Directorate General XVI
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D  **Country Report: Germany**

D.1  **Progress Towards Implementing the Operational Programme for Transport**

D.1.1  **Transport Policy and Strategy Review**

To date transport infrastructure development in Germany has not benefited from significant support through Structural or Cohesion funds. Nevertheless it is relevant to report here the current national and regional transport policies and priorities that influence the economic development of the New Germany Länder.

Due to its high level of industrialisation and its export orientated economic structure, Germany is dependent on a good transport infrastructure. In the period since 1945 the transport sector in Germany has been characterised by intensive infrastructure investment. In the New German Länder the compact network of roads and railways suffer from an inferior quality of construction. After German Unification, the transport strategy in both the BRD and the former GDR were standardised.

D.1.2  **Hierarchical Structure of Transport Planning in Germany**

The German national transport policy is regulated by the Bundesverkehrswegeplan - BVWP (National Transport Infrastructure Plan). The BVWP identifies the projects to be constructed in the future according to the level of urgency.

The BVWP covers planning for autobahns, interregional highways, long-distance railways, waterways and airports. The Federal Government participates in transport planning at this level.

The regional transport policy is regulated by the Landesentwicklungsplan - LVWP (Regional Development Plan for Transport). This directs transport planning within the individual German Länder (e.g. Sachsen, Bayern). In addition, regional development is also carried out by the relevant municipalities.

The LVWP covers planning for ordinary roads, regional railways, other waterways and airports with regional demand.

All other projects are, as a rule, undertaken by the municipalities.

**Identification of the demand for transportation projects**

As a rule, transport infrastructure deficits are well known. All governments (municipal, Länder or federal) can accept requests for the approval of a project according to the corresponding plan. The approval procedure comprises:

- an analysis of the present situation;
- a prognosis for the demand in the future;
- an assessment of available funds; and
• based on available funds, a final decision on the project is made.

Within the framework of the BVWP the Federal Government passed the Verkehrsprojekte Deutsche Einheit – VDE (German Unification Transport Projects) in 1991. The objectives of VDE projects are the furtherance of the economic, social and political union of Germany and the furtherance of regional development in the New German Länder.

The VDE comprises 17 projects, all of which are evaluated based on a common economic assessment. These 17 projects were taken into the BVWP 92 as a backlog of projects, which were urgently needed but had not yet been realised. Thus they were categorised as having the highest priority level for realisation and were allocated some 57 Billion DM, (28 Billion euro). The projects are as follows:

**Rail**

VDE 1: Lübeck/Hagenow-Land - Rostock - Stralsund  
VDE 2: Hamburg - Büchen - Berlin  
VDE 3: Uelzen - Salzwedel - Stendal  
VDE 4: Hannover - Stendal - Berlin  
VDE 5: Helmstedt - Magdeburg - Berlin  
VDE 6: Eichenberg - Halle  
VDE 7: Bebra - Erfurt  
VDE 8: Nürnberg - Erfurt - Halle/Leipzig - Berlin  
VDE 9: Leipzig - Dresden

**Highways**

VDE 10: Lübeck - Stettin (A20, Ostseeautobahn)  
VDE 11: Hannover - Berlin (A2) , Berliner Ring (A10)  
VDE 12: Berlin - Nürnberg (A9)  
VDE 13: Göttingen - Halle (A14, A9)  
VDE 14: Magdeburg - Halle (A14)  
VDE 15: Kassel - Eisenach - Görlitz (A44/A4)  
VDE 16: Erfurt - Schweinfurt (A81)

**Waterways**

VDE 17: Mittellandkanal/Elbe - Havelkanal/untere Havel/ Berliner Wasserstraßen

**D.1.3 The Bundesverkehrswegeplan (BVWP) (National Transport Infrastructure Plan)**

The BVWP was first developed in the 1970s and is updated regularly (e.g. ’73, ’77, ’80, ’85, ’92). It is a national framework for investment in transport infrastructure from the federal budget.

