

**Legislative Reform for Transport and Air Quality in Mexico**  
**Case Study Germany**  
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**Final Version 22 August 2005**

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## 1. Introduction

The Federal Republic of Germany (FRG, since 1989/90 re-unified with the German Democratic Republic GDR) has a population of 82 million people with an average density of 231 per sq. km, living in some 14,600 municipalities. The smaller communities and towns are combined in community associations (districts), the larger towns and cities are "district-free". In these 113 district-free towns and cities about 33 per cent of the population live on 5 percent of the land area. 83 towns and cities have more than 100,000 inhabitants, where 32 per cent of the population lives. 106 medium cities have a population between 50,000 and below 100,000. 495 communities are between 20,000 and below 50,000.

Of the cities mentioned, three have a population of more than 1 million (Berlin, Hamburg, Munich); a fourth one (Cologne) slightly less. The table gives the 15 largest cities in Germany.

Largest Cities in Germany; Population (2002)	
Berlin	3,392,425
Hamburg	1,728,806
Munich	1,227,958
Cologne	967,940
Frankfurt	641,076
Essen	591,889
Dortmund	589,240
Stuttgart	587,152
Duesseldorf	570,765
Bremen	540,950
Hanover	516,415
Duisburg	512,030
Leipzig	493,052
Nuremberg	491,307
Dresden	478,631

Germany is thus an urbanized country and its towns and cities are geographically relatively evenly spread. This spatial structure on the national level is seen as an advantage with respect to economic and social stability.

Graph 1 (see Annex) gives the population density on the basis of cities/communities, separated into five classes. Each of the classes comprises 20 percent of the total population. The quintuples in five colors and the according densities are listed in the following table.

Population density (per square kilometers) in quintuples of the German population (see Graph 1 in the Annex)		
black	20 %	2,000 to 5,500
dark-red	20 %	1,000 to 2,000
red	20 %	400 to 1,000
yellow	20 %	150 to 400
green	20 %	below 150

The first three classes can be interpreted as citizens living in major conurbations. In rural areas, on the other hand (fifth category, with density below 150 per square kilometers), there is no attractive supply of bus services. But, as is shown, most people live in densely populated areas where mobility does not rely on the private car. Although there is broad official support for public transport, and high subsidies out of public budgets, car traffic by far is exceeding pt share.

For about 50 years, starting soon after the end of World-War II, Germany has enjoyed a stable economic growth leading to rapidly increasing transport activities. The current passenger car fleet is about 45 million, about 520 vehicles per 1,000 inhabitants. The average per-capita transport activity is about 12,000 kilometers (km), 80 per cent being made by passenger cars. The rate has doubled since 1975. Goods transport by trucks has even tripled since then, of which vehicles of neighbor countries already make about one third of the kilometers. Other transport modes (rail, inland-shipment) have not shown comparable increases.

Located in the mid of Europe, Germany has close economic ties and transport links to all neighbor states. The ongoing extension of the EC will significantly change the economic and political landscape in the Eastern direction. With the EC originally being founded by 6 members in 1955, and being stepwise enlarged up to 15 member states until April 2004, the enlargement to Eastern Europe on May 1, 2004 now shows 25 members.

The political, economic and social integration within the EC of the last decades already has led to strongly increased transport volumes. The enlargement to the East will continue that trend. Under business-as-usual conditions in European transport policy, long-distance truck traffic will benefit most. This has been identified as a critical factor not only with respect to emissions, energy consumption, congestion at major bottlenecks, as well as road safety on highways, but it will also tighten already existing pressure in urbanized areas.

### Spatial Changes

The spatial structure at regional level has changed in a similar way as can be observed in all highly industrialized countries. The sub-urbanization of living, shopping and working has spread since 1960, and it will continue in the foreseeable future as a dominant and general spatial trend in German urban regions. This trend has not changed despite the fact that Germany traditionally has a strong record in spatial planning on national, state and regional level - although it must be admitted

that urban structures have been kept in a denser scope than has been observed e. g. in the US. The legal and planning procedures will be discussed in detail below.

On an international scale, European cities in general can be characterized by making strong efforts to support good living conditions by revitalizing old-industrialized areas (brown-field development), giving financial support to public transportation, and mitigating the use of private cars. Pedestrian areas and parking fees are typical instruments for that in central urban areas. There is an increasing political criticism in Germany of road construction in urban and sub-urban areas. The “vicious cycle” between road extensions, change in land-use and the resulting increase of cars is a common argument in the critical debate. Based on studies not only in Germany but also a. o. UK, it is acknowledged that additional roads create additional transport demand. In other words: Other solutions have to be found to meet mobility demand for economic and social well-being.

### German Integration into the European Community

The EC gives financial support to city networks and activities for more sustainable urban transport. But it also must be said that there is a general contradiction within EC transport policy as an instrument for more economic integration among the member states. It can be characterized as follows: Free-market development needs more transport of goods and passengers, so everything has to be done to enable traffic flow increases. Public financing and political support for Trans-European Networks (TEN) is under way. On the other hand, the EC has been discussing over decades “fair prices” in transport by integrating external effects, but it has not yet come to results with respect to social effects of transport. National legislations are blocked (for instance the Austrian efforts to follow Swiss road-pricing legislation; the German road-pricing model is not allowed to cover social cost). Another string of EC arguments aims at privatization of all transport services and a retreat of public entities. The underlying economic theory is that this will reduce transport cost – which, on the other hand, is known to increase transport demand. These arguments have to be balanced with the claim for “livable cities”.

Environmental dimensions of transport have been covered by EC directives since about 1970, starting with emission standards for passenger cars and – with some delay - for trucks and buses. Initially, EC-wide standards had not been set because of environmental or health concerns but rather in order to avoid market barriers and create a common market. Technical standards are completely under the responsibility of the EC. National legislation only has to implement, e.g. exhaust emission standards. But there are still areas of national activities, as well as regional or local initiatives to improve ambient air. There is a general understanding within the EC that technological fixes and improvements have been (and will be so in future) effective but these measures will not be sufficient. EC has launched air quality requirements, which force the responsible entities on lower levels to take actions, otherwise member states would be charged at the European Court<sup>1</sup>.

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<sup>1</sup> The European Court (Europäischer Gerichtshof, EuGH) was founded 1952. It can be called by the European Commission, the European Parliament, other EU bodies, member states and natural as well legal persons. Decisions are directly binding for member states, EU bodies, national courts. (There also is a court of first instance since 1989.) EuGH judges are jointly denominated by national governments.

Main problems in air quality are ozone and particulate matter. The court has been called several times by the EU Commission, charging member states for not implementing directives in time. The usual consequence: Member states commit to implement.

## 2. Institutional Context

### 2.1 Legal Context

#### 2.1.1 Constitutional Structure

Germany is a Federal Republic made up of the Federation (*Bund*) and 16 federal states (*Laender*), three of them (Berlin, Bremen, Hamburg) being also municipalities.

According to the federalist principle of the constitution the authority is divided between the Federation (the *Bund*) and the federal states (the *Laender*). The federal states have their own state authorities and their own legislation. This fact characterizes Germany as a "Democratic and Social Federal State" (Article 20 Chapter 1 GG).

The constitution mentions the sources of law and the general principle of administrative acts. The most important sources of national laws are:

- ? Constitutional law: The constitution can only be changed<sup>2</sup> by a consent of two thirds of the members of the House of Representatives and two thirds of the votes of the Senate (Article 79 GG)
- ? Formal Laws<sup>3</sup>: Formal decisions of the legislative bodies, the federal and state parliaments (Article 76 GG)
- ? Legal Decree: General Ordinances issued from governmental or administrative bodies based upon a legal authorization (Article 80 GG)
- ? Statutes: General regulation issued by an independent administrative body (e.g. a community as a corporation under public law) which has been enabled by state legislation in order to organize its own matters. Statutes are only internally binding.

The constitution defines a basic hierarchy of legal regulations and general principles, which have been differentiated by numerous decisions of administrative courts and finally by the Constitutional Court (*Verfassungsgericht*). Starting with the highest, the hierarchy of norms reads:

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<sup>2</sup> The basic principles laid down in Articles 1 and 20 are inadmissible (Article 79 Chapter 2 GG)

<sup>3</sup> The term "act" (in German: *Akt*) is often used to describe an official administrative decision. This would be based upon laws and decrees. An *Akt* should not be understood as parliamentary decision (e.g. in the US).

Federal Law (*Bundesrecht*):

- ? Constitution (*Grundgesetz*)
- ? Formal Federal Law (*Förmliches Bundesgesetz*)
- ? Legal Decree (*Rechtsverordnung*)
- ? Statute (*Satzung*)

✍ Principle: Federal Law ranks higher than State Law (Art. 31 GG)

State Law (*Landesrecht*):

- State Constitution (*Landesverfassung*)
- Formal State Law (*Förmliches Landesgesetz*)
- Legal Decree (*Rechtsverordnung*)
- Statute (*Satzung*, internally binding)
- Administrative regulations (*Verwaltungsvorschriften*, internally binding)

In cases of conflict between norms the principle says:

- Between contradicting norms of different rank, the higher-ranking norm takes precedence, the lower-ranking norm is invalid.
- When norms of equal rank contradict, the more special law supersedes the more general law.
- The order of ranks clarifies the cases of conflict, but in a concrete situation the lower-ranking norm has to be applied first.

In cases of collision between the law of the European Union and national law it is basically clear that EC ranks higher. But it has not been decided yet how it has to be made operational: Are conflicting national norms not valid or are they not applicable? Are member states obliged to change their national norms or is it possible to keep them valid in principle and leave clarification to concrete conflicts?

**Balance between *Bund* and *Laender***

The concept of federalism is rather important for the decision making process and the balance of power between national level (Federation, *Bund*) and regional level (states, *Laender*). The constitution contains detailed regulations and formulates principles about the distribution of competences between both levels with respect to a. o. legislation, administration and finances.

It is of interest to see how the constitution defines the principles and institutions of federalism: The national level admits the *Laender* being constitutional states. On the other hand states declare "friendly behavior" towards the Federation, as well as the principle of homogeneity. The general rule says: Federal law breaks state law. But in order to avoid this kind of conflicts the states participate in decision making processes on the national level and, vice versa, the *Bund* takes effect on state decisions.

Article 70 GG defines the principle of legislative balance between both levels in Chapter 1: "The States have the right to legislate insofar as this Constitution does

not confer legislative power on the Federation.” The exclusive legal authorities of the federal level are described in Article 71 GG in connection with Article 73 GG; the competing legal authorities of the federal level in Article 72 GG in connection with Article 74 GG. Then there are topics of which the federal level in Article 72 in connection with Article 75 GG has framework responsibility (e.g. nation-wide spatial planning), and issues legal acts defining the principles and basic aspects of those more detailed legislative acts of the states.

The distribution of administrative responsibility between federal and state level is given in Articles 30, 83, 108 and 120 GG. It should only be mentioned here that basically (Article 30 GG) the states implement federal law (and of course their own state law), the federal level only has a sort of supervision function in legal matters (Article 84). Implementing national law the right and obligation of the states is clarified in Article 83 GG: “The States execute federal statutes as matters of their own concern insofar as this Constitution does not otherwise provide or permit.” The expression “as matters of their own concern” is quite important because it forbids the upper level to decide in detail or to take specific legal decision. This is left to the states; when the upper level is not satisfied with certain decisions it has to go the Constitutional Court.

There are a few important exceptions when the federal level can decide in specific cases and order the states the implementation. One concerns highway construction according to the Federal Highway Act (*Bundesfernstrassen-Gesetz – FStrG*) in connection with the Federal Transport Infrastructure Plan (*Bundes-Verkehrswege-Plan – BVWP*). Because the infrastructure project in question is part of the BVWP law decided by the National Parliament vote, a state is obliged to implement just this road. Moreover: even if there is a certain infrastructure not in line with regional planning (of which the state has the competence), national BVWP breaks state decision. In this case the state has to act under order (in German “*Auftragsverwaltung*”), see Article 85 GG.

Some more remarks on the constitutional aspects of federalism:

- A number of topics are defined as subjects of “Common Tasks” or “Joint Tasks” (*Gemeinschaftsaufgaben* – Article 91 GG). Within the last decades the number of topics under joint national and state responsibility has been rapidly growing. The national level wanted to extend power, and the states to reduce or avoid financial responsibility. The constitutional anchor is the concept of achieving “equal living conditions in all parts of Germany”. A task relevant for transport is Art.91a Para 1,2: Improvement of regional economic structure. The national level (Bund) finances 50 percent of roads, although of state roads (*Landesstrassen*) and local roads. Although according to law the states are not forced against their will for certain infrastructure decisions, in reality it is against the concept of federalism. Decisions should be made at the lowest level (principle of subsidiary).<sup>4</sup>
- The tightened interactions between the national and the federal level have received harsh criticism in last year, because it leads both to inflexibility and unified solutions. „In general terms, the German system tends to promote

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<sup>4</sup> There is an ongoing debate on strengthening the role of the states, and in the same time reduce the numbers of joint tasks. This goes together with the weakening of the concept of connectivity – a common topic is that the national level decides about social support for the poor, but the states have to pay for it.



unity rather than to maintain diversity within the federation. This tendency towards a unitary structure is mainly due to two main provisions in the German constitution: the strong participation of the *Laender* in federal legislation via the *Bundesrat* [second chamber of the federal parliament] and their predominant responsibility for the implementation of federal laws. Thus although the German federal system consists of two autonomous orders of government there is a considerable legal interdependence between the central government and the *Laender*.<sup>5</sup>

- The financial aspects are defined in Article 104a Chapter 1 GG with the „principle of connectivity“ (*Konnexitätsprinzip*). Chapter 4 defines that the national level gives financial support for investment tasks<sup>6</sup>, which are under the responsibility of the states. This will be described more in detail in Para 2.2
- For planning between neighboring states informal co-operative structures are established (joint planning areas, which are vaguely mentioned in the constitution (Art. 91, Art. 104a GG)). Details are left to the states. A recent example is the joint planning between Berlin (being a state and a city) and the State of Brandenburg (see Chapter 3.2). There are also cross-border planning authorities with neighboring countries of the EU. Germany with its relevant states cooperate<sup>7</sup> on regional matters for instance with the Netherlands, Belgium and France.

### **Municipalities (*Kommunen*) and Districts (Counties, *Kreise*)**

The local administrative levels consist of the municipalities (*Kommunen*) and, above these, the Districts (Counties, *Kreise*). But there are major differences in the legal independence: Municipalities have strong positions with rights of their own (e.g. right of taxes), while the districts have kind of service function for communities. Major communities (large cities) are “district-free” and administer the district-functions themselves.

