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Intermodal transport in Europe

Editorial

A topic very frequently mentioned in policy documents about European and national transport (most notably the *White Paper* of the European Commission in 2001), intermodal transport in Europe is intrinsically international: two-thirds of rail - road transport in Europe crosses a border, and this proportion is continuing to increase faster than that of national transport. An understanding and a comparison of the position in different countries of the European Union, a useful exercise in any kind of question about transport, is really essential on this topic.

The French National Transport Council gave priority in its discussions in 2004-05 to intermodal transport. Its aim was not to initiate yet another study describing the policy but to formulate practical proposals that would meet the needs of public authorities. At the request of the CNT's Standing Section and the CNT's President, Alain Gille, the OTPSE contributed to this debate with an inquiry on the situation in European countries, analysing the mechanisms of their policy successes and failures. The extensive nature of the work undertaken, which was discussed over two sessions of the Observatory, explains why this unusually large edition of *Transport / Europe* is a double issue.

For readers who want further information, a Dossier produced by the OTPSE (number 7 in the series), will be bringing together the full reports from the Observatory's experts. Like the Bulletin *Transport / Europe*, all the Dossiers of the Observatory are downloadable free of charge from the CNT's web site: *www.cnt.fr*).

Michel Savy
Director of OTPSE

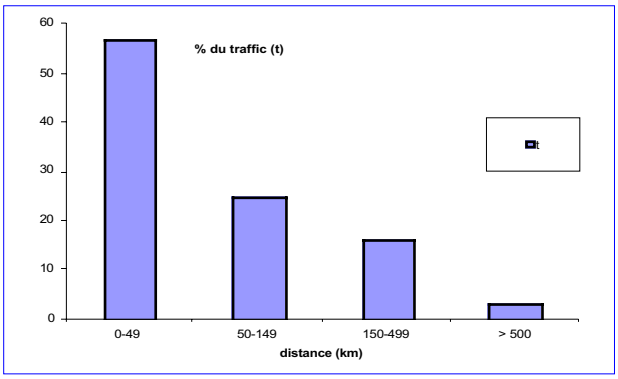
CONTENTS

The background data

Our knowledge of intermodal transport in Europe is incomplete. The statistics available are not comprehensive, and they use a variety of units (sometimes tonnes, sometimes Intermodal Transport Units or TEU, Twenty-foot Equivalent Unit containers). But they are adequate for providing an approximate estimate of the current position and general trends: intermodal transport hardly accounts for more than 5% of the total surface traffic (in tonne-km) of goods in European countries as a whole.

This overall figure must nevertheless be qualified in a number of ways: first, there are many transport routes between European economic zones where intermodal transport does not even exist as an option; second, it is technically and economically more suitable over long distances, whereas a high proportion of traffic moves a short distance and by road (some 57% of land-based goods traffic moves within a radius of 50 km!); yet, third, in those freight corridors where it is used most extensively, intermodal transport represents a far from negligible proportion of total traffic, of the order of 30% along the North-South axis between the Rhine delta and the Po valley; and in these cases it is not a marginal activity but provides relief to a road-based transport that is not really welcome in sensitive areas of Alpine valleys.

Surface freight traffic by journey length in the European Union, 1996



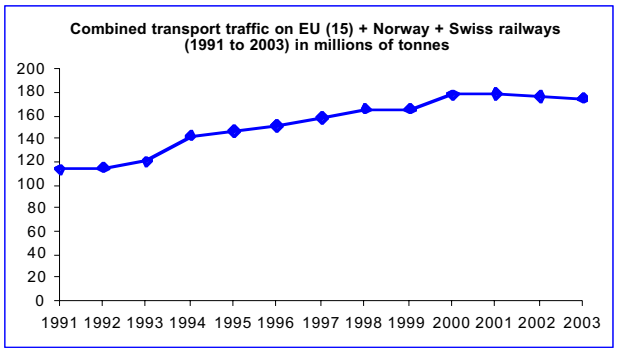
Source: European Commission, EU Energy and Transport in Figures, Statistical pocket- book 2001,

Intermodal transport, whatever the technological structure put in place, has no role to play in the general coverage of a territory. It is a market that is restricted to **precise segments** of the market; it has to link zones of economic activity that are sufficiently strong to generate mass transfers and sufficiently far apart that the advantages of rail, river or sea, in terms of costs per km, outweigh the additional costs of terminal operations, when compared with door-to-door road transport.

In its current state, intermodal transport in Europe is mainly present because of a few countries (Austria and Switzerland especially), that have had to consider strong geographic constraints, and have put considerable regulatory and financial effort into promoting this option.

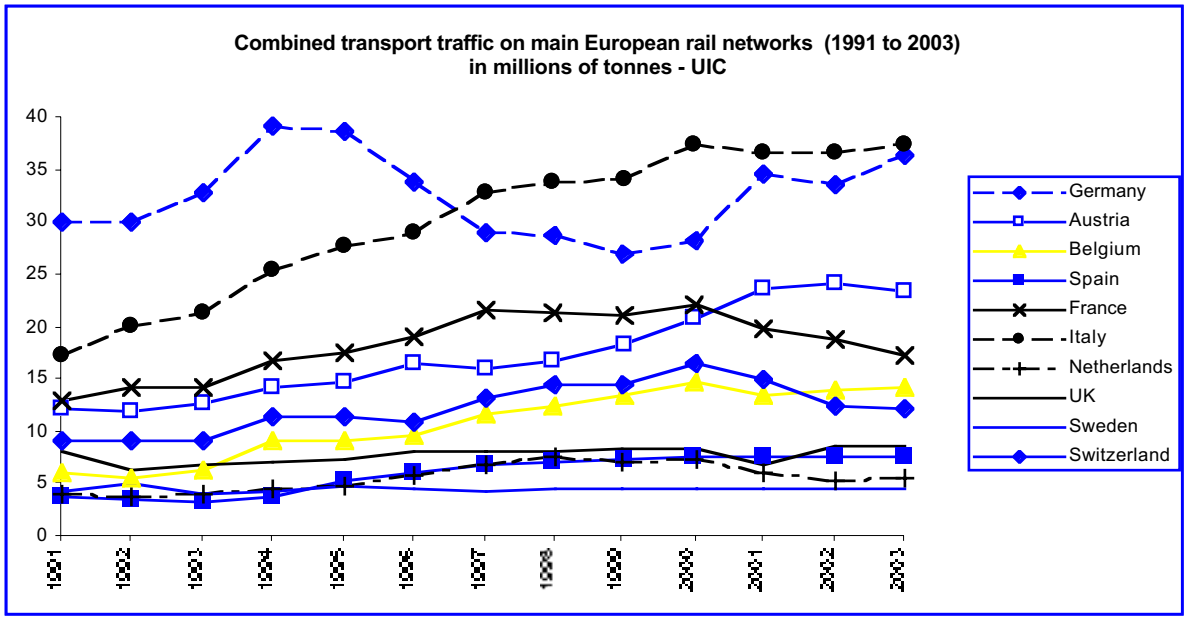
Transport volumes

In Europe as a whole intermodal transport grew for a long period throughout the 1990s, but more recently this overall growth has been halted: **the system is in crisis**.

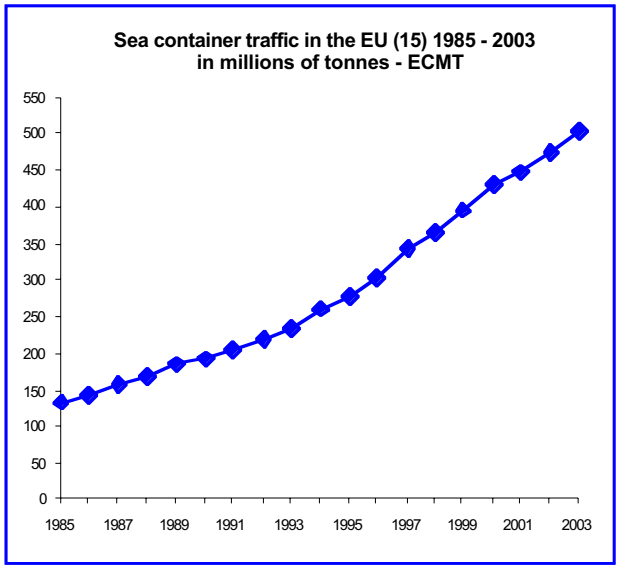


Source: UIC

The trends, however, differ greatly from one country to another, with stagnation today in Austria, Spain and Belgium, growth in Germany - though a growth which has not yet returned to its peak of 1994 - and in Italy, which is now the country with the second highest volume of this type of transport in the Union, and, finally, a decline in road - rail transport in France and Switzerland.



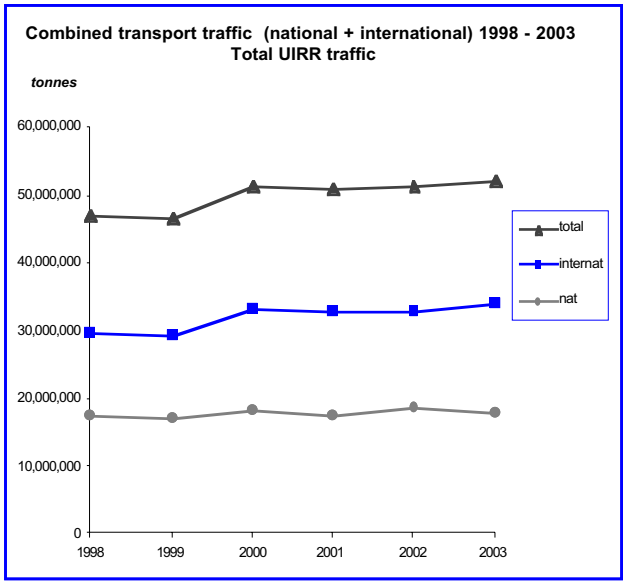
Intermodal rail - road transport makes up about a quarter of rail transport in Europe; intermodal transport that includes a waterborne section accounts for only 5% of river traffic (despite the current growth in waterborne container traffic); and less than 10% of total maritime tonnage completes its journey with a land-based segment that uses a combined transport technique (as an alternative to road). However, the growth of **maritime container transport** in Europe offers encouraging prospects for intermodal surface transport.



Source: ECMT

Types of transport

Within the generic group of combined transport operators, the family of operators composing the members of the UIRR (Union international rail - route or International Union of Combined Road - Rail Transport Companies, whose businesses mostly came from the road transport world) is the largest: it transports about 4.5 million TEU*, that is, about 50 million tonnes. Two-thirds of this traffic is international transport (serving especially the hinterland of maritime ports), and one third is national transport, whose proportion is tending to decline because the distance at which intermodal transport is competitive in relation to road transport is becoming longer.



Source: UIRR

The technique of the rail motorway (sometimes called the 'rolling road' or 'piggy back' method), which consists of putting the whole road vehicle (including trailer) on a train, together with its driver, contributes about 20% of land-based intermodal traffic, and concerns only the Channel crossing and Alpine passes.

Among the remaining 80%, that is, "unaccompanied" intermodal transport, four-fifths consists of "boxes" (containers and swap bodies) and only a fifth by special trailers, a technique in decline today (as it is too in the United States).

Operators

The entry onto the market of new operators has not had the dynamic effect for which many had hoped. Traditional operators (Kombiverkehr, Hupac, Cemat, Ökombi) are still playing the main role, while the volume shipped by the international cooperative organisation ICF is in decline.

** Traffic volume is calculated by translating all types of traffic units (containers, swap bodies, trailers) into the equivalent number of twenty-foot ISO containers, the TEUs (Twenty-Foot Equivalent Units).*

The international traffic of the UIRR operators

In TEU	1999	2000	2001	2002	2003
CNC, Vincennes	156 794	146 584	131 491	117 429	103 436
Cemat, Milano	304 187	343 607	366 743	405 927	504 566
Combiberia, Madrid	25 207	30 227	26 839	29 391	31 542
Hupac, Chiasso	424 099	531 438	514 089	497 794	562 219
Hupac, Rotterdam	56 448	60 663	73 048	78 465	84 930
Kombi Dan, Padborg	8 938	12 475	14 288	14 902	12 749
Kombiverkehr, Frankfurt	818 770	862 121	857 424	869 682	947 591
Novatrans, Paris	174 426	177 730	167 360	171 716	154 207
Ökombi, Wien	307 295	342 169	381 779	416 562	389 839
Polkombi, Varsovie	26 034	26 098	10 512	854	0
Rocombi, Bukaresti		725	501	232	9
Swe-Kombi, Helsingborg	16 555	17 234	18 547	8 646	0
TRW Brussels	126 660	132 818	139 794	148 582	144 234
TOTAL TEU	**2 445 412**	**2 683 888**	**2 702 415**	**2 760 181**	**2 935 321**

Source: UIRR

The trends on international intermodal traffic are diverging between French operators (a drop of 22% in 4 years) and the other operators as a whole (an increase of 27%; CEMAT alone + 66%).

Difficulties and trends

Intermodal transport faces some real problems. Operators are generally under-capitalised or in deficit, therefore unable to invest in and develop an activity of low profitability. The costs structure is often poorly understood; the division of business receipts and public subsidises between the various elements of the total cost, i.e. between infrastructure, traction, provision of wagons and traction units, multimodal railheads, handling, purchase of materials, etc, is not clear. **The justification for intermodal transport is more often made in socio-economic terms** (referring to external costs) **than in financial terms** (the profitability of the operators); the 'rail motorway' for example cannot survive without a considerable level of subsidy.

The regulations on using the rail network, whether concerning the tariff structure or the allocation of track paths between the different types of traffic and operators, pose an additional problem. The succession of European directives since 1991 shows the difficulty there is in reforming the system and making it work better. Finally, shippers complain that the punctuality of both rail and rail-road transport is poor. In commercial terms, it is evident that customers disappointed with the failings in the system will not return willingly.

However, the success of intermodal solutions in certain countries and on certain rail lines shows that the right conditions for it can exist in Europe.

The European research project IQ studied the **quality of service** provided by intermodal transport, and its effects on the market. The notion of service quality was subdivided into **flexibility, reliability and security**, and quantifiable indicators were devised for each of these concepts. Progress on these three aspects of service is still not easy. Thus, for example, the flexibility of terminals undoubtedly needs improving, but they are in operation for a few hours a day only and the relevant investment would have therefore only a limited financial return. The research compared the use of intermodal transport, on the territorial scale of the European Union, with the alternative of door-to-door road transport. Its **competitiveness** only emerged beyond a minimum distance of at least 400 or 500 km, which means that intermodal transport, in large part, has to be international.

Out of 99 road - rail connection terminals in Europe, only 20 had a daily service and at some of these the frequency of service was once a week! The 200 largest customers made up half the total demand, which shows that the use of intermodal transport is not easily accessible to every small-scale shipper. As to the **costs**, it was estimated that they divided into 40% for the road journeys pre- and post- the rail element, 50% for the rail transport section, and 10% for the other parts of the operation. The **tariff** was a prime consideration for customers and it was low only for routes that had reached a certain critical mass, or for transalpine routes. However, even this traffic has not been captured by the intermodal market permanently: the withdrawal of the Austrian eco-point system was followed by a reduction of 20% in intermodal traffic on the relevant route.

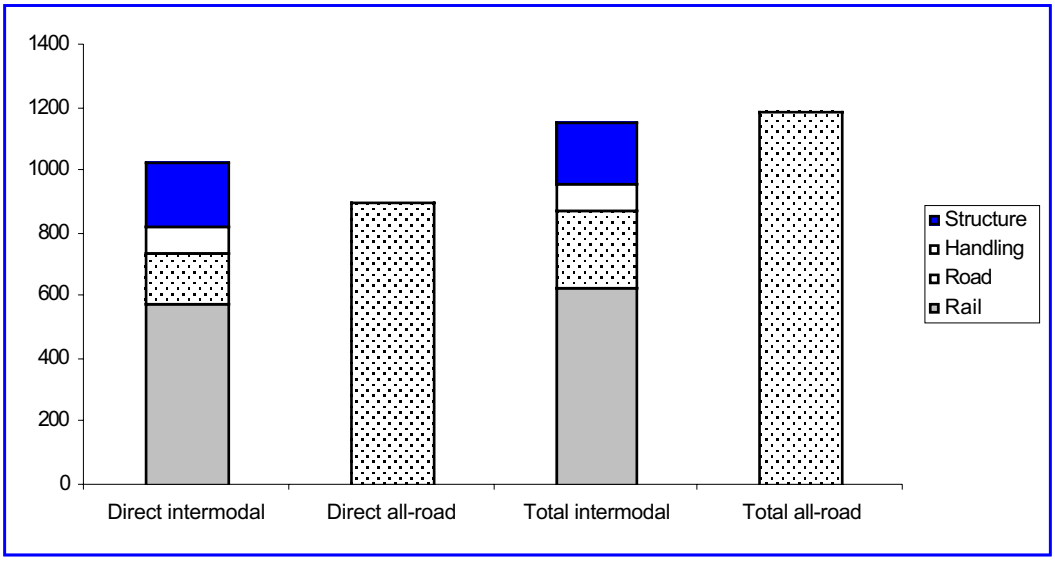
Among **possible future scenarios**, the concentration of resources onto the corridors with the strongest potential could be envisaged. But then what would happen to the idea of a network, that links corridors into an organised whole? The question is controversial, because the shuttle trains on corridors with a mass, stable demand have been technical and commercial successes, in contrast to open block trains, and even more to the "hub and spokes" system, logically seductive but also costly and fragile in practice. On the question of which products provide the most appropriate traffic, one must aim for products that are relatively insensitive to journey-time (day A to day B constitutes the best performance that can be achieved) and travel in complete train-loads (the combination of intermodal transport and groupage seems to be difficult).

These conclusions were drawn up in 1997. Since then, the development of shuttle services and withdrawal of rail hubs has further concentrated traffic onto the most heavily-loaded axes (North - South).

It must be emphasised that the potential increases in the cost of oil energy and road transport will not be sufficient to re-establish intermodal transport as a player in the market: **its future requires a radical reform of its mode of production**, in order to provide better quality and higher productivity, and thereby achieve thereby the objective of the European Commission's White Paper: that of a better regulation of competition between the modes.

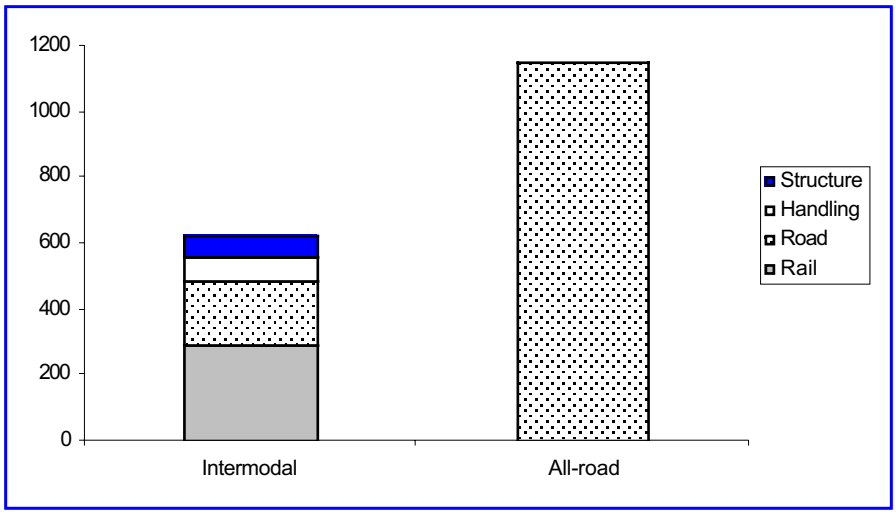
The European research project Recordit, based on a detailed study of three intermodal corridors in Europe, showed that the **direct costs** of all-road transport (those met by the shipper through the price system) are lower than those of intermodal transport. The addition of **indirect costs** (social costs resulting from accidents, noise and other nuisances) gives intermodal transport only a small advantage on total costs. Internalisation of external costs, though often suggested, would not only pose political problems but also not suffice to make intermodal transport really competitive.

Direct cost and total cost of intermodal transport and road transport in Europe: current situation
(in Euros/TEU for an average journey of 1000 km)



In contrast, a thorough reform of intermodal transport, treating all its components, and inspired by the model of dedicated freight routes on American railways, could make its direct costs to drop dramatically, allowing it to play a full part in the market.

Direct cost of intermodal transport and road transport in Europe,
the long- term situation in a reformed system



The enlargement of Europe (the Union has gone from 15 to 25 members and ECMT from 19 to 43) relaunched the debate on intermodal transport. Everywhere, it is road goods transport that is growing and people everywhere are suggesting that other solutions will have to be sought. The rail-road option, old -style, will not be adequate, and people are also thinking about the waterborne mode, and sea cabotage (motorways of the sea).

The European Union is developing its own support policy for intermodal transport, even if no directive is specifically devoted to it. The Marco Polo programme has only limited resources however, while the network junctions and intermodal loading infrastructure do not figure explicitly in the Trans-European Transport Networks (TENs) promoted by the Union. Finally, rail interoperability is still very imperfect and is an obstacle to the development of rail transport, and therefore even more to that of rail - road transport.

This overall analysis is supported but also modified by the analysis of national situations, which provide examples of failures and successes from which all the countries can draw lessons.

Analysis by country

• In **Germany** an Act of 2000 has reformed the statistics relating to the transport of containers and swap bodies. The results of a new survey should be available in 2005. Much double counting has been noticed in the earlier figures. The trends are as follows:

— intermodal traffic that includes a railway element increased by 8.4% between 1996 and 2002, its percentage of 12% of railway tonnage remaining stable;

— the rail motorway (rolling road) remains an alternative solution to the road for Alpine crossings but has not been used for domestic transport within Germany since 1994;

— river-borne intermodal transport, measured by the number of containers carried, doubled between 1995 and 2002, and is used in particular for serving maritime ports, but its share of total rail transport is still no more than 6%. This traffic consists mainly of containers, with few swap bodies, transported on the Rhine but also on other rivers that flow into the North Sea;

— as to maritime container transport, a distinction is going to have to be made in the statistics between despatches and receptions at terminals and transfers between one mode and another which produce a double operation;

— finally, there are few figures available for maritime cabotage, though it is the subject of great expectations at the European level

The principal axes of German intermodal transport are North - South, from Italy to Scandinavia. There is also an East-West traffic, with services to the Czech Republic and Hungary from the ports of Hamburg and Bremerhaven, but the traffic with Poland has declined since 1999 because of the influence of road competition.

The major rail - road transport operators are Kombiverkehr and Transfracht (Stinnes has a 50% share in both these operators). Kombiverkehr, a member of the UIRR family, has restructured its network with "Kombinetz 2000+", and transports 23 million tonnes annually, that is, the equivalent of 960,000 lorries. Transfracht, in which DB has a large share interest, mainly transports containers, their load equivalent to 260,000 lorries in 2003. This company too has restructured its network and renovated its commercial product, by differentiating between one service for stable, loyal traffic, a "stand by" service for unexpected despatches that matches the flexibility of goods traffic, and a "last minute" service for reservations made 24 hours before departure. Intermodal loading sites are the property of the ports and the DB. A debate is taking place about their development into logistics platforms.

The **costs of rail - road transport** are divided, in Germany as elsewhere, in equal proportions between the road section (pre- and post- rail carriage and transfer) and the rail section.

As to trends, **Kombinetz is expanding**. The operator buys the traction of complete train-loads from DB Cargo and commercialises them. The traffic amounts to about 150 trains a night. The quality of service with, in prime place, punctuality, has made real progress. On the other hand, the question of terminals is controversial. The political project is to provide coverage of the whole country. But the traffic flow is not sufficient in certain zones and, moreover, because terminals are often located near towns and are noisy, local authorities are not always in favour of their extension. The result is that traffic is concentrated into certain dense axes, which is creating a service that is very different from the initial plan, especially in geographic terms.

Public policies for subsidising intermodal transport include the funding of terminals, whether they belong to the DB or private firms; the "advantage" given to intermodal transport by fixing the maximum weight of intermodal road haulage units at 44 tonnes (40 tonnes for conventional road transport), exemptions from restrictions on weekend working, and lower taxation on vehicles.

The total aid thus allocated, over the period since 1998, amounts to 219 million euros. The Ministry of Transport is not satisfied with the results that have been achieved. It wants the level of the aids to be linked more closely to their effectiveness, by tying them to the volume of goods transferred from road to rail and by asking operators to reimburse subsidies if they do not fulfil the objectives they had promised. Some aids will also go to private branch lines, if these shippers have a substantial volume of traffic, and if they do actually use this infrastructure.

Finally, new operators are entering the intermodal market, for example Box Express, created by port and maritime groups which have their own means of traction using leased equipment and which transports 100,000 boxes a year. There is also the case of operators created by industrial firms, such as the chemicals firm BASF in the Rhineland. Cooperation between Kombiverkehr and Polzug is starting to appear, but this situation has not yet stabilised.

Overall, **the reliability of combined transport is satisfactory**, because 92% of trains arrive less than a quarter of an hour late. But the reduction in quality seen in 2003 compared with 2002 is evidence that the network is being used intensively and would not easily cope with a growth in traffic

• The case of **Belgium** shows that it is not helpful to constrain the field of intermodal transport within strict technical and legal definitions. Waterways and railways as a whole are, most often and necessarily, multi- or inter-modal.

The **cost of transport remains the determining factor** in the choice of mode for most shippers (even though experts specialising in transport tend to insist on the influence of the transit time). Recent research showed that, more than speed, it is **reliability** that is important to shippers, in accordance with the needs of a more rigorous logistics.

As to infrastructure, what is needed is not so much major construction but ensuring the **interoperability of existing networks.** It is a technical problem, but also one of personnel (why could not a pan-European programme of training engine-drivers be introduced?) To facilitate cross-border traffic, the Commission could subsidise, in a very precise fashion, multi-current locomotives.

Obstacles to the development of intermodal transport that have been identified in Belgium can be identified and listed by component, interchangeable with systems in other countries.

Obstacles relative to rail transport:

— in managing the network, priority is traditionally given to passengers, which has a strong impact on the quality of the freight service. In Belgium this difficulty should be reduced with the entry into service of the new Namur- Athus line, dedicated to freight and serving the port of Antwerp;
— rail freight does not possess its own set of locomotives or team of drivers: any problem with the transport of passengers produces a problem with freight;
— strikes on one side of the border or the other are numerous and have repercussions on neighbouring networks as well;
— technical standards are not homogeneous between one country and another and necessitate a change of locomotive and driver at each border crossing; this problem constitutes a particularly serious obstacle;
— the change-over of train drivers does not relate just to technical questions, but also to rules on the use of labour (these are directly linked to geographic zones, which do not match commercial traffic zones);
— tunnel clearances and the height of catenaries (too low in Europe for the "double stacking" used so efficiently in the United States) are inadequate and impose their own constraints;
— wagons are often poorly adapted to the containers and swap bodies;
— triage operations in freight sidings are slow and expensive;
— freight services are not have sufficient autonomous within the management of rail companies;
— telematics tracking of despatched items is less well developed than in other modes;
— rail transport is poorly integrated into logistics supply chains;
— the current cultural behaviour of rail managers leads them to try to satisfy resource conditions and not outputs. They lack a commercial spirit and do not find it easy to cooperate with operators of other modes.

Concerning waterborne transport:

— barge owners are poorly organised and reluctant to work in cooperative groups;
— it does not provide telematics tracking;
— it is poorly integrated into logistics chains;
— it does not have enough regular routes and timetables;
— the operating times of the infrastructure are inadequate (canal locks close during the night and on Sundays);
— loading and unloading times at the port are long, in particular for transfers between river and maritime modes (at Antwerp the relevant jetties are separated from one another). Where maritime ports are concerned, river transport is seen as a poor relation in comparison with the surge in maritime container traffic;

For maritime cabotage ("short sea shipping"):

— the image of this mode among shippers is that of an old-fashioned technique, and not really dynamic;
— administrative and documentary procedures are particularly complex, by comparison with land-based modes;
— telematics communication is poor;
— small ports are not very efficient.

The result is that intermodal transport that includes a maritime component cannot generally be competitive in relation to road transport except at a minimum distance of 1000 km.

Despite all these problems, there are cases where intermodal transport works well! This observation gives room for optimism and suggests that there should be a search for solutions based on practical analyses, case by case.

• In **Spain** the new government has repealed the law on railway reform prepared by the preceding government. It is not yet known whether the priority will be given to rail, and within that mode whether it will be just the TGV, or include renewal of the classic network and freight. The liberalisation plan, which should allow new operators to enter the market, will be re-examined in the coming months.

Intermodal transport receives practically no public subsidy in Spain; it is hardly mentioned in political discourse, apart from the Petra plan for supporting road transport, which makes a minor mention of intermodal transport. To a certain extent, **it benefits from the aids provided by neighbouring countries**.

Rail intermodal transport concerns mainly containers and a limited number of swap bodies, but not accompanied lorries of the "rolling road" type. The business unit in charge of freight within the rail company RENFE has recently fused with the unit in charge of intermodal transport. Within a total traffic of 26 million tonnes, intermodal transport represents about 30%. A third of this traffic is domestic, entirely within Spain; a third is international European, and a third relates to maritime ports. The network connects the main towns and maritime ports. Apart from the historic operator, there is Combiberia (with participation by Novatrans and Kombiverkehr) and Transfesa (which brings together RENFE, SNCF and private capital). Traffic development is limited by the pinch points outside terminals in the major cities.

A recent study by CETMO analysed intermodal transport within a 'strengths, weaknesses, opportunities and threats' framework.

The weaknesses are not negligible:

— operations are too segmented;
— tariffs have increased more than inflation, unlike road transport;
— investment decisions are inflexible;
— the average commercial speed is lower than that of road, and even of sea transport;
— the main terminals are saturated;
— the French network, which gives access to the rest of Europe, has no spare freight paths;
— there are many strikes on the French network;
— the responsibility for this traffic is divided between national networks;
— the length and weight of rail convoys in Spain are less than the European average (respectively 400m and 800 tonnes, against 750m and 1200 tonnes in France). Changing to these norms would reduce costs by 30%.

Among the threats can be listed:

— price competition from door-to-door road transport;
— priority given by the rail network to passenger transport (notably in the suburbs);
— the scarcity of land at affordable prices for constructing new terminals, and the distance from city centres which stems from that;
— the large number of actors, which complicates any new initiative.

The strengths of the system cannot be ignored:

— a possible increase in the share of the market for intermodal transport;

— the service quality plan that has been introduced, which could bear fruit.

Finally, the opportunities are as follows:

— intermodal transport has less impact on the environment than its main competitor, roads;
— rail transport is growing by 1% to 2% faster than Spanish GDP;
— road transport costs would increase significantly if the internationalisation of external costs, promoted by European documents, comes into effect;
— the costs and prices of road transport are likely to increase under the influence of a rise in salaries;
— road is subject to a growing pressure to take more account of the environment;
— European policy is seeking alternatives to road;
— the liberalisation and interoperability of railways are likely to strengthen its competitiveness;
— the Sines - Madrid - Paris line might be reserved for freight and is TENs - listed.

Though the operation of the terminals must be improved by creating new ones, and the characteristics of convoys must be harmonised with the rest of the European network, the problem of the larger Spanish gauge will constitute an supplementary and long-lasting obstacle.

• In **France** intermodal rail - road transport is experienced a return to the conditions at the end of the 1990s. After a period of definite growth (a doubling from 1985 to 2000), its traffic is currently in decline despite statements of principle by those with political responsibility that are systematically favourable to intermodal rail freight. For its part, waterborne freight is expanding noticeably. The share of intermodal transport in national surface transport has always been modest (of the order of 3% of the current total, expressed in tonne-km, having reached 4.5% in 1997), and will probably decline further, because of the reforms currently under way, to about 2%.

The **problems of rail intermodal transport** stem first from the structure of the traffic it carries (with a high proportion of national traffic, over distances too close to the minimum level for competitiveness with door-to-door road transport), an absence of rolling road or piggyback systems (except to cross the Channel), and the inadequate services to sea ports for the land-based sections of container traffic. As a consequence, transit traffic has undoubtedly not been sufficiently taken into account in the management of intermodal transport and its projects. The requirements of the market also favour transfers towards road (for example, small parcels services hardly use rail anymore because of the time it takes, while the motorway network now covers the whole of the national territory).

To these special problems can be added the generic problems of rail transport: sensitivity to the economic situation and a vicious circle of deficits in an industry which has increasing returns; structural blockages; and the inertia of the organisation of production by the railway company. Intermodal transport seems to have been used, up to the end of the 1990s, as an adjustment variable for the freight market in a period of strong economic growth. The subsidies awarded at the time had perhaps the air of a godsend. Then the strikes of 2001 undermined the confidence of shippers, and the reduction in State aid, the increase in track access charges by the infrastructure manager, RFF, and the increase in the price of energy, have set off a circle of decline.

The **market is segmented into axes**. The success of certain routes (Paris-Bayonne) shows that the potential exists for some expansion. The efforts that have been made to improve rail punctuality are now recognised by shippers. The under-equipment of handling infrastructure has been reduced with the construction of the sites of Dourges, Bordeaux and Dijon, while Marseille and le Havre are making an effort to invest. The North-South backbone is emerging as the central traffic route (traffic between the Provence- Alpes -Côte d'Azur region and the Ile-de-France represents 50% of the French domestic market), though it is a route whose pinch-points need to be removed. As to international traffic, that to and from Italy is much the most important. The reliability of rolling stock is improving with the entry into service progressively of a stock of locomotives dedicated to freight, interoperable and travelling fairly fast so that they fit more easily on the tracks used by passenger trains. The question now is to identify a team of locomotive drivers specialising in freight. Service quality is now the subject of increased effort, the proportion of trains arriving on time having reached 87% (it must be said too that the operators tend to pass the blame for their own delays to the rail company.

However, the number and quality of available freight paths are insufficient, the gauge clearances being too small on a large part of the network. The infrastructure operator, RFF, has announced a forthcoming reform that will give better treatment to freight. A debate has started on whether the network is being used correctly and whether additional capacity could be identified by modifying the way the SNCF uses the network.

More generally, French intermodal transport is a **complex system of interlinked actors**, who were reluctant for a very long period to consider innovation and the entry of new actors. For all that, a recomposition of the landscape is emerging. The CNC, a subsidiary of the SNCF, is part of the renovation plan for rail freight recently launched by the company, faced with a chronic deficit in this market. It is selecting its markets more strictly and closing the least busy terminals, reducing the number of its agencies (14 closures in 6 months) to the point where it is now keeping only a "skeleton" network of the most heavily-used routes. The plan for a hub-style network, focused around the "nodal point" of Ile-de-France, at Villeneuve- Saint Georges, has been abandoned in favour of a scheme of direct point-to-point lines (as the company Novatrans has done), in particular for serving ports. Shippers seem ready to accept this modification, providing the service offered is at the level of quality they expect.

Public grants for intermodal transport have been reallocated and their volume severely reduced: 95 million euros in 2001, 20 million euros in 2004 and 16 million euros in 2005. They are no longer awarded to the rail company providing the traction (to compensate it for the deficit related to intermodal traffic), but to the specialised operators. The State, in its ambiguous role of regulator and shareholder, has not set out a clear strategy (between the desire to develop intermodal transport, to liberalise the market, and to stabilise SNCF's balance sheet). It is possible that, in some cases, local authorities will involve themselves more in this traffic (in the way that the Nord-Pas de Calais region did on the Dourges terminal).

Will the SNCF deconcentrate its management, or on the contrary try to become an operator of international standing and open up to logistics (as the DB has already done with its subsidiary Schenker and Railion)? Will changes come from Europe, with the entry of new operators, and the opening up of the networks?

• In **Greece** as in the rest of Europe, information about intermodal transport encounters a basic problem: **transport statistics are conceived according to a modal logic**. Thus, one can follow traffic flows right to the rail terminals, but knowledge of what happens to road flows before and after the rail journey is poor…

In Greece, the dimensions of the country do not lend themselves very well to intermodal domestic transport: distances are too short along the principal economic axis, Athens - Salonika. The only road- rail service is between Salonika and Sopron (in Hungary), provided by ICF.

Greek intermodal transport is thus mainly maritime transport. Greek ship owners possess 18% of the world fleet but domestic traffic, serving the islands by Ro-Ro, is only a very small proportion of their activity. In any case, the use of the sea does not constitute an alternative to road in Greece; it is simply imposed by geography.

The principal intermodal axis is the **international Adriatic axis**, with some 350,000 lorries transported annually. Grants are being maintained until 2008 to strengthen intermodal terminals.

As to the **measures that could be taken**, increased attention could be given to road transport, in order to harmonise regulations on maximum weights in Europe. Also the pertinent markets for intermodal transport should be identified in order to concentrate resources on those markets. Finally, shuttle trains seem to be confirmed as the only way of ensuring the reliability demanded by shippers.

• **Italy** has an important place in the organisation of rail-road transport in Europe. **Transalpine international traffic makes up two-thirds of the total traffic** - though it hardly exists outside the Northern part of the country.

The principal rail operator is Trenitalia, a product of the reform of FS, but private companies have also appeared in the market: Ambroggio, Rail Traction Italy (bought by the German Railion) and ERS for the transport of containers (from Rotterdam).

For the Alpine crossing, Luino is the most-used pass (more than the Brenner), Domodossola is in rapid expansion, Chiasso is stagnant, while Modana is in decline because of the commercial failure of Eurotunnel and the reduction in traffic between France and Italy. Overall, there are three times as many swap bodies as maritime containers. The principal terminals are Padova, Verona, Busto (the private terminal of Hupac), Novara (linked to the Lötschberg) and Milan. In Milan there are five terminals, too small, fragmented and enclosed within the built-up urban area.

The technical efficiency of combined transport is known to depend on a series of structures: intermodal handling equipment, railway goods sidings, and a railhead terminal providing the connection to the main rail network. In addition account must be taken of disparities between gauges and often their inadequate size.

The rail motorway (rolling road) with Austria has been suppressed following the abolition, imposed by the European Union, of the "ecopoints" system. Furthermore, the largest European intermodal operator, ICF, is in the process of fragmenting because of the strategic error of a choice of a hub and spokes type of organisation in preference to the shuttle system, which is more productive.

On the whole, intermodal transport is in a fairly healthy state in Italy (thanks largely to the policy of the Swiss government!), and could expand even further. The **principle of giving public aid** to help this growth has been agreed but the budgetary decisions have not been made, and will not be easy…

• The transport system in **Poland** is characterised by an expansion in road freight transport at the expense of rail, including over long distances. Rail transport is orientating itself rather towards international traffic. However, after the liberalisation of the market, in conformity with Community legislation, and with the entry of new operators (especially on "short lines"), it can be seen that after years of decline rail transport is again on the increase, the historic operator, PKP, carrying only two-thirds of total traffic.

Within this context, **intermodal transport plays only a limited role**. Concerning mainly containers (for 90% of the total, the rest divided between swap bodies and trailers), it accounts for example for no more than 4.5% of traffic from the port of Gdynia and 2% of national traffic. Nevertheless, a certain growth can be seen in connections to other parts of the European Union, because of the disappearance of barriers at the German border.

In addition to the **obstacles to intermodality** that are found in many countries, can be seen some characteristics specific to Poland: the change of rail gauge at the Eastern border of the country; the availability of a labour force which sustains road transport and strengthens its competitiveness: the persistence of a sizeable 'own account' road freight transport sector, less likely to turn to rail.

The result is that the majority of maritime containers are not treated in an intermodal manner on their land-based section, but move entirely by road or by rail: the container acts rather as a packing box (it leads to a significant drop in the theft of goods) than an intermodal tool.

The German port of Bremerhaven is competing with that of Gdynia, with a land-based service carried out by Polzug (subsidiary of PKP and the DB). The PKP is having trouble accommodating to the reform separating infrastructure, freight transport (profitable!), inter-city passenger transport and regional transport.

For all that, the medium-term prospects are good. The production of manufactured goods is increasing, and international traffic is expanding. Undoubtedly, Polish transport firms are subject to a period of transition that is longer than for other member countries, delaying their capacity to provide a cabotage transport in the Union, but a phenomenon of convergence seems already to have been triggered.

• Of the 350 million tonnes transported in **Portugal**, 85% moves by road, 12% through the ports and **only 3% by rail**. Road transport is 96% national, two-thirds of the rest is traffic with Spain. Rail freight is 90% national, the rest is with Spain. In Spain the public authorities have supported the creation of 25 logistics platforms, while in Portugal governments have not become involved in this activity beyond making exploratory studies. The existing platforms have been set up for their own use by the large distributors and the railway company.

A recent event could change this state of affairs. The port of Sines has started operations, with the presence of the international warehousing and handling firm PSA (Singapore). Conceived as a port of transhipment between inter-Continental routes and feeder routes, it could nevertheless take traffic from other ports. An agreement has been made for a rail service five days a week in the direction of Lisbon and Porto. The way the whole Portuguese port system is run could therefore see thorough change.

Rail transport is evolving too. Goods are likely to be concentrated towards five points in the country, with direct connections between each of them twice a day. But it is not really known how much demand there is for such a service. Furthermore, a project associating road transport firms, the railways and freight forwarders to create an intermodal company has waited four years for the necessary authorisations from the rail enterprise….

Finally, there has been **an effort to create a highway of the sea** with Great Britain and Northern

Europe. Its price (0.8 euros per kilometre) remains higher than that for road transport (0.7 euros per kilometre), while European governments do not want to subsidise this system. It is true that road transport works on unusually low margins (Portuguese enterprises declare themselves to be in deficit), while respect for working time regulations is not rigorous and the road tolls for heavy vehicles are low.

• Research on intermodal transport in the **United Kingdom**, as noted in the recent report by the French Plan Commissariat, is handicapped by a lack of data, which is not collected in detail by the administration, although national-level statistics for the road sections of intermodal journeys are available and there are new proposals for collecting maritime data.

Great Britain is an island and much of the freight which arrives is in containers, which a priori should encourage intermodal transport. The Channel Tunnel also enables this technique to be used for transport links with the Continent. But rail-road transport in Britain makes up only a quarter of rail traffic, which itself only accounts for 8% of British freight traffic: Only **2% of British surface freight transport is intermodal**. Since 1998 transport of goods through the Tunnel has fallen by half. The agreement between Eurotunnel and the operators did not encourage its development and traffic was disturbed for a long time by the problem of illegal immigrants, to the extent that road transport remains competitive for serving France, Germany and Italy. Nevertheless there has been some improvement in the situation.

The goods transported are forestry products, chemicals and food. An increasing use of this technique is being made by supermarket chains, which have increased their intermodal traffic by 20% in the last year with the goal of making logistics organisation more efficient. It should be noted that operators advertise their intermodal transport services by drawing attention not to their prices, but to road congestion, which intermodal allows traffic to escape!

A strategic rail freight network linking 40 major industrial towns has been published. The intermodal freight offer is fragmented at the moment, 20 terminals being linked by just one train a day in each direction. There is a lack of the associated logistic installations (warehousing, storage depots) in proximity to intermodal sites in some regions, especially around London, in Wales, and in north-east England, which puts a brake on the use of this technique.

The plan for a new line, "Central Railway", linking the Channel Tunnel to Liverpool in the north of England by using an old route which is currently mostly disused, and which would have been financed by participation from the banks, was not supported by the ministry, either because it was sceptical about the relevance of the dossier or because it was concerned that its possible success would rebound on passenger transport, already weakened by network congestion.

The principal operators are Freightliner, created from the historic BR, and Intermodal Express (a subsidiary of EWS which specialises in bulk transport). They offer a terminal to terminal service, while other operators, which are smaller, offer a door-to-door service accompanied by additional logistics operations. Freightliner and Intermodal Express own their own terminals but also use those of other operators. Various intermediary companies also intervene in the services: companies leasing intermodal units, and railhead terminal owners and operators. The logistics company Tibbett & Britten manages two platforms, Associated British Ports Group three.

The government has announced a programme of modernisation of the freight network, including terminals, especially on the routes between ports and the big metropolitan centres. It is necessary both to widen the gauge clearances and to remove the pinch points on East-West routes: this project is advancing. The recent widening of clearances on the North-South route immediately bore fruit, with the launching of several supplementary trains daily.

The Rail Regulator decided to subsidise freight traffic by reducing its track costs. The SRA (Strategic Rail Authority) can allocate a "freight facilities grant" (subsidy for intermodal equipment) in which a grant is given to operators according to the equivalent road vehicle-km avoided. The "track access grant" subsidises freight train operators' network charges. Finally, the "company neutral revenue scheme" is a subsidy for container traffic which is paid to the partner in the transport chain which takes the highest commercial risk. The criteria taken into account include the impact on the environment, the additional financial costs and the points served.

For the regulatory authorities, the prospects for the development of intermodal transport depend on the improvement of reliability (for a journey from Day A to Day B) and the reduction of prices.

A recent study for the Rail Regulator predicted a doubling of domestic intermodal traffic over 10 years. The argument was based on the overall transport context, in which the prospects for

growth of road freight transport are disquieting, because of the possible extension of road pricing (today in London and perhaps one day on inter-urban routes), the lack of recruits to drive lorries, and the European Working Time Directive, etc…..

• Intermodal transport in **Sweden** is seen as an alternative to road transport. Already **the Swedish modal pattern is fairly atypical in Europe**, because its 90 billion tonnes-kilometres are divided between 22% for rail, 36% for sea and 42% for road.

Intermodal transport is both maritime (with numerous ferries) and rail, and lends itself to serving ports, land-based long-distance links (the country measures 2000 kilometres from North to South) and to crossing sea inlets. It carries 6% by value of the country's exports and 10% by value of imports. Apart from intermodal transport, there are also rail services carrying swap bodies, introduced by manufacturers such as Ikea and Volvo. The products transported by intermodal techniques are those principally of high-density value, apart from steel and paper which are handled in specialised boxes.

The principal ports are Gothenburg, which handles 70% of Swedish containers and is also a ferry terrminal, and Stockholm, whose traffic is mainly in the Baltic Sea.

Intermodal transport involving the railway mode is, in its case, divided as follows:
— 27% lorries;
— 22% 20 foot containers;
— 18% 40 foot containers;
— 17% trailers;
— and 16% specialised containers
and it is largely international.

In terms of railway reform, **the State is responsible for the infrastructure**, including terminals; the operators are responsible for services. These are divided, as in other countries in Europe, between:
— a member of the UIRR family, Rail Kombi, which is a subsidiary of the Norwegian Cargo Net with a minority participation of the Swedish Green Cargo, and which sells a transport service to road freight transport firms from railhead to railhead. Its annual traffic is some 45,000 TEU and has increased by 60% during the ten last years;
— a subsidiary of the historic rail enterprise, Green Cargo, which sells a door-to-door transport to shippers;
— finally, other firms intervene in intermodal transport: ICE, Maersk and new entrants.

The State is trying to fund technological research and supports discussion forums and study groups. An innovative attempt to use small containers has been a commercial failure.

A commission has been asked to draw up policy objectives for freight transport, according to the formula "an efficient transport and a competitive industry within the framework of sustainable development". It has recently submitted its proposals, notably a variable toll on infrastructure use to encourage intermodal transport, but without formulating its objectives in numerical terms. In effect, there must be action on Intermodal Transport Units (whose tare weight is too heavy; their use is too rigid; while ISO containers do not fit well with road transport use); on terminals (in which the State does not intervene directly but for which it envisages supporting services with a budget of 100 million euros, on condition they are open to all operators); on the clearance gauge ("double stacking" on the line between Finland and Poland would increase capacity by 25%); and on the expansion of research; improving logistics organisation, improving technical performance of engines, and promoting research on fuels.

The commission is also examining the obstacles to the development of intermodal transport, whether of a technical, organisational, legal… order. Information systems must provide better links between the railways and the other modes; and a special plan aims in this way to make movement through the ports more fluid.

The outlook for changes in intermodal transport seems positive, with an increase of 8% a year for ferries, in which shippers are showing a sustained interest. But the forwarders do not want to take a risk by putting their own system in place. In Finland intermodal transport provides a domestic service to the ferries that connect with Lübeck. Containers transit the country towards Russia, but they go by road to preserve control over it!

Intermodal transport in **Switzerland** is composed, as far as 80% of it is concerned, of international traffic in transit and especially of transit along the North- South axis (85% of the total).

Intermodal transport in transit is divided in the following way:
— 34% rail-road transport (of which 4% for the rail motorway, or 'rolling road' or 'piggy back', which therefore has only a marginal role);

— 30% traditional rail traffic;
— 36% road transport.

The share of intermodal traffic in rail traffic has doubled since 1985, going **from 20% to 40%**.

The Swiss model of support to intermodal transport, which is intense, can be separated along the different time scales:
— in the short term, aid is going to transport operations via the rail operators: one special aid to the 'piggy back' railway and another to reduce the price of freight paths. In ten years, some 2.8 billion Swiss francs (1.8 billion euros) will have been spent in this way;
— the tax on heavy lorries has made road freight transport more expensive and is expected to rise further in 2005. But the RPLP ("charge proportional to the distance covered") has not had the effects that were expected on the modal division of freight: the size of lorries has increased and their number has decreased, thereby absorbing this increase in the tariff for using road infrastructure;
— In the medium term, aid is being given to the construction of terminals (including abroad, as at Busto in Italy) and to interest-free loans for the purchase of rolling stock;
— in the long term, the new rail lines currently under construction will modify strongly the transport system as a whole. The Lötschberg line will enter into service in 2007, that of the Gothard in 2014, with a capital expenditure of 10 billion francs by that date. In addition, the traffic through the Simplon is rising because of the improvement to its gauge configuration.

Among the actors of rail - road transport, CFF Cargo represents 90% of the market but BLS, allied to Railion, will now use its own locomotives. The strategy of CFF is to strengthen the Italy-Germany route by creating ad hoc companies in cooperation with other partners and by buying multi-current traction units. For domestic traffic, the use of swap bodies that are handled horizontally is developing (400 units are already in use). The company Hupac (associating majority private shareholders with CFF) is developing its volume of traffic intensively (+ 11% in 2003) and has 80 trains running on the European North-South axis daily. In particular it sends 30 shuttles daily towards its Italian hub of Busto.

The entry of new operators onto the market has been noted, but on a reduced scale. Finally, ICF is in difficulty, in Switzerland as elsewhere. Generally, there is a certain reluctance to provide information, which does not help analysis.

Among the challenges for the future, the **reliability of the service must be improved** (more than half the trains are more than half-an-hour late). There are multiple causes: the limited capacity of many rail interchanges, a lack of locomotives (orders have been placed), saturation of Italian terminals (new ones are being constructed). **As to costs**, they are not well known!

So far, the energetic policy of the Swiss authorities has had effects that are far from negligible. Nevertheless i**ntermodal transport has only experienced a growth in parallel to that of road transport, without taking a larger share of the market**.

Forecasts for about 2030 that were calculated recently envisage a much stronger growth on rail than on roads (the rail share would go from 40% to 46%) but do not give any precise figures for intermodal transport. This outcome would be the result of a vigorous policy which is likely to go in the following direction:
— concentration on the major routes (use of long and fully-loaded trains, avoiding road pinch points and satisfying the environmental expectations of people living nearby);
— reductions in the price of freight paths by subsidising the operator, or the construction and maintenance of infrastructure by the railway management;
— exempt heavy lorries from the RPLP charge when they are serving an intermodal;
— guarantee loans for constructing terminals;
— restrict night-time road freight traffic (currently forbidden between 10 p.m. and 5 a..m)
— persuade the public authorities to join in the strategy (30% of receipts from the RPLP are assigned to the cantons). Note that road tolls will in this way have contributed to transport options that are alternatives to road.

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The situation and dynamics of intermodal transport in Europe both have rather contradictory characteristics. Countries and operators experiencing a growth in traffic live side by side with those where is it falling away. Governments who invest in infrastructure projects and new capacity are neighbours of those which, while proclaiming their desire to see a different balance between the modes, are reducing their financial support and seeing a decrease in intermodal traffic.

These comments also apply to the European Commission, whose resources are not always at the level of its ambition. But its role is not only financial, and the promotion of standardisation as well as interoperability shows the **importance of technical and organisational factors**, at the same time as **budgetary and regulatory factors.** The comparative method ("benchmarking") and the diffusion of **good practice** can have a beneficial effect, and this panorama drawn up by the OPSTE hopefully contributes to that process.

From this picture of contrasts, the conclusion might be that intermodal transport is only **one particular answer** among very many others to the questions that public authorities and economic actors ask themselves about the future of transport. Intermodal transport, whether it marries road freight to the maritime mode, rail freight or waterborne transport, cannot be introduced under any conditions or in any place. On the contrary, efforts to encourage it must concentrate on those cases where it has the best chance of demonstrating its technical and commercial effectiveness and its benefits, socio-economic if not financial.

ntermodal solutions are more efficient on **axes** with heavy traffic, over long distances. Though intellectually seductive, the various "hub and spokes" formulae, that aim to massify low-volume traffic flows by making them transit a single central sorting point, have been abandoned. It is through "industrialised" shuttles which associate productivity with service quality (providing that they own suitable rail freight paths) that rail - road transport can develop today.

Can the development of intermodal transport manage without **political support** from the public authorities? Public support in launching new services is usually necessary during the inevitable period of apprenticeship. However, not all public aid takes the form of money, **nor does it all have a budgetary impact.** For example, the prohibition of heavy lorries at night costs the budget of the Federal State and cantons nothing, and yet it has an effect on the modal distribution of freight. The same could be said of the former Austrian system of "ecopoints". Conversely, some measures without budgetary cost have been disadvantageous to intermodal solutions: with the enlargement of the Union to ten new members, if the liberalisation of the road freight transport market is allowed to operate without a simultaneous harmonisation of competition conditions, it will bear down on road prices (worrying the French professional road haulage organisations), and will thereby restrict the area in which intermodal transport is competitive.

Construction, access and infrastructure tariff regime, fiscal policy, labour regulation, technical standardisation and interoperability, the regulation of emissions and noise and other nuisances: the public authorities have to operate **a vast range of instruments** in order to contribute, with the private actors, to the development of an intermodal solution which associates the special characteristics of each one of the various transport techniques.

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Summary by Michel Savy and Christine Aubriot derived from the contributions of Catherina Horn (Germany), Michel Beuthe (Belgium), Rafael Gimenez i Capdevila (Spain), Antoine Beyer (France), Séraphin Kapros (Greece), Sergio Bologna (Italy), Jan Burnewicz (Poland), Fernando Nunes da Silva (Portugal), June Burnham (UK), Bertil Carstam (Sweden), Tristan Chevroulet (Switzerland), Martine-Sophie Fouvez (ECMT), Claude Rossignol (European Commission). Statistics came from: UIC, ECMT, UIRR, Eurostat/DGTREN.

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