the EU offered a choice between more than five operators to their citizens. The SMP portion of Belgacom on vocal telephony is illustrated by its share in market turnover (see Table 10).

**TABLE 10 - Vocal telephony market shares based on turnover (end of year)**

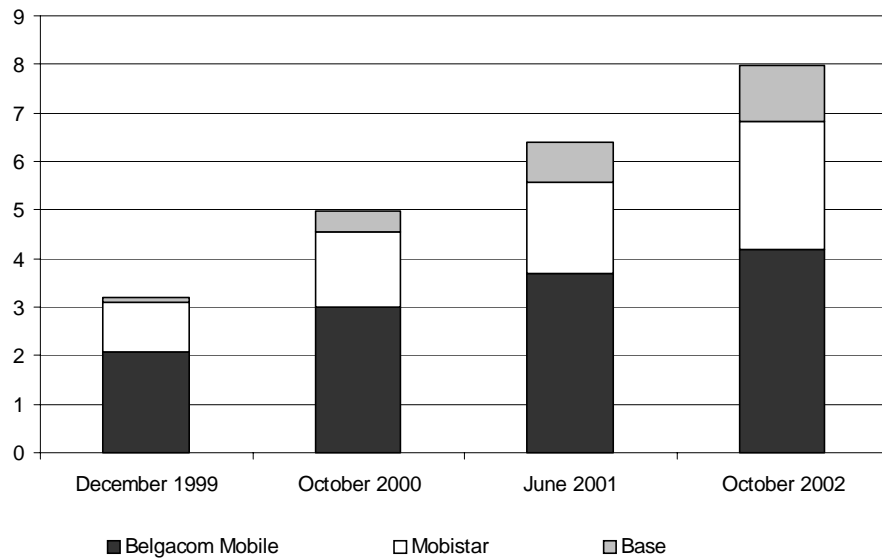
	1999	2000	2001	2002*
Total vocal telephony:				
- OLOS	4.3%	13.1%	19.1%	21.5%
- Belgacom	95.7%	86.9%	80.8%	78.5%
National vocal telephony:				
- OLOS	2.5%	7.6%	13.9%	15.7%
- Belgacom	97.5%	92.4%	86.1%	84.3%
International vocal telephony:				
- OLOS	10.5%	28.2%	34.3%	38.4%
- Belgacom	89.5%	71.8%	65.7%	61.6%

Source: BIPT (2003).

\* June.

Figures on market shares are available for the mobile telephony market and are presented in Figure 12. The dominant position of Belgacom on the mobile telephony market is progressively eroded by the two other operators while the market is rapidly developing. Between 1999 and 2002, the market share of Belgacom decreased from 65% to 53% while the number of users has more than doubled. The new users are more likely to choose for the new operators.

**FIGURE 12 - Market shares of mobile operators**



Sources: BIPT (2003).

**b. The unbundling of the local loop and binary access**

The local loop is the bottleneck of the fixed network that telecommunications service providers need to pass in order to reach their customers from other fixed networks. Local loop unbundling (LLU) is of utmost importance to effective competition, especially for local call operations in vocal telephony. In Belgium and other industrialised countries, the implementation of LLU has been slow. In 2001 Belgacom was for the first time legally obliged to publish its reference offer for the unbundling of the local loop (BRUO 2001).<sup>1</sup> This BRUO was published on 31 December 2000. Two months later, on 28 February 2001, the Minister of Telecommunications approved the judgement of BIPT that obliged Belgacom to modify its offer. Harsh negotiations about the conditions of the BRUO took place between Belgacom and the OLOS. The first ministerial notice was followed by others designed to determine some specific tariffs.<sup>2</sup> At the same time, BIPT decided to create working groups with all market participants in order to identify the main obstacles that prevent an effective unbundling of the local loop. The high cost of collocation charged by Belgacom and the delay in providing effective lines rapidly appeared as the main obstacles. Consequently, on 27 July 2001, BIPT imposed co-mingling to Belgacom as a solution to the collocation problem.<sup>3</sup> On 9 April 2002, BIPT published the formal approval of the BRUO 2002. The new offer (BRUO 2003) is currently being analysed by BIPT. At the end of 2002, only 2,005 lines have been fully unbundled, and for 1,632 there is offer shared access.

Broadband connections are diffusing rapidly. They can be based on DSL lines or through cable television infrastructure.<sup>4</sup> At the moment, it is mainly used for data transmission, but in the future it could be used more and more as support for vo-

1. BRUO = Belgacom Reference Unbundling Offer.
2. On 13 March concerning the tariffs of raw copper, on 27 April concerning the tariffs of shared access and on 31 May concerning the tariffs of blocs, tie-cables and splitters.
3. Co-mingling offers the operators the possibility to install their racks in the same place where Belgacom installs its equipment and not in a distinct space (as is the case for collocation).
4. It should be noted that the cable TV network (especially as regards coaxial cables) is a less performing infrastructure. Due to the bus technology used, the speed of transmission will decrease as the number of users increases.

cal telephony. Effective competition on broadband DSL services also demands for access to fully unbundled lines. On 16 January 2001, Belgacom published its wholesale offer concerning bitstream access (BROBA 2001) as scheduled by a 1998 royal decree.<sup>1</sup> This offer was judged insufficient by BIPT and, following a formal demand, Belgacom published a modified version of the BROBA on 3 July 2001. This new version has been modified several times by ministerial decisions in order to improve the competitive conditions of this segment of the market, in particular in terms of tariffs. However, the OLO complain about the reluctance of Belgacom to effectively apply the conditions scheduled in the BROBA. After harsh negotiations with Belgacom, the BROBA 2002 was approved by BIPT on 9 April 2002. At the end on 2002, BIPT received the BROBA 2003 for advice. However, the effective competitive access to this market segment seems to remain difficult and figures published at the end of June 2002 by the European Competitive Telecommunications Association (ECTA, 2002) showed that only 1,000 DSL lines out of a total of 363,000 were fully unbundled and operated by competitive local exchange carriers. The lack of competition on the DSL market is partly counterbalanced by the services provided by cable operators. Some of them already offer broadband access. In June 2002, around 280,000 cable Internet broadband connections have been registered. Broadband lines represented 15% of the total number of lines in Belgium, which was significantly higher than the EU average of 4%. In December 2002, 330,931 cable Internet broadband connections have been registered.

As a major alternative for bridging the last mile, the setting up of wireless access could greatly contribute towards opening up the market to new operators. This alternative technology has received different names: Fixed Wireless Access, Wireless Local Loop (WLL) or Broadband Wireless Access. In 2001, six national licences were attributed for different frequencies spectra. However, at the end of 2001, the interest manifested by operators had rapidly declined because of difficulties in financing the project and the frequency fees that made WLL an unattractive alternative for leased lines. Consequently, at the end of 2001, only 61 connections were realized via Fixed Wireless Access.

## B. Specific topics concerning telecommunications

### 1. Universal service, access, and public interest

The public service of telecommunications includes three elements: the universal service, the universal access and some missions of public interest.

The principle of universal service is that everyone, regardless of income and geographical location, has access to an affordable telephone service. This service in Belgium includes the following elements as defined in the 21 March 1991 Act:

- access to the basic public fixed network everywhere on the national territory;
- free emergency calls;
- help service for subscribers;

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1. It has to be noticed that Belgacom has an ADSL retail offer since April 1999; BROBA = Belgacom Reference Offer for Bitstream Access, which includes two parts: BROBA I concerning the leased capacity and BROBA II concerning the access line; Royal Decree of 22 June 1998.

- information service for subscribers;
- possibility to receive calls and to call emergency services even in case of non-paid bills;
- supply and maintenance of public phone boxes;
- publication of a universal directory in areas where there is not such a directory;
- supply of basic vocal telephony services at a price affordable for persons in financial difficulties.

The Belgian universal service does not include the mobile telephony. The BIPT annually publishes a report concerning the respect by the incumbent operator of the universal service obligations (USO). The performance of Belgacom is evaluated for each obligation imposed by the law. The law also provides for the financing of USO through a specific fund. In 2002 Belgacom asked for the activation of this fund and this demand is currently examined by BIPT as well as the practical modalities of the contribution to this fund. The legal framework of USO has to be adapted to the European legislation, in particular in order to open the universal service offer to competition and to extend it to mobile telephony.<sup>1</sup>

The principle of general access imposes the availability of some specific services everywhere on the national territory. A Royal Decree defines these specific services: for example leased lines, data commutation service, ISDN access, telex and telegraphy services.

General interest missions are also organized by a management contract between the Belgian authorities and Belgacom as scheduled by law.<sup>2</sup> This contract fixes the general interest missions: the collaboration of Belgacom with the civil defence and the mixed telecommunications commission; the supply of Internet connections to schools, libraries and hospitals at affordable prices. In addition, the act opens the possibility to OLO to participate in these general interest missions. The management contract also contains the budget allocated by the State to Belgacom in order to fulfil these missions.

## 2. Welfare effects

### a. Prices

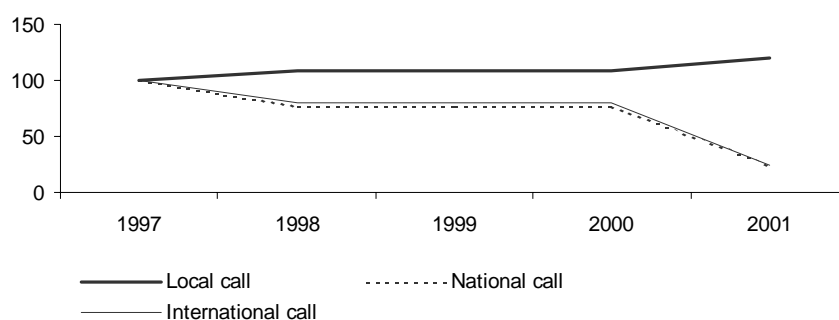
The liberalisation of the market and the progressive increase in competition has generally allowed a decrease in prices for final users, as illustrated by Figure 13.<sup>3</sup> However, although prices of national and international calls on the fixed network have sufficiently decreased to improve the Belgian position inside the EU (fifth position among the cheapest countries), the price of local calls increased in 2001, thus staying among the highest of the EU (see Figure 14).

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1. Directive 2002/22/CE.

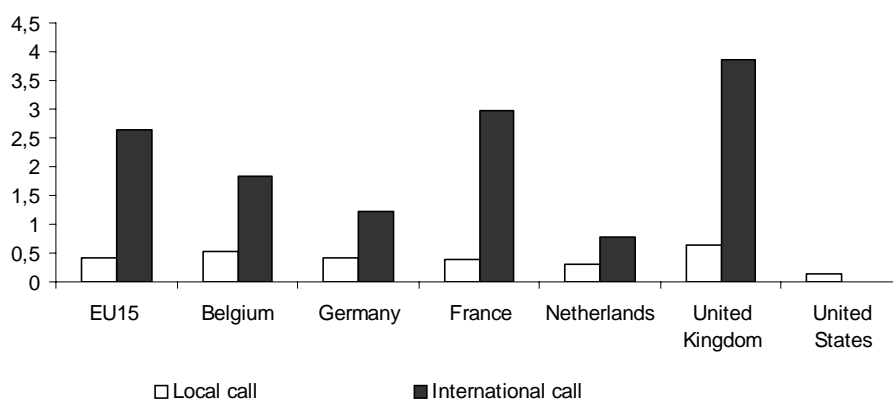
2. Act of 22 June 1998.

3. As these consumer prices continue to be measured on the basis of incumbent prices, they do not reflect the most attractive conditions offered by the market.

**FIGURE 13 - Prices of local, national and international calls in Belgium (1997=100)**

Source: Eurostat.

In 2001, the price of a local call in Belgium (0.54 euro) was 32% higher than the average price for the EU (0.41 euro). Since 1997, this gap has even increased, reflecting the difficulties to establish effective competition on the local loop, as already mentioned.

**FIGURE 14 - International comparison of telecommunications prices (2001)**

Source: Eurostat.

The Eurostat structural indicators do not contain information on prices of mobile calls. Information on these tariffs is published by the OECD (2002a) and shows the relatively favourable position of Belgium with prices lower than the average EU prices.<sup>1</sup>

The cost of data switch in Belgium is quite difficult to evaluate and to compare to other countries given the multiplicity of different offers for basic and broadband connections. For 2002, however, a general decline of tariffs applied by the main providers of Internet access via DSL connections has occurred, which boosted the number of these connections.

1. Currently, the most recent year available is 2000.

## b. Quality

Compared to other countries in Europe, Belgium has a middle-sized fixed telephony infrastructure. During the past few years the incumbent, Belgacom, has put a huge effort in digitising a significant part of the network. In the area of new communication technology infrastructure, Belgium is performing well: mobile telephony is important and the network is for the major part digitised; cable infrastructure is widely implemented; Belgium has a relatively dense network of optical fibres (424,327 km at the end of 2001).

Indicators on the quality of services provided by Belgacom in the area of the USO are available in BIPT reports. However, these indicators are estimated by Belgacom itself, without systematic independent controls.