In a comparable way as the constitution (Basic Law) defines the balance between Bund and *Laender*, the rights of the municipalities are clarified in the Basic Law. Article 28 Chapter 2 GG declares: “The municipalities (*Kommunen*) must be guaranteed the right to regulate, on their own responsibility, all the affairs of the local community within the limits set by statute (as is laid down in national and state legislation, *nach Massgabe der Gesetze*). Within the framework of their statutory functions, (also) the associations<sup>8</sup> of municipalities (*Gemeindeverbände*) have such right of self-government as may be provided by statute. The right of self-government also encompasses the foundations of financial accountability.” But this does not

<sup>5</sup> Cited from: Daniel Augenstein (2003): Legal and political autonomy in decentralized systems: A comparative study of German federalism and UK devolution. European Young Lawyers Scheme; [www.law.ed.ac.uk/eyl/03repdaniel.htm](http://www.law.ed.ac.uk/eyl/03repdaniel.htm)

<sup>6</sup> See second-last footnote: This principle of connectivity is not always followed by the *Bund* financing those decisions it has taken. The Constitution is not clearly defining this.

<sup>7</sup> But it has to be admitted that transport infrastructure planning does not play a major role in these activities. In rail transport the national rail companies are still focusing on their national networks. The EU privatization policy may change this.

<sup>8</sup> Associations are formed by very small communities.



guarantee the continued existence of the municipality – there is only a guarantee that citizens are part of a self-governed community. It is common that large cities extend their urban area at the cost of the surrounding communities, trying to get back those citizens who have spread into the “Umland” via sub-urbanization.

The structure and internal organization of local government units are the responsibility of the *Länder*, so that there are great differences from state to state. However, the matters to be dealt with at the local government level are essentially the same, since they are predominantly determined by Federal law. Important local functions are the provision of the technical infrastructure, the creation and maintenance of social infrastructural, cultural and leisure facilities, as well as local economic development cultural and leisure facilities, as well as local economic development and environmental protection.

The states are given control functions over the municipalities (as over districts), but the constitution also makes in Article 28 GG very clear that the municipal right to decide by their own on how the city or village should look like, which area should be dedicated for housing, which for facilities, and so on. This in constitutional theory holds also true for transport infrastructure and services, but – as will be described below – there are both formal and financial obstacles against municipal independence.

A more comprehensive overview on the administrative levels and administrative tasks is given in the table in the annex to Chapter 2.

### **The Courts (Judiciary System)<sup>9</sup>**

The kind of courts worth to be mentioned in the context of this study are

- Ordinary courts
- Labor Courts
- Social and Financial Courts
- Administrative Courts

The jurisdiction of the administrative courts extends to offer legal protection against all administrative acts and other administrative proceedings. The administrative courts handle all trials under public administrative law that do not fall under the jurisdiction of the social and finance courts or, in exceptional cases, the ordinary courts, or do not involve disputes which fall under constitutional law. Administrative courts have – as the others - three levels.

### **Legal Structures of Public Revenues and Expenditures**

The primary function of the federal government is to prepare political decisions and legislation, while administrative responsibilities are mainly devolved to the *Laender*, which have general competences. Tasks are then undertaken mainly at the local level or, to a lesser degree, by the *Laender*.

According to the German Constitution (Article 30 GG) it is the task of the federal states (*Laender*) to fulfill the national obligations (of the *Bund*). The national level is only responsible for the implementation of those tasks explicitly mentioned. Article 70

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<sup>9</sup> Source: The federal Foreign Office – Facts about Germany: The legal System;

ff<sup>10</sup> regulates the federal competences; Article 105 describes this for the tax issue. The basic law defines exclusive (Article 71, 73, 105 Para 1 GG) and competing competences (Article 72, 74, 75, 105 Para 2 GG). Of the latter, the *Laender* have only the competence if the *Bund* does not make use of his right.

The only sources of tax revenues for the *Laender* (and their communities<sup>11</sup>) are consumer taxes, motor vehicle taxes, property taxes and trade taxes. While the states are obliged to implement and to basically bear *all* tasks, especially those the upper level has decided on, they need the financial resources given from the national tax revenues.

The German Constitution gives high rank to the principle of interregional equity formulated as "Uniformity of the living conditions throughout the territory of the FRG" (Article 72 § 2-3 and Article 106 §3-2 GG). This characterizes the German financial system with its complicated structure of tax exchange ("*Finanzausgleich*") between the federal states, and joint actions ("*Gemeinschaftsaufgaben*") of the national level and the federal states (as mentioned above). The concept covers all constitutional rules that have financial implications, such as the sharing of competencies as well as tax revenues and public spending between jurisdictions. "*Finanzausgleich*" applies to fiscal equalization of the *Laender* as a part of revenue distribution.

The Federation and the *Laender* manage their own budgets independently from each other but are bound by the Basic Law to take into account the requirements for general economic balance. The states must pay for the tasks, which they exercise for themselves. In case they act as agents of the Federation, these cost are covered. Within the framework of co-operative federalism, the Federal government funds investments made by the *Laender* or by the local authorities. But by doing so, the Federation can exert considerable influence on state and municipality policy. In the case of joint tasks, the Federation (the *Bund*) and the states (the *Laender*) share the financial burden equally. A reasonable amount of equalization must take place between financially strong and financially weak states. This is ensured by the distribution of tax revenues and by a system of supplementary allocations.

The states are responsible for the adequate funding of their municipalities. In order to equalize the different financial capacities of their municipalities, the *Laender* again have adopted legal provisions on local financial equalization. Also, the municipalities may transfer tasks, which exceed their financial capacities, to supra-local units such as the counties.

### **Tax assignment and revenue sharing**

The sharing-out of tax revenues lies at the heart of the German Financial Constitution and it determines primary distribution of fiscal revenues. Some taxes are allocated to a specific level of government. The significance of taxes directly assigned to each level of government is small.

The tax pool formed by the Federation and the *Länder* and the related sharing out of revenues from taxes and other charges is referred to as 'vertical financial equalization'.

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<sup>10</sup> ff = and following

<sup>11</sup> The communities do not act as equal partners (Bund – *Laender*) but are part of the *Laender*; they receive financial aid from the national level via the states,

### Vertical Appointment of Tax Revenue

(The revenue of the taxes accrues wholly to one tier of the government in Germany)

Federal Taxes	State Taxes	Municipal Taxes
Excise Taxes on mineral oil, also on tobacco, coffee	Motor Vehicle Tax	Real Property Tax
Spirit Monopoly	Real Property Transfer Tax	Municipal Trade Tax
Insurance Tax	Inheritance Tax	Local Excise Taxes on certain Non-Essential Spendings (e.g. Dog Tax, Beverage Tax)
Customs Duties and other Levies Required by the European Union	Beer Tax	
	Tax on Betting and Lotteries	
	Gaming Casinos Levy	

The taxes appointed to a specific level make in total only 28.2 percent of all German taxes, while the majority of 71.8 percent is levied jointly.

### German Taxes Revenues 2000 (According to Tax Category)

	In Million German Mark <sup>12</sup>	In Percent of total Taxes, all levels
Joint Taxes	651,786.3	71.8
Federal Taxes	147,692.1	16.3
State Taxes	36,072.4	4
Municipal Taxes	71,697.5	7.9
 All Tax Revenues	907,248.3	100

Of the joint taxes, the most important are personal Income Tax (resulting in 29 percent of the total German tax load), and VAT (22.9 percent). Of the Federal Taxes, Mineral Oil Tax (8.1 percent of total taxes) and Tobacco Tax (2.4 percent) count highest. Of the state taxes, the annual vehicle taxes are most important (1.5 percent of total). Of the municipal taxes, it is the Trade Tax (5.8 of total).

In addition to the taxes mentioned, revenues include Custom Duties in the amount of 6,638.0 Million Marks have been raised, adding to "all Tax Revenues" within the table above. The total sum of revenues accounts for 913,886.3 Marks.

<sup>12</sup> Based on: Bundesminister der Finanzen (2001): Bund-Länder-Beziehungen auf der Grundlage der geltenden Finanzverfassungsordnung; Berlin (The data of 2000 are given in Deutsche Mark; the EURO has been introduced 2001/2002.)

### Vertical distribution of joint taxes (in percent of revenues collected)

The joint taxes, like VAT, income tax and corporate taxes, which represent the most important source of revenue, are divided among the partners according to fiscal arrangements. In the case of VAT distribution, there is a redistribution mechanism between states following (see next Para below).

Sharing of Joint Taxes

Joint taxes	Federal Taxes	States	Local
Wages and Personal Income Tax	42.5	42,5	15
Corporate Income Tax	50	50	0
Value -Added Tax	52.2	44.7	2.1
Local Business Tax	5	15	80

(Taxes exclusively referring to one level are not included, for example annual vehicle taxes, which belong to the states.)

As has been shown in the previous Para, joint taxes represent more than 70 % of German total fiscal revenues. In addition, local trade/business tax, officially not a joint tax, is shared by all levels, and part of the federal mineral oil tax revenue is granted to the *Laenderto* subsidize public transport. (See Chapter 2.2 on details transport financing.)

German Tax Revenues 2000 (According to Level Benefiting; including EU)

	in Million German Mark	in Percent of total Revenues, all levels
Federation (Bund)	388,800.3	42.5
States (Laender)	370,616.2	40.6
Municipalities ( <i>Gemeinden</i> )	111,748.6	12.2
Transfer to EU Budget	42,701.3	4.7
	913,886.3	100

With respect to municipal budgets, grants and co-financing arrangements from Bund and Laender for specific tasks have to be mentioned. Grants from *Laender* account for approximately 28 per cent of local revenues and thus present the second largest source of income. Most allocations are made within the framework of financial

equalization carried out in each federal state. There is a complicated procedure for calculating the amount to be given to each municipality, based on its population, financial capacity (taking into consideration its local tax revenues), and other parameter. If a municipality fulfils central functions such as maintaining schools, cultural and sports facilities, its financial requirements increases.

The Federation also pays its part by allocating to the federal states funds for, e.g. promoting social housing, urban development projects and improving local transport. Thus, local allocations contain some elements of central control. On the other hand it would not be compatible with the right to local self-government if the Federation promoted local projects too purposefully, thus undermining the local scope of action.

The local authorities have other revenues, composing almost 20 per cent of the total, mainly in the form of income from rents, leases, gains transfers of local enterprises, royalties and property sales. County revenues come mainly from the contributions paid by the municipalities belonging to it, from allocations made by the Federation and the federal states and, to a small extent, from fees.

### Horizontal Tax Equalization

The Basic Law also provides for horizontal financial equalization between *Länder* of the Federation that differ in financial strength. The German financial constitution (*Finanzverfassung*) requires tax redistribution between the states, meaning that states with higher tax revenue per capita share their revenue with economically weaker states. The simplified principles:

Level 1: Redistribution at the time of VAT sharing-out

Level 2: Interstate horizontal fiscal equalization between the *Laender* (states)

Level 3: Vertical transfers from the *Bund* and the *Laender* (*Bundesergänzungszuweisungen*)

“The sum of contributions and grants is nil. At the end of the process, this “brotherly” mechanism guaranties the weakest *Laender* a basis of 95 percent of the federal fiscal capacity average per capita.” (Cited after: Guihéry 2000) In order to guarantee the “uniformization of living conditions” throughout Germany, tax legislation is uniform and centralized. Thus it limits fiscal competition between the *Laender* while paving the way for a competition in terms of public spending. Fiscal bases are determined by the central government, directly when it comes to taxes for which the *Bund* is exclusively responsible, or indirectly when shared taxes are concerned. In order to meet the constitution’s demand, altogether more than 13 different equalization schemes have been implemented among the states<sup>13</sup>.

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<sup>13</sup> Source: An Economic Assessment of German Fiscal Equalization Scheme since 1970: What Prospects for a Unified Germany? Laurent Guihéry Institute of Transport Economics (LET – ISH) Université Lumière Lyon 2 - France

## 2.1.2 Structures of Transport Decision Making

### Administrative Responsibilities

The national responsibility for transport is under the Transport Ministry (see below), which since a few years has merged with Building and Housing.

Federal Transport Administration – Institutions under the Federal Ministry

Bundesministerium für Verkehr, Bau- und Wohnungswesen (BMV BW)

[Federal Ministry for Transport, Building and Housing]

Bundesanstalt für Straßenwesen (BASt) [Federal Institution for Road Affairs]

Kraftfahrt-Bundesamt (KBA) [Federal Automotive Office]

Bundesamt für Güterverkehr (BAG) [Federal Office for Goods Transport]

Eisenbahn-Bundesamt (EBA) [Federal Railways Office]

Luftfahrt-Bundesamt (LBA) [Federal Aviation Office]

Bundesstelle für Flugunfalluntersuchung (BFU) [Federal Bureau for Aircraft Accidents Investigation]

Bundesamt für Seeschifffahrt und Hydrographie (BSH) [Federal Office for Shipping and Hydrography]

Bundesanstalt für Gewässerkunde (BfG) [Federal Institution for Hydrology]

Deutscher Wetterdienst (DWD) [German Weather Service]

Bundesanstalt für Wasserbau (BAW) [Federal Institution for Waterway Engineering]

Wasserstraßen-Neubauamt (WNA) [Waterways Construction Office]

- Wasser - und Schifffahrtsverwaltung (WSV) [Water and Navigation Administration]

o Wasser - und Schifffahrtsdirektion (WSD) [Directorate of Water and Navigation] (5 regional directorates covering the area of one or two *Laender*)

✍ Wasser - und Schifffahrtsamt (WSA) [Office of Water and Navigation] (local offices about 3 to 4 under each Directorate)

Bundesamt für Bauwesen und Raumordnung (BBR) [Federal Office for Building and Regional Planning]

The Ministry has direct authority over a number of Federal Upper Agencies (*Bundes-Oberbehörden*). For transport issues the ones dealing with various transport modes are of interest. BASt is dealing with road network issues in general, with construction technology and with traffic safety issues; KBA deals with issuing of type approval of vehicles and administers the data of the drivers' traffic fines. BAG is the statistical agency for road goods transport and initiates truck traffic control measures. For road transport planning in general there is no lead agency. Commercial engineering companies and university institutions run the planning process on contract basis. The process (for instance FTIP) is directly guided by the respective division of the ministry. When decisions about certain road infrastructure projects within the federal highway system have been taken, the implementation (project planning, alignment,

EIA, construction) is made under federal order by the states. The State Transport Ministries are the responsible implementation authorities. The planning and construction of state-own roads (*Landesstrassen*) is informally very closely connected to the national level because of that structure.

EBA has changed its role after the so-called privatization of German Rail – it has changed from a public authority to a state-owned company<sup>14</sup>(Deutsche Bahn DB). EBA now is the control agency of the *Bund* for rail issues; the technical and operational aspects of rail operation are left to the operating companies. Because the *Bund* has given responsibility for regional and local rail to the states (see Para later-on), state officials are commissioned for work within EBA on their respective matters.

The direct responsibility of the national level for waterways and inland navigation (as for sea transport) is managed differently to the road and rail modes. There is a network of federal upper, medium and lower-level authorities (administrations, directorates and offices).

The Federal Office for Building and Regional Planning (BBR) mentioned as the latest agency joined the Federal Transport Ministry after the merger with Building and Housing but has not yet been integrated into the transport planning and policy task. Because spatial planning issues (see Chapter 2.1.3) are extremely relevant for the transport sector, stronger integration would allow complementing the traditional supply-side transport policy with a demand-side approach.

