

## NEW TRANSPORT CORRIDORS DIRECTED TO THE EAST.

Hans TEN VELDEN

Physical Planner

NPPA

The Hague - The Netherlands

Martie MEIJER

Geographical Researcher

NPPA

The Hague - The Netherlands

Arnaud BURGESS

Economist

Institute NEA

Rijswijk - The Netherlands

Henri DIJKMAN

Transport Researcher

Institute NEA

Rijswijk - The Netherlands

### INTRODUCTION

The fall of the Berlin wall in November 1989 has given a tremendous impetus to thinking on east-west relations, not least in the field of transport and infrastructure. Recent orientation towards Eastern Europe has left its mark in the Netherlands Fourth Physical Planning Memorandum and the related infrastructural plans. At the European level, the seminar of the European Conference of Ministers of Transport (ECMT) in late 1990 was entirely dedicated to the future of east-west transport. These developments coincide with the increasing attention paid to physical planning at a European level, which recently became apparent from the publication of the Europe 2000 document<sup>(1)</sup>. Regarding the Netherlands, the Fourth Physical Planning Memorandum (1988) stated that the desirability and possibilities of physical planning at European level needed to be examined. This statement sparked off the recently completed study entitled *Perspectives in Europe, an exploration of options for European spatial policy*<sup>(2)</sup>. In addition to a broad analysis of spatial problems on a European scale, the study contains two scenarios for the spatial development of Northwestern Europe and also gives impetuses to European policy-making. In the so-called 'chains and zones' scenario, the infrastructural concept of the major transport axes has been integrated with concepts ranging from urban relations and urbanization to 'development axes'. This kind of spatial structures provide a framework for integrated research and policy-making. Policy regarding transport, infrastructure and physical planning will have to be supported by analyses of goods and passenger transport flows.

Against this background, the Institute NEA has conducted a study on behalf of the National Physical Planning Agency regarding the present and future significance of new east-west axes from a Dutch viewpoint. This paper deals with the growth of transport in Northwestern Europe and problemizes the significance of the east-west axes in the light of the development of east-west transport in the unified Germany. The theoretical framework of the development axes is discussed in order to explain that both the study of and the finding of solutions for the European transport problems need to be structured from a dynamic spatial viewpoint. We will look into the structure and quality of European transport data which poses several research problems. Finally,

<sup>1</sup>. Europa 2000; Planologische perspectieven voor de gemeenschap, EC 1991

<sup>2</sup>. Perspectives in Europe; NPPA, The Hague 1991

we will present some of the results of research on east-west axes and discuss the methodology and dataquality.

## 1. TRANSPORT AND INFRASTRUCTURE IN NORTHWESTERN EUROPE

### 1.1 Growth in European Transport

National transport flows and those between the EC countries as well as those to and from the European Free Trade Association (EFTA) countries have been increasing steadily for a fairly long period of time. Between 1970 and 1988, passenger transport and goods transport increased by 70% and 50% respectively, almost exclusively as a result of the increase in air and road transport. This knowledge leads to a permanent flow of reports by industrialists' interest groups (ERT) and transporters' organizations (UIC, IRU, IRF) concerning the quality and capacity of the international infrastructure. The growth in road haulage is a particular source of concern for the EC too. In addition, congestion at a large number of European airports is becoming an increasingly big problem.

The growth of total international goods transport between EC countries up to 2010 is expected to amount to ca. 50%, in terms of both weight and transport performance (tons/km)<sup>(3)</sup>. Despite measures taken, road transport will represent the major portion of the growth; congestion will increase on the main routes and in all urban areas; and, as a consequence, environmental pollution will increase. The 'Eastern Europe effects' have not yet been taken into account in these prognoses (September 1989).

These issues have recently been highlighted by the Group Transport 2000+ in the 1990 report *Transport in a fast changing Europe*, an initiative of the EC commissioner for transport, Van Miert. The report emphatically recommends that other modes of goods transport - trains, inland vessels, coastal transport and other forms of combined transport - be promoted to take care of at least part of the growth. In view of the nature and magnitude of the problems, there is work to be done in the field of integrated spatial and infrastructural policy:

*'There is an urgent need for a common viewpoint on a system of major axes for the transport modes, ports, harbours, multimodal terminals and telematics; and not just in the EC, but also linking up with the transit countries of Scandinavia and Eastern Europe. The viewpoint will need to be founded on main streams of goods and passengers, bearing in mind that transport policy does not necessarily imply response to regional development. It should be up to the EC to designate axes such as inter-urban corridors, the nodes of urban areas where they meet up, and major infrastructural aspects of ports, harbours, terminals and telematics'.*<sup>(4)</sup>

To date, the European Commission has not yet managed to make a start with an integral European transport and infrastructural policy. Designating a system of European major transport axes would constitute an important element. The structure and implementation of European major transport axes is being deliberated on many fronts. At present, however, the accent is on

<sup>3</sup>. Internationale vergelijking kwaliteit infrastructuur; Coopers & Lybrand management consultants, 1990

<sup>4</sup>. Transport in a fast changing Europe; Group Transport 2000+, 1990 p.37

national strategies, as appears from the current developments of lines for high-speed trains, for instance. The EC countries themselves have not yet shown much initiative as regards actually fulfilling the need for the creation of European networks. Physical planning organizations in a number of countries react to the need for planning at European level by linking elements of regional development and urbanization to the traffic and transport issue. This results, for instance, in the presentation of spatial 'pictures' of axes (RPD, DATAR, IFHP, ARL) in which spatial developments on a European scale are interrelated with the concept of 'major transport axes' which focus particularly on east-west relations.

Due to the inextricable connection between issues concerning location and transport, it is worth approaching the east-west issue from a spatial viewpoint. Spatial concepts and strategies have already proved to be useful aids in policy-making and consensus-building as regards transport and infrastructural policy plus urbanization and regional development.

## 1.2 Increase in East-West Transport

If the German prognoses for the new transport relations between the FRG and the former GDR are a reliable indication of the potential increase in the traffic with the other Eastern European countries, the effects will be enormous. On the basis of the proximity principle - which plays a significant role in the prognosis models used - the increase in flows of goods and passengers between bordering regions with large population centres will be the largest. Shifts will occur in the spatial pattern of flows of passengers and goods between East and West.

The goods transport to Eastern Europe currently comprises a mere 3% of the total European crossborder transport. For the future increase in east-west flows of goods and vice versa, innovative scenarios have been created (e.g. ECMT seminar 1991) which point to an enlargement of transportflows by a factor of 6 or 10<sup>(5)</sup>. This forecast is based on the assumption that trade relations between East and West will have been more or less normalized by 2010. The expected effect of German reunification on the volume of goods transport becomes apparent in the comparison in table 1. Annual passenger transport between East and West Germany is expected to increase from 27 million trips in 1985 to 228 million in 2010<sup>(6)</sup>.

Europe does not yet have a satisfactory west-east oriented infrastructure to cope with the increase in transport. This applies to road transport as well as to railway and overwater transport. Before the detente, the major part of the goods transport in the former Comecon countries occurred by train. The opportunity to freely choose modes of transport is currently generating an enormous increase in road transport. This is also due to the abolition of subsidies for railway transport and adaptation to market conditions. Consequently, haulage companies in Eastern Europe are mushrooming. The new "Bundesverkehrsplan" (German Federal transport plan, due in 1992) will include a sizeable programme for the infrastructural "Wiedervereinigung" (reunification). At present, the so-called Lückenschluss programme<sup>(7)</sup>, a short-term programme, is in operation.

<sup>5</sup>. Prospects for east-west European Transport; ECMT, 1991

<sup>6</sup>. Developments in Transport in Central and Eastern Europe from the point of view of the European Community; A. Frohnmeyer in: Tijdschrift voor vervoerswetenschap 1/1991 p.83

<sup>7</sup>. Bundesverkehrswegeplanung im Lichte der Deutschen Einheit; J. Huber in: Stasse + Autobahn, 1/1991 p.5

Table 1.

	Before	After
Trade between FRG - GDR	30	244
Trade between FRG and Eastern Europe	35	145
Subtotal of trade	65	389
Transit to GDR via FRG	4	36
Transit to East. Eur. via FRG	6	25
Subtotal of transit	10	61
Total	75	450

Comparison of German forecasts for 2010 regarding goods transport with the former GDR and Eastern European countries made before and after the fall of the wall (in million tons).

Source: Reynaud in: Prospects for east-west European transport: ECMT 1991.

## 2. TRANSPORT AXES IN A GEOGRAPHICAL PERSPECTIVE

### 2.1 From transport axes to development axes

Large-scale axes drawn on a map are abstract representations of important spatial relations. The form of axes usually conceals the fact that the precise course of transport flows is much more capricious than the straight or slightly curved line on a map. Furthermore, pictures of axes create the impression that the major interaction occurs between the ends of the axis, while a large part of the interaction actually consists of consecutive short-distance movements. The Perspectives in Europe study indicates the possible spatial effects and implications of the axes. Regarding axes as chains of urban and economic centres makes them into the main branches of a network. The number and size of the links determine the chains' strength. Such a spatial concept is based on the assumption of reinforced intra-European relations. This is the reason chains can be viewed as development axes.

We believe that research on transport and infrastructure on the basis of this concept should be much more integrated with research on shifts in spatial patterns and centres of production, consumption and service. This implies an unravelling of transport flows into constituent parts, each with its own spatial pattern. An integrated policy on transport, infrastructure and spatial developments, based on a common spatial strategy, can then be much more differentiated and so do justice to the complex and dynamic nature of the relations between the European regions. Research conducted so far by the National Physical Planning Agency has shown that international bulk transport, for instance, requires a different policy than transport of final products.

In relation to an integrated European spatial policy and transport policy, the axes concept is important in order to designate the European main relations and to select the modes of transport to be developed for these main relations. The transport world refers to 'axes management' in this

matter.

## 2.2 The East-West Infrastructure

New east-west axes in Europe will first appear in the unified Germany, where plans for construction and improvement of east-west infrastructure have entered an advanced stage<sup>6</sup>). A striking aspect in that regard is that, for the Benelux, the Rhine/Ruhr area is still considered the major linking region with the East (Hannover, Berlin, Dresden, Leipzig, Poland, Czechoslovakia) and the North (Hamburg, Scandinavia). However, that region is already excessively congested and will not be capable of handling the expected increase in transport flows. At an ILS conference (Institut für Landes- und Stadtentwicklungsforschung Nordrhein Westfalen), the mayor of Dortmund pointed out that the Ruhr area is not particularly keen on enormous transit flows. This development is not only significant to Germany itself but also to the surrounding countries. It is perfectly conceivable that the north of Germany, harbouring such important towns as Hamburg, Bremen, Hannover, and Berlin as the new metropolis, will witness a substantial economic boost. As a result, it will be essential for both the Netherlands and Germany to focus on the northern west-east route from the Randstad (urban conglomeration of Western Holland) via Enschede/Hengelo to Hannover and Berlin, branching off to the north near Osnabrück.

This development is of strategic importance to the Netherlands if it wishes to continue to serve as a major distribution-base for Germany and Eastern Europe. For this reason, the study on east-west axes includes a comparison with competing axes, via the Antwerp corridor and the Paris corridor. Section 4 discusses some of the results.

## 3. EAST-WEST CORRIDOR RESEARCH

### 3.1 Introduction

During the research we hit upon considerable data problems concerning the interregional flows in Western Europe, and to an even greater extent, the flows to and from Eastern Europe. For this reason, section 4.2 deals with the methodology of the study and the data related problems. Considering the quality and structure of the available data, the resulting figures must be interpreted with suitable caution.

### 3.2 Methodology and dataquality

In transport research on east-west corridors, data collection plays a significant role in two respects. Firstly, current data provide insights into the present transport situation. Secondly, the data serve as a basis for prognoses. Defining transport axes requires data on origin-destination relations at regional level. To date, detailed and reliable data on goods transport are only available for this purpose at national level. However, it is an international statistical convention to record domestic origin/destination at regional level, while information on foreign destination/origin is usually available at national level only. Consequently, the definition of international transport axes requires the harmonizing of international transport statistics of

<sup>6</sup>. See note 7.

various countries in such as fashion as to yield a regional distribution of transport flows. Not until then will it be possible to assign international transport flows to a particular transport axis.

The NEA institute has converted the international country-region relations into international region-region relations by using the import and export structure of a country as distribution code. In this way, a European transport matrix of 108 to 108 European regions has been construed for the road, railway, inland shipping and maritime transport modes for 11 goods categories. An administration of transport flows from region to region (NUTS III scale), both national and international, would yield better data.

National and international passenger transport is usually a neglected subject compared to goods transport; fewer reliable sources are available. Since passenger transport is one of the main causes of congestion in the road network, action must be taken as regards data on this issue. The available data are usually outdated or only partially suitable for transport axis analysis. As regards the Randstad-Berlin axis, it is at present only possible to present a rough projection on the basis of population size and potential developments of urban areas situated along the axis. For instance, Berlin will once again perform an important linking function in the trade with Eastern Europe. The urban areas of the Randstad (a population of approx. 3.6 million) and Berlin (population of 3 million) can be qualified as major urban areas of more or less the same size. Also in view of the explosive growth of the transport between Hannover and Berlin, passenger transport between the Randstad and Berlin may be expected to increase from ca. 160,000 in 1986 to more than 500,000 annually in the future. A high speed train connection between Amsterdam via Enschede/Hengelo to Hannover and Berlin would then be able to take up part of the increase in passenger car traffic. Incidentally, such a connection may be of great regional/economic significance to locations where the trains stop.

### 3.3 Some results of the Corridor Study

Prognoses are made in two phases. In the first phase, economic development determines the total transport of goods and passengers between national regions and between countries. In the second phase, the total transport is divided among the modes.

The transport of a certain commodity is estimated on the basis of economic development of sectors which are responsible for production on the one hand and demand for the commodity on the other. Table 2 shows the economic development of the Gross National Product in an average annual growth figure over the period 1986-2010. It includes a high and a low scenario for the Eastern European countries in view of the uncertain developments of these countries. The underlying idea is that the actual economic development will fall within the range thus defined.

It should be borne in mind that the growth figures provided do not reflect a stable annual growth. These countries, rather, follow the J-curve (which means that economic growth improves after an initial period of negative development).

The Randstad-Berlin-Poland (RBP) and Randstad-Hamburg-Scandinavia (RHS) corridors follow a central axis from the Randstad (the provinces of North Holland and South Holland, Utrecht) via the East (the provinces of Gelderland, Overijssel) and Northern Germany (in 9 regions) to Berlin. The hinterland consists of Scandinavia (Denmark, Norway and Sweden) and Eastern Europe (former GDR, Poland and the former Soviet Union). In the study, the flows of goods between Germany and the Netherlands have been regionalized. The transport in relation to the hinterland has been presented as flowing from the Dutch provinces and the German regions to these countries as a whole. In addition to the above two corridors, other two east-west axes are

examined as well; on the one hand from the area around Antwerp and on the other from the Parisian basin via Northern Germany to the hinterland of RBP and RHS.

Table 2.

	Low scenario	High scenario
The Netherlands	2,86	2,86
Germany (W)	2,68	2,68
Germany (E)	4,07	6,18
Belgium	2,64	2,64
Denmark	1,90	1,90
France	2,67	2,67
Norway	1,98	1,98
Sweden	2,32	2,32
Poland	3,48	3,78
Former USSR	3,63	4,63

Average annual GNP growth figures 1986-2010 in %.

Source: Prognos, World Report, 1991; CPB, Various Publications, 1991; NEA, European Traffic Forecast.

Figures 1 and 2 show the relative and absolute increase in the transport flows on the corridors. The rightmost column in figure 1 represents total transport growth, amounting to 100% in the low scenario and 140% in the high scenario. As expected, international transport on the corridors from the Netherlands and Germany is growing more rapidly than national transport as a result of the lifting of the borders in a united Europe. The two left-hand columns represent national transport in the corridor regions in the Netherlands and Germany. Growth occurs by almost the same factor in both countries, amounting to a rise of approximately 70% compared to 1986. National transport in the Netherlands in 2010 will then amount to 98 million tons and in Germany, 127 million tons.

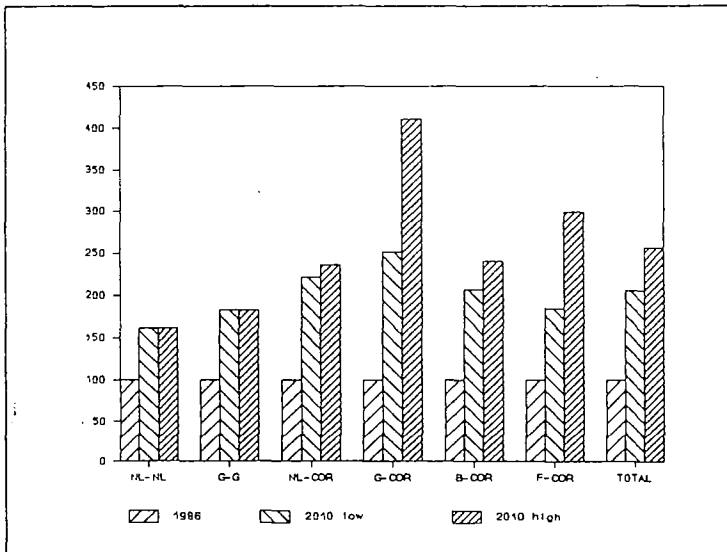
In both scenarios, Germany's international transport is by far the most rapidly growing compared to the other areas on the corridor. Germany already had the strongest initial position, but in 2010 the absolute difference between Germany and the other countries will have increased considerably. International German transport will reach 195 million tons according to the low scenario and 318 million tons according to the high scenario. This rapid growth, particularly in the high scenario, is largely explained by the already important trade relations between Germany and the East bloc countries, and especially by the German unification, which will eventually give a strong impetus to the Germany economy. If orientation on the hinterland of both corridors remains the same, transport in relation to France and to a slightly lesser extent to Belgium will grow more rapidly in the high scenario than transport in relation to the Netherlands.

Determination of the total goods transport volume is followed by the second phase of the prognoses in which the transport flows are divided among the modes.

Similar to the estimate of economic development, the estimate of the modal split is made on the basis of scenarios. The influence of EC policy is taken into account alongside trend-following developments in the past few years - in the cost development of the different modes of transport for instance. This entails considering the consequences of fiscal harmonization (raising road taxes, excise increases) as well as the influence of general policy plans such as environmental levies, internalization of external costs of transport, and also promotion of new transport concepts such as combined transport. On balance, the policy will lead to relatively high cost increases for road transport. Accordingly, the analysis of modal split developments is interesting, considering the policy measures the EC is preparing in order to inhibit road transport. Figure 4 illustrates the development of transport per mode on the Randstad-Berlin-Poland and Randstad-Hamburg-Scandinavia corridors as a whole. Sea transport appears to be the only mode of transport that follows the development of the market as a whole reasonably well. This leads to the conclusion that sea carriage serves a specific market segment, to which the other modes of transport barely have access.

Despite EC policy, the rapid growth of road transport in comparison with the other inland transport modes is striking. Due to the importance attached to high quality and flexibility as a result of new logistic developments, road transport is the fastest growing mode. Volumes of railway transport and inland shipping appear to have come to a standstill; on an absolute scale, these volumes even appear to decrease. Transport growth is almost entirely represented by road transport.

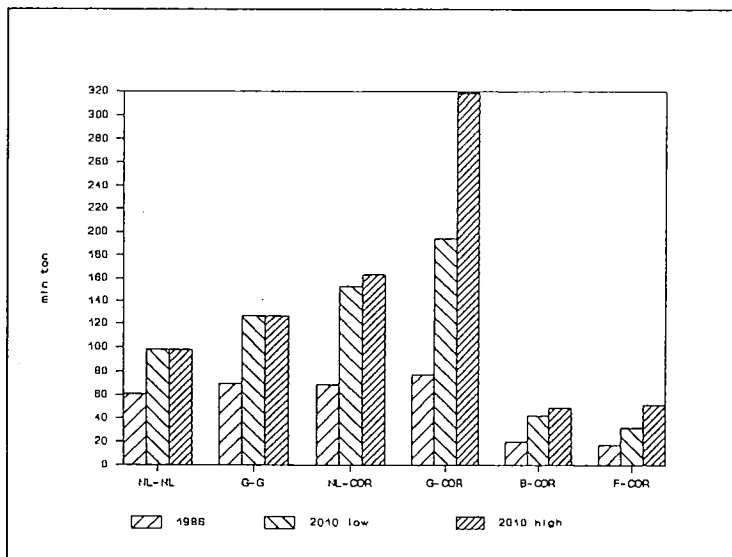
Figure 1



Index figure of the increase in transport, divided according to the various differentiated relations on the Randstad-Berlin-Poland and Randstad-Hamburg-Scandinavia corridors, as well as the other studycorridors from Belgium and Northern France; 1986=100.

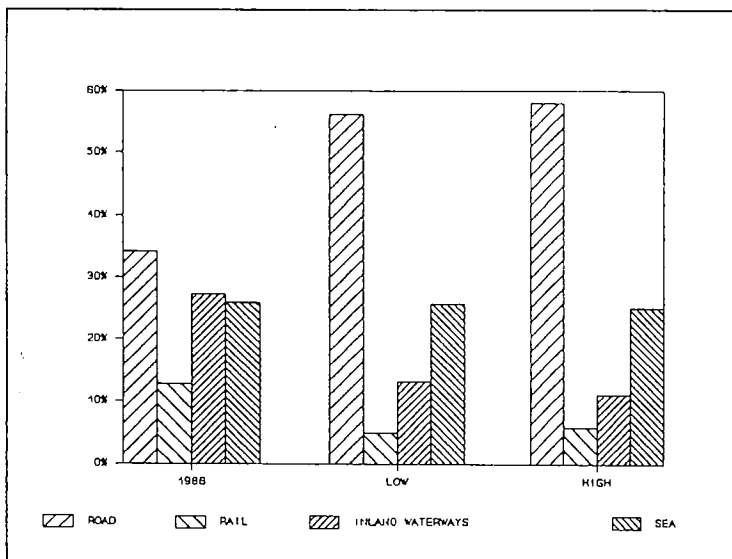


Figure 2



Same as figure 1, absolute volumes 1986/2010

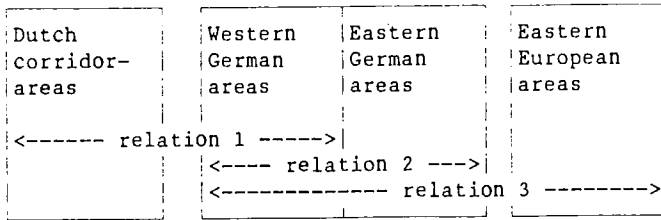
Figure 3



Developments in modal split of the total transport on the Randstad-Berlin-Poland and Randstad-Hamburg-Poland corridors.

The figure below represents the studied links within the Randstad-Berlin-Poland corridor.

Figure 4



#### Main Corridor Areas and studied relations

Further inspection shows that inland shipping is losing ground even on markets on which it is traditionally strongly represented. In relation 1, its share even drops from 62% in 1986 to 38% in 2010. This decline runs parallel to developments on the national markets. Here we see a considerable lapse from 34% to 10% on the Dutch market and from 21% to 9% on the German market. The same applies to railway transport, whose share is roughly halved in the modal split, to 0.4% and 13% respectively on the German and Dutch markets in 2010.

Shifts in the modal split can also be expected in the direction of Eastern Europe, particularly regarding transport between the former GDR and FRG (relation 2). Whereas the proportion of road transport in both directions amounted to only 4% and 6% respectively in 1986, it increases to 52% and 72% in the low scenario and to as high as 64 and 82% in the high scenario in 2010. The proportion of railway transport in relation 3 drops in the same period from 59% to 12% (low scenario) and 15% (high scenario) respectively. Sea transport is also losing ground. The proportion of inland shipping remains relatively stable in relation 3 and its proportion of 22% in the low scenario is actually larger than the 17% in the basis year. However, the inland shipping proportion will drop to 12% according to the high scenario.

#### 4. CONCLUSIONS

There is no longer any doubt that the flows of goods and passengers between Eastern and Western Europe will substantially increase in the future. In the long run, developments in the overfull Ruhr area as linking region between the Benelux and Northern France on the one hand and the east and the north on the other, will necessitate the creation of other east-west axes. The study provides a rather sombre picture regarding possibilities to influence the modal split in the various relations in favour of railway transport and inland shipping. To this end, the transhippers' opportunity to freely decide which transport mode they wish to utilize must first be raised for discussion.

The concept of large-scale axes as connections between economic centres offers a solid framework for studies on the interrelated issues of regional development, transport and infrastructure. However, this kind of research requires a restructuring of the collection and

administration of transport data.

In an EC context, a standard would have to be developed in order to set up an unequivocal arrangement of regions for Western (and Eastern) Europe for the administration of transport statistics. This would yield information on transport and traffic from a national region to a foreign region on the lowest possible scale. An integrated European system of transport statistics should not only include agreements on unequivocal geographical areas, but also on arrangements regarding goods categories, modes of transport, routes across the network and the monetary value of goods. Since the way in which transport registration will develop after 1992 is unclear - at present it largely based on customs documents - it seems the time has come to consider a new concept of transport statistics. Hopefully, the recently established European Committee for Spatial Development of the communities territory will be able to make a contribution here.

#### Literature

1. Europa 2000 : Planologische perspectieven voor de gemeenschap, Commissie van de Europese Gemeenschappen, 1990
2. Perspectieven in Europa, Rijksplanologische Dienst, 1991
3. Bundesverkehrswegeplanung im Lichte der Deutschen Einheit, J. Huber, in Straße + Autobahn 1/1991
4. Internationale vergelijking kwaliteit infrastructuur, Coopers & Lybrand Management Consultants, 1990
5. Transport in fast changing Europe, Group Transport 2000+, 1990
6. Developments in Transport in Central and Eastern Europe from the point of view of the European Community, A. Frohnmeyer, in Tijdschrift voor vervoerswetenschap 1/1991
7. Prospects for east-west European Transport - European conference of ministers of transport, 1991
8. Bundesverkehrswegeplanung im Lichte der Deutschen Einheit, J. Huber, in Straße + Autobahn, 1/1991 p.5
9. Entwicklung der großräumigen Verkehrsinfrastrukturen zwischen Norddeutschland und den europäischen Nachbarn, Akademie für Raumforschung und Landesplanung, 1991
10. Großräumige Verkehrsachsen in Nordwesteuropa, in ILS Schriften 31/1989
11. De Atlantische noord-zuid as, A.C.M. van Eekhout, in Mobiliteitschrift van de Stichting Weg feb/1990
12. Rotterdam / Nederland in de wervelwind uit het oosten, Rotterdam Consultative Group, 1990
13. Huidige en komende infrastructuur, Symposium "Oost-Europa het schip in", R. Filarski, 1991
14. Raumordnungsbericht 1990, Bundesministerium für Raumordnung, Bauwesen und Städtebau
15. Der Norden wird aktiv, R.D. Brunowski in Wirtschaftswoche augustus 1989
16. Regionales Raumordnungsprogramm Großraum Hannover 1990, Zweckverband Großraum Hannover
17. Kiemen van vernieuwing, INRO-TNO, 1989
18. De vitaliteit van het Nederlandse bedrijfsleven, NMB, Kamers van Koophandel en INRO-TNO, editie 1990