## C. Annex

**TABLE 11 - European regulation on telecommunications since 1997**

European Regulation	Subject	Problems in transposition into Belgian law
Directive 97/13/EC	Common framework for general authorisations and individual <b>licences</b> in the field of telecommunications services	
Directive 97/33/EC	<b>Interconnection</b> in telecommunications with regard to ensuring universal service and interoperability through applications of the principles of open network provision	Non conformity
Directive 97/51/EC	Adaptation to a <b>competitive environment</b> in telecommunications	
Commission Recommendation (Oct. 97)	Interconnection pricing:	
Directive 97/66/EC	Processing of <b>personal data and protection</b> of privacy in the telecommunications sector	
Directive 98/13/EC	Telecommunications terminal equipment and satellite earth station equipment	
Directive 98/10/EC	Application of <b>open network provision</b> to voice telephony and universal service for telecommunications	Incorrect applications of national measures implementing the directive (accounting model)
Commission Recommendation (April 98)	Interconnection/accounting separation and cost accounting	
Directive 98/61/EC (amending 97/33/EC)	Operator number <b>portability and carrier preselection</b>	
Decision 128/1999/EC	Coordinated introduction of a third generation mobile and wireless communications system (UMTS)	
Directive 1999/59/EC (amending 77/388/EC)	<b>Value added tax</b> arrangements applicable to telecommunications services	
Commission Recommendation (Nov. 1999)	Leased lines interconnection pricing	
Commission Recommendation (March 2000)	Interconnection pricing	
Regulation 2887/2000	Unbundled access to the local loop	
Commission Recommendation (February 2002)	Interconnection pricing	
Directive 2002/22/EC	<b>Universal service</b> and users' rights relating to electronic communications networks and services	



European Regulation	Subject	Problems in transposition into Belgian law
Directive 2002/21/EC	Common regulatory <b>framework</b> for electronic communications networks and services	
Directive 2002/20/EC	<b>Authorisation</b> of electronic communications networks and services	
Directive 2002/19/EC	<b>Access</b> to and interconnection of electronic communications networks and associated facilities	
Decision	Establishing the European Regulators Group for Electronic communications networks and services	
Directive 2002/58/EC	Processing of personal data and the <b>protection of privacy</b> in the electronic communications sector	

**TABLE 12 - Main problems encountered in Belgium in the implementation of the telecommunications regulatory package**

Main issues	Problems	Measures taken or expected
National regulatory authority	Lack of independence of BIPT Too heavy procedures of the interconnection chamber Lack of power to enforce decisions upon the incumbent	Setting up of an independent body to deal with matters such as interconnection and LLU
Licensing	Too high frequency fees for the WLL Uncertainty regarding the issue of a 4 <sup>th</sup> licence in UMTS Stop given to the building permits to set up antennas	New tariffs introduced in 2002
Local access competition, including implementation of the regulation on local loop unbundling and bitstream access	Although Belgium is one of the cheapest countries for unbundled lines, many problems appear for the LLU: quality of lines provided by Belgacom, time needed for provision, end-user tariffs of the incumbent. Too high costs for collocation Insufficient viable margins for new operators willing to offer ADSL services (technical restrictions and tariffs offered by Belgacom)	Improvements for collocation and co-min-gling
Tariffs	Level of retail tariffs of Belgacom and absence of an <i>ex ante</i> price squeeze test by BIPT	
Cost accounting	Entrants regret the delays and the lack of transparency in the use of the cost accounting model by BIPT	
Leased lines	Tariffs for international leased lines are above the EU average	
Rights of way	Major bottleneck Regions and other entities ask for rights of way permit and fees which is not permitted by federal law	

Sources: BIPT and EC (2001c).





## Electricity

### A. The electricity sector in Belgium

#### 1. Sector structure

##### a. Structure of the electricity sector

The electricity sector is split into three segments: generation, network operations and sales. There is a dominant private incumbent, Electrabel, active in all segments of the electricity market, but also in the gas market (see the next Chapter). The recent reforms of the electricity sector did not result in a radical re-structuring. In particular, these reforms were not aimed at breaking up the generation and distribution activities of the incumbent as was done in England and Italy. They focused on market regulation to ensure fair competition in production and supply and on the legal unbundling of network operations from production and sales activities.

Electricity *production* is dominated by two electric utilities: the private company Electrabel with a share of 91% and the public company SPE with a share of 6.5% of total electricity generation in 2000. Autonomous electricity producers and industrial autoproducers represent less than 3%. Moreover, in 1995, Electrabel and SPE created a new company, called CPTe, to co-ordinate and manage their activities in electricity generation and transport. With a production share of 58% in 2001, nuclear power is the main source of net electricity production. The second most important source is natural gas (21%), followed by coal (13%). Renewable energy sources amount to less than 3%.

Network operations are separated into:

- transport: networks with a voltage higher than 70kV;
- distribution: distribution and local transport networks with a maximum voltage of 70 kV.

Further to the legal provisions in the 1999 Electricity Act (see Section 2b below), the *transport* of electricity becomes a legal monopoly and must be legally separated and become independent from production and supply. To comply with the law, CPTe – the only candidate for the nomination of transport system operator (TSO) – created a subsidiary for its network operations. This subsidiary, called ELIA, was established in June 2001. 30% of the shares were sold to Publi-T (a holding of Belgian municipalities) and 40% will later be sold on the stock market. In September 2002, the government nominated ELIA System Operator as independent TSO.<sup>1</sup>

1. Official Journal of 17 September 2002.

The municipalities own the *distribution* network. This network is managed by 8 municipal utilities, 8 pure intermunicipal companies, and 16 mixed intermunicipal companies. The major difference between the three groups is that the latter organise and manage their distribution activities in association with Electrabel.<sup>1</sup> Similarly to transport, distribution system operations (DSO) will be legally separated from sales activities. In Flanders, the share of private shareholders is limited to 30% and in Wallonia to 49%. The legal unbundling of DSOs is under way with the appointment, in September 2002, of most DSOs in Flanders and Wallonia. The latter are the current (inter)municipal companies.

In 2000, 35 companies ensured the electricity *sales* to final consumers: 3 private companies and the 32 municipal and intermunicipal distribution companies (see above). In this segment, the direct market share of Electrabel is slightly less than 40%. However, Electrabel also has an indirect market share through its participation in the mixed intermunicipal companies, who represent some 80% of electricity sales to public distribution.<sup>2</sup>

With the further opening-up of the electricity market, the above picture of electricity supply is changing: sales to eligible customers are in the hands of licensed suppliers, whereas sales to captive customers are still ensured by the (inter)municipal companies. At the moment, about 15 companies have a licence to sell electricity to eligible customers. In Flanders, five pure intermunicipal companies have transferred their electricity and gas sales activities into a new commercial company, called Luminus.<sup>3</sup> In Wallonia, three pure intermunicipal companies have created ALE-trading for their sales activities.<sup>4</sup> Moreover, sales activities for the non-captive segment of the market, which were previously operated by mixed intermunicipal companies, came in the hands of Electrabel Customer Solutions (ECS), a subsidiary of Electrabel, in which the municipalities took a minority interest.

#### **b. Key figures about the incumbent (Electrabel)**

Electrabel is a European company. It is the market leader in Benelux and a major energy company in Europe. The company is quoted on the stock market. The leading shareholder is Tractebel (43.99%), which is the energy branch of the French company Suez. The remaining shares are allocated between the stock market (51.34%) and the municipalities (4.67%). Electrabel is organised according to four core activities: electricity generation; building, management and maintenance of electricity and natural gas networks; electricity and natural gas trading; sales of electricity, natural gas and derived energy products and services.

The strategy of Electrabel focuses on competitive pricing and quality and on the further development of the company in Europe whilst remaining the leader in the Benelux. In Belgium, Electrabel has a dominant position in electricity generation and sales to direct customers. It is also a key player in natural gas trading. Through its 100% subsidiary ECS and its participation in the mixed intermunicipals, it is active in electricity and gas sales to the 'distribution' customers. Through its participation in several DSOs, it is active in network management.

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1. Electrabel has an average share of 60% in the mixed intermunicipal companies.
  2. Electricity sales to public distribution represent about 63% of total sales.
  3. IVEG, PBE, VEM, WVEM and Interelectra.
  4. ALE, ALG and AIEG.

## 2. Legal framework

### a. EU level

The main EU legislative framework at the basis of the reform of the Belgian electricity sector is Directive 96/92/EC concerning common rules for the internal market in electricity.<sup>1</sup> The directive introduces competition in the European electricity industry and establishes common systems for the generation, transmission and distribution of electricity. It lays down the rules relating to the organisation and functioning of the electricity sector (separate accounts for generation, transmission and distribution activities; reciprocity clauses; time schedule of the market opening), access to the electricity network (negotiated or regulated third party access, or single buyer), and the criteria and procedures for granting authorisations for generation, transmission and distribution of electricity.

With the aim of speeding up the liberalisation of the electricity market and integrating other policy objectives (security of energy supply; consumer protection), the European Energy Council approved the draft of a new directive on 25 November 2002.<sup>2</sup> The key elements of this draft are:

- a faster time schedule for the full opening of the electricity market (full competition by 1 July 2007);
- legal unbundling between network management and production and sales activities;
- regulated and published access tariffs;
- establishment of an independent regulatory body<sup>3</sup>;
- additional measures regarding the security of energy supply and public service obligations (PSO).

Finally, other EU legislation adopted or in preparation will have an impact on the generation of electricity in Belgium. For instance, Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market contains an indicative objective for Belgium that 6% of total electricity consumption should be produced from renewable energy sources in 2010.<sup>4</sup> Furthermore, there is a proposal for a directive on the promotion of cogeneration based on a useful heat demand in the internal electricity market, which creates a supporting and facilitating framework for the development of cogeneration in EU countries.<sup>5</sup>

### b. Belgian level

The transposition of Directive 96/92/EC into Belgian law implies the adoption of federal and regional legislation. The federal legislative and administrative provisions focus on those aspects of the directive that are of federal competence, namely the production and transport of electricity, tariffs, long term planning and competition issues. The regional legislative and administrative provisions deal

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1. Official Journal L 27 of 30 January 1997.  
 2. Based on COM(2002)304 final of 7 June 2002: Amended proposal for a Directive amending Directives 96/92/EC and 98/30/EC and for a regulation on conditions for access to the network for cross-border exchanges in electricity.  
 3. Independent of the interests of the electricity industry and of politics.  
 4. Official Journal L 283 of 27 October 2001.  
 5. COM(2002)415 final of 22 July 2002).

essentially with the distribution of electricity, the rational use of energy and renewables.

At the federal level, Belgium has implemented the directive through primary legislation by the 1999 Electricity Act.<sup>1</sup> In July 2001, a new act has been adopted that completed and amended some provisions of the 1999 Act.<sup>2</sup> Secondary legislation is almost completed. For instance, Belgium has adopted major decrees of application, notably relating to the nomination of the TSO, the general structure of transport tariffs and the technical rules for the management of the electricity transport network (grid code).

At the regional level, the Decrees relating to the organisation of the electricity market were approved in July 2000 for the Flemish region and in April 2001 for the Walloon region.<sup>3</sup> As for the region of Brussels-Capital, the Council of Brussels-Capital approved the order on the liberalisation of the electricity market in July 2001.<sup>4</sup> The adoption of secondary legislation (implementing decrees) is progressing steadily but at a different pace according to the regions (see Section 3 below). Several decrees deal most particularly with renewable energy sources and cogeneration by setting up of systems of green and heat certificates.

### **c. Role of the State and the market regulators**

The role of the federal Government relates mainly to procedures for the investments in transport and generation of electricity and to the setting of tariffs. More specifically, the Ministry of Energy is responsible for granting, on the basis of proposals by the regulator, of licences for electricity generation, transport and supply. It also nominates the TSO. The Ministry of Economic Affairs fixes maximum prices for electricity sold to captive customers. The 1999 Electricity Act also gives the possibility to the Ministry of Economic Affairs to fix maximum prices for electricity supply to eligible consumers, but no decision has been taken yet on this issue.

Belgium has five bodies in charge of the regulation and control of the electricity market: four regulators for the opened segments of the market (one at the federal level and three at the regional level), and the Control Committee for Electricity and Gas (CCEG) for the captive segments of the market.

At the federal level, the Commission for the Regulation of Electricity and Gas (CREG) was established in January 2000. The CREG has both an advisory, monitoring and controlling role. It approves the tariffs for access to the network, establishes an indicative plan of power production means for the next ten years, controls the application of laws and regulations and is also the dispute settlement authority. The members of the Board of Directors are not allowed to have any direct or indirect interest in the electricity industry. The CCEG is still competent for the regulation of electricity prices to non-eligible customers. Nevertheless, in December 2001 the Council of Ministers decided to transfer the competencies of CCEG to CREG by 1 July 2003.

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1. Official Journal of 11 May 1999.  
2. Official Journal of 20 July 2001.  
3. Official Journal of 22 September 2000 and 1 May 2001, respectively.  
4. Official Journal of 17 November 2001.

In the Flemish and Walloon Regions, regulators were also set up with similar responsibilities as those devoted to CREG: VREG in Flanders, and CWaPE in Wallonia.<sup>1</sup> The region of Brussels-capital has no specific regulatory authority. The energy department of the Brussels Institute for the Environment (BIM/IBGE) fulfils the tasks of the regulator.<sup>2</sup> The regional regulators are also responsible for the management of the systems of green certificates, set up to promote renewable energy sources and of measures to encourage the rational use of energy.

### 3. Progress in market opening

According to present legislative provisions, the time schedule for the opening-up of the electricity market is summarised in Table 13.

**TABLE 13 - Eligibility thresholds for electricity in Belgium**

Category	Transmission Grid		Distribution Grid		Directive 96/92/EC	'New' EU Directive
	National territory	Flemish Region	Walloon Region	Region of Brussels-Capital		
> 100 Gwh	Eligible	Eligible	Eligible	Eligible	Eligible	
> 20 Gwh	Eligible	Eligible	Eligible	Eligible	Eligible	
> 10 Gwh	January 2003	Eligible*	January 2003	January 2003	February 2003***	
High-tension Clients**		January 2003	January 2005	January 2005		
Non-domestic clients						July 2004
All clients	January 2007	July 2003	Not decided yet	January 2007		July 2007

Source: FPB/BfP.

\* Eligibility also applicable to consumers consuming more than 1 GWh per year.

\*\* It is worth underlying that the definition of high-tension client varies according to regions.

\*\*\* In fact, eligibility applies to consumers consuming more than 9 GWh per year.

Thus, in 2002, all consumers consuming more than 20 GWh annually and connected to the national transport network or to the distribution networks of Wallonia and the region of Brussels-Capital are free to choose their supplier. The eligibility threshold is lower for the final consumers connected to the distribution network in Flanders, where it is fixed at 1 GWh since January 2002.

The above time schedule translates into the following theoretical market opening: 35% of total electricity demand in 2000, 42% in 2001 and 52% in 2002. However, in practice, only a small percentage of eligible customers have switched between suppliers: in 2000, customers having switched represented no more than 1% of the total electricity demand; in 2001, this percentage rose to 3% (or 8% of total electricity supplied to the eligible customers). The new entrants are foreign electric utilities or energy trading companies.

1. VREG = Vlaamse Reguleringsinstantie voor de Elektriciteits- en Gasmarkt (in English: Flemish Regulating Body for the Electricity and Gas Markets; CWaPE = Commission Wallonne pour l'Energie (in English: Walloon Energy Commission)
2. BIM = (Brussels Instituut voor Milieubeheer); IBGE = (Institut Bruxellois pour la Gestion de l'Environnement).

As Table 13 shows, the opening-up of the electricity market is progressing faster in Flanders than elsewhere in Belgium. About 60% of total electricity consumption in Flanders is now eligible and the market share of entrants is about 24% of total electricity supplied to the eligible customers. Another indicator of the progress towards more competition is the number of supply licences delivered recently in Flanders and Wallonia to new Belgian or foreign market players, which is about 15. Notwithstanding the fact that many owners of a supply licence are not necessarily active yet, the number suggests that competition may increase in the future.

Several obstacles or particular circumstances have been identified that can explain the relatively low level of competition in Belgium up till now. These include (EC, 2002b):

- the late nomination of the TSO and the still incomplete legal implementation of the EU Electricity Directive (e.g. the regulator has not yet approved network access tariffs). Resulting uncertainty may constitute a brake to new market players;
- the high degree of concentration in generation. The Belgian generation market is dominated by two incumbents, Electrabel and SPE, which represent some 97% of the total electricity production. Moreover, the market share of the largest generator, Electrabel, is around 90%. In the absence of significant competition in generation, competition in supply has come essentially from cross-border purchases. Nevertheless, some entrants plan to construct new generation capacities, notably near the port of Antwerp and in the North Sea (offshore wind turbines);
- the conditions of access to congested interconnection capacities with neighbouring countries. Up till recently most of the interconnection capacity was reserved for long-term supply contracts and used by the main incumbent. However, recent initiatives by the Belgian, French, Dutch and German TSOs will make the access to new entrants easier and more transparent (see Section B1b below);
- the absence of a power exchange market. Such a market can serve as an operating base for new entrants on the end-user market and therefore improve competition. Power exchanges exist in Scandinavia, the Netherlands, Germany and France;
- some eligible customers may remain bound by long-term contracts with Electrabel or the distribution companies. This obstacle has, however, been removed recently in Flanders, where VREG has decided that all existing contracts between the distribution companies and the forthcoming eligible consumers expire on 31 December 2002.<sup>1</sup>

Another way to enter the Belgian electricity market is entry by acquisition. For instance, the French state-owned power company, Electricité de France, took a share of 10% in SPE and will supply some eligible customers in Belgium from the power plants owned by SPE. Centrica plc., a UK based energy trading company, has bought into Flemish electricity and gas distributors.

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1. Beslissing van de VREG of 7 oktober 2002 met betrekking tot de bestaande overeenkomsten tussen intercommunales en eindafnemers (in English: Decision taken by the VREG on 7 October 2002, relating to the existing contracts between intermunicipal companies and end-users).



## B. Specific topics concerning electricity

### 1. Access to the network

#### a. Third party access

The 1999 Electricity Act creates a regulated access to electricity transport and distribution networks: suppliers have the right to access the network at approved and published tariffs. According to the regulated third party access system, the TSO must submit its network access tariffs for approval to the federal regulator. These tariffs have to be based on the general tariff structure as fixed by Royal Decree.

While waiting for these regulated tariffs, ELIA, the TSO, applies temporary commercial conditions for providing access to its network. Moreover, further to the legal provisions in the Flemish decree, the DSOS in Flanders have to publish their access tariffs. In November 2002, more than half the operators had done so.

#### b. Cross-border interconnection

Sufficient levels and efficient use of interconnections between national electricity grids are also key elements of the electricity market reform. Indeed, they foster market integration and therefore competition and an increased security of electricity supply at the European level.

Belgium is relatively well interconnected with France and the Netherlands: its degree of interconnection capacity is around 20%.<sup>1</sup> There is, however, no direct connection between Belgium and Germany. Nevertheless, the scope for cross-border trade for new entrants on the Belgian electricity market is limited by congestion. This situation is due to the fact that a major part of the interconnection capacity is reserved to cover long-term supply contracts without use-it-or-lose-it principle. Because this may constitute a brake to the liberalisation process in Belgium, several actions have been or are being taken to improve the situation:

- the reinforcement of cross-border capacities at the French border;
- the publication of relevant data concerning the cross-border transfer capacities by the Belgian and neighbouring TSOS;
- the auctioning of the available capacity at the Belgian-Dutch and Dutch-German borders, set up by the TSOS ELIA (B), TenneT (NL), RWE Netz and E.on Netz (G).<sup>2</sup> This auctioning has the advantage of providing a transparent method for allocating the available cross-border capacity and to facilitate the emergence of new market players in the respective countries. Capacity is allocated for three different time horizons (daily, monthly and yearly);
- the introduction by the Belgian and French TSOS (as of 1 July 2002) of a common system for access to the Belgian-French interconnection capacity. The mechanism combines allocation on a daily and monthly basis. So

1. The ratio between net import capacity and total production capacity.

2. The available capacity is defined as the total import/export capacity reduced by the volume of long-term contracts from the pre-liberalisation era.

far, the capacity was allocated on a first-come-first-serve basis, though with priority for long-term contracts from the pre-liberalisation era;

- a consultation organised by the Belgian and French regulators in autumn 2002, targeted to the users of the interconnection capacity and relative to the access system put in place at the Belgian-French border. The principal objectives of this consultation were to evaluate the efficiency of the system and to identify possible improvements.

## 2. Public Service Obligations

The federal and regional legislation on electricity includes provisions related to public service obligations (PSO) to be imposed on electricity generators, network operators and suppliers. Secondary legislation defines more precisely the tasks and obligations of the different market players.<sup>1</sup> The tasks and obligations of the network operators regarding the security and reliability of electricity supply are consistent with the technical rules for the management of the electricity transport and distribution networks. Those of the electricity generators and suppliers are part of the authorisation criteria for power generation and supply.

The PSO foreseen in the laws are of technical, social and environmental nature. The first two categories relate to the guarantee of a universal and secure service to the consumers. They cope with the right for each household to be connected to the electricity network (a universal service obligation, or USO), and with safety, security, regularity and quality of supplies at an affordable price, including the protection of vulnerable consumers. On these issues, legal provisions notably impose the supply of a minimum level of electricity to households, even when they cannot pay their bill, the installation of pre-payment meters and the application of the social tariff to people with low levels of income.

To finance the above social measures, special funds are put in place (Social Funds in Wallonia and the Energy Fund in Flanders). According to the level of competence, these funds are fed by special charges on the transport and distribution of electricity, special fees related to the authorisation procedure for network extension and for electricity supply, fees on electricity supply licences, or administrative penalties for non-compliance with the law.

The third category of PSO involves the protection of the environment through the promotion of renewable energy sources and the rational use of energy. In this respect, a Royal Decree and one major provision in the regional decrees deal with the creation of green certificate systems.<sup>2</sup> According to these systems, increasing shares of electricity sales by electricity suppliers must be produced from renewable energy sources (or in combined heat and power plants (CHP) in Wallonia).<sup>3</sup> Electricity suppliers who fail meeting the target must pay penalties, which will feed regional Funds (the Energy Fund in Wallonia and the Renewable Energy Fund in Flanders).

Legal provisions related to the promotion of the rational use of energy include, among others, the setting up of a system of cogeneration certificates in Flanders,

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1. Official Journal of 29 October 2002.

2. Official Journal of 23 August 2002 (the federal level is competent for offshore wind energy from the North Sea).

3. Wallonia: 12% in 2010 (including CHP); Flanders: 5% in 2010 (excluding CHP).

obligations for network operators to set up electricity saving programmes aimed at reducing electricity consumption in Flanders and in the region of Brussels-Capital, or to adopt an appropriate pricing formula in Wallonia. These obligations will be financed through the regional energy funds, whose financing will be similar to the funds for the social PSO.

### 3. Welfare effects

#### a. Prices

A distinction between eligible and non-eligible (or captive) consumers should be made. Electricity prices to the former category are neither regulated nor published, and there is no wholesale market in Belgium. Electricity prices to captive consumers are regulated and the tariff structures are published in the Official Journal. Consequently, the focus here is on the evolution of electricity prices for captive consumers, namely a domestic consumer consuming 3,500 kWh/year (Figure 15) and an industrial consumer consuming 2 GWh/year (Figure 16). These categories of consumers belong to the standard consumer types of Eurostat for which price statistics are regularly published.

Changes in consumer prices emerged mainly as a result of the application of price-cap rules applied to the captive electricity market. These follow the government decisions taken in April 2000 to reduce captive end-users' prices quickly and significantly, so that the price differences with neighbouring countries could be eliminated by June 2002. The resulting 'administrated' price falls can be considered as direct effects of regulatory reform in the electricity industry although they do not occur as a result of increased competition (see ECB, 2001).

The price reductions took four different forms:

- changes in the price calculation formula;
- temporary reductions for all consumers connected to the low voltage grid (2000 and 2001);
- a rebate for low voltage customers, in Flanders taking the form of a free amount of electricity (2002 onwards);
- 500 kWh free of charge annually for consumers benefiting of the social tariff.

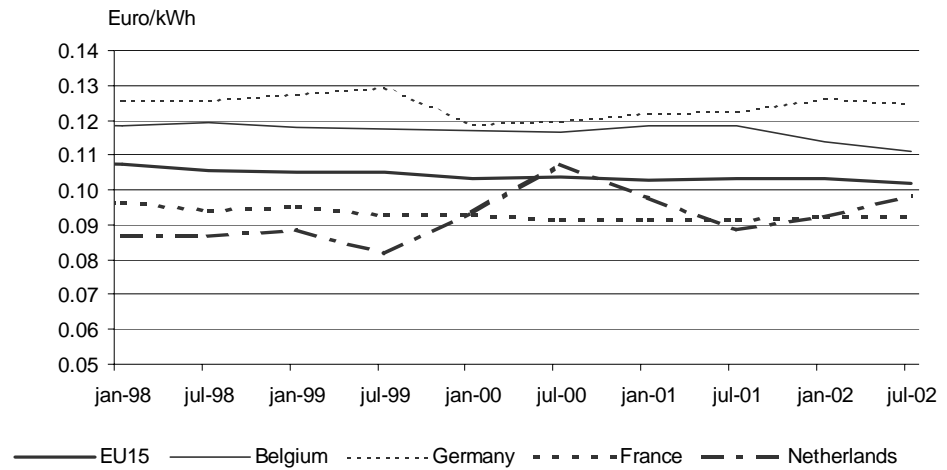
According to the CCEG, the measures adopted in 2000, 2001 and 2002 should reduce most of the price differences with neighbouring countries. The costs of the measures are born by the electric utilities (production and distribution) and financed by productivity gains.

Nevertheless, part of the above price reductions were counterbalanced by an increase in production costs resulting from high natural gas prices. Changes in electricity prices are indeed strongly influenced by the developments in fuel prices but not equally in each country. The changes reflect several factors, one of which is the underlying technology of electricity generation and the resulting mix of primary energy sources. In Belgium, around 20% of electricity is produced in gas-fuelled power plants.

The combination of 'administrated' price falls and high natural gas prices have in practice led to a stabilising of electricity prices for domestic consumers. The im-

fact of the tariff reform has only become obvious since the beginning of 2002 when gas prices stopped rising. Nevertheless, electricity prices for households in Belgium remain in general among the highest in Europe. In 2001 they were about 15% higher than the EU average, but the gap came down steadily to 10% in January 2002 and to 9% in July 2002. However, there are categories of domestic consumers, in particular those consuming less than 1,200 kWh per year, for which electricity prices have decreased by more than 10%. This reflects the social focus of the reform of electricity tariffs.

**FIGURE 15 - Electricity prices for domestic consumers (3,500 kWh/year)\***

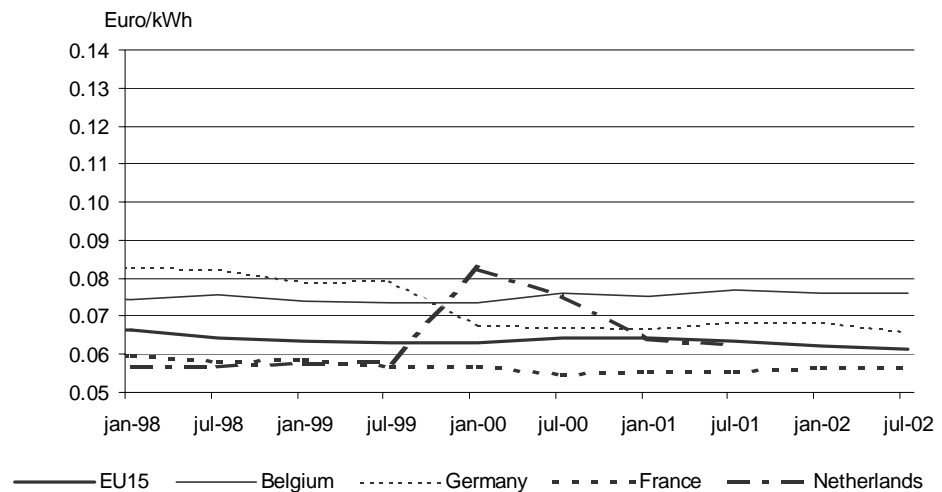


Source: Eurostat.

\* Current prices excluding VAT and taxes.

Between January 1999 and July 2002 Electricity prices for Belgian industrial consumers with an annual consumption of 2 GWh have increased slightly by 2.7%, while they have decreased in almost all other member states. Again, rising natural gas prices may explain this trend. However, constant prices in Belgium have decreased over the same period. So far, the opening-up of the electricity market has not brought Belgian electricity prices to the EU average; electricity prices for the Belgian industry remain higher than those for the European competitors.

**FIGURE 16 - Electricity prices for industrial consumers (2 GWh/year)\***



Source: Eurostat.

\* Current prices excluding VAT and taxes.

## **b. Quality**

Besides price reductions and the implementation of PSO (see Section 2 above), the reform of the electricity sector brought benefits in terms of energy services offered to the different categories of consumers. As far as industry is concerned, several energy services in combination to electricity sales are offered against payment. These are essentially targeting at a more rational use of electricity (energy audits, technical consulting). There are also initiatives to improve the quality of services to the customers of the distribution companies. These initiatives include energy advice, information on more efficient electric appliances and faster intervention in case of power failure.

## **4. Other topics**

### **a. Power system security**

Because electricity cannot be stored, different systems or mechanisms are set up to ensure that electricity supply continuously matches electricity demand. These include, among others, the development of interconnection capacity between European countries (see Section 1b above), the constitution of reserve capacities of production and the implementation of a market balancing system.

Belgium is in a position to meet peak demand with its own production means. The difference between the total available capacity for internal demand on the one hand, and the maximum peak demand and the required reserve capacity on the other hand, represents some 7% of the total available capacity.

The respective tasks and obligations of the market players, and in particular of the TSO, regarding the balance between electricity supply and demand is described in the grid code. Since October 2001, ELIA has implemented a balancing mechanism. According to this system, the responsible parties may ask ELIA to compensate for the imbalance between their injections to and takings from the network against payment. The required price is related to electricity prices on the APX and Powernext power exchange markets.

### **b. Investments**

Since the implementation of the 1999 Electricity Act, there are no more obligations or incentives regarding investments in electricity generation for the market operators. The only exception concerns the requirement of minimum shares of electricity produced from renewable energy sources or by cogeneration specified in the regional decrees. Instead, decennial indicative programmes for electricity generation must be elaborated every three years. It defines the preferred power generation means based on technical, economic and environmental considerations. The first indicative programme is due for 2002.

The indicative programme is formulated by CREG in collaboration with the Energy Administration of the Ministry of Economic Affairs and after consultation with the TSO, the Federal Planning Bureau (FPB), CCEG, the Office for Sustainable Development and the regional Governments. It is subject to approval by the Min-

istry of Energy who also publishes the report. A draft of the first indicative programme has been produced at the beginning of 2002. At present, the final document is to be transmitted to the Ministry of Energy.

Despite the indicative character of the programme for electricity generation and regarding the long-term security of electricity supply, the Government has the possibility to launch an international call for tender for the construction of new electricity generation capacity. Moreover, new power plants are subject to authorisation by the Ministry of Energy.

As for investments in transport capacities, including interconnectors, the TSO will carry out a transmission development plan for the transport grid in collaboration with CREG. This plan has a seven-year horizon and must be updated every two years. It is subject to approval by the Ministry of Energy. The first plan is due within twelve months after the nomination of the TSO, hence in September 2003. Contrary to the programme for electricity generation, the transmission development plan is binding.



## Gas

### A. The gas sector in Belgium<sup>1</sup>

#### 1. Sector structure

Belgium has no indigenous gas production and relies exclusively on gas imports. Therefore, the gas sector is built up of only two major activities: network operations (transport, distribution and storage) and trade (purchase and supply).

Until recently, the gas industry was characterised by the existence of a dominant integrated private company, Distrigas, having a *de facto* monopoly on gas imports and supplies to large customers and distribution companies, and a legal monopoly on transport and storage operations. Similarly to the electricity sector, the principal aim of recent reforms was not the in-depth restructuring of the gas industry. There are, however, two exceptions: the unbundling of network system operations from sales activities and the removal of Distrigas' monopoly in transport and storage. At the distribution level as well, regional legislation provides for a mandatory legal separation between network operations and gas sales to eligible consumers.

At the end of 2001, Distrigas was legally unbundled into two separate companies: a gas transport company named Fluxys and a trade company with the existing name Distrigas. The legal unbundling was an initiative of Distrigas, anticipating the amended EU Gas Directive (see section 2a below). The Belgian legislation on gas only requires the separation of accounts relative to network operations and sales activities. The activities of the transport system operator (TSO) Fluxys include transport services, flexibility and transport-related services, such as terminal handling and storage of liquefied natural gas (LNG). The activities of the trade company Distrigas encompass natural gas sales in Belgium and in Europe, natural gas purchasing, LNG trade and shipping, and international transport capacity trade.

Distrigas and Fluxys have the same shareholders. The leading shareholder is Tractebel (46.8%), which is the energy branch of the French company Suez. The remaining shares are allocated between Publigaz (25%), Belgian Shell (16.7%), the stock exchange (11.5%) and the Belgian State who owns a single share, the so-called 'Golden Share'.

The structure of the natural gas supply market differs according to the annual consumption of the gas customers. Customers consuming at least 1 million m<sup>3</sup> of

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1. State of play November 2002.

gas per year (large industrial consumers, electricity producers and gas distribution companies) are supplied directly by Distrigas - or by other gas suppliers - and belong to the so-called 'transport' category. At present, five companies hold a licence to supply gas to the eligible customers of the 'transport' category. The other consumers are supplied by the distribution companies and belong to the 'public distribution' category, which is not eligible yet.

Although the municipalities do not have the legal monopoly in the distribution of natural gas, distribution is organised in a similar way as the electricity sector. Municipalities confer exclusive rights on distribution companies to distribute gas in their geographical area. Distribution companies are either formed by the local authorities themselves (pure intermunicipal companies) or co-owned by the electricity incumbent Electrabel (mixed intermunicipal companies). In 2001, there were 5 pure and 15 mixed intermunicipal companies. Consequently, Electrabel is also a major player in gas distribution.

Finally, the recent development of a gas wholesale market in Belgium at the hub of Zeebrugge is worth noting. Huberator, a subsidiary of Fluxys and Distrigas, operates the hub, which offers gas trading opportunities to gas and electricity companies. As a matter of fact, more and more European electric utilities are active in gas trading, in particular Electrabel, the dominant actor on the Belgian electricity market. This illustrates the development or the strengthening, all over Europe, of horizontal integration of gas and electricity activities.

## 2. Legal framework

### a. EU level

The main EU legislative framework at the basis of the reform of the Belgian gas industry is Directive 98/30/EC concerning common rules for the internal market in natural gas.<sup>1</sup> The directive introduces competition in the European gas industry. It lays down the rules relating to the organisation and functioning of the gas market, access to national gas transport systems, the operations of systems, and the criteria and procedures applicable to the granting of authorisations for transport, distribution, supply and storage of natural gas.

With the aim of speeding up the liberalisation of the gas market and integrating other policy objectives (e.g. security of energy supply, consumer protection), the European Energy Council approved the draft of a new directive on 25 November 2002.<sup>2</sup> The key elements of this draft are:

- a faster time schedule for the full opening of the electricity market (full competition by 1 July 2007);
- legal unbundling between network management and production and sales activities;
- regulated and published access tariffs;

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1. Official Journal L 204 of 21 July 1998.

2. Based on COM(2002)304 final of 7 June 2002: Amended proposal for a Directive amending Directives 96/92/EC and 98/30/EC and for a regulation on conditions for access to the network for cross-border exchanges in electricity.



- establishment of an independent regulatory body<sup>1</sup>;
- additional measures regarding the security of energy supply and public service obligations (PSO).

## **b. Belgian level**

Similarly to the electricity sector, the transposition of the European Gas Directive into Belgian law implies the adoption of both federal and regional legislation. The federal legislative and administrative provisions focus on gas transport, gas supply to the 'transport' category of customers, long term planning and competition issues. The regional legislative and administrative provisions deal with gas distribution, gas supply to the 'distribution' customers and the rational use of energy (mainly cogeneration).

At the federal level, Belgium has implemented Directive 98/30/EC through primary legislation in 1999 by amending the Gas Act of 1965.<sup>2</sup> In July 2001, new amendments to the Gas Act were adopted.<sup>3</sup> These amendments included, among others, eligibility thresholds, access to the network, unbundling and financing of public service obligations (PSO). Secondary legislation is being worked out but is not completed yet. Belgium still has to adopt Royal Decrees related notably to the Code of Good Conduct for the access to the transport network.

At the regional level, a decree relating to the organisation of the gas market in Flanders (the Gas Decree) was adopted in 2001 and secondary legislation is being completed.<sup>4</sup> The Walloon government approved a draft decree in 2001 and the region of Brussels-Capital a draft order in October 2002. Both texts are likely to be adopted in early 2003.

## **c. Role of the State and the market regulators**

The role of the federal Government relates mainly to the security of gas supply, large infrastructures for transport and the setting of tariffs. The Belgian State holds one specific preferential share, the so-called 'Golden Share' in both Distrigas and Fluxys. This share grants the Government the power of veto in matters of national energy policy. Moreover, just as for the electricity sector, the Ministry of Energy is responsible for granting transport and supply licences. The Ministry of Economic Affairs fixes maximum prices for gas sales to captive customers. The 1999 Gas Act also gives the possibility to the Ministry of Economic Affairs to fix maximum prices for gas supply to eligible consumers, but no decision is taken yet on this issue.

As for the regulation and control of the gas market, Belgium has five bodies, which are the same as for the electricity market: four regulators for the opened segments of the market (CREG at the federal level and VREG, CWaPE and BIM/IGBE at the regional level), and CCEG for the captive segments of the market. Their roles are similar to those for electricity (see Chapter III, Section A2c).

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1. Independent of the interests of the electricity industry and of politics.  
 2. Official Journal of 11 May 1999 and 30 June 1966, respectively.  
 3. Official Journal of 20 July 2001.  
 4. Official Journal of 3 October 2001 and 18 October 2002, respectively.

### 3. Progress in market opening

According to present legislative provisions, the time schedule for opening-up the gas market is summarised in Table 14. At the moment, electric utilities, consumers connected to the transport network and consuming more than 5 million m<sup>3</sup> per year and cogenerators located in Flanders are eligible. Because no eligibility thresholds have been decided or adopted yet at the regional level, customers of the public distribution have no freedom to choose their gas supplier.

**TABLE 14 - Eligibility thresholds for gas in Belgium**

Category	Transport		Public distribution		Directive 98/30/EC	"New" EU Directive
	Federal level	Flemish Region	Walloon Region (proposal)	Region of Brussels-Capital (proposal)		
> 25 mio m <sup>3</sup>	Eligible				Eligible	
Cogeneration and power plants	Eligible	Eligible	Eligible*		Eligible	
> 5 mio m <sup>3</sup>	Eligible				2008**	
> 1 mio m <sup>3</sup>	October 2006	January 2003	Eligible*			
Public distribution	October 2006					
Non-domestic clients						July 2004
All clients		July 2003				July 2007

Source: FPB/BfP.

\* According to the proposal, these consumers will be automatically eligible as soon as the decree is published in the Official Journal.

\*\* As an intermediate step, consumers consuming more than 15 mio m<sup>3</sup> per year shall be eligible by 2003.

The adopted time schedule translates into the following theoretical market opening: 47% of total gas consumption in 2000 and 58% in 2001 and 2002. Nevertheless, there have so far been very limited changes to the gas supply market. The eligible gas market is still dominated by the incumbent utility Distrigas. In 2000 and 2001, only two large industrial consumers have received gas from other suppliers whose market share can be estimated at less than 5% of the eligible volume. There are several reasons for this. First, the implementation of the EU Gas Directive in Belgium is still at an early stage. In particular, major pieces of law regarding access to the transport network are missing (regulated tariffs, transport licenses). The resulting uncertainty makes potential suppliers to adopt a cautious attitude.

Other reasons for the low pace in market opening include:

- the fact that a number of eligible gas buyers are locked into medium term contracts with the incumbent. Consequently, only those with short-term supply contracts with the incumbent can renegotiate the terms of their contract (in the form of price reductions for instance) or switch to a new supplier;
- the horizontal integration between the incumbent Distrigas and gas distributors. The ultimate shareholder of Distrigas, Suez, has interests in the majority of the gas distributors through Electrabel;

- the link between the gas buyer/importer Distrigas and the incumbent electric company Electrabel through a common ownership structure (the French company Suez). Electrabel represents about one fifth of Distrigas' sales in Belgium. Moreover, Electrabel is active in gas trading;
- the lack of quality conversion services between the high and the low calorific gas grids. This leads to the impossibility for high calorific gas suppliers to access the low calorific gas grid (in the North East of Belgium). This situation puts many customers out of reach;

Notwithstanding the slow progress in market opening, there are now five companies that hold a gas supply licence and initiatives from distribution companies have already taken place in view of the forthcoming eligibility. The latter is the case in Flanders, where the Luminus consortium covers 8% of the public distribution of gas.

## B. Specific topics concerning gas

### 1. Access to the network

According to the Belgian Gas Act, the access to the gas transport network is regulated: the structure of network tariffs is specified by Royal Decree and the regulator should approve the tariffs proposed by the gas TSO according to this structure.<sup>1</sup> Regulated tariffs apply to the *connection to and use of* the transport network and LNG infrastructure, and to ancillary services. On the contrary, tariffs for gas *transit* are negotiated between the parties. The regulator approved the transport tariffs in September 2002. These tariffs are published on Fluxys' website and came into force in November 2002.

The new transport tariffs are not distance-related and cost-reflective. This type of tariffs should facilitate the development of competition. Indeed, since the Belgian gas network has several entry nodes, distance-related tariffs may not reflect the actual transport costs because the physical path of gas transported does not always match the contracted path. On the contrary, the balancing regime set up by Fluxys that requires transport users to balance supply and demand over very short periods of time (hourly) and to purchase flexibility services in advance, is not likely to offer favourable conditions for new market entrants.

### 2. Public Service Obligations

The Belgian Gas Act includes general provisions related to PSO to be imposed on gas transport, distribution and supply companies. For instance, the tasks and obligations of the holders of transport licences relate to the extension of the existing infrastructure provided the investment is economic. The tasks and obligations of the holders of a supply licence deal with the regularity and quality of the supply and the requirement to supply distribution companies and customers connected to the gas system. For the moment, a Royal Decree precisely defines the PSO of the

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1. Official Journal of 23 April 2002.

market players as regards the captive customers and the way they will be financed, but no PSO are specified yet for the eligible customers.<sup>1</sup>

At the regional level (Flanders), similar provisions exist for the distribution system operators (DSOs) and for the holders of a supply licence. But the Gas Decree includes also provisions for social and environmental measures, such as the guarantee of a minimum gas supply, programmes for the rational use of energy, and the setting up of a heat-certificate system to promote cogeneration. Secondary legislation about definition and implementation issues is awaited. The long-term security of gas supply is also considered a PSO. This issue will be dealt with in Section 4.

Regarding the geographical coverage of the gas pipeline system, Belgium has a well-developed gas network. By the end of 2001, about 60% of the households were connected to the gas grid. The transport and distribution networks continue to be modernised and developed, so that an increasing number of industrial and domestic consumers will have access to the gas network.

### 3. Welfare effects

#### a. Prices

One expected benefit from market opening comes from reductions in consumer gas prices. The extent to which price reductions occurs effectively depends on the cost structure of gas tariffs and on the evolution of the cost elements, namely border price, transport/wholesale/storage costs and distribution/retail costs. For large consumers, the border price is usually the largest element of the total price, while for domestic customers, border price and distribution/retail costs are almost equally important, namely around 40% each of total price excluding taxes.

The liberalisation process of the gas industry is not expected to affect the border price of gas significantly, at least in the years to come. Indeed, there is no evidence of a fundamental move away from gas pricing according to its market value (oil price indexation). In the short period since the market opening, oil prices were high compared to the prior period. Consequently, the border price of gas increased and so did all consumer gas prices.

In contrast, gas transport tariffs decreased steadily during 2001-2002 as a result of liberalisation. For instance, the new regulated transport tariffs that came into force on 1 November 2002 led to a reduction of 7% compared to previous tariffs. Nevertheless, the 2001 reduction in transport tariffs did not compensate for the high border prices of gas and consumer gas prices remained high in comparison to the levels that held before the market opening.

Figures 17 and 18 show the evolution of gas prices in Belgium and its neighbouring countries for two categories of *captive* consumers: households with an average annual consumption of 83.7 GJ, and industrial customers with an average annual consumption of 41,860 GJ.<sup>2</sup> Both categories of consumers are standard consumer categories for Eurostat. The figures are also compared to the EU average. In view

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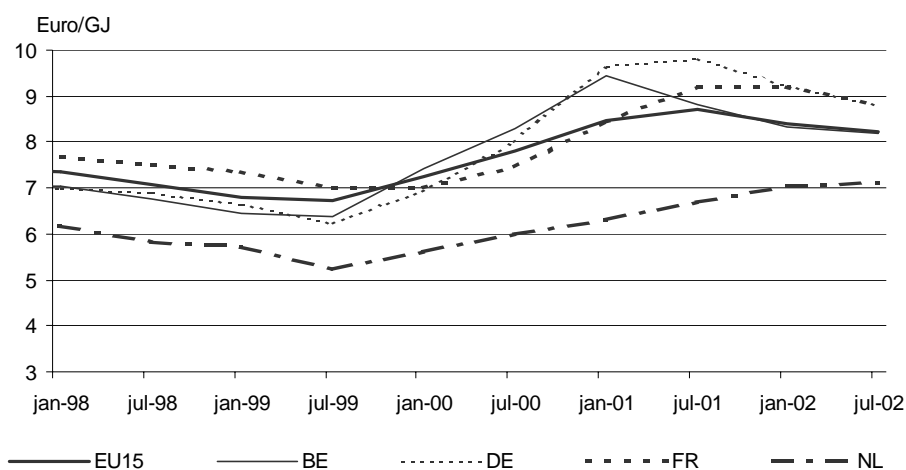
1. Official Journal of 6 November 2002.

2. *I.e.* about 1 million m<sup>3</sup>.

of the short period over which the gas markets have been open, price trends must be analysed with caution, and the extent to which major differences across countries can be attributed to market opening is all but straightforward.

In all countries, prices rose during 1999-2001 as a result of the increase in oil prices, but then declined rather steadily until January 2002. For countries in the Euro zone, the increase in gas prices was amplified by the falling exchange rate between the euro and the US dollar. Until the beginning of 2001, prices for the selected categories of consumers were higher in Belgium than in the neighbouring countries except Germany, and than the EU average. The gap was also more important for households than for industry. However, during 2001, Belgian gas prices decreased faster than in the other countries and turned below the EU average for both categories of consumers. The reason for this development is a change in the tariff structure for captive customers.

**FIGURE 17 - Gas prices for domestic consumers (83.7 GJ/year)\***

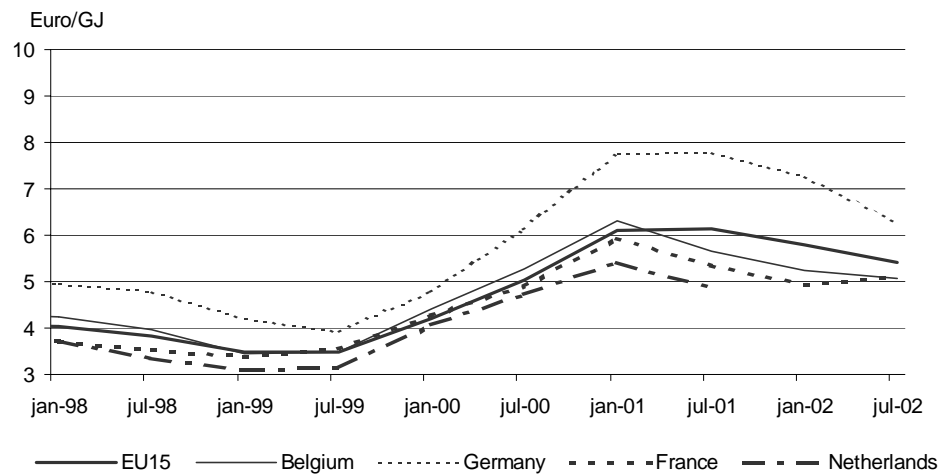


Source: Eurostat.

\* Current prices excluding VAT and taxes.

The price increase was stronger in relative terms for industry than for households due to the more important role of border prices in the price structure of the latter category of consumers. Gas prices for households increased by some 27% in Belgium between January 1999 and July 2002, which is in the range of increase in the neighbouring countries. Gas prices for industry increased by 47% in Belgium over the same period to be compared to increases of some 50% in France, 55% for the EU average and 49% in Germany.

**FIGURE 18 - Gas prices for industrial consumers (41860 GJ/year)\***



Source: Eurostat.

\* Current prices excluding VAT and taxes.

The development of the short-term or wholesale gas market of Zeebrugge may give some scope to reduce the average gas supply price. The possibility for Distrigas and other potential gas suppliers to buy significant volumes of competitively priced short-term gas on the Zeebrugge spot market had a beneficial effect on the average gas import price. The resulting price reductions are then passed on to the gas price to keep or to attract *eligible* customers. The beneficial effect of short-term gas supply markets will, however, remain limited because long term contracts will continue to dominate the gas supply portfolio in order to ensure the security of gas supply.

When gas prices decrease on the spot market, *non-eligible* consumers cannot benefit since the tariff structure does not take into account the spot market prices. Instead, their gas import prices are determined on the basis of long-term supply contracts following the oil prices. Therefore the Government decided in July 2000 to adapt some of the other elements determining the consumer price, e.g. those for personnel and material costs. This was done in the perspective of the accelerated market opening and in the context of the then sharply increasing oil prices. When oil prices started to fall in 2001, the Belgian gas prices could thus fall stronger than the prices in the neighbouring countries. The price cuts apply mainly, but not only, to domestic consumers with low income levels.

**b. Quality**

One may fear that productivity policies in the interest of competitive pricing in transit services and third party access, operated by the gas utility company with regard to network operations and construction activities, are made at the expense of safety and the environment. So far, however, no negative impact on the safety and quality of gas supply, nor on the environment can be noticed. The TSO took several initiatives to ensure safety and environmental protection, namely:

- the development of an integrated safety management system since 1999, which copes with all aspects of health and industrial safety at work;

- the regular inspection of the gas infrastructure to identify elements that may present a safety risk in future;
- the launching of an environmental action programme in 2000;
- the introduction of an environmental quality insurance system, covering all gas facilities of the TSO.

#### 4. Other topics: long-term security of natural gas supply

Because Belgium has no indigenous gas production and relies solely on imports, the 1999 Gas Act requires the elaboration of a ten-year indicative plan for the Belgian gas supply, in order to monitor the long-term security of natural gas supply. The plan identifies the necessary investments to safeguard the functioning of the gas market and maintain security of supply. It must be updated every three years.

The indicative plan is formulated by CREG (2001b) in collaboration with the Energy Administration of the Ministry of Economic Affairs, after consultation with the gas industry (Figas), the Federal Planning Bureau (FPB), the CCEG, the Office for Sustainable Development and the regional governments. It is subject to approval by the Ministry of Energy who publishes makes the report. The first indicative plan was submitted to the Ministry of Energy in October 2001.







## Postal services

### A. The postal sector in Belgium

#### 1. Sector structure

##### a. The structure and dynamics of the postal sector

In the context of the present paper, the postal sector is atypical in the sense that it does not possess a physical infrastructure to convey its services. It rather makes use of the infrastructure of road, rail and air transport, with post-offices, postboxes and sorting-centres as the nodes. Nevertheless, this does not take away that the postal sector is a sheer example of a network industry. Just like the other sectors discussed in this paper, the sector consists of a system of nodes and links along which, in this case, the postal items are conveyed.

A second atypical feature is that an analysis according to a vertical segmentation is not useful for the moment. Such a segmentation gives a chain of four activities: (1) collecting; (2) sorting; (3) transporting; and (4) delivery of letters, parcels and printed matter. As these activities are usually integrated into one company exploiting its own network, there is presently no need to make a distinction between the four activities.

More useful than the vertical is the horizontal segmentation. In that case a basic distinction is made between postal services, which still act in a reserved market; and parcel and express services, which act in a free market. The reserved market holds for all postal items (except express letters) up to 100 grammes, to be later reduced to 50 grammes. In Germany, the Netherlands and most Scandinavian countries, steps towards this reduction have already been taken. In Belgium, the 100 grammes threshold is strictly applied.

The reserved market is served by a state monopoly (De Post / La Poste). For parcel and express services, five companies possess 62% of the market in Belgium, leaving the remaining 38% for a few hundred smaller companies.<sup>1</sup> The five large companies are the four integrators (DHL, Fedex, TNT and UPS) and railway-subsidiary ABX. Besides these large companies, there is a number of smaller companies active in the Belgian market. Finally, numerous small courier services are operating locally. In sum, there are about 700 companies active in the sector. The private segment of the postal sector is growing steadily. Employment in this segment increased from 1,700 in 1993 to 6,200 in 1999.

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1. The parcel and express turnover of De Post itself is thus not included in this 62/38 ratio.

Further specific features of the postal sector are (IEI, 1999; Anderloni & Pilley, 2002):

- a natural monopoly in the last segment of the chain, which is delivery;
- a high labour intensity: in general about 80% of the costs are labour costs;
- a stagnant demand caused by the growth of fax and email services;
- a technological development allowing for cost savings;
- a uniform pricing;
- a service based on confidence (privacy of letters).

The postal sector has become a dynamic sector. Several developments brought about the end of the era of simple mail delivery. These developments imply big challenges for both public and private entrepreneurship. Major determinants are:

- the genesis of niche markets: parcel services, express services, banking services, logistic services, electronic services, graphical services, consultancy, printing, archiving, etc.;
- increasing cross-border services as a result of the globalisation of the economy;
- the introduction of new technologies: automatic sorting, tracking & tracing, computerising front- and back-offices.

#### **b. The incumbent (De Post/La Poste)**

The Belgian incumbent for postal services (De Post/La Poste) is limited company since 2000. It is not quoted, all shares are owned by the Belgian State.<sup>1</sup> Despite this public ownership, De Post is independent from the State. The law only imposes universal and public service obligations (USO/PSO), among which are mail delivery and banking services. The conditions under which these USO/PSO are carried out are laid down in quinquennial management contracts with the State. The first covered 1992-1996, the second 1997-2001, the present 2002-2006.

The company is subdivided into a series of business units that are grouped into three basic categories:

1. *Mail*: the activity chain for letter-post, printed matter, newspapers, magazines, direct mail and non-addressed mail, international consignments included;
2. *Retail*: management and operation of post-offices, savings-banking, property and life insurance, and miscellaneous financial services such as money orders and management of State accounts;
3. *New business*: e.g. printing & archiving, electronic services, direct marketing, parcels and express mail.

Many of the above activities are carried out by subsidiaries of De Post. There are more than 15 of such companies, more than half of which are fully owned.

- Fully owned are companies active in international consignments, printing & archiving, electronic services, direct marketing, parcels, express mail and publicity.
- Partly owned (50% or more) are companies active in distribution of newspapers and magazines, administrative mail, post-office outlets, banking, insurance and digital certification.

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1. Approved by Royal Decree of 17 March 2000.

In the context of the forthcoming market opening a strategic plan was developed in 2001, and revised in 2002. This plan, elaborated in conjunction with a renowned consultant, aims for a thorough modernisation of the company. An extensive investment programme will bring about significant improvements during 2001-2003. For an amount of almost 600 million euro, De Post wants to improve its efficiency in such a way that it can compete with the best foreign mail operators. Of this amount, 250 million will be invested in modernising the sorting centres. 10 million is foreseen for automation of the process of 'door-products', such as parcels and registered letters. The investment programme also includes 125 million euro for ICT infrastructure in the post-offices, and 150 million for modernising the post-offices. 33 million euro will be spent on a new distribution network for express mail, and 8 million on e-fulfilment. To finance the investments, De Post will get a 300 million euro capital injection from the State.

## 2. Legal framework

### a. EU level

The gradual opening of the European postal market was started by the Council with Directive 97/67/EC. This directive did not explicitly institute market opening yet, it rather shaped conditions for an adequate opening in later years. Important items concern the universal service and the reserved area.

- The universal service should, in short, guarantee a nationally covering network for the daily delivery of items up to 10 kg. Among others, the directive sets minimal conditions, pricing principles, accounting transparency, quality standards and quality measurement.
- The reserved area involves that the treatment of domestic mail up to 100 grammes may be exclusively awarded to the contractor of the universal service.<sup>1</sup> Implicitly, the market is thus opened for items above 100 grammes and for all outward international mail, but this concerns only a very small part of the market.
- Furthermore, the nomination of independent national regulators is stipulated.

When this directive is strictly followed, the following situation holds: the government has contracted a universal service provider for postal services, better known as the incumbent. For all items up to 100 grammes, this incumbent has the exclusive rights. For items between 100 grammes and 10 kg, the market is open for competition, but the incumbent should guarantee the universal service.<sup>2</sup> For items above 10 kg the market is open.

The actual market opening started recently with Directive 2002/39/EC. In fact, this directive is an amending act to the prior directive. However, a very important amendment is the timetable for the market opening for items below the threshold of 350 grammes which was prevailing in 2002. By January 2003, the reserved area was cut down to items of at most 100 grammes. In 2006 the threshold will be further reduced to 50 grammes.<sup>3</sup> No full market opening is foreseen yet, but this will

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1. Moreover, a second criterion holds: the price of delivery is at most three times the price of delivering a standardised letter. This basically excludes express mail from the reserved area. Also out-bound cross-border mail is excluded from the reserved area.

2. For international mail the threshold is 20 kg.

3. Second criterion: the price of delivery is at most two-and-a-half times the price of delivering a standardised letter.

not happen before 2009. According to the directive, non-reserved may not be subsidised, whereas services within the reserved area may. The directive also allows for a monitoring on antitrust rules. Despite the market opening, there is no de-traction from the guarantee of universal service as stipulated in Directive 97/67.

## **b. Belgian level**

In Belgium the two EU directives were turned into law by Royal Decree in 1999 and 2002, respectively. A regulator, the Belgian Institute for Post and Telecommunications (BIPT/IBPT), was already nominated in 1991. As already indicated in Chapter II (Section A3c), a review was started that will make this regulator fully independent from the Government.

Besides the implementation of the EU directives, important legal arrangements are made in Acts of 1956, 1970 and 1991. The 1956 Act holds fundamental legislation that defines and determines everything concerning the postal service. The 1970 Act determines the tariff system. The 21 March 1991 Act concerns the reform of specific public enterprises, such as De Post, NMBS and Belgacom. This act lays down the relationship with the Government and establishes the regulator, BIPT. This independence, however, is limited by that same act because De Post must fulfil USO and PSO. The rules and conditions under which De Post must carry out these obligations are laid down in quinquennial management contracts.

The present management contract covers 2002-2006. The contract sets the rules concerning the PSO. Basic tasks are the daily mail delivery for the reserved area, the free provision of financial services and some specific obligations for the State. For the losses incurred in fulfilling the PSO, the government pays a compensation. This compensation is annually determined by the Council of Ministers, and was settled at 227 million euro for 2002. Besides, the contract fulfils the criteria for USO determined by the EU directives, which are quality, universality and financial accessibility. Noteworthy is the emphasis on quality. In 2006, 95% of the preferential items should be delivered the next day (for 2001 this was estimated at 75%).<sup>1</sup> Furthermore, frequent measurements of customer satisfaction should be carried out by the regulator. Finally, the contract sets basic principles for pricing, and for the density of the post-office network.

Besides the EU directives and the 21 March 1991 Act, two 1956 Acts and 1970 Decrees are of importance. They concern De Post as a company, and hold regulations on the postal service and postal cheques.

## **c. Summary role of the government**

The Belgian government is owner and authority of the postal services. As an owner, it may influence appointments of the board and management of the company. However, it also has to take account of the independence of the company. As an authority it sets the USO and PSO, and serves as a market regulator. USO and PSO are set in the quinquennial management contracts, including the financial compensation the State grants for the fulfilment.

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1. In the present year, 92% of the items should be delivered the next day, as measured by an internationally standardised method.

The tasks of the market regulator are assigned to BIPT. The tasks of this regulator are listed in detail in the 21 March 1991 Act. Basically, it monitors the sector and serves as a house of appeals. Up to now BIPT has directly fallen under the control of the government, so that it could not be labelled as independent. However, a bill was recently approved that will change its statute. The same type of organisation will be adopted as is applied for other regulating bodies, such as the Banking and Financial Commission (CBF) and the Commission for the Regulation of Electricity and Gas (CREG). The BIPT will become more flexible, especially as regards the recruitment of staff. This will put the institute in a better position to adapt to the unceasing dynamics of the post and telecoms industries. For further information of BIPT and its reform, see Section A3c of Chapter II.

### 3. Progress in market opening

The market opening and universal service provision in Belgium are precisely the same as required for by Directive 97/67. The government has not decided to accelerate the market opening. On the other hand, it has also not decided to extend the threshold for USO beyond 10 kg.<sup>1</sup> The first stage of the further market opening was realised in January 2003, the next stage will be realised in 2006.

As parts of the market are already opened, a number of competitors is active on the Belgian market. These companies are potential competitors for De Post when the market opening will be extended. The four world-market leaders for parcels and express mail have built up their networks in Belgium, and employ almost 6,000 people. Furthermore, foreign incumbents, either in joint venture or independent, are becoming active in Belgium.

## B. Specific topics concerning the postal services

### 1. Universal service obligations

Postal services have USO. They are imposed on the EU level by Directive 97/67 and adopted as an amendment of the 21 March 1991 Act. The directive sets common rules concerning the definition, criteria, pricing principles, quality and regulation of the universal service.

- *Definition:* Postal services must be permanently available for all users at affordable prices and of specified quality, and at all places on a member state's territory, even when and where it is commercially unattractive. The density of post-office and pillar-box networks must fulfil the needs of the customers.
- *Criteria:* During five days per week, there must be at least one collection and one delivery per day. The universal service concerns all consignments up to 10 kg, registered letters and items with declared value. Member states have the freedom to extend the service to at most 20 kg. Cross-border consignments are included in the universal service. The State supervises the delivery of the universal service. The State may organise

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1. Extension to 20 kg is allowed for.

financial compensation when the service can only be delivered at too high cost.

- *Pricing principles*: Prices must be affordable, cost-based, transparent and non-discriminatory. Companies must have separate accounts for universal and non-universal, and for reserved and non-reserved services.
- *Quality*: The member states must establish quality standards concerning delivery time, regularity and reliability. At least annually, an independent body must examine the performance on these standards. Customer complaints must be treated in a transparent, simple and inexpensive way.
- *Regulation*: Every member state nominates at least one legally and functionally independent regulator for the postal sector. They must take care of the fulfilment of the directive and may also serve as an antitrust authority.

For Belgium, fulfilment of the criteria concerning quality, universality and financial accessibility is guaranteed by the third management contract. The Belgian law does not give the regulator the role of antitrust authority.

## 2. Public service obligations

Postal services have PSO that typically include the USO. They are imposed on the national level by the 21 March 1991 Act and the management contracts. This contract combines the social role of De Post with modern customer-oriented services that fulfil the highest quality standards. The services concern mail delivery, financial services and services of general interest. The contract also indicates the reserved area, the State compensation, the quality standards and standards for the post-office network.

- *Mail delivery*: This includes also newspapers and magazines. Note that separate agreements on the conditions of the service are concluded with the State and the publishers;
- *Financial services*: De Post must guarantee the universal *banking* service in the sense that every citizen must be able to do financial transactions via a bank account and at an affordable cost. Furthermore, De Post must take care for the payment of pensions and disability benefits. Special attention will be paid to the safety of the postmen carrying this money;
- *Services of general interest*: Among the tasks imposed are the furnishing of post-offices with infrastructure that facilitates the communication between the citizens and government, for example Internet terminals;
- *Reserved area*: The maximum criteria of the respective EU directives are applied (100 grammes or three times the price of a standard letter);
- *Financial relations with the State*: The State pays an annual compensation for the losses on public services that cannot be rendered at a profit. The compensation is based on the actual cost as derived from an analytical accounting system. The actual amount is determined annually. For 2002 it was 227 million euro;
- *Quality standards*: Much attention is paid to the relation with the customers. For example, staff will be educated in customer relations. New quality standards are set. In 2002, 91% of all (priority) items must be delivered the next day. In 2006, this must have gradually grown to 95%. When the standards are not met, financial sanctions are imposed. Furthermore, BIPT and De Post itself will frequently measure customer satisfaction;

- *Post-offices*: Every municipality must have at least one post-office or postal service outlet, which must fulfil the USO and PSO. The service outlets (a new phenomenon for municipalities too small for a full post-office) will be developed in an active and creative way, and in co-operation with other public services. All offices will be accessible for the disabled.

### 3. Welfare effects

As there has been hardly any market opening yet, at least in terms of volume and turnover, no welfare effects could be measured for the moment. Nevertheless something can be said about prices and quality in relation to the management contract.

#### **a. Prices**

As in many other countries, a system of uniform prices is employed. This implies that for each given category of mail there is only one price, irrespective of whether the mail is delivered in densely urbanised or in remote areas. Postal tariffs in Belgium are somewhat lower than in other countries. This may, however, be more a consequence of the relatively short distances than of a higher level of efficiency.

#### **b. Quality**

As shown above, the management contract demands for a number of measures to enhance quality. The number of items delivered the next day must increase from 91% in 2002 to 95% in 2006. In practice, however, it is hard to meet the standard. According to the measurement of De Post itself, only 85% of the mail was delivered the next day in 2001, but this increased to 92% during the first half of 2002. According to an independent measurement that applies another, internationally standardised, method, the 2001 performance was even lower: 79%. To become better able to meet the standards, De Post recently introduced a distinction between priority and non-priority mail. As the next day delivery standard only holds for priority mail, De Post may then concentrate on meeting this strict standard for the first category only.







## Railways

### A. The railway sector in Belgium

#### 1. Sector structure

##### a. The structure of the railway sector

In the railway sector a basic distinction exists between network management and train operations. Besides, there are secondary activities such as station operations and property management, and the activity of train operations is usually subdivided into passengers and freight. According to EU legislation, there should at least be separated accounts between the two basic segments, and within the operations segment between public services and other operations (usually passengers *versus* freight). Member states, however, have the freedom to make further (accounting and institutional) separations in their railway system.

In Belgium the EU directives have always been followed in the strictest sense. Hence, there are separate accounts for network and operations, and for public services and other operations, but the incumbent (NMBS/SNCB) remained one institutional unit. Other member states, especially the United Kingdom, the Netherlands, Germany and Sweden, have gone further. In these countries several forms of institutional breakdown of the incumbent and tendering of train operations were put into practice.

The railway system, especially as regards freight transport, is considered an international system. However, because of differences in technical standards, borders still are serious barriers. This requires for costly investments in special locomotives, and timely halts when crossing a border. In the context of market opening the concept of the Trans European Rail Freight Network (TERFN) is launched by the European Commission. From March 2003, there must be an open market for freight transport on this network. However, this solves only a part of the interoperability problem because many of the technical differences remain. For passengers, no market opening is foreseen yet.

The railway system is regarded as a key for sustainable mobility. On both the local and national level, investments in and use of railways may help to reduce road congestion. Moreover, railways are less environmental unfriendly than road transport. Railways, however, suffer from a lack of competitiveness to other means of transport. Because of this the railways market share is even diminishing. The last section of this chapter is devoted to the evolution of railways *vis-à-vis* other means of transport.

**b. The incumbent (NMBS/SNCB)**

In Belgium, virtually the whole railway system is run by NMBS.<sup>1</sup> For freight only two other companies have a license to operate trains. The one is ICF, an international co-operation in which NMBS participates. The other is an independent company that started its operations in April 2002 and is the first competitor for NMBS. For domestic passenger services there is no market opening as there is no EU directive imposing this. International passenger trains are operated by separate companies, which are cooperatives of the respective national incumbents.

Virtually all shares of NMBS are held by the State. Only 0.2% is held by other shareholders, who are all private persons. In its turn, NMBS is shareholder of more than 200 companies in Belgium and abroad. Of these companies, about 140 are consolidated into the NMBS balance sheet. They represent 9% of the balance-sheet value.

The company is subdivided into the following divisions:

- *Domestic passenger transport*: this includes the public service obligations (PSO), which are train operations and network maintenance;
- *International passenger transport*: Eurostar, Thalys, TGV and conventional day- and night- express trains;
- *Freight transport*;
- *ABX Logistics*: actually a road transport company with hardly any direct link to railway operations;
- *Telecommunications*: a large optical fibre network, originally built for internal communication, but also offered for use by telecoms operators.

Despite the public ownership, NMBS is administratively and legally independent from the State. The law only imposes PSO, which are the provision of domestic passenger transport and the maintenance of the railway network. The conditions under which these PSO are carried out are laid down in quinquennial management contracts with the State. The first covered 1992-1996, the second 1997-2001, the third was still being negotiated in late 2002.

NMBS is faced with the following challenges:

- *Indebtedness*: NMBS is heavily indebted because in recent years many investments were financed with borrowed capital instead of State transfers. To get out of this situation, the Government has announced to gradually take over the debts, as recommended by the EU and already done in other countries. A condition for the takeover is that the total public debt has fallen below the threshold of 100% of GDP, which is not expected to happen before 2005;
- *Passenger traffic*: In 2000, the Government imposed an objective to increase transport by 50% and committed itself to contribute additional amounts for investments. In ten years time, this additional contribution would gradually increase from 25 to 250 million euro per year. Nevertheless, heavy efforts are required to attract significantly more passengers than the 'natural' growth;
- *Freight market opening*: Given the strategic location of Belgium in the European transport market, the freight liberalisation of 2003 involves both opportunities and threats for NMBS. To cope with the new situation, the cargo department needs a thorough restructuring;

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1. NMBS = Nationale Maatschappij der Belgische Spoorwegen; SNCB = Société Nationale des Chemins de Fer Belge; in English: Belgian National Railway Company.

- *Social relations*: Given the historic power of the trade unions it is important for management to retain on good terms with them;
- *Institutional unity*: Contrary to many other European countries, NMBS remains one institutional unit. The question, however, is whether this is tenable in the long run, given the EU requirements to open the freight market and the demands of some to regionalise part of the activities;
- *Regionalising*: There is political pressure to give the Belgian regions (at least) more influence in financing investments and operations.

Investment plans include the completion of the three high-speed lines (in the directions of Lille, Cologne and Amsterdam); the development of a metropolitan commuter network for Brussels; the modernisation of some major stations; and the removal of bottle-necks for freight operations. The total amount of investments is divided among the Flemish and Walloon regions according to a 60/40-ratio. The investment plan and regional division of the funds is based on a recent agreement between the federal Government and the regional Governments on railway investments for the period 2001-2012. Furthermore, NMBS recently unfolded a new strategy for the future. Market share and productivity must be increased. The freight section will be reorganised. To safeguard the company's financial health, more public compensation is needed for carrying out the PSO.

## 2. Legal framework

### a. EU level

The gradual liberalisation of the European railway market was commenced by the Council with three directives (91/440/EEC, 95/18/EC and 95/19/EC). These directives did not institute market opening yet, they rather shaped the conditions for market opening in later years. The most important items from Directive 91/440 are:

- *Separation of interests*: railway companies must be administratively independent and should make a separation (at least in their accounts) between network management and train operations;
- *Access to the network*: international cooperatives in passenger and freight transport and international combined transport services have the right of access to the national railway networks;
- *Public service*: obligations and other agreements must be concluded according to the principles that apply to commercial companies;
- *Healthy finances*: this should be assured by adequate financial structures, and may not be hampered by excessive debts.

The other two directives are technical supplements to 91/440. Directive 95/18 arranges the granting of licences. It gives the conditions a railway company must fulfil to obtain a license, and regulates the safety certificates. Licenses and certificates are to be granted by a government-nominated body. Directive 95/19 arranges the assignment of capacity (slots on the railway network) to the users, and the imposition of a levy for the use of the infrastructure. To this end, each country must nominate an independent network manager, and establish a capacity manager and a house of appeals.

The only market opening that was instituted by the three directives was the right of access for international cooperatives and operators in combined transport. The actual market opening started with another set of three directives (2001/12, 2001/13 and 2001/14). This package partly gives further arrangements to the prior directives. However, more important is the timetable for the opening of the international rail freight market. By March 2003, this market opening must have taken place on a specific set of main lines, named the Trans European Rail Freight Network (TERFN). In 2008 this will be followed by a full market opening. For passengers and domestic freight, no market opening is foreseen by the EU yet.

#### **b. Belgian level**

In Belgium the EU railway directives have been followed in the strictest sense. The first package of three directives was transposed into Belgian law by Royal and Ministerial Decrees during 1997-1999. This implies that the conditions for market opening are implemented, and there is some room for entry in the freight market. The conversion of the other three is in process. In July 2002 the Government approved a conversion model, but further legislative texts are still awaited. Nevertheless, under normal circumstances the first stage of freight market opening in March 2003 is assured. By then, a regulator must become active. This regulator will be in charge of capacity management, infrastructure levies and safety certificates. Furthermore, a house of appeals will be established. At present, regulatory tasks are still carried out by the Ministry of Transport.

Besides the implementation of the EU directives, important legal arrangements are made in the 21 March 1991 Act on the reform of public enterprises. This act lays down the administrative and legal independence of NMBS from the Government. This independence, however, is limited by that same act because NMBS must fulfil PSO, in particular domestic passenger transport and network maintenance. The rules and conditions under which NMBS must carry out its PSO are laid down in quinquennial management contracts.

The present management contract covers 1997-2001, whereas a new one is being negotiated. The 1997-2001 contract sets basic principles for the governance of the company, such as a strive for efficiency and the fulfilment of tasks imposed by law. More important, the contract contains minimum requirements concerning the PSO and an investment plan for infrastructure and rolling stock. The contract also sets the financial compensation for these tasks. Furthermore, the company must fulfil tasks for the need of the nation (defence, mail transport, *etc.*), enhance rules of conduct and quality, and make strategic plans. The company has the freedom of price setting, albeit in coordination with the Government. In 2000 there have been two supplements to the contract. Among others, these supplements contain agreements on new investments in infrastructure and rolling stock.

Besides the EU directives and the 21 March 1991 Act, some further legal texts are of importance:

- In 1997 a company named HST-Fin was established by law. This is a company with the objective to finance the three high-speed lines on the Belgian territory. It is funded by NMBS, the State, EU subsidies and a Dutch contribution. Until 2006 NMBS obtains a fixed dividend, and a variable dividend thereafter.

- In 2000 an agreement on mobility was made within the government. For the railways, this agreement set the objective to have its output increased by 50% in 2010. Evidently, this has serious implications both for the demand and the supply side, namely in attracting travellers and freight and providing sufficient capacity and train services.
- In 2002 an agreement on a new investment plan was made between the federal Government, the regional Governments and NMBS. This plan covers the period 2001-2012 and involves a total amount of 17 billion euro.
- Also in 2002, a law was voted that imposes a separation of the public service from other activities in the accounts of NMBS, and a new management structure. This would improve the relation between the State and NMBS, increase accounting transparency, and improve the performance of the company.<sup>1</sup>

### c. Summary role of the government

The Belgian Government is owner and authority of the railways. As an owner, it appoints its representatives on the board of the company, and may also influence management appointments. However, it also has to take account of the independence stipulated by the 1991 EU directive. As an authority it sets and pays for the PSO. It may also use the railways as a policy instrument for mobility, for example by investments and pricing policy. In the 2000 agreement and the investment plans it does so, although the 50% growth objective is rather voluntaristic and no strategy is worked out on how to attain the objective.

Until the market opening of March 2003 the Government also serves as a market regulator. The tasks involved are carried out by the Technische Steundienst voor het Spoorvervoer, which falls under the Ministry of Transport.<sup>2</sup> The Ministry is and will remain responsible for awarding licences to railway operators. The other tasks involved will be assigned to two regulating bodies which must become active after the market opening. The first regulator will be in charge of capacity management and infrastructure charges. These tasks are typical tasks for a network operator, but are assigned to a separate body because the Belgian network operator (NMBS) is not independent from the incumbent train operator (NMBS as well). The other regulator will monitor the sector and serve as a house of appeals. These tasks are comparable to those of BIPT and CREG. NMBS will remain responsible for the issue of safety certificates.

## 3. Progress in market opening

Market opening in Belgium only concerns freight. For passengers no liberalisation is foreseen for the time being. As mentioned, the EU directives have been followed in the strictest sense. Hence there are separated accounts, and competitors are admitted on specifically assigned lines. Up to now this has led to the entry of only one competitor, and an expression of interest by a few others. Since April 2002 this company runs four or five trains per week from Antwerp to Munich. Although not formalised by law yet, the first real stage of the market

1. This law actually is an amendment to the 1991 law.

2. Loosely translated as 'office for technical support to the railways'.

opening of international freight transport is expected to be realised in March 2003. Full opening of this segment is expected to be realised in 2008.

A serious obstacle for the market opening is the unity of the incumbent. When network management and train operations are separated it is relatively easy to make further separations of the latter. However, some fear that this will lead to regionalising and privatisation. As regards the latter, trade unions expect that jobs will be lost and/or working conditions deteriorate.

Another serious obstacle for the market opening is the lack of interoperability with foreign railway networks. A locomotive cannot move freely along the European network, as a truck can. At each border (and sometimes even within a country) a train runs foul of another voltage and signalling system, or another maximum width and height of the trains. In some countries there are other safety regulations, or even another gauge. This is of course not a Belgian but a European problem. For Belgium the situation is as follows:

- All neighbouring countries have a different voltage. In the Netherlands the type of current is the same (DC), but the voltage half that of Belgium. In France and Germany, the system is AC, and with a different voltage each.
- All neighbouring countries also have different signalling and automatic train control systems.<sup>1</sup>

Locomotives that are suitable for more than one voltage or signalling system are very expensive. This serves as a serious barrier to entry which is only partly levelled by the use of diesel locomotives, and then at the cost of more pollution. In EU context efforts are made to attain standardisation, but progress is slow.

Not an obstacle but an important point of attention is the priority for passengers *versus* freight trains in capacity assignment and daily traffic control. For political reasons, passenger trains often get priority over freight trains. For capacity assignment this implies that freight trains often have *scheduled* waiting times for half an hour or more at certain stations. For daily traffic control it sometimes implies significant delays at arrival. Evidently, this is not good for the competitiveness of railways *vis-à-vis* other means of goods transport. The issue of priority thus requires serious attention in the context of market opening.

## B. Specific topics concerning the railways

### 1. Access to the network

When network operations are separated from downstream service provision, and competitors are admitted to the network, a new market exists for transactions that were formerly carried out within one company. This market concerns the operators' rights of access to the network. Just as this was the case for telecoms and energy, this is the case for railways. In the European context this is a strongly regulated market. According to the 2001 directives a levy for the use of the network must be charged from all train operators. This levy must be declared by an inde-

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1. Automatic train control is a system that interferes by automatically stopping the train when the driver ignores a danger signal.

pendent body, and according to marginal cost principles. It may not be discriminating. The revenues must be used for the maintenance of the network. However, because the marginal cost principles apply, the revenues do usually not cover all maintenance costs. Therefore, network maintenance also remains on the government budgets. Belgium was one of the last EU countries to introduce such a network levy. The charge (on average 0.70 euro per trainkm) is relatively low, but there exist countries with even lower charges.

Access to the network in practice requires the assignment of slots to the incumbent and its competitors. A just assignment of slots requires non-discrimination between the applicants. Non-discrimination requires an independent capacity manager. Therefore, EU Directive 95/19 stipulates the establishment of such an independent capacity manager. This may be the network manager when it is separated from the incumbent, it may also be a separate body. In Belgium a separate body will be nominated, because network management is still carried out by NMBS.

Note that the issue of access and the tasks of the network manager are not limited to international freight traffic. Also passenger and domestic freight services are involved. Firstly, when assigning slots one has to take account of all use that is made of the network. A fine schedule integrating local and express trains, passenger and freight trains must be designed every year. Secondly, all services are due to pay network levies. For NMBS this of course involves an accounting transfer from passenger and domestic freight transport to network maintenance.

## 2. Public service obligations

In general railways have no USO, as for example telecoms and postal services have. Rail is just one of the available means to convey persons and freight. Other opportunities are given by the road, air and water networks. Railways, however, do have PSO. From the second management contract, the PSO are summarised as follows:

- *Domestic transport of passengers* by scheduled trains, including the domestic section of international trains: NMBS must meet minimum production standards and is obliged to draft a traffic plan. To give some examples, this concerns the number of train-stops at each station, the number of train kms produced and the application of certain tariff reduction schemes;
- *Purchase, construction, maintenance, management and operations of infrastructure and investments in rolling stock*: NMBS commits itself to the investments that are programmed in the investment plan 1996-2005. Annual investment programmes are submitted to the State. Investments that are financed by the State must be approved by the Minister of Transport. There are separate accounts for maintenance, management and operations of the network;
- *Tasks for the need of the nation*: Among the tasks are transport imposed by the Administration, military duties and services for De Post;

The management contract also sets the State compensation for PSO, although the precise amount is determined on a year-by-year basis. In 2001, the State paid about 360 million euro for domestic passenger transport. For purchase, construction, maintenance, management and operations of infrastructure and

investments in rolling stock NMBS got 1.4 billion euro. Furthermore, there are compensations for the tasks for the need of the nation, pensions, injuries and other financial duties of the State;

At present, a third management contract is being negotiated. The precise content of this contract is not known yet. However, since the conclusion of the previous contract the State contribution has grown from 2.1 to 2.3 billion per year.

### 3. Welfare effects

As there has been hardly any market opening there are no welfare effects yet. Nevertheless something can be said about prices and quality in relation to the management contract.

#### a. Prices

NMBS only has a limited freedom to set its prices. Prices for passenger services are determined in conformity with the Government so that generally no advantage can be taken from a monopoly position. It is not easy to say whether the present prices are too high or too low. Given the enormous Government dotation one might conclude that the prices are too low to cover the costs of operating a railway system. However, one might question whether it is right to recharge the cost of PSO to the users, as users of other modes of transport often pay less than the social cost of their traffic too. Moreover, pricing may be used by the Government as an instrument of transport and mobility policies.

As regards freight traffic, prices seem to be relatively high in Belgium. As no published data on freight prices is available, an approximation can be made by the average turnover per tonne km. In Belgium this is almost one and a half times as high as in the neighbouring countries.<sup>1</sup> This indicates that prices are relatively high in Belgium, and there may be room for improvement of efficiency.

#### b. Quality

As shown above, the management contract requires for a number of measures to enhance quality. Important indicators for quality are safety and punctuality. Punctuality is the extent to which trains arrive at their destination without delay, and which is a sensitive quality element for the user. As regards safety, the safety certificates imposed by Directive 95/18 should warrant that railway services normally meet high safety standards.

In general, Belgium performs well as regards safety and quality, but there is still room for improvement. In 1996 and 1997 together there were 44 fatal casualties on 285 million passengers. This is 1.54 per 10 million passengers. This was slightly better than the EU average of 1.60, and more or less the same as in the neighbouring countries (ranging from 1.14 to 1.61).

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1. Based on numbers for 2000, see FPB (2002).



As regards quality and according to measurements by NMBS itself, the standard for punctuality is almost met. In 1999, 94% of the passenger trains arrived in time or with a delay of at most 5 minutes at their final destination, whereas the standard is 95%. In 1996 the punctuality was only 91%. There are plans to introduce a system of ticket-repayment for serious delays.

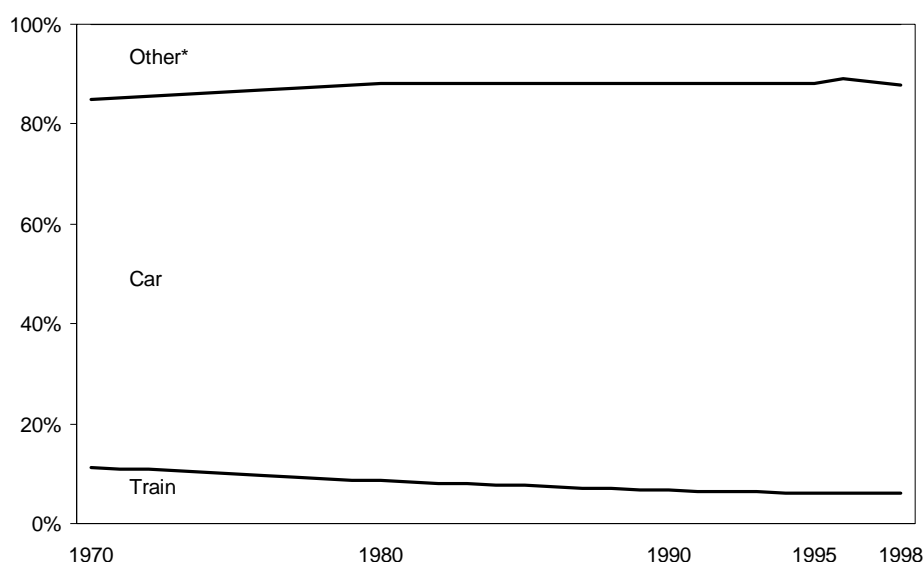
A study by Harvard University (1999) put Belgium at 5.5 on a scale from 1 to 7 on the basis of a questionnaire about several aspects of quality. The Netherlands had about the same score, but Germany and France did significantly better (6.3 and 6.7, respectively). The UK and Italy did significantly less (4.3 and 3.5, respectively).

#### 4. Other topics: modal split

To a higher extent than the other network industries presented in this paper, railways are in competition with other industries, namely road, air and water transport. The position it occupies is paradoxical. On the one hand, railways have clear advantages in safety, environment and mobility, in particular when compared to road and air. On the other, its market share is low and for freight it is even falling.

In 1970, NMBS carried 247 million passengers, but in 1980 this had fallen to 164 million. 1986 gave a low of 139 million. In 1999 there were 147 million passengers, which was the highest number since 1984. The market share, in terms of passenger km, fell from 11% in 1970 to 7% in 1990, and stabilised at 6% in 1995, see Figure 19. The market share of international passenger transport gradually grew from 7% in 1992 to 8.5% in 1999.

**FIGURE 19 - Modal shift for passenger transport in Belgium, 1970-1998**

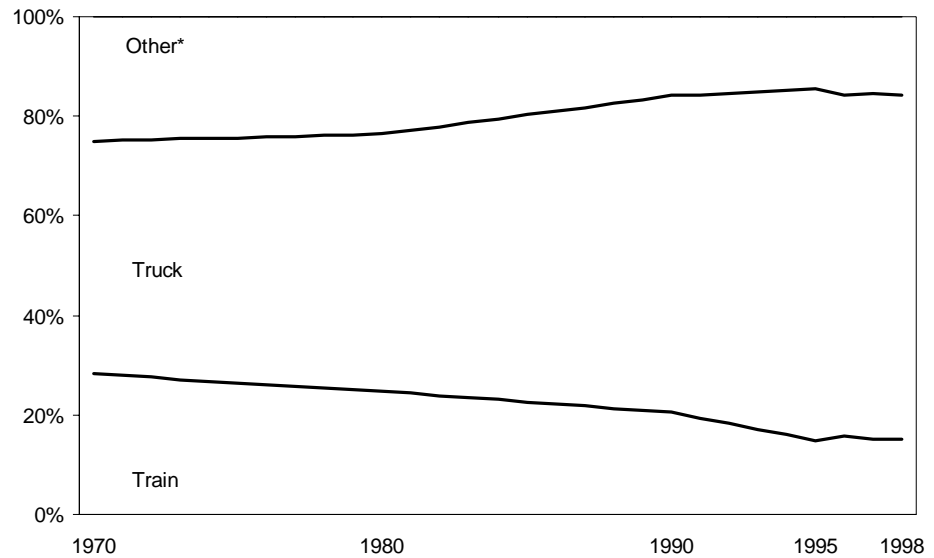


Sources: NIS/INS and NMBS/SNCB.

\* Bus, local public transport and motorbike.

For long, the transport of freight oscillates around 60 million tonnes per year. Despite some fluctuations, this is a rather stable number. About 70% consists of traffic from and to the Belgian seaports. The port of Antwerp alone is good for 45% of the freight traffic. Because of the ever growing amount of goods transported, a *stable* traffic implies a *falling* market share. Figure 20 shows that this market share, measured in tonne km, has fallen from 28% in 1970 to only 15% in 1998.

**FIGURE 20 - Modal shift for freight transport in Belgium, 1970-1998**



Sources: NIS/INS and NMBS/SNCB.

\* Vessel and pipeline.

For passengers and freight, the Belgian market shares are remarkably close to the EU average: 6% and 14% in 1998, respectively. For passengers, there are no exceptionally large differences between the member states. The neighbouring countries do somewhat better than Belgium, with market shares up to 8% (the Netherlands, after Austria having the second largest market share in the EU). In the UK the market share is 5%. For freight the differences are larger, from 2% in Greece to 37% in Austria and Sweden. In the neighbouring countries the market shares range from 4% in the Netherlands (with a remarkable 42% for inland waterways) to 16% in France and Germany.

There are several reasons for the paradoxical nature of railways in the transport markets. From the point of view of the demand side, the use of car and truck is more attractive than the use of the train. Road traffic gives cost and (usually) time savings, flexibility and independence. Moreover, attempts to make railways more attractive have been insufficiently successful, in particular for freight traffic. For example, in many countries there have been insufficient commitments to bring the goods in time at their destination, whereas truckers and barges do have that commitment.



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