### Transport Planning in Several Modes

While in transport sciences and policy it has become common to promote inter-modality and integrated planning, the legal system still treats different transport modes very differently. Historically, planning and operation of road and rail had completely different roots with consequences for today, when it comes to integrated decision-making. The obstacles against a modern system of integrated transport planning and financing, which would aim at improvements for mobility in general – independent of divided responsibilities and the traditional separation between advocates of different modes – go back to the fact that the institutional system arose historically. So, important responsibilities are still divided between the various road and rail, between those institutions responsible for infrastructures and those dealing with the operation of vehicles. The list of Administrative Levels and Administrative Tasks in the Annex to Chapter 2 is mentioning, amongst others, the distribution of the responsibilities for roads and for public transport between the national level, the states, the districts and the communities<sup>15</sup>. Only at the two lower levels (districts and communities) integrated planning has become common, while both the national and the state level still lack integration of infrastructures and operational management. Also, the financing system is still separated between different modes.

In a modern democratic society with numerous interest groups it is hard to form a modern legal structure up from scratch. It is easier to “muddle through”, i.e. to keep those non-perfect regulations as they are, and batch up the holes of newly upcoming

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<sup>14</sup> The German government would like to bring German Rail to the capital market but DB is not yet ready for it because of its continuous deficits.

<sup>15</sup> Urban transport planning today is such an integrated concept.



tasks. There is that sort of problems in the German environmental law – over decades there had been a debate on a completely new environmental legislation, but it ended up with the decision to carefully adapt to the upcoming problems, bit-by-bit. A similar problem exists with respect to the co-ordination between various transport modes. Although nowadays the *Bund* and the *Federal States* cover in their respective infrastructure plans roads together with other modes (especially the *Bund* in the Federal Transport Infrastructure Plan FTIP (see below) but real integration has not been reached.

### Decisions Regarding Various Modes

**Road transport** in Germany is by far the most important transport mode, according to the passenger and goods transport volumes per passenger-kilometers and tonne-kilometers. Responsibility for planning, construction and maintenance of roads within the total road network is divided according to the classification of the roads between the vertical levels. The German road legislation has a highly differentiated system of procedural rules making the road network a most regulated part of the mobility. There is a rule to each aspect, for the width, the material, the quality, and also of course the financing when roads of different classification cross. There is also a tradition that road professionals of all levels (federal, state, local, also those who work at related road issues in additional inter-mediate entities on regional and/or county level) use to keep close contact within semi-public associations.

**Federal Roads:** Under Article 89 and 90 of the Constitution, the Federal Government is the owner<sup>16</sup> of the federal trunk roads (motorways and highways). The main provisions about the structure, use and extension of the network of trunk roads are given in the Federal Motorway Act<sup>17</sup> (Bundes-Fernstrassen-Gesetz – FStrG). The Ministry of Transport now affiliated with Building and Housing, including the federal engagement in spatial planning) is the responsible federal authority for trunk roads, classified in the network as motorways (road numbers coded with “A” for “Autobahn”) and national roads (also in English named highways; numbers coded “B” for “Bundesstrasse”). The table gives the actual lengths of inter-urban roads, for which the *Bund* and the lower administrative levels are responsible.

Lengths of Inter-Urban Roads (2001)

Administrative Level	Road Sign	Road Length
Bund	A: Autobahn	11,786 km
	B. Bundesstrasse	41,200 km
States	L: Landesstrassen	86,800 km
Districts	K: Kreisstrassen	91,000 km
☞ Total		230,800 km

Although the road network of Germany is quite dense, construction activities are continuing at all levels. Motorways are increasingly widened towards 6 or 8 lanes

<sup>16</sup> The Federal Government is also owner of the federal waterways. For the federal railway infrastructure, see below.

<sup>17</sup> In some English publications the federal roads are named “Highways” (“Federal Highways Act”)

(this is not reflected in the normal road statistics). The *Autobahn* network in average is growing by about 200 km per year.

Inner-urban and community roads of these categories are not included in those figures from 2001. There is an estimate from 1990 that main urban roads account for about 35,700 km. For community roads an estimate from 1992 is given by 413,000 km.

### **Federal Transport Infrastructure Plan - FTIP**

Since 1973, the federal government meets its constitutional responsibility (here: for trunk roads, but in principle, this is also valid for railway and waterways) by issuing a Federal Transport Infrastructure Plan – FTIP (in German: *Bundes-Verkehrswege-Plan BVWP*). The legal basis for national roads is the Federal Motorway Act (*Bundesfernstrassengesetz FStrG*). The actual federal FTIP has been issued in 2003, in between FTIPs date from 1979, 1985 and 1992. “FTIP is a framework investment plan. It does not contain any decisions regarding the funding and time of realization of a project in the FTIP; these decisions are taken on the basis of the multi-annual plans in accordance with Section 5 of the Federal Railway Infrastructure Upgrading Act or Section 5 of the Federal Trunk Road Upgrading Act (*Fernstrassen-Ausbaugesetz FStrAbG*). The individual projects will be realized depending on the level of funding available each year (the so-called budgetary proviso).”<sup>18</sup>

The legal procedure of the “Upgrading Act” (FStrAbG) is of interest. This law reads in § 1 (2): “The projects of the demand plan (*i.e. the FTIP*) correspond to the targets of § 1 Para 1 of the Federal Motorway Act (FStrG). The statement of demand is for alignment and for the plan approval binding (*obligatory*).” The consequence of the fact, that the federal plan with its list of projects is adopted by the parliament (because it is attached to the prevailing actual law FStrAbG): It beats any different decisions within regional land-use plan, although the constitution gives authority for spatial aspects exclusively to the states.

FTIP collects measures for federal roads, federal (long-distance) rail and waterways. But alternatives to roads are not really reflected an integrative process. It had specific reasons to put different modes together: “After the first FTIP of 1973), financial deficits of the German Railway Company (Deutsche Bundesbahn) and the discussion about the efficiency of planning brought up the idea of an integrated planning procedure for all transport modes. In 1998 the extensive rise of costs for projects of the 1992 plan caused two ad-hoc investment programmes (*Investitionsprogramm 1999 – 2002* and *Anti-Stau-Programm*), which reduced the number of projects of the FTIP 1992.”<sup>19</sup>

The Trunk Road Extension Act (*Fernstrassen-Ausbau-Gesetz FStrAbG*) and similar for railways the Federal Railway Extension Act (*Bundesschienenwege-Ausbau-Gesetz*) decide about infrastructure planning and related investments in a mixture of demand prognosis, long-term planning continuity, and regional lobbying. The scientific umbrella, on the other hand, is a highly sophisticated bundle of studies on future scenarios, demand forecasts, cost-benefit analysis, and more. In the public

<sup>18</sup> Cited from Page 4 of the official document „Federal Transport Infrastructure Plan 2003, Federal Government Decision of 2 July 2003, published by the Federal Ministry of Transport, Building and Housing, Berlin, July 2003

<sup>19</sup> Dalkmann / Bongardt (2002): The Federal Transport Infrastructure Planning (FTIP) in Germany; A German Case Study of the ANSEA Project; Wuppertal Institute

debate, driven by car manufacturers, drivers' associations and the business community, and finally in political decision-making, the road congestion argument is of major importance.

Since decades, a figure of 100 million EURO cost for society caused by congestion is cited, although there is no serious study available supporting this.

In the contrary: The conclusions of an workshop under ECMT (European Conference of Ministers of Transport) in 1998 brought conclusions that seriously are questioning the political German debate about the need for more inter-urban roads, to fight congestion: "Congestion in Europe is relatively low in that it does not affect a significant proportion of the road network as a whole. On interurban roads there is sufficient capacity available, and even in urban areas congestion is not necessarily a prominent feature. In this respect, it may be noted that traffic speeds have been constantly increasing for many years. When congestion does occur, however, it is spectacular and is largely due to a long-term policy of restriction on investment in transport infrastructure. In Germany, despite a lack of comprehensive data, only 2 per cent of the network is congested. In the Netherlands, often given as an example because of its congested infrastructure, barely 2 per cent of drivers have to contend with congestion on an average day. (...) Congestion is an urban problem."<sup>20</sup> The conclusions point at solutions like parking fees, higher urban cost for car driving, and better urban planning.

The figures of each 2 percent may have changed in between, but certainly not in an amount that would justify major federal network extensions. This leads to the question, why road construction is still seen as a necessity to reduce inter-urban time losses. A recent paper<sup>21</sup> of the Integrated Planning Working Group of the German Transport Ministry (BMVBW) gives the following source of congestion on federal roads:

Road Construction Works: 12%

Accidents: 41 %

Overload: 39 %

(Other Reasons: 8 %)

### **Decision Making and Critical Discussions**

How does the government decide which of the projects are to be chosen and financed: The FTIP process includes a large number of studies of commercial planning institutions. The studies usually result in two reasons for road extensions: (1) Time savings can be achieved by cars and trucks; this will benefit the national economy and justify public investments. (2) A number of highways are on their capacity limits; the future traffic increases will lead to more bottlenecks.

The traffic forecasts aim at a time horizon of about 10 to 15 years; the actual FTIP 2003 looks at the year 2015. The scenarios describe different economic and social

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<sup>20</sup> ECMT (1998): THE SPREAD OF CONGESTION IN EUROPE. Conclusions of Round Table 110. Published as ECMT Paper, Paris. With reports by Bovy/Salomon (Delft/Jerusalem), Schallaböck/Petersen (Wuppertal Institute Germany), Gerondeau (France), Goodwin/Dargey (London)

<sup>21</sup> BMVBW (2002): Mobility Initiative (Mobilitätsinitiative, AG Integriert Verkehrspolitik des BMVBW), Berlin

trends, as well as environmental consequences of each assumption. Here the methodology cannot be discussed in detail but it is necessary to stress those two main arguments:

(1): The economic argument in favor of time savings is weak. The European Ministers of Transport conclusions point in another direction: "Why is congestion such an issue among the public and politicians? (...) Studies have shown that individuals perceive waiting time to be three times longer than the actual duration whenever there is congestion. Furthermore, the reference situation is deemed to be freely flowing traffic. This has led to claims in some studies that congestion in Europe costs 2 per cent of GDP. But it is questionable to take free-flowing traffic as the reference situation because when traffic does flow freely, infrastructure capacity is so underused that any investment in infrastructure capacity is unwarranted. An economically optimal level of congestion is therefore necessary if capacity is to be used to the full. Economic theory holds that a degree of congestion other than zero is preferable. In the Netherlands this optimal figure has been estimated as the level at which 2-3 per cent of drivers encounter congestion on an average day."

(2): The trend prognoses describe sort of self-fulfilling prophecy: Although it is both German and EU policy to especially mitigate road goods transport for environmental and climate change<sup>22</sup> reasons, any bottleneck that may cause longer travel times is subject to planning activities. This is in conflict with the dedicated task to increase rail goods transport. The extension of the European Union (10 Eastern European states have joined at May 1<sup>st</sup>, 2004) has already since a number of years led to extended infrastructure planning (Trans European Networks TEN<sup>23</sup>). While the rail network is planned to be improved significantly in relation to rail<sup>24</sup>, road haulage certainly will benefit most from transport demand increases – not only because of lack of co-operation between the European rail operators but also low cost of truck tariffs<sup>25</sup>.

The methodological deficits of the current FTIP process regarding sustainability-dimensions are obvious. The heavy criticism in the public arena does not only stem from environmentalists advocating against road network extensions but also from economists. Stakeholders of the road transport businesses on the other side require higher public investments.

Some of the arguments taken are:

- FTIP is not integrated into a general transport policy concept.

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<sup>22</sup> The Kyoto commitments to reduce CO<sub>2</sub> require emission reductions from all sources and have not been broken down between the sectors. While truck kilometers are expected to increase further on, there is an increase of CO<sub>2</sub> from that sub-sector.

<sup>23</sup> Infrastructure projects within TEN mainly are based on proposals of the respective national governments. Construction cost will be supported by EU co-financing by no more than 10 percent; feasibility studies 50 percent.

<sup>24</sup> "More than 55 percent for rail, no more than 25 percent for roads." In light of the small EU contribution it is more important that the shares of the national EU governments are 62 % for roads and 27 % for rail. The European Investment Bank (EIB) financing transport investments in Eastern Europe gives these data: Roads and motorways received 43 % of the investments, while 28 % were allocated to the railway network and 29 % to air transport and shipping (Eurostat, 1999).

<sup>25</sup> The external-cost debate within the EU has not yet resulted in concrete measures to internalize social cost of road transport.

- Although FTIP is maintained to be an integrated plan bringing together various transport modes, in reality it reflects the demand of each single mode.
- The problem of bottlenecks on some roads could be solved by political measures, supporting demand shift towards rail or (in goods long-distance transport) inland-waterways.
- As typical congestion problems in and around metropolitan areas are caused by local car traffic, these problems could be addressed by a better regional public transport (being not addressed by FTIP). The geographical scale of the transport models is too large for simulating local trips.
- The transport scenarios, and the final decisions, are not linked to the targets of other policy sectors, e.g. greenhouse-gas emissions.
- Decisions about national infrastructures are influenced by local politicians via the national parliament.
- Because of lacking financial resources, many projects issued by the FTIP anyway will not be realized within a realistic time frame. These projects will hinder discussion about short and medium-term alternatives.

The financial aspect mentioned in the last bullet is dealt with by the FTIP distinguishing two basic categories, namely first priority projects and second priority projects. "The first priority projects comprises the total investment with the anticipated financial framework plus planning reserve for the period from 2001 to 2015. (...) The second priority category comprises projects that have been proven to be macro-economically profitable<sup>26</sup> but whose total level of investments exceeds the financial framework in the period up to 2015. Project planning may thus only commence or be continued in justified exceptional cases and only with the consent of the Federal Ministry of Transport, Building and Housing."<sup>27</sup>

### **Other Roads and the Informal Integration of Road Planning**

Corresponding procedures as in FTIP (with minor differences) have been issued by the German states for their network planning. Thus, the deficiencies mentioned for the national level are valid also for state level.

The rules for road design are developed and standardized by professionals working in public administrations on various levels and in private sector companies. These – and experts from academia – form a semi-public organization named "Society for Research in Transport" (*Forschungsgesellschaft für Strassen- und Verkehrswesen FGSV*). The recommendations issued from that society are widely accepted as basis for planning. They also serve for nearly all court decisions as "anticipated expert opinion / judgment"<sup>28</sup>. Although these recommendations generate no legal commitment – for instance about the width of a road -, they will be followed in praxis.

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<sup>26</sup> "Profitable" under the doubtful assumptions within the Cost-Benefit Assessments of FTIP. It is interesting to know that a different Cost-Benefit Model is used for decisions about federal co-financing of public transport projects (under the frame of the Federal Community Transport Financial Law (Gemeinde-Verkehrs-Finanzierungsgesetz GVFG).

<sup>27</sup> Source: Page 5 of FTIP, Ministry of Transport, Building and Housing, Berlin 2003

<sup>28</sup> In cases of court decisions the recommendations of FGSV named RAS ... (Road Construction Recommendation, followed by capital letters (indication a. o. E for Erschliessungsstrassen or W for



When it comes to conflicts of interest between the administrative bodies of various levels (typically also caused by political differences between federal and states, and between states and communities), the procedures for conflict-solving are defined in the Administrative Law Codes (*Verwaltungsrecht*). When the planning decision has been taken for a certain infrastructure project, the implementing agency will be responsible for the Project Approval Procedure (*Plan-Feststellungs-Verfahren*). It organizes the involvement of public authorities as well as of affected citizens. In this phase all environmental or social aspects will be discussed and balanced for final decisions.

### Responsibility for Railways

The **railway** network has been planned and operated on the national level for more than 100 years<sup>29</sup>; the national rail company was responsible for all aspects of rail transport. In 1992 the respective article in the German constitution was changed. There are two important aspects to be mentioned: First, the previous national railway administration (German Federal Rail - Deutsche Bundesbahn (DB)) was privatized (with still 100 percent under national ownership, so it is a state-own company). In January 1st, 1993, it started operation as German Rail Inc. – Deutsche Bahn AG (DB)<sup>30</sup>. DB now has three sub-units for Passenger Transport, Goods Transport, and Rail Infrastructure. The second important change is a shift of responsibility for part of the operation to the German states (Laender). Now, the federal level only bears responsibility for long-distance rail while responsibility for regional and local rail – both for network infrastructure and operation – is on state level. Some of the German states have founded state railway administration bodies; others shifted operational functions down the line to regional entities.

Both aspects – privatization and regionalization – are part of the political paradigm change “from public ownership to private market”, driven by EC free-market<sup>31</sup> principles. This movement, in the UK already realized in the late 80s, will allow private rail operators to compete with the national carriers. It is planned to sell the national DB shares on the capital market. It is still unclear if this will include the sub-unit for rail infrastructure. The only profitable part of DB is the high-speed rail operation (Intercity Express ICE), but only the operation excluding infrastructure and vehicle cost. The goods rail segment is highly subsidized and cannot gain enough market revenues. EU liberalization and access of Eastern European countries with low wages have led to low truck tariffs. There is a broad understanding among realistic politicians of all parties that under current conditions of the transport market the rail sector needs subsidies to mitigate more rapidly increasing truck traffic. There is an ongoing debate within the EU about “fair prices” in goods transport. The general understanding is that trucks do not pay their cost imposed on the society and

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Wirtschaftlichkeit) will serve as definition about “state of the art”. Similar official functions of private societies exist in the environmental area, see Para 2.1.4

<sup>29</sup> In earlier years the rail lines have mainly been financed by private investors, who defined the desired alignment; the national level used to accept this. Then the national level saw the strategic interest and nationalized all railway companies and their lines.

<sup>30</sup> As a consequence of the re-unification of 1990 also the GDR rail company Deutsche Reichsbahn had been integrated.

<sup>31</sup> The free-market principle (for the internal EC market) aims at shifting services from the public sector to commercial companies; it is meant to support European integration.

on nature (social and environmental cost). If these were taken into account, and internalized into the prices of transport services, truck tariffs would increase, which would give a fair chance to rail. The current legal position of the European Commission on that reasoning is, and this is laid down within respective directives, that only proven road cost can be the basis for taxation or other road-pricing approaches.

Concerning the rail sector in general: The financial side and the conditions, under which financial supports is allowed to be granted towards the rail companies, make an important part of legislative provisions on EU and national level. In recent years, the EC has changed these rules by launching directives demanding separation between planning and operation, requiring invitation for bids for all rail services receiving public subsidies, thus forcing federal and state level to spread any financial support equally between publicly-owned and commercial companies.

### Responsibility for Public Transport

The changes which **public transport** now has to undergo have the same roots as described above: EC policy directed towards liberalization, deregulation, competition, and thus putting pressure on the public resources. (Here **public transport** is including urban buses, trams, and metro, although EC directives left some holes for municipalities operating public transport companies under certain conditions<sup>32</sup>.)

Federal and state legislation for the public transport (except rail) is focusing on financial aspects, describing the conditions under which subsidies can be given to regional and local entities. The Federal Community Transport Financial Law (*Gemeinde-Verkehrs-Finanzierungs-Gesetz GVFG*) supports communities' infrastructure investments for urban trams and metro, also including bus vehicles and specific service buildings. The personnel costs of transport operation have to be borne by the communities. (See Chapter 2.2.)

But again there are some exceptions from this basic principle: Both federal level and state level finance model projects aiming at innovative solutions within urban transport operation. For both financial support according to GVFG and to model projects it is up to local decision makers if they allow the upper administrative levels to take influence in the local field, or not. Given the fact that the municipal budgets suffer from severe budget constraints, there often are reservations within the municipal authorities against GVFG-based investments and against model project subsidies because these would deserve local co-financing. Under current budget constraints of the municipalities, this hinders innovation.

On the other hand, municipal decisions in the past often have been taken in favor of expensive projects, which would never have been made under their own financial responsibility for the total cost. This especially has been the case with underground trams and metro lines beyond all reasonable cost-benefit.

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<sup>32</sup> Bus transport in rural areas underlies different political and economic rules: Buses are to a large extent operated by private companies bearing their cost by tariffs and additional financial support from state budgets for transporting school children, for handicapped and for the poor. Those public bus companies under public ownership are privatized and thus subject to market conditions.



### Non-Motorized Transport

Municipal planning for **non-motorized transport** has been gaining importance during the last decade. Local planners and political decision makers are acknowledging the social dimension, its importance for the quality of urban life, and the inter-linkage between good pedestrian and cycle networks with public transport.

Finally, support for non-motorized mobility may mitigate passenger car traffic within cities. Walking and cycling requires lowest specific investments per trip. It must be admitted that this argument only is influencing a minority of decision makers. The same is true for the concept of Least-Cost Transportation Planning (LCTP), which is discussed within the scientific arena.

Although the economic dimensions of different transport modes in terms of social cost are intensively discussed, not only by NGOs but also in several European working groups, non-motorized transport continues to lack that level of importance, which is justified by its role in daily mobility. The German federal level and the states are merely verbally engaged in supporting measures for walking and cycling. Municipal investments in respective infrastructure can be co-financed within the frame of GVFG. The engagement of municipalities is very unevenly distributed in Germany.

### EIA and SEA - Planning for Sustainable Development

A comprehensive concept of integrated transport planning should not only aim at inter-connecting various transport modes in order to allow inter-modality, but in a broader sense it should also deal with the inter-linkages between transport and other sectors. This includes two perspectives:

- On one hand, there is the impact of transport on neighbor-sectors, like the environment.
- On the other hand, there are the consequences of decisions of other sectors (namely housing, businesses) influencing future transport demand.

The requirements for environmental impact studies are well known (based on the EC Directive 85/337/EEC, modified as 97/11/EC “Environmental Impact Assessment – EIA”; in German: *Umwelt-Verträglichkeits-Prüfung UVP*). Germany has implemented this directive in a rather special way, with only minor structural changes of the existing environmental legislation. This law and the procedural aspects will be covered below in Chapter 2.1.4. EIA is required in the phase of concrete infrastructure planning, as a necessary pre-condition before the construction measures are allowed to start.

Because EIA is carried out in a rather late phase of a transport planning process, when basic policy decisions and e.g. a Transport Master Plan normally has been issued years before, the results of related studies rarely question a road or rail construction in total. Although it is required to discuss alternative solutions, even the “zero-alternative” (the option of not constructing that respective road), the limited scope of the process analysis normally does not allow to impose basic changes, e.g. replacing a road extension by a bus lane. In order to make planning processes more flexible and transparent, and to introduce alternative long-term options, the EC has issued the Directive 2001/42/EC on Strategic Environmental Assessment (SEA), which was implemented in Germany in 2003 (*Gesetz zur Strategischen Umweltprüfung SUP*). Like in the case of EIA, Germany again chose a simplified but

nevertheless useful approach of implementing SEA. There is a legal SEA framework, and the various transport (and other sectors) provisions are formally extended with SEA-references. The experience with SEA application is too short to analyze effects. The FTIP has not yet formally adopted SEA as obligatory task. The responsible authority (Federal Transport Ministry) on the one hand questions the legal necessity for an SEA, on the other hand the officials claim that certain elements of SEA processes since long times already are applied.

The environmental consequences of transport decisions are analyzed, and the impact assessed, within the project approval process (Planfeststellungsverfahren). Participation of other administrations that may be effected, is taking place. This holds also true for NGOs engaged in Nature Conservation (the “acknowledged” NGOs). In this process, giving public information and the opportunity to introduce statements and positions plays an important part. The leading agency (normally, the Transport Ministry) has to initiate this involvement, and finally to weigh the contributions of the stakeholders.

The crucial point of EIA and SEA application in Germany is the lack of integration in the planning phase. EIA now has been formally implemented since about 15 years, but the requirement with the EIA directive of the EU, that the impacts of a project have to be assessed in an integrated approach, is not met. (See also Chapter 2.1.4.)

### **2.1.3 Spatial Planning on State, Regional and Community Level**

The important impact of land-use development on the transport demand, and vice versa of the transport decisions on land-use, requires high attention in local and regional transport planning. The methodical studies have not yet left the scientific community to join the officials and politicians. Land-use planning and transport planning also are not connected within the German Transport Ministry despite its merger with Housing and Building, its responsibility for federal spatial planning and its agency providing lots of data and research experience.

The crucial question is, how additional transport infrastructure (both road but also other modes) will change the spatial structure of a region. In return these changes will again cause consequences for overall transport demand at least in medium and long range. This leads to the need for integrated planning beyond the transport sector itself: The choice of locations for settlements, production facilities, and for all other kinds of spatial impacts will also impact transport demand.

In Germany the spatial dimension is dealt with by the states together with the lower levels. The federalist structure of the German state with the three central levels of the Federation, the federal states and the municipalities as the organs of local self-government has a decisive influence on spatial planning. It is arranged through the legally determined distribution of responsibilities and tasks. Altogether there is a strongly decentralized system, in which the respective upper levels focus on principles to be formulated while the lower levels decide on specific situations. Decision-making takes place according to the principle of “counter-current” as well as on the basis of complex regulations regarding information, participation, agreement and co-operation, and obligation.

Spatial planning has to co-ordinate different user-demands directed towards a certain area. At all administrative levels – state/government, district/regional and local community/city – plans ought to be prepared which are suitable to balance the

demands and the needs for housing areas, facilities, transport infrastructure, conservation of nature, and others. The establishment of spatial plans is a pre-requisite for the comprehensive balance of interests between different parts of society.

### Legal Structure of Spatial Planning (*Raumordnung*)<sup>33</sup>

All three administrative levels are responsible for spatial planning in Germany. The different perspectives and tasks are reflected by different terms:

- The federal level is responsible for the principles of *Raumordnung* (it may be translated “spatial order”) on the national territory.
- The states are responsible for implementation of the national concepts by *Landesplanung* and *Regionalplanung*<sup>34</sup> on their respective territory.
- Municipalities are responsible for land-use planning and decisions on the smallest scales: on preparatory land-use plans and concrete building applications.

German land-use legislation on the federal level, mentioned above as *Raumordnung*, is composed of the Federal Regional Planning Act (*Raumordnungsgesetz ROG*) on the one hand and the Acts of *Raumordnung* of the federal states (*Landesplanungs-Gesetze*) on the other hand.

All German states have issued State Planning Acts (*Landes-Planungs-Gesetze*), which specify the states policy interests with respect to the spatial structure, based on general policy objectives of the national level laid down in the Federal Regional Planning Act (*Raumordnungsgesetz ROG*). Spatial planning is in accordance with the German constitution (Art. 75 No. 4) a policy area with only framework competencies for the Federation. Therefore, there is neither a federal spatial planning nor a national plan; the constitution makes clear that spatial planning has to be understood as planning of and within the states. The responsibility of the federal level is to establish the principles of the *Raumordnung*, which are the guidelines for the whole spatial planning and spatial policy.

In order to co-ordinate the different policies in the field of spatial planning, a conference of the state ministers for spatial planning was founded<sup>35</sup>. Their decisions have self-binding effects on the states. Among the federal states there are considerable differences with regard to the responsibility for *Raumordnung* or rather for *Landesplanung*. At present, the predominant departmental assignment models are (a) the State Chancellery and (b) the Ministry for Planning and Environment.<sup>36</sup> At the federal level is the Ministry for Transport, Building and Housing, responsible for the ROG.

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<sup>33</sup> This Para benefits strongly from the work of Stefan Greiving and Gerd Turowski, University of Dortmund, Faculty of Spatial Planning (published for VASAB [vasab.leontief.net/](http://vasab.leontief.net/))

<sup>34</sup> There is no fixed definition what a region is. It seems to be accepted that this is below the scale of a state and beyond the level of districts/counties.

<sup>35</sup> There are also conferences of other sectoral state-ministers with the respective federal ministers, for instance transport, environment, financing. The Federal Minister for Transport, Housing and Building is member of three conference-groups. The decisions can only be taken for the specific areas of legal responsibility.

<sup>36</sup> Source: VASAB [vasab.leontief.net/](http://vasab.leontief.net/)

The national ROG authorizes the federation to draw up leading concepts (*Leitbilder*) of the spatial development in co-operation with the federal states. This is kind of an informal instrument; legal instruments are reserved to the states. Only the states are obliged to draw up comprehensive plans, which are binding for the subordinated authorities. Most states have set up regional planning processes for parts of their territory<sup>37</sup> (regions) under the ROG and the State Planning Laws. Regional Plans should contain specifications concerning the spatial structure, especially with respect to

- the desired settlement structure (including spatial order categories, and development axes; both may be of relevance for transport);
- the desired open space structure;
- the desired infrastructure locations and routes (including e.g. traffic infrastructure and installations for transfer of goods).

Between state and municipal levels there are regional planning authorities, which on the one hand have to transform the state laws into planning schedules in which the municipal plans have to fit. The local plans are brought to the attention of the state planners, which are obliged to respect the local interests. This combination from top-down and boom-up is in Germany named the “principle of counter-current” (*Gegenstrom-Prinzip*). The state schedule plan defines the principles and formulates the regulations for subsequent activities on the lower levels, which in return is free to decide within this frame.<sup>38</sup>

During the establishment of the local plans on community level, public participation is demanded. This comprises information of the public, discussion of its interests, and special hearings for all relevant authorities and parliamentary bodies as well as other institutions. Public participation has to take place in a very early stage of the planning process. After the discussions have been finished, before the implementation act legal evaluation can be demanded by those directly affected. There is no public participation during the establishment of the state and regional framework – this is understood as internal procedure of the authorities.

Both for the states and for the municipal levels, the principles of spatial planning and the political goals are formulated by law. But the plans are not drawn in detail from the respective upper levels. There is room for political decisions, as has been mentioned above, within a broad range of possible preferences. Neither the weight of environmental aspects is absolutely defined, nor is the weight of economic development. The key word for dealing with different interests is *weighing*.

### Regional Planning and Transport

Between sectoral planning (here: transport) and the states *Raumplanung* there is a tension in several respects: The planning of the states includes the state ideas about not only the principles of the regional development and e.g. of a specific landscape,

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<sup>37</sup> The ROG does not specify procedures for cross-border regional planning. States may join and plan together, if they will. Cross-border planning activities over the national border require contacts made over the Ministry of Foreign Affairs.

<sup>38</sup> This is more or less the case in all mid-European countries, e.g. in France. Major differences exist worldwide when it comes to the question if the upper level can force the municipality to change a plan once adopted from above on behalf of national interest.

of the places for nature conservation or leisure, but it also declares transport tasks. An example: The State of North-Rhine Westphalia (NRW) has issued the Regional Development Plan (*Landes-EntwicklungsPlan LEP*) under the authority of the State Planning Act (*Landesplanungs -Gesetz LPIG*) respectively the sub-ordinances (*Verordnungen*). LEP-NRW defines as goals in transport

- “to expand the rail network and improve its capacity for handling express traffic, goods traffic and local public transport;
- to give priority to high-capacity modes of transport (rail and bus) in the areas subject of heavy traffic.”

And further-on: “A considerable proportion of passenger and goods traffic can be moved from road to rail by changing the underlying conditions.” (LEP-NRW) Now it is obvious that some of the contents LEP-NRW will touch the federal ideas about transport infrastructure planning. Federal trunk roads under planning in a certain region may conflict with the states principles of spatial development. As has been said before, the German constitution gives the right of spatial decisions to the states, while the national government has to restrict its activities to the principles of *Raumordnung*. The legal question now is if the states Regional Plans can form a binding effect (as general stated in § 3,2 of the federal ROG) towards the (national) Federal Transport Infrastructure Plan (FTIP).

But this clearly is not the case because FTIP has been adopted by the national parliament. § 16,1 of the Federal Trunk Road Act (FStrG) gives a higher rank to federal planning decisions. The prevailing legal doctrine argues as follows: The objectives of *Raumordnung* justify according to ROG the duty of all responsible entities, even of the federal authorities like the Ministry of Transport, to respect plans and measures of a states´ Regional Planning – but not to those of the Federal Parliament.

In so far, it is a wise decision of all Federal Governments from the beginning 1973 on to now to let the respective parliament majority adopt the FTIP and to avoid opposing state plans.<sup>39</sup>

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<sup>39</sup> As has been mentioned in Chapter 1, the states have to carry out planning, plan approval and construction of federal roads under the order of the federal government.

## 2.1.4 Environmental Aspects in Transport Planning

The environmental standards had been subsequent tightened since the seventies, and in a leap forward in the eighties, when both the damages to the natural resources (the *Waldsterben*, eutrophication of lakes) and public health studies forced the decision makers to take actions. In the mid-eighties, about ten years later than US and Japan, unleaded gasoline made the use of catalytic converters possible. Both cleaner fuels and advanced emission control technology were enforced by rapidly strengthened vehicle emission standards.

### Environmental Policy on National and EU Level

Only when in the early sixties mass motorization started in Germany, exhaust emissions became a public health issue in and around urban roads. The Road Traffic Admission Ordinance (*Strassenverkehrs-Zulassungsordnung StVZO*) was extended with CO and HC concentrations limits for gasoline engines in 1969, later NOx standards were added. Diesel emissions are limited since the 80s.

EU initially launched environmental standards as part of unified standard-setting for products in general. In the beginning it was an Economic Union. Although now has legal responsibility for environmental issues, the economic dimension is still dominant, characterizes the inconsistency in transport topics. On the one hand, there is a strong environmental (and social) commitment especially by the European Parliament (less by the Commission, least by the Council of Ministers); on the other hand there is (mainly by the Commission) absolute priority for economic issues.

Having said this - which is important for an understanding of EC legislation and attitude - it is also true that these days the European Union implements straight-forward highest technical standards for vehicles, it issues challenging air quality standards, it finances sustainability research and model projects, and it implements advanced planning instruments via directives. The legal structure of EC measures – the directives - does not fully substitute German law in the field of transport and the environment. Some short remarks on the relations between EU and member states in environmental issues:

- There is a certain room left to the member states for additional measures. A member state can tighten its policy a bit – not as a mandatory requirement but with “soft” tools, e.g. tax incentives. Germany e.g. has used tax instruments to enforce fleet renewal.
- The EC authorities strongly advocate de-regulation and free market competition (only within the EC of course). Therefore, all subsidies the German government would like to spread towards German companies, or which would disturb competition is prohibited. For some years, the EC is taking actions to open the market for public transport services. Previously, the EC liberalized road goods transport services.
- And there is also an area for those national governments' activities that do not interfere with the common market, for instance speed limits and urban transport infrastructure. Any measures have to be open for competition; construction as well as operation services have to be tendered.



Have the EU and Germany in total been successful in their clean air strategies related to transport? There is no doubt that vehicle standard setting since the mid-eighties has been very straightforward<sup>40</sup>. The technological status, with EURO III standards being in force since 2001, and the next step EURO IV already been implemented to be mandatory since 2006, matches with the US and Japan. Germany has played a leading role and is continuing to do so. The next enhancement, EURO V, standards already have been being proposed within the EU working groups.

But the technical improvements were never linked to an air quality strategy. While step by step vehicle standards were tightened during the decades, fleet and mileage increase hindered ambient improvements. But since about 1995 total emissions and monitoring data show declining trends – although there still is non-attainment of health-related guidelines. Today, mileage increase at least in urban areas has come to a halt. Urban air quality will improve further. But Ozone remains to be a huge problem in rural regions during summer, and there are new challenges not yet adequately addressed: Fine particulates and greenhouse-gases<sup>41</sup>.

### German and EU Air Quality Legislation

EC has started to issue air quality directives, forcing the member states to take actions. They are obliged to meet the ambient air quality within a few years (- naturally not by changing vehicle emission standards but by planning and traffic management). The latest topic is of interest for urban transport planning in Germany.

For about 30 years the Federal Immission<sup>42</sup> Control Act (Bundes-Immissionsschutz - Gesetz – BImSchG<sup>43</sup>) has been effective. The act has been very effective for control of stationary sources but the provisions for control of mobile sources have not gained any success. It may be of interest to take a short look at the history, to understand why.

The provisions of interest for the transport sector are entitled “Nature and Operation of Vehicles and Crafts, Construction and Alterations of Roads and Rail tracks” (Part IV. Art. 38 to 43). There are general environmental requirements laid down in the act, and procedures.

Basically, the provisions address the traffic pollution problem in three ways: The responsibilities are on the sides of the manufacturers, the drivers and the traffic management. The relevant sentences are:

- The nature of motor vehicles (...) shall be such that in case of normal use for the intended purpose the emissions resulting from their participation in traffic

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<sup>40</sup> During the 70s and early 80s, EU standards were far behind the US and Japan. Unleaded gasoline and catalyst technology started around 1984, 10 years later than the competitors.

<sup>41</sup> Because of the global nature of the greenhouse effect, this aspect will not be discussed in detail within this text, focusing mainly on urban transport and infrastructure. There is no doubt that all measures mitigating car use and car speed also contribute to CO<sub>2</sub> reduction. The German government, and later the EU, have made agreements with the automobile industry to reduce average CO<sub>2</sub> emissions towards 140 g per kilometer.

<sup>42</sup> „Immission“ is a specific Germanism of the English language. It means ambient pollution (both ambient air and noise). For ambient air the term « concentration of pollutants » would be adequate.

<sup>43</sup> Full title: “Act on the Prevention of Harmful Effects on the Environment Caused by Air Pollution, Noise, Vibration and Similar Phenomena”



do not exceed the limits, which must be observed to ensure protection from harmful effects on the environment. They must be operated in such a manner that avoidable emissions are prevented and unavoidable emissions are kept to a minimum. (Article 38, 1)

- The state governments are authorized to designate (...) specific areas in which motor vehicle traffic shall be restricted or banned during (*adverse*) weather conditions... The road traffic authorities shall ban the operation of all or part of the motor vehicles. (Article 40,1)
- Additionally, the Act (BlmSchG) and related Legal Decrees set target values for air quality.

But BlmSchG influenced neither of the stakeholders in air quality mentioned above, which were aimed at in the articles. Different to the Muskey Act of the US, no detailed targets for emission standards of vehicles were issued. In the US, the requirement was a reduction by 90 percent<sup>44</sup>, which was made operational by EPA, the US Environmental Protection Agency. In Germany, standard-setting was under the authority of the Transport Ministry (under the *Strassenverkehrs-Zulassungsordnung STVZO*). The German Federal Environmental Agency (*Umweltbundesamt*) being under the head of the Environmental Ministry had no authority to set standards, not even launch appropriate proposals.

The traffic bans to be issued under adverse weather conditions have been issued by some state governments but were only based upon contaminants, which lost relevance when catalyst cars entered the fleet. For those contaminants today still critical, namely Ozone (Art.40,3) and Particulate Matter (Art.40,2), issuing of the decree defining the acceptable levels nearly took 8 years and resulted in quality levels beyond any effectiveness.

Another aspect was the lack of decisive approach. An example: Article 40, 2 was meant to solve continuous traffic-related air pollution problems aside specific roads (high concentrations of benzene, nitrogen dioxide and diesel particles). There is no doubt that urgent actions are needed to meet health standards. But the Act reads like this:

“The road traffic authorities *may* restrict or *even* ban motor vehicle traffic on specific roads or in specific areas, taking into account *given traffic requirements* and town *planning concerns* (...)”

In other words: There is no legal force to take actions but a polite suggestion to consider actions. This does not sound very resolute. In the end, it turned out that this article had never been applied.

The lesson to be learnt: There was a lack of commitment. The responsible authority was not interested in environmental and health matters but only for free traffic flow, the environmental side had no mandate to act.

Air quality management should aim at strict quality standards and a time frame to reach the quality. This is the actual EU approach.

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<sup>44</sup> The U.S. Muskey Act was issued in 1972. Ironically, the only information available at the internet to this historic approach goes back on the Japanese car manufacturer HONDA  
<http://www.honda.co.jp/motorshow/1997/e/auto/thought/thought.htm>

### The new EU air quality standards

Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management (the Air Quality Framework Directive) provides the framework for the actual EC legislation on air quality. The four objectives of the Air Quality Framework Directive are to:

- define and establish objectives for ambient air quality in the Community designed to avoid, prevent and reduce harmful effects on human health and the environment as a whole;
- assess ambient air quality in Member States on the basis of common methods and criteria;
- obtain adequate information on ambient air quality and ensure that it is made available to the public inter alia by means of alert thresholds;
- maintain ambient air quality where it is good, and improve it where it is not.

The Air Quality Framework Directive lists atmospheric pollutants to be taken into consideration in the assessment and management of ambient air quality. Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead, Directive 2000/69/EC relating to limit values for benzene and carbon monoxide and Directive 2002/3/EC relating to ozone in ambient air are in force. In addition to this legislation, there is provision for regulating other contaminants less important for the transport sector. A quality standard for polycyclic aromatic hydrocarbons (PAH) is under consideration<sup>45</sup>.

### Environmental Requirements for Infrastructure Projects

In Chapter 2.1.2 “Structures of Transport Decision Making” in the Para on Road Transport the legal procedure of plan approval and the adoption of the directive on EIA have been described. Here some remarks shall be made on the environmental content of the procedures.

Already before the EIA directive was launched, and applied in Germany 1988/1990<sup>46</sup>, the responsible authority for an infrastructure project had to analyze its environmental consequences. Within the Plan Approval Process (*Plan-Feststellungs-Verfahren*) information about the area and the possible impact of the project had to be collected, and assessed with respect to standards valid for air, water, soil, and so on. Art. 17 of the Federal Highways Act (*Bundesfernstrassen-Gesetz FStrG*) reads:

- ? (1) Federal highways may only be built or altered if the plan has been approved in advance. During the plan approval procedure the public and private interests affected by the project, including the environmental impact, are to be taken into consideration in the weighing up.

<sup>45</sup> Cited from: Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (presented by the Commission); COMMISSION OF THE EUROPEAN COMMUNITIES Brussels, 16.7.2003 COM(2003) 423 final 2003/0164 (COD)

<sup>46</sup> The year of legal national implementation was 1990 (2 years later as required by EC).

- ? (6c) Faults in the consideration of the public and private interests affected by the project are only serious if they are apparent and influenced the outcome of this consideration. Serious faults in the consideration or a violation of provisions on procedure or form shall only lead to the lifting of the decision on the plan approval or plan authorization if they cannot be eliminated through an addition to the plan or supplementary proceedings (...).

### EIA in Infrastructure Planning

Environmental studies have been made in German infrastructure planning far earlier than EIA was issued within the EU. The reason was to avoid the risk of court decisions against a project. Within the project approval (Planfeststellungsverfahren) the planning authority has to decide if certain burdens caused by the project are acceptable for the concerned citizen. The central legislative term in German law is *Abwägung* ("weighting" or "consideration"). Opponents would go to court and argue, that some aspects had not been considered adequately. This is an argument often used in court decisions (not only in the transport sector, but for all kinds of project approvals, like production facilities and even nuclear power-plants).

Weighting environmental impact (for instance air pollution) against public interest (in the case of a new road) is a rather tricky issue. The plan approval authorities therefore are analyzing the direct impact on air quality quite comprehensively, and use to prove that related standards have not been exceeded. (Before EC directives on air quality were issued, the transport planners referred to standards and limit values of BImSchG (respectively its ordinance "Technical Instruction on Air Quality" (*Technische Anleitung Luft TA-Luft*)). Not only directly concerned citizens and legal persons have the right to raise objections (in the project participation phase) or go to court afterwards. There are two categories of other stakeholders, which have this right: (1) other official institutions like e.g. water authorities, health authorities (public agencies, *Traeger oeffentlicher Belange*), and (2) acknowledged NGO dedicated to nature protection (see § 29 of the Federal Nature Protection Law – *Bundes-Naturschutz-Gesetz BNatSchG*).

The courts see no offence against the duties to weighten and to consider, when formal air, noise, and other standards ore guidelines are not exceeded. If no formal guidance (standard, guideline) has been issued for a certain environmental aspect, the "state of the art" applied by citing recommendations or information from associations of professional.

The problem of implementing EIA in Germany <sup>47</sup> as an *integrated concept* was that German environmental law consists of numerous different laws. Each of them deals with a specific matter and thus can be called "specialist law" (*Fachgesetz*). These specialist laws set up "material" demands on certain projects, such as threshold values for emissions of a plant (§ 5 BImSchG), for the purpose of human and environmental protection. These demands are called "substantive licensing demands" (*materielle Genehmigungsanforderungen*). The procedural demands are called "formal licensing demands" (*formelle Genehmigungsanforderungen*). But prior

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<sup>47</sup> Sources: The Environmental Impact Assessment in the Federal Republic of Germany; <http://www-penelope.drec.unilim.fr/penelope/Library/Libs/Dintro.htm>; Case Study Germany; <http://www-penelope.drec.unilim.fr/penelope/Cases/german/GERCase.htm>

to the EIA Act, there were no provisions demanding an extensive and integrated cross-media examination and assessment of a development project.