The BVWP represents a long tradition in national transport planning. The National Government has its own priorities such as the VDE or the Transrapid. At the same time the German Länder also receive funding for their regional investment projects. The requests for urgent measures in 1974 amounted, for example, to 200% of the length of the existing network and in 1985, 100% of highway length.
The selection of projects is carried out by the Federal Government, after pre-selection by the regional governments. Before the final selection, the projects are assessed at round-table conferences between representatives of the national and relevant regional governments.

In order to be assessed at the round-table conferences the projects undergo an extensive evaluation process. This evaluation comprises the following elements:

- economic evaluation;
- ecological evaluation;
- urban planning evaluation; and
- other project specific criteria.

The economic evaluation includes project costs and project specific benefits. The benefits are again broken down into specific costs (e.g. for project implementation) and regional effects such as employment and environmental benefit.

The benefits are weighed in comparison to the costs of investment. The difference between costs and benefits is the first indicator of the economic evaluation. The cost/benefit ratio is the second indicator.

All of these factors are shown in an overall evaluation for each project. This evaluation results in a rating for each project. The higher the rating, the better the chance of realisation. However, there is no guarantee that a project will be realised based only on its rating.

The VDE comprises BVWP projects with highest priority. They are now and will, in the next few years, be the most important projects and will thus be realised first.

The BVWP is financed almost exclusively through national government. Some of the projects have priority in the TEN objectives or in the Pan-European Corridor. Other projects are included in the TINA Programme for connection to Central and Eastern European Countries - CEEC.

The objectives of the BVWP project planning process reflect the national transport policy objectives. The effectiveness of the implementation of these policies can only be assessed based on an evaluation of selected projects. This evaluation is planned for a later stage of this project.

### D.1.4 The Gemeindeverkehrsfinanzierungsgesetz – GVWG (Municipal Transport Funding Law)

The current budget of the GVWG fund is 3.28 billion DM, 1.7 billion euro. This fund is financed through a tax on petrol. Project funding is provided by the national government (20 %) and the regional governments (80 %). Of these funds 1.55 billion DM are used for building roads in municipalities (8,144 projects) and 1.68 billion DM are used for projects in public transportation (1,667 projects).
The allocation for the GVWG can be carried out by either municipalities or the federal states. The criteria for funding are written down in § 2 and § 3 of the GVWG. A standardised evaluation procedure exists for eligible projects. This procedure involves obtaining objective criteria to allow a comparison across all projects. This in turn allows prioritisation to identify the most urgent projects.

**The standardised evaluation procedure**

Within the standardised evaluation procedure, specific indicators are assessed:

- economic evaluation for public transport operators;
- economic evaluation for all sectors of society;
- other evaluation of different kinds, for all sectors of society; and
- all assessment of other parameters which become relevant.

The objectives of the GVWG planning process reflect the policy objectives. The effectiveness of the policies in reaching these objectives can only be assessed based on an evaluation of selected projects. This evaluation is planned for a later stage of this project.

**D.1.5 The Transrapid-Magnetschwebebahn (Transrapid Magnetic Railway)**

Due to the high technological significance of the Transrapid, the „Transrapidbedarfsgesetz“ was accepted. It was decided to extend the line between Berlin and Hamburg based on the evaluation of the BVWP. In the evaluation for the Transrapid, a technological assessment was also evaluated. The partners of the Transrapid Company are the Federal Government, the Deutsche Bahn AG and several private companies.

**D.1.6 Summary of Transport Infrastructure Provision**

**Rail**

Germany has a total of 46,300 km of railways including 18,866 km electrified and 14,768 km double- or multiple-tracked (1996). Since privatisation in 1994, the Deutsche Bahn AG (DBAG) no longer publishes details of the tracks it owns. In addition to the DBAG system there are 102 privately owned railway companies which own an approximate 3,000 km to 4,000 km of the total tracks.
Roads

The 1997 estimate shows a total of 656,074 km of highways. 650,169 km are paved (including 11,309 km of expressways) and 5,905 km all-weather are unpaved (1997 est.). Germany has the world's second largest road system (after the U.S.) There are 656,074 km of roads with over 221,000 km of this total being trunk roads and highways. These roads carry a huge and growing volume of traffic. In 1990, there were over 42 million registered vehicles, up from 32 million in 1986 and 19 million in 1950. In addition, Germany serves as the crossroads of Europe funnelling much of the continent's east-west and north-south traffic.

The roads in Germany are well engineered and maintained; potholes are rare, and snow removal is almost instantaneous. Signing is uniform and comprehensive. However, many roads in the former East Germany are still in a dilapidated condition. Several projects, part of the "German Unity Transport Projects" plan, are underway or pending to bring the outdated eastern roads up to modern standards. Germany has a hierarchical road system ranging from unpaved forest paths to the world-renown Autobahn. The following is a brief description of German road types:

- Forest and country lanes (Waldweg, Feldweg): Paved and unpaved one-lane roads. These are in generally good repair. Forest lanes are usually restricted with access controlled by a barrier.

- City streets (Straße): All town and city streets are paved, sometimes with cobblestones. Generally in good repair. Frequently narrow with tight corners, but usually with enough room for two cars to pass. Variable traffic.

- County roads (Kreisstraße): Somewhat narrow two-lane roads connecting smaller towns. These roads have official numbers which start with a K. Universally well-maintained. Light to moderate traffic.

- State roads (Landstraße): Very similar to County roads. Usually connect larger towns. Again, these roads have official number starting with an L, but these numbers do not appear on signs. Universally well-maintained. Moderate to heavy traffic.

- Federal roads (Bundesstraße): Somewhat larger and usually significantly busier than State and County roads. The routes are numbered with "B" numbers (i.e. B35). These roads are usually two lanes but frequently, especially in metropolitan areas, these roads are upgraded to 4 or 6 lane expressways (Kraftfahrstraße), or so-called "Autobahn-similar" (Autobahnähnlich) roads. Federal roads connect large towns and cities and tourist areas. Universally well-maintained. Generally heavy traffic.

- Motorways (Autobahn): What is widely regarded as the world's first motorway was built in Berlin between 1913 and 1921. The 19 km long AVUS, in south-western Berlin, was an experimental highway that was (and occasionally still is) used for racing. It featured two eight m. lanes separated by a nine m. wide median. Italy built several expressways in the 1920s and Germany followed with its first Autobahns opening in 1929 between Düsseldorf and Opladen and in 1932
between Cologne and Bonn. More routes were planned in the early '30s and Adolf Hitler, seeing the propaganda benefits of a high-speed road system (as well as the immediate military and employment value) started a program to build two north-south and east-west links. The first of these Reichsautobahnen opened in 1935 between Frankfurt and Darmstadt. By the end of World War II, the Autobahn network comprised 2,100 km. Between 1959 and 1966, the Federal Republic executed a series of three 4-year plans that expanded the Bundesautobahnen system to 3,378 km. Expansion continued during the next two decades and the system reached 7,784 km in 1981 and 8,198 km in 1985. A new system of 5-year plans had expanded the net to nearly 11,000 km by 1990 (see map.) This makes the Autobahn network the world's second largest superhighway system.

Early Autobahns were crude by today's standards. The first Autobahns, like their Italian counterparts, featured limited-access and grade-separated crossings, but no medians. The first Reichsautobahnen had narrow medians, no shoulders, and cobblestone ramps and waysides. When Germany was reunified in 1989, the Autobahns of East Germany were in virtually the same condition as they were in 1945 with the features above as well as inadequate signing, infrequent (and often non-functional) emergency telephones located in the centre median, and service areas consisting of a dilapidated roadhouse next to a wayside. The new West German Autobahns had for many years featured 3.75m. wide lanes, shoulders, landscaped medians, frequent roadside emergency telephones, and ample, well-adorned service areas. Since reunification, the German government has expedited upgrading of the old East German Autobahns in a series of "German Unity Transport Projects." To date, over 370 km of Autobahn have been upgraded and 70 km of new Autobahn have been built. Nearly 500 km more of Autobahn are under construction.

The general rule for design is to provide for unimpeded, high-speed traffic flow. Unimproved eastern segments aside, most Autobahns feature the following design elements:

- 2, 3, or occasionally 4 lanes per direction. Lanes on rural sections are generally 3.75 m wide except the left lane of newer 3 lane segments- which is 3.5 m wide. On urban sections, all lanes are 3.5 m wide;

- A landscaped "green" median 3.5 or 4 m wide (3 m in urban areas). A double-sided guard rail runs down the middle. Blinders are often used on curves. Some newer sections have concrete Jersey Barriers instead of green medians;

- Outside emergency shoulders and long acceleration and deceleration lanes;

- Full grade-separation and access control provided by half-cloverleaf interchanges at exits; cloverleaves and directional interchanges at Autobahn crossings. Interchanges are generally well spaced, sometimes exceeding 30 km between;

- 4% or lesser grades. Climbing lanes are provided on most steep grades;

- Gentle and well-banked curves; and
• Freeze-resistant concrete or bituminous surface.

In addition, the Autobahns also feature the following amenities:

• Reflector guide posts at 50 m intervals;

• Frequent parking areas, often equipped with toilet facilities;

• Extensive and ample service areas featuring gas stations, restaurants and hotels;

• Video surveillance and electronic signs providing advance warning of congestion or fog or dynamic regulation of traffic;

• Emergency telephones at 2 km intervals;

• Pre-designated detour routes to facilitate emergency closures;

• Standardised signage; and

• Wildlife protection fencing and crossover tunnels.

Maintenance is superb. Crews inspect every meter of the system periodically, and when a fissure or other defect is found, the entire road section is replaced. Signs, barriers, and other features are also well maintained.

City Autobahns: Generally speaking, the mainline Autobahn routes avoid the metropolitan cores. Instead, spur routes provide Autobahn access to the cities. These spurs are usually built as "City Autobahns" (Stadtautobahnen). Design features of City Autobahns include 6 or 8 lane elevated or depressed roadways with frequent and more closely paced diamond interchanges. The standard rural signage standards are suspended in favour of more appropriate overhead signs. There are often no emergency phones or roadside reflector posts. Tunnels and overpasses are more frequent. Night time illumination is often provided. Medians are usually just double-sided guard rail or concrete Jersey Barrier.

Because of Germany's location in central Europe, traffic on the Autobahn is generally heavy. In 1997, motorists logged a staggering 189.7 billion kilometres on the Autobahn, averaging 46,700 vehicles per day on any given segment. This amounts to 30% of all traffic in Germany. As a result, traffic jams occur frequently on the Autobahn, especially on Fridays, Sundays, and holidays, and anytime after an accident or during bad weather or construction.

• European Highways (Europastraße): These aren't separate roads, but rather are code designated with other highways, usually Autobahns. The European Highway System, with routes designated with an "E", provides for continuous numbering between countries. Near Saarbrücken, the German A6 crosses into France and becomes France's A32. However, both roads carry the E50 designation.
Waterways

There are 7,467 km of waterways (1997). The major rivers include the Rhine and Elbe. The Kiel Canal is an important connection between the Baltic Sea and North Sea.

Ports and Harbours

The seventeen main harbours are located in Berlin, Bonn, Brake, Bremen, Bremerhaven, Cologne, Dresden, Duisburg, Emden, Hamburg, Karlsruhe, Kiel, Lubeck, Magdeburg, Mannheim, Rostock and Stuttgart.

Merchant Marine

The merchant marine has a total of 594 ships (1,000 GRT or over) totaling 7,699,596 GRT/9,629,163 DWT. This includes 227 cargo, 15 chemical tanker, 1 combination bulk, 306 container, 5 liquefied gas tanker, 5 multifunction large-load carrier, 7 oil tanker, 3 passenger, 2 railcar carrier, 2 refrigerated cargo, 14 roll-on/roll-off cargo, 7 short-sea passenger (1998 est.).

Airports and Heliports

There are 618 (1998 est.). 319 have paved runways. Of these, there are 14 with over 3,047 m., 62 with 2,438 to 3,047 m., 68 with 1,524 to 2,437 m., 54 with 914 to 1,523 m. and 121 with under 914 m. (1998 est.). Of the 299 airports with unpaved runways 2 have over 3,047 m., 6 have 2,438 to 3,047 m., 6 have 1,524 to 2,437 m., 58 have 914 to 1,523 m., 227 have under 914 m. (1998 est.).

There are 61 heliports (1998 est.).

D.1.7 Transport Indicators

Table D1 summarises indicator data for Germany that are available in both 1994 and
Table D.1  Summary of Transport Indicators in 1994 and 1996

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<td>All Country</td>
<td>EC 12</td>
<td>Objective 1 Regions</td>
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<td>Provision</td>
<td>0.0481</td>
<td>0.0651</td>
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<td>Other Roads</td>
<td>1.341</td>
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<td>Rail Lines</td>
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<td>0.061</td>
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<td>0.1162</td>
<td>0.1043</td>
<td>0.067</td>
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Note: Indicator is defined as the square root of (length of route/1000 inhabitants) * (length of route/km²). Thus it combines the demand element, largely determined by population, and the geographical dispersion of population centres.

Germany is in a special position with regard to Regional Development and Cohesion Funding. The reasons for its qualification for Objective 1 status do not appear to lie with a lack of transport infrastructure, but rather with the structure and competitiveness of its industries. Improving infrastructure in specific locations may help the competitiveness and productivity of some industries, but there is not such a clear case on the basis of provision for substantial intervention on the grounds of inadequate provision, as there is in other Objective 1 regions and countries.

There may be a case for rehabilitation and modernisation of infrastructure and rolling stock, or widening of existing roads and motorways.

To date transport infrastructure development in Germany has not benefited from significant EC support through the use of Structural and Cohesion funds. The integration of the former East Germany into unified Germany and hence the EU, has initiated a need to consider the support of transport infrastructure improvement as part of the economic development strategy for German Objective 1 regions.
D.2 Review of Transport in the New German Länder

Given the absence of an Operational Programme has transport covering the period 1994 – 99 it is not possible to conduct an ex-post evaluation of the effectiveness of EC interventions in the field of transport infrastructure. It is, however, possible to review the regional development objectives and the current transport problems of the New German Länder with the aim of identifying the priorities for future transport infrastructure development. Hence, the subsequent sections provide a summary of the consultant's review of:

- regional development objectives;
- transport problems that currently hinder economic development; and
- priorities for future transport infrastructure development.

D.2.1 Regional Development Objectives

The principal regional development objectives for the New German Länder can be summarised as follows:

(a) **Improvement of living standards through:**

- infrastructure development (more money is planned to be invested into the rail system than into the road system according to the VDE); and

- development of industrial and service sectors (through the development of commercial districts, e.g. construction of new roads and connection to larger roads and highways or railroad tracks);

The development of the transport infrastructure is parallel to other support programmes e.g. the Gemeinschaftswerk Forderung der regionalen Wirtschaftsstruktur und Gemeinschaftswerk Aufbau Ost.

(b) **Improvement of efficient and modern transport infrastructure** to improve Germany as a transport way between Eastern and Western Europe (development of trans-European transport network). Germany is at present on the eastern border of the EU and as a middle European country and is key to north-south transit traffic in the EU. It is only a question of time before this role is expanded to include the east-west transit traffic. Steps in this direction have already been taken and agreements have been made with Poland and Czech Republic to prepare for joint planning for this future traffic.

(c) **Connection of economic centres between Eastern and Western Germany** (Hamburg, Rhein/Ruhr, Südwestdeutschland, Nürnberg-München mit Rostock, Berlin, Magdeburg, Leipzig/Halle, Dresden). In addition to the trans-European networks a priority is placed on the internal German traffic between the larger German cities.

(d) **Creation of jobs** during the construction phase and additional during the construction phase and additional settlements. It is expected that the development of transport infrastructure according to West German standards will not only create additional jobs during the construction phase but also in the long-term as a result of
Development of an effective public short-distance transport network in the cities in the New German Lander. After the fall of the wall and German reunification a push for motorisation took place in the east German Lander. This was connected with a move away from public transport systems (OPNV). An effort must be made to improve standards so that the passengers lost during the push for motorisation will go back to using public transport systems in order to allow for environmentally friendly short-distance travel in the future.