National implementation: The German EIA-Act (*Umwelt-Verträglichkeitsprüfungs-Gesetz UVPG*) itself is the core EIA-law formally transposing<sup>48</sup> European law of the directive into the German legislation. (Then there is an "Article Law", bringing together UVPG with all the related articles in existing laws (for instance those dealing with air quality, water, and so on). This "Transposition Act" only consists of procedural rules that are listed in systematic order. UVPG introduces Environmental Impact Assessment as an integral part of the licensing (project approval) procedure (§ 2 UVPG). There is no "original" EIA -Procedure and no specific EIA-Authority; the EIA-Act is subsidiary to those laws, which set out specific EIA-related provisions. The purpose of integrating the EIA into the licensing procedure is to avoid an increase in bureaucratic work as well as the creation of new authorities and also to not prolong the licensing procedure.

The EIA-Act neither sets up substantive demands on projects, nor has it made any changes in the substantive demands of the environmental specialist laws. The only provision related to substantive demands is the demand of taking into account the outcomes of the EIA in licensing (project approval, *Planfeststellung*) decision (§12 UVPG).

After EIA had been formally implemented in Germany, and after it had been adopted as a part of the Project Approval Process, the traditional way of balancing and weighting arguments did not change very much. The Environmental Impact Analysis is a summary of considerations about specific environmental impacts. The requirement of the German *Planfeststellung* is met, when the planning authority proves that it took all arguments and facts (standards, recommendation from professional bodies, business representatives, public officials, scientists) into consideration.

Already in the origins of EIA in the US National Environment Policy Act (NEPA), the problem was recognized that "many of the most detrimental environmental effects may not result from direct impacts from individual projects, but from a combination of impacts from one development, or from minor impacts generated by a number of developments. Such impacts, over time can cause a significant impact."<sup>49</sup> The Directive 85/337, especially also in its amendment 11/97, states: This description should cover the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects of the project." Also, „inter-relationships and „interactions“ have to be assessed.

In practice few EIAs appear to consider the assessment of indirect effects, cumulative effects or impact interactions as this process is often thought to be too difficult due to technical and institutional barriers. This is valid for the whole EU<sup>50</sup>

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<sup>48</sup> Source: EIA-Directive 85/337 - National transposition in Germany; <http://www-penelope.drec.unilim.fr/penelope/Library/Compare/topic1/Dmleng.htm>

<sup>49</sup> Sparr, S. (1999): Study on the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions; on behalf of EC DG XI. Environment, Nuclear Safety and Civil Protection

<sup>50</sup> Wood, C. et al. (1996): EVALUATION OF THE PERFORMANCE OF THE EIA PROCESS FINAL REPORT; [europa.eu.int/comm/environment/eia/eia-studies-and-reports/eiaperform.pdf](http://europa.eu.int/comm/environment/eia/eia-studies-and-reports/eiaperform.pdf)

The German legislation makes references to indirect impacts, impact interactions and cumulative impacts, and the guideline says how to deal with the problems, for instance deciding the concept of interaction into two sub-groups: problem-shifting and overall burdens on the environment. "But practice shows that indirect impacts, impact interactions and cumulative impacts are seldom addressed in great detail. It was found that of 150 German EIA analyzed only about 50 mentioned the term 'interaction', and only about 10 treated the issue thoroughly."

This is related to the problem of "Salami-slicing", the practice of dividing projects up into two or more separate entities; not only to avoid requiring an EIA in general, but also reducing perception of the overall impacts at side of the opponents. German administrative courts have ruled, that individual project sections are only to be defined as independent partial projects if each of the partial projects 'forms a meaningful unit in its own right'. This would be the case, when e.g. a single road within a comprehensive urban by-pass net will evolve functions. With "slices" step by step being cut, the political and economic pressure to complete the system will increase, notwithstanding that the total impacts never have been assessed.

This leads to a further problem: The analysis of alternatives. This not only refers e.g. to alternative road size and general alignment (distance of a ring-system from urban area). Literature suggests that the alternatives assessed also should include "to-nothing". It is quite clear that these options get lost when various "road slices" have been launched.

But anyway, this is not bad because in the end the main positive outcome of the process is public interest in and the enhanced transparency of decisions taken. Annex IV of Directive 97/11 (the amendment to the core EIA Directive of 1985), sets up the basis criteria on the content of the EIA-report or –statement. Germany has received high scores in the EIA Reports (see Wood et al.).

Some of the more far-reaching ideas of EIA, mentioned above, now are addressed by SEA<sup>51</sup>.

### Strategic Environmental Assessment - SEA

The European directive 2001/42/EC, adopted in June 2001, regulates the assessment of the environmental effects of plans and programs. While EIA aims at the environmental effects of specific projects in a limited area, SEA should provide a wider strategic view.

It is not possible within this text to discuss SEA in detail. This instrument also is very new, and a broad range of different conceptual ideas is under discussion<sup>52</sup>. Some

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<sup>51</sup> This becomes clear when comparing EIA and the US-NEPA. A recent publication with each a German and a US case (not in the sector) analyses the histories of both the US and the EU concepts. See: Niestroy, Ingeborg (2000): Strategic Environmental Assessment as an instrument for external environmental integration; Case studies in waterway planning at the river Elbe and the San Francisco Bay. Dissertation Technical University of Berlin, Department 7 – Environment and Society.

<sup>52</sup> Of interest is a large EU project named ANSEA, see central website of the Spanish coordinating institute: <http://www.taugroup.com/ansea/>. Also at [www.wupperinst.org/Projekte/Verkehr/3089.html](http://www.wupperinst.org/Projekte/Verkehr/3089.html), [www.sei.se/policy/ansea.html](http://www.sei.se/policy/ansea.html), [www.urban.nl/ANSEA/ansea.htm](http://www.urban.nl/ANSEA/ansea.htm), and other research institutes involved.



observations from banking experts engaged in project financing – who not always rank environmental aspects very high – on SEA may be cited<sup>53</sup>:

“An SEA is basically to inform decision-making. If there is no decision to be made (or it has already been made) there is no need for an SEA. The decisions which an SEA would inform are those related to policies and programs, and are made by public authorities such as governments and the European Union. Public authorities therefore have the ultimate responsibility for initiating and implementing SEAs as well as taking note of, and acting upon, their findings. Practical methodologies are not yet available to integrate SEA outputs with other appraisal criteria to provide practical advice to decision-makers.”

The transformation of the EU SEA-Directive into German law has been discussed controversially within the German government. The deadline of 21 July 2004 for transposition has to be met. There has been uncertainty about whether the directive would be best implemented with one Federal Act, covering all of the 16 German States, or whether further Acts would be required in each state to support the Federal Act. A recent proposal by the Federal Ministry of Environment (BMU)<sup>54</sup> begins with the similarity of SEA (in German: *Strategische Umweltprüfung SUP*) with EIA (*Umweltverträglichkeits-Prüfung UVP*): SUP were the application of UVP on the level of plans and programs; it will complement the UVP/EIA made on the level of project approval by similar assessment on the upper planning level. Thus the structure of the legal transposition will be of extensions of UVP. On Federal level the UVP-law (UVPG) will be extended with all provisions needed to implement SUP/SEA.

The relation of SUP/SEA to the so-called “Specialist Law” (*Fachgesetze*) will be the same as of UVP/EIA.

Currently it is unclear how the broad scope of the SEA Directive will be up taken in German planning reality. The Federal Transport Ministry already had issued its consideration that FTIP would *not* necessarily be a mandatory candidate for SEA because it were issued by an act of the Federal Parliament. But this position certainly will not be held.

Several studies have been made by researcher outside of the official FTIP planning teams. A comprehensive analysis of adequate assessment procedures has been made funded by the EU 5<sup>th</sup> Research Framework Program<sup>55</sup>

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<sup>53</sup> Kennedy, William; Haumer, Alexander (1999): SEA and the European Bank for Reconstruction and Development; OECD/ECMT Conference on Strategic Environmental Assessment for Transport WARSAW 14-15 October 1999

<sup>54</sup> Source: [www.bmu.de/files/supg\\_bel.pdf](http://www.bmu.de/files/supg_bel.pdf); Title of the Proposal: „Entwurf SUPG Begründung Allgemeiner Teil. Stand 17.05.2004“

<sup>55</sup> Download under: [www.wupperinst.org/download/FTIP\\_ANSEA.pdf](http://www.wupperinst.org/download/FTIP_ANSEA.pdf)

## 2.2 Financing of Transport in Germany

### Financing of Federal and State Transport Infrastructure

The German national budget 2004 accounts for about 257,000 million<sup>56</sup> EURO, with revenues of only 228,000 million EURO (which makes a deficit of roughly 29,000 million EURO). The planned share the Ministry of Transport, Building and Housing from the total expenditure of the Federation, is 25,600 million<sup>57</sup> EURO or about 10 percent. Investments in transport infrastructure in Germany (total) accounted (2001) for more than 20,000 million (private estimate); about 50 percent of it were destined for roads and bridges, half of those again for federal highways (roundabout 5,000 million). A comprehensive balance also including planning and management cost is not available. The official federal transport expenditures of 2001 and in comparison 1991 are given in the following table.

	1991	2001
Federal Transport Expenditures in mill. €	18,099	18,343
- Of which investments of the total transport expenditures, in %	48	59
✍ Federal trunk roads	4,277	5,578
✍ Railway transport	9,955	8,589
✍ Federal waterways	1,192	1,552
✍ Air transport	501	434
✍ Other transport expenditures	491	591
✍ Transport improvements in municipalities	1,682	1,598

Source: Verkehr in Zahlen 2002/2003; Ed. Federal Ministry for Transport, Building and Housing

The position about grants to the municipal level gives a misleading picture because the legal structures changed significantly in 1997. The last year with the structure based upon the figure given for 1991 showed more than 3,000 mill. EURO. From 1997 on the responsibility for regional rail ("Schienen-Nahverkehr": rapid rail, commuter rail) was handed over to the federal states, which receive annual payments of about 6 bn. per year from the federal government<sup>58</sup>. The long-time idea is to decentralize responsibilities and – finally – let the states themselves pay for investments and for operation cost subsidies. It is the general understanding that

<sup>56</sup> Million (1,000,000 - mill.) Billion, in Germany named *Milliarden* (1,000,000,000 – bn)

<sup>57</sup> This is slightly more than the Ministry of Defense (25.000 million EURO). "Health and Social Security" keep the largest portion.

<sup>58</sup> The states have decided to manage rail operation on their territories in different ways, See later in this Chapter.



local transport will never be profitable. The Federation is concentrating on inter-regional and long-distance transport.

The cumulated expenditures for transport of all three administrative levels (Federal, state, municipalities) are about 47 billion EURO per year (budgets of 2000, corrected with the internal tax distributions and grants)<sup>59</sup>. Also other public cost may be included in the balance, namely subsidies and tax deductions. Germany traditionally supports cost of work trips by tax deductions not only for those using their private car but also rail and buses, even cycling. Since 2000 the so-called *Kilometer-Pauschale* to be deducted from personal income tax is independent from the transport mode really used. This amounts to 4.4 billion EURO annually. Transport expenditures of all public budgets thus can be estimated by 51.4 billion in total.

There is an ongoing public debate about the question if public finances are distributed fairly between the transport modes. Already the distribution of expenditures is difficult, not to mention what the term “fairly” should mean. The relative shares of total expenditures have been calculated as follows (for 2000):

Public transport (pt): 56 percent

✂ of which for rail: 42 percent

Roads (without pt): 37.8 percent

The crucial point with these figures is the contribution of operation cost subsidies (most of pt cost) with investments (nearly all road cost). Rail costs cover both categories. The reason for discussing these figures is, that the modes provide quite different shares of the transport load (passenger-kilometers and ton-kilometers): only 3.2 percent of passenger-transport and 14.5 percent of ton-kilometers have been made on rail.

The difference between public expenditures and transport performance is evident. It is of interest for two aspects: (1) Why should the public pay so much for rail? (2) Given the fact that there is a shortage in road financing (i.e. there are more road infrastructure project proposals in FTIP than can be financed): Would it not be fair to dedicate more towards the rail sector? And there is a third string of reasoning: (3) How is the total balance of transport-related tax revenues and expenditures? Should not be the transport taxes been used for transport-related expenditures?

For topic (3) there are of course also very different positions: It can easily be calculated that the revenues from mineral oil and from annual vehicle tax account for some 58.9 Billion EURO, which is above the total of expenditures of 51.4 EURO. This would give a surplus of 7.5 Billion EURO or 15 percent. But the conclusions differ widely:

- Industry and car manufacturers demand tax reductions and/or more roads being built. But there is no consensus on the question if traffic-related taxes should be seen as contribution to road financing and discussed in the context of cost recovery. Taxes were taxes, not citizens' payment to the state providing roads<sup>60</sup>.

<sup>59</sup> Thomas Holzendorf (2002): Neue Wege der Finanzierung der Verkehrsinfrastruktur, University of Potsdam. [www.uni-potsdam.de/u/wipo/sem/verkehr1.pdf](http://www.uni-potsdam.de/u/wipo/sem/verkehr1.pdf)

<sup>60</sup> The opposite position is supported by the fact, that mineral oil tax since 1960 indeed is linked to road construction expenditures. The legislation obviously required arguments for tax increase. 50 percent of the tax

- Federal Environmental Agency (UBA) sees major road cost not taken into account, both direct and indirect cost. (The arguments include cost of road administration, cost for slopes etc. It should be mentioned that the discussion often does not differentiate between financial and economic dimensions.)
- Then there is the aspect of social, especially environmental external cost of road traffic. UBA estimated some years ago 30 Billion EURO annually, what would change the above balance of surplus. (Studies on external cost of transport<sup>61</sup> provide a broad range of estimates, including a minority-position that there were external benefits to be taken into account.)

The German debate on transport financing can be differentiated into the following dimensions, which are characterized in the following sections:

- FTIP and New Federal Financing Concepts; New Toll-System
- Private Financing of Infrastructure
- Transport Financing at Local Level
- Future of Public Transport: Cost-Cuttings and Financial Reforms Initiated by EU
- Cooperation of Municipalities to Increase Effectiveness of Public Services
- Financial Support for Environmental-Friendly Transport

### **FTIP and New Federal Financing Concepts; New Toll System**

The Federal Transport Infrastructure Plan (FTIP) ranging up to the period from 2001 to 2015 is planned to dedicate around 150 bn. EURO on federal roads, federal rail and waterways. This perspective is not yet comparable to annual budget decisions, but it is quite clear that these are the targets. There will be medium-range plans over five years subsequently.

Usually, this kind of national procedure is also common in the states.

Both on national and on state level there are budget constraints for a significantly higher volume of infrastructure investments, which is desirable from the transport politicians' point of view. Because public money is scarce, two main strategies are under discussion (with numerous further variations each): To find new financial resources for public investments, or to leave infrastructure construction and operation to the private sector. It is unclear if pre-financing concepts offer a solution from financial shortcomings, because the commitments to pay later the bill of the road construction company (or pay back to investors) has to be integrated into the deficit control measures of the EC. It is an open debate if the higher capital cost would be justified.

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revenues ought to be spent for "road purposes". Later on this earmarking concept was extended to "other transport-related purposes of the Federal Ministry of Transport". This provision has to be renewed annually by parliament decision.

<sup>61</sup> One of the best studies : Maibach, Markus et al. (2000): External Costs of Transport - Accident, Environmental and Congestion Costs in Western Europe. Under contract of IUC.  
Original summary available at [www.uic.asso.fr/d\\_environnement/envissues/ext-cost-summary\\_de.pdf](http://www.uic.asso.fr/d_environnement/envissues/ext-cost-summary_de.pdf)  
English summary available at [www.unece.org/doc/poja/poja.uic.2.e.pdf](http://www.unece.org/doc/poja/poja.uic.2.e.pdf).

Higher tax revenues to the public budget are – under the general economic situation – seen as an unrealistic option. Even with toll-collection from heavy duty trucks – as has been decided to start in 2003 but had to be postponed for technical reasons – total revenues will not increase significantly. The transport operators and the German industry in general have massively intervened to any overall cost increase. The European Commission, on the other side, would not accept any advanced concept like the internalization of social cost.

The road use charges for the whole country, the toll system for heavy trucks hence will come in Germany within a short time; Switzerland has made a good start of such system already two years ago. The Motorway Toll Act (ABMG) lays the legal foundation for that. It stipulates that the toll is to be differentiated by axle and emission category. This has been derived from an average toll rate of 12.4 cents per kilometer and laid down in regulations made by the Federal Government. Basically, the Act also permits differentiation of the toll according to the place and time a federal motorway is used. The satellite-based system will allow – when in operation – these additional options but these will not yet been applied. The toll will be collected automatically to avoid any time losses of the vehicles. An additional manual toll-collect system for occasional motorway users will ensure non-discriminatory access to the motorway network.

The Federal Ministry for Transport, Building and Housing document on FTIP of 2003 explains the use of the revenues: “The Motorway Toll Act states that the toll revenue shall, after deducting of the expenditure for the operation, monitoring and enforcement of the tolling system, be added to the transport budget and all of it shall be ring-fenced to improve transport infrastructure, predominantly federal trunk road construction. This will first be used to finance the Anti-Congestion Scheme for Federal Railway Infrastructure, Federal Motorways and Federal Waterways (...)”<sup>62</sup>.

### Private Financing of Infrastructure

The idea of privatizing part of the network dedicated to long-distance traffic, allowing investors to plan, to construct and to operate new roads, is not very new outside of Germany. Private operators are quite common in e.g. France, Italy and Spain. The government’s position on private investments is: “The Federal Ministry applies the operator model, in which responsibility for financing, construction and maintenance is transferred to the private sector, in two different forms:

- Operator model for widening motorways by adding lanes (the so-called A-model)
- Operator model under the Private Sector Funding of Trunk Road Construction Act (the F-model).<sup>63</sup>

A rather positive expectation, which is directed towards both types, is as follows: “Costs are cut through competition, private sector operation and life cycle analysis (experiences in other countries show that this is by 10-20%)” (Ministry of Transport, Building and Housing). The current status of the preparatory work and planning activities is that a total of 17 projects /12 A models and 5 F models) will be included

<sup>62</sup> Source: [www.bmfvbw.de/Anlage17121/Federal-Transport-Infrastructure-Plan-2003.pdf](http://www.bmfvbw.de/Anlage17121/Federal-Transport-Infrastructure-Plan-2003.pdf)

<sup>63</sup> Act on the Construction and Funding of Federal Trunk Roads by the Private Sector (*Fernstrassenprivatisierungs- und Finanzierungs-Gesetz FStrFinG*) in the version of 1 September 2002

in the FTIP. In similar a way as the federal level argues, this strategy is advocated by some state transport ministries. But there also is heavy criticism with respect to expected higher total cost for the public budgets.

### **Future of Public Transport: Cost-Cuttings and Financial Reforms Initiated by EU**

The Federal Governments position<sup>64</sup> on the future of public transport and the EC framework reads:

“We need competition as an instrument to mobilize customer-focused services. The Federal Government therefore endorses more transparency and competition in local public transport. In this context, important bases have been provided with the new Carriage of Passengers Act and the railway reform. In view of the overall-economic tasks of local public transport the Federal Government supports rules of competition which are fair and socially balanced, leave private and local transport operators sufficient time for adaptation and restructuring measures and which take the public service obligation appropriately into account. (...)The European Commission wants to take decisive action as regards this regulatory power now. It intends to realize the freedom of services and, thus, to establish the internal market also in the field of local public transport.” (...) “Local public transport needs a stable financial framework to enable it to be improved and modernized further and to adapt its infrastructure to increasing requirements.”

From the point of view of the Federal Government it is necessary to pay greater attention to efficiency in supporting local public transport in the future. As has been mentioned already, the government itself and the EC are changing the balance between public responsibility and the commercial sector. The first steps have been taken about ten years ago with the reform of German Rail (“Bahnreform”). (See also Chapter 2.1) The Deutsche Bundesbahn, owned formerly by the Federal Government, has been reorganized as a stock company, the DB AG, operating as a holding structured by regions. Some large municipal transport companies, joined partner with the now commercially organized DB. The DB and also formally public companies now compete for services in other regions and cities. Against this restructuring background, the transit systems are handed over to the Regional Authorities according to Law 1994 that came into effect in January 1996. The law transfers to the states (Laender), County Districts (Kreise) and municipalities the urban and regional transit systems are the responsibilities for: planning, organizing and funding.

The 1996 change in the German Constitution, whereby a new article was added that allocates to the States (Laender) part of the income from fuel taxes for funding transport systems, is made operational (amount and distribution of funds specified) in the “Regionalization<sup>65</sup> Law” (*Regionalisierungs-Gesetz RegG*). The Laender are authorized to distribute those funds as they deem fit amongst the transport systems. Most Laender use those funds to meet either the suburban railways operations deficits or those of the remaining transport modes. As provided by Regionalization Law (RegG, Art. 8,2), they are allocated for investments.

<sup>64</sup> Source: [www.bmfvbw.de/Alle-Artikel-zum-Thema-Verkehr-.392.2180/Basic-Concept-for-Urban-Transport.htm](http://www.bmfvbw.de/Alle-Artikel-zum-Thema-Verkehr-.392.2180/Basic-Concept-for-Urban-Transport.htm)

<sup>65</sup> The term *Region* is not defined explicitly in this and other laws. It seems to be clear that a region is composed out of several districts. German states will have between 2 to 7 regions.

### Coope ration of Municipalities to Increase Effectiveness of Public Services

In densely populated regions, all municipalities are coordinating and are also often cooperating on transport within regional Public Transport Associations (“*Verkehrsverbünde*”)<sup>66</sup>. The transport associations have derived out of general associations integrating land-use planning, water treatment, financing of cultural activities, hospitals, and much more.

Details of the organizations differ widely, for example the City of Frankfurt cooperates in various associations. The Frankfurt region here will be used as illustration of the process. The basic aim is to improve effectiveness of public services. In 1975 it started with the „*Umlandverbund Frankfurt UVF*“ (*Verbund* is named *Union* in the English publication<sup>67</sup>). The purpose is named „to promote and secure the orderly development of the union territory” :

„The Frankfurt Regional Union covers an area of approximately 1400 sq-km, 7 percent of the territory of Hesse or one quarter of the Rhine-Main area, and with 1.5 million inhabitants, which is 25 per cent of the Hesse population or just under half that of the Rhine-Main area.

The members of the Union are the county (district) boroughs (*kreisfreie Städte*) of Frankfurt and Offenbach and 41 non-county municipalities and *Gemeinden* plus `6 *Landkreise*, of which three belong fully to the Union, while only parts of the others do so. (...) The *UVF* is financed not only by charges and contributions but especially by means of the Union levy (*Verbandsumlage*) raised from municipalities and *Gemeinden* belonging to the Union - but not from *Kreise*. It is set in proportion to both the population and the economic strength of the given *Gemeinde*. The City of Frankfurt must accordingly contribute almost half of the Union budget - although this does not correspond to its population.”

Public transport not only in the UVF area, but also in a continuously enlarged outreach (currently 2,200 sq-km) is managed by the *Frankfurter Verkehrsverbund FVV*. FVV is operating buses, underground and suburban railway systems.

About 10 years ago consequences have to be taken in all states from shifting-down the responsibility for regional rail from the national to states level. Typically trip distances travelers using these trains are 50 to 150 kilometers (different to the FVV described above which deals with transport demand a more local scale). The State of Hesse has decided to found an association to take over the responsibility for the regionalized rail services. In mid-1994, the Rhine-Main Transport Association (*Rhein-Main-Verkehrsverbund [RMV]*) was founded, based largely on a concept of the *UVF* described above.

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<sup>66</sup> Of interest is the Chapter “Features of Public Transit Systems Organization In Germany. The Munich, Berlin and Hamburg Cases” within a broad comparative study in the frame of the World Bank Urban Transport Strategy Review. Prointec Inocsa Stereocarto(2000): Urban Public Transport Systems Integration and Funding. Examples include Madrid, Paris, Lyon. [www.worldbank.org/transport/utsr/background-papers/pt-funding-prointec.pdf](http://www.worldbank.org/transport/utsr/background-papers/pt-funding-prointec.pdf)

<sup>67</sup> Heinz, Werner (1995/2000): Major Cities and Their Peripheries: Frankfurt and the Frankfurt Region. Deutsches Institut für Urbanistik (German Institute of Urban Affairs) Occasional Paper This paper is one of six case studies on Major cities and their Peripheries, convened by The Council of Europe, Secretariat General.



Covering an area of 14,000 sq-km with a population of over 4 million, the *RMV* is the largest integrated transport system in Europe. It extends far beyond the limits of the Frankfurt Regional Union (*UVF*) and the *FVV*, including not only the Rhine-Main area but also large parts of central Hesse. The boundaries of the *RMV* were determined by, among other things, the terminal points of existing railway or bus routes.

Like the *FVV*, the *RMV* was given the legal status of a limited liability company (*Gesellschaft mit beschränkter Haftung - GmbH*). But in contrast to the *FVV*, the *RMV* is an association of local authorities. The shareholders are not only the State of Hesse and the City of Frankfurt but also 10 county boroughs and 15 *Landkreise*. Because EC law requires the strict separation of 'clients' (local authorities) and service providers (local transport undertakings), the latter are precluded from membership in the *RMV*.

Whereas the fare system of the *FVV* was mono-centrally oriented on the City of Frankfurt, the *RMV* with its different and greater territory operates with an area tariff system. The *RMV* motto is 'One Timetable, One Tariff One Ticket'.

The planned services are to be financed by 'fare and compensation revenue, transfer payments from the Federation and grants from the *Länder* and from local authorities'. The Federal government continues to furnish the basic funding and facilities hitherto provided by German Rail; improvements in services with regard to transportation modes and traffic routes, on the other hand, have to be paid for proportionately by the local authorities and *Kreise* concerned. As an incentive for local 'clients' to improve their mass transit services, the State of Hesse subsidizes *Gemeinde* and *Kreis* outlays in this field to the amount of 45 per cent.

Coming back to the local level of transport services as provided by the *FVV*. Within the framework of the Community Transport Financing Act (*Gemeinde-Verkehrs-Finanzierungsgesetz GVFG*), local public transport projects receive assistance from the Federal Government, although the federal states are responsible for carrying out and funding these projects. Since 1997, financial aid amounting to over 7,5 bn. EURO per annum has been provided. The increasing investment aims at improving the level of service to make it far more attractive and gain higher shares for public transport.

As has been mentioned above in the section on taxes and revenues, GVFG is financed by the federal level from a certain percentage of mineral oil taxes. But this causes a number of problems.

- There is a strong criticism from the car lobby that car drivers have to pay for public transport.
- Mineral oil tax revenues are declining. As reported by the Federal Statistical Office, in 2002, the amount of mineral oil on which taxes were paid was lower than in 2001. The amount of petrol on which taxes were paid fell by 3.3% to 36.6 billion liters, while the amount of diesel fuel on which taxes were paid was 33.8 billion liters, i.e. 1.2% less than in 2001. (The taxes share of the sales price of today 1.15 EURO per liter gasoline at the gas station is about 75 percent or 0.83 EURO. Any further increase will cause political uproar.
- Financing via GVFG is restricted to infrastructures and co-financing of vehicles, and the federal level only contributes 40 percent of total cost.



Another 40 percent has to be contributed by the states, and 20 percent by the local level (see Chapter 2.1.2 and the Rhine-Ruhr Case Study in Chapter 3.1)

- Even if one assumes that GVFG further on will continue to provide financial support, there are the deficits of the operation cost. It is common that in municipalities the rate of cost recovery is below 50 percent<sup>68</sup>. The local budgets have been covering these deficits in the past to a large extent by profits from municipal electricity works or water works. Because EU legislation does not allow cross financing further on, the municipal budgets are under pressure.

It is of interest to look for benchmarks for quality and cost-efficiency of services. The exceptional supply and demand situation of public transport in Zurich and other Swiss cities is well documented in the literature<sup>69</sup>. One reason for the differences towards German cities has been found in the different institutional arrangements. The rate of cost recovery certainly is not much different from comparable German cities but the subsidies obviously are politically accepted. Swiss municipalities have higher fiscal autonomy. They are responsible for all the cost of pt and seem to choose less costly solutions than in Germany with the help of GVFG-money from national and state level.

The future of public transport in Germany: Certain costsavings will be reached by tendering bus services, as now required by EU. But it will not be possible to operate these transport services without subsidies. But society needs a well functioning and adequately financed public transport for social and environmental reasons. For sustainable mobility, it does not make any difference if buses are operated by municipal companies or by private operators.

### **Financial Support for Environmental-Friendly Transport**

As has been explained, the Federal Government is, both under EC-pressure and driven by its own political goals, reorganizing the urban transport financing system. The shift towards free-market, competition and the need for tendering services has caused serious concerns amongst the NGO, which – surprisingly – see themselves as partners of the public worker unions. Both sides argue that the reform will weaken the position of the environmentally and of the socially beneficial modes (namely public transport).

One indication is the EC Directive 1107/70, forbidding general subsidies for state-owned urban transport companies. In all large cities in Germany these have been benefiting from the municipal budgets in a non-identifiable amount. There are estimates of about 2,5 billion EURO per year. The sources have been (and still are in a number of cases) non-transport municipal revenues, e.g. profits out of public power

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<sup>68</sup> If all expenditures are taken into account, only one third of pt costs are covered by tickets.

<sup>69</sup> A less-known comparative study: Haefeli, Ueli (2001): Public transport can pay. A historical analysis of transport policies in Bern (Switzerland) and Bielefeld (Germany) since 1950; 1st Swiss Transport Research Conference. Conference paper STRC 2001

stations and water works<sup>70</sup>. The argument against such a reform is, that without these cross-subsidies it would not be possible to provide enough resources for a good urban transport.

But this argument against the directives is not convincing, and cannot be proven. EU is not hindering public financing of services, but is against unfair competition and in favor of free market. The European legislation, not only directives 1 191/69 and 1893/91, but also the Amsterdam Treaty (in Article 73 and 87) acknowledge public financing of “social public services”. This further on would allow communities to finance unprofitable bus, tram and railway services. But transport services now have to be tendered; the public bus companies have to be open for competition. The bidding might result in foreign companies taking over the urban services and receiving subsidies from the public budgets, while the municipal company would have to close down. According to the directives, the community has to guarantee that the “public interest” meets with “lowest cost for the public”. There is a later Directive 91/440, which explicitly requires that public subsidies “for social, environmental and regional objectives” have to be given by economic principles and under fair market conditions.

This makes clear that also in future the municipalities – and via the financial transfers the states, too – will be allowed to support desirable urban transport services. (The same holds also true for transport in rural regions.)

The EC policy does not touch upon the topic of infrastructure for public transport (bus lanes, urban rail, metro-lines). There are even exceptions for the rule to tender services: If an urban company is operating buses and underground jointly, tendering is not - not yet - required.

### **Financial Support for Clean Vehicles**

A high share of mass transportation is often equated *per se* with clean, environmentally friendly, sustainable transport. This may be true in comparing the toxic and greenhouse-gas emissions per passenger-kilometer with the private car. But there are some doubts if this simple rule is valid in general. With the passenger car emission standards of (EURO 4erklären) it can be said that there is no reservation remaining<sup>71</sup> against the private car under the perspective of toxic air pollution. There remains still an ongoing criticism against the diesel vehicle cause of the fine particulates<sup>72</sup>. An in-depth analysis shows a second topic of concern against diesel: Higher nitrogene-oxide (NOx) emissions than with gasoline vehicles because diesel-engines operate with excess-air, not allowing catalytic control of NOx.

The air quality problems are not only due to diesel passenger cars (which have a high share in European countries, in Germany diesels have a passenger-car market share of more than 30 percent). Moreover, these are the critical topics of medium and heavy-duty vehicles, of buses and trucks. Clean urban air can only be achieved by technologies for cleaning-up the diesel. According to state-of-the-art, this requires either low-sulphur diesel fuel (less than 30 ppm, preferably 10 ppm, as pre-condition

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<sup>70</sup> Because EC and Federal Government both are deregulating these and other sectors, the municipal profits are melting down anyway.

<sup>71</sup> The analysis is valid for Mid-Europe. In developing countries it will lead of course to other results.

<sup>72</sup> These will become a problem also with direct-injection gasoline engines.

to particulate traps) or a shift to natural gas engines<sup>73</sup>. In light of this argument<sup>74</sup>, the German Federal Government is supporting measures for cleaning-up diesel buses and trucks by particulate traps, and gives tax incentives. The so-called economic instruments can be differentiated into reduced taxes on low-sulfur diesel fuel (compensating the higher production cost at the refinery) and subsidies for various sorts of clean vehicles (natural gas as well as diesels with traps and De-NOx catalyst).

The EC is acting in a similar way by supporting large-scale projects and defining benchmarks. Also keeping in mind the enforced directives and nationally required measures for the improvement of ambient air there is no doubt that the EC has high interest in air quality.

But it is not clear if the EC member states or its subordinate authorities (states, communities) are authorized to demand cleaner vehicles used by bus or truck operators within cities. In any case authorities subsidies would have to be non-discriminatory.

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<sup>73</sup> The Clean Air Initiative for Latin American Cities (CAI-LAC) operates a website on the topic of clean vehicles and clean fuels.

<sup>74</sup> Fuel-cell technology will require some decades to become competitive. The subsidies support research and development.

### 3. Planning in Practice

#### 3.1 Case Study Rhine-Ruhr

##### Topics of Interest

With respect to developments and transport planning in other metropolitan areas, some observations of Rhine-Ruhr may be interesting.

The topics to be discussed are:

- Institutional structure: No chance for cooperation within the region?
- Spatial structure and transport patterns: Poor conditions for public transport?
- Sustainable mobility in Rhine-Ruhr: What are the challenges?

##### Definition of the Rhine -Ruhr Region<sup>75</sup>

The area in question comprises the largest Mid-European Metropolitan area. It is located in the State of North-Rhine Westphalia (the largest German state with in total 17 million inhabitants). There are 20 cities with a population of each more than 100,000 and 11 counties (*Kreise*) with a population over 250,000. Rhine-Ruhr has in total about 11.5 million inhabitants, see Table.

Table: Cities and Counties of Rhine-Ruhr -Area

Cities / Population		Counties / Population	
Bochum	391,147	Ennepe-Ruhr-Kreis	350,781
Bonn	302,247	Erftkreis	455,487
Bottrop	120,611	Märkischer Kreis	457,465
Dortmund	588,994	Mettmann	507,699
Duisburg	514,915	Neuss	443,865
Düsseldorf	569,364	Recklinghausen	657,592
Essen	595,243	Rheinisch -Bergischer Kreis	275,474
Gelsenkirchen	278,695	Rhein-Sieg-Kreis	576,993
Hagen	203,151	Unna	431,740
Hamm	182,427	Viersen	300,842
Herne	174,529	Wesel	474,390
Köln (Cologne)	962,884		
Krefeld	239,916		
Leverkusen	161,047		
Mönchengladbach	263,014		
Mülheim a.d. Ruhr	172,862		
Oberhausen	222,151		
Remscheid	119,287		
Solingen	164,973		
Wuppertal	366,434		
<b>Subtotal cities</b>	<b>6,593,891</b>	<b>Subtotal counties</b>	<b>4,932,328</b>

<sup>75</sup> Definition of the Rhine-Ruhr Region based on the *LEP*-Definition (LEP: Regional Development Plan of the State of North-Rhine Westphalia; Source: Comparative Analysis of the Rhein-Ruhr-Area; Written by: Charles H. Grier, Published by: Bezirksregierung Düsseldorf (Düsseldorf Regional Government) in August 2002. [www.bezreg-duesseldorf.nrw.de](http://www.bezreg-duesseldorf.nrw.de)

### Total population in the Rhine-Ruhr Region 11,526,219

(For information: Large cities are district-free (or county-free); they include the districts administrative functions. Population density in the counties listed at the right side above are quite high, but no cities are smaller as those listed on the left side.)

The Rhine-Ruhr Metropolitan Area can be identified by the settlements belonging to Cologne in the South, Duisburg in the Northwest and Dortmund in the Northeast. (Other boundaries excluding Cologne would lead to a Metropolitan area of about 6,000 sq-km with a population of 9.5 million. See Graph of Rhine-Ruhr Area in the Annex to Chapter 3.1)

The region is neither politically nor statistically defined. The idea that a number of cities and counties in the *Rhine-Ruhr Region* could be looked at as a metropolitan area was first suggested in the 1995 North-Rhine Westphalia Regional Development Plan (*Landesentwicklungsplan NRW* or *LEP*). It turned out that the connections between the communities had similarities with e.g. Los Angeles, which especially with respect to transport and spatial structure is kind of a nightmare for planners advocating sustainable mobility<sup>76</sup>.

### Institutional structure: No chance for cooperation within the region?

The area can be seen as a classic example of a polycentric region. Although it contains several large cities, there is no clear hierarchy of cities. On the one hand, this leads to an increased need for co-operation among the cities to avoid being played off against each other, e.g. by investors. The cities also would avoid double-financing of museums, opera houses, by developing certain “specialties”. On the other hand *there is* strong competition between cities claiming their respective leading position.

State and local politicians over decades have tried to foster cooperation by establishing formal institutional structures. The historic setting is difficult: The Rhine-Ruhr arose during the last 120 years by rapid growth of the cities and integration of their respective surrounding rural areas. It was a consequence of the growing economic role of coal and steel. It comprises of part of two traditionally very different provinces: Rhineland and Westphalia. They still have different cultures; the first being urbanized rather early, the second still rural. So the Rhine-Ruhr area is administered by two separate administrative bodies, which unfortunately have its heads in relatively remote cities (Regierungsbezirk Duesseldorf for the North-West, Regierungsbezirk Arnsberg far-out North-East).

There had been a long political debate if at least the upper part of the Ruhr area should form *one* large city (“Rhine-Ruhr-City”). Or at least a joint administrative entity should be established, which could be a nucleus for such a future step. But the opposition of the communities has been too strong. The German Constitution gives cities a strong position. To overcome the problems of weak formal integration between the cities and counties (districts) of the area, initiatives of the State level have to focus on integration by regional planning instruments. The responsibility on planning issues is at the State Chancellery of North-Rhine Westphalia. The guiding principle for vertical integration in planning is the “principle of counter-current” (see

<sup>76</sup> The concept of Sustainable Mobility cannot be discussed here in detail, for details see literature at the web.

Chapter 2.1.1): the upper level formulating the framework of urban development, and the communities decide about the details, which in turn have to fit into the regional scheme. The special poly-centric situation of Rhine-Ruhr made it necessary to strengthen the horizontal links in planning and decision-making.

The guiding concept under the perspective of the state, issued by the State Chancellery, is named „Regionalization and Decentralization“. Regions are formed by neighboring cities and counties; the regional associations receive extended administrative and political power. One aspect of strengthening the engagement of the cities as members of regional bodies is that the state renounces its „revision of permission“. State planning is no longer superseding the lower level – if the plans and decisions are results of close regional cooperation processes.

A further strategy of the state to foster regional integration can be named “golden bridle” (*goldener Zuegel*). State grants<sup>77</sup> are only given to projects of cities and counties within a region after horizontal integration.

### **Spatial structure and transport patterns: Poor conditions for public transport?**

The Rhine-Ruhr area suffers from high car traffic and low modal share of public transport. This on first glance is surprising because public expenditures for pt are high, and there is a well-established rail system. It should be possible at least to have a pt share of 25 percent. (All shares without through-traffic.)

Modal Shares within Rhine - Ruhr-Area in Comparison<sup>78</sup>

	Walking	Cycling	Public Transport	Private cars
Ruhr-Area North-West to North-East	28	6	11	54
Frankfurt	30	6	25	39
Hamburg	22	12	21	45
Munich	22	13	24	41
Zuerich	28	7	37	28

Although the region has a fairly good regional rail network, and also administrative cooperation-structures have been established several decades ago, the transport situation is insufficient. This is especially the case in the highly industrialized Northern part, while the Southern cities Duesseldorf and Cologne enjoy some higher shares. It must be admitted that the figures on pt mainly are issues for environmentalists, both with respect to air pollution consequences and the total energy consumption.

<sup>77</sup> This refers to additional grants. The regally fixed distribution of tax revenues remains unchanged.

<sup>78</sup> A more detailed picture is given in: gtz (2001): Urban Transport Strategy Review - Experiences from Germany and Zurich. [www.worldbank.org/transport/utsr/background\\_papers/germany&zurich\\_gtz.pdf](http://www.worldbank.org/transport/utsr/background_papers/germany&zurich_gtz.pdf)



Congestion problems within the road network play a major role in the political arena. A majority of state parliamentarians demand additional investments to widen the network. While this causes resistance of citizens in the affected settlements – Rhine-Ruhr Metropolitan Area is densely populated with about 1,400 to 5,000 per sq-km.<sup>79</sup>

But can more road infrastructure ease congestion? The significant investments into road infrastructure within the region – resulting in the densest network of motorways and other trunk roads - does not prevent the traffic participants from regular time losses from congestion. The rate of car ownership exceeds the German average of about 600 per 1,000. Congestion typically occurs in the morning and afternoon peak-hours on the radial roads between the large cities and the surrounding areas, which have changed their character during the last decades from rural to sub-urbanized areas. The more centralized a city-region is (most Duesseldorf, Cologne), the more this kind of congestion can be observed. This problem cannot be solved by additional ring roads because the bottlenecks are where the motorway leads into populated urban areas. Within the cities there is no place for extended highway construction – the citizens also want to keep their cities settlement areas and centers as they are. Urban highways would destroy their hometown for the benefit of the commuters.

In the Northern part of Rhine-Ruhr, where 5 cities of each 300,000 to 600,000 lay like pearls on a string, congestion focuses on the central motorway A 40, the former National road (Bundesstrasse) B 1. Here we find not the traffic flowing radially from the outskirts to a dominating center but the motorways leads right in the middle of the centers of Dortmund, Bochum, Essen, and Duisburg.

Here the decisive link to the public transport deficiencies can be identified. Congestion mainly is caused by local car trips. Highway A 40 mainly is used for short-distance urban traffic, not for longer distances. Bypasses would be of minor advantage for relieving congestion of in the central A 40 axis. The road traffic problem of Rhine-Ruhr is caused by the lacking acceptance of the public transport system.

The lobby advocating in favor road extension argues that the poly-centric structure of the region would not allow operating a high-level pt system. Drivers would have to drive through the whole region, mainly connecting peripheral areas; the trips were not oriented radically, which were a condition for high pt shares. But fact is that most car trips about 80 percent of the trips within the cities with a population more than 100,000, even 50 percent in the smaller cities of about 40,000 - are made within the city boundaries, hardly exceeding 5 kilometers. These should be addressed by better pt, not by additional roads. The poly-centric structure of the Rhine-Ruhr Metropolitan Area is not necessarily a problem for non-car mobility, as the majority daily trips takes place within the cities and settlements themselves. Centralization of mega-cities on the other hand is real problem, as has been observed in rapidly growing urban areas. For those, a change towards “decentralized-centralization” is required<sup>80</sup>.

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<sup>79</sup> Figures vary according to the boundaries chosen to define the region.

<sup>80</sup> See: Petersen, Rudolf (2003): **Land use planning and urban transport**. Module 2a of the gtz-sourcebook on sustainable transport; [www.sutp.org/docs/sourcebook/overview.pdf](http://www.sutp.org/docs/sourcebook/overview.pdf)

The challenge now is not only to improve pt services, but also change urban design. The reconstruction of cities, which had been heavily destroyed during War II, was planned car-oriented, according to the urban planning paradigms of the 50s and 60s. Thousands of parking lots and parking garages have been built, attracting car use instead of using buses and trams. Parking often even is free there.

Although the cities have reasonable walking and cycle lanes, these modes are not attractive to be used. Pedestrians miss the urban atmosphere, being surrounded by cars all over, and mostly monotonous buildings. Studies have revealed that pedestrians accept longer walking distances to pt stations along smaller buildings with a variety of facades and shops.

### **Sustainable mobility in Rhine -Ruhr: What are the challenges?**

Basic aspects have been mentioned: increasing pt shares, mitigating car dependency. The challenge is to bring together urban development concepts, transport alternatives, and car users changes in attitude. The Ruhr area with its car-oriented urban development of the 60s, 70s and 80s, which led to one of the highest regional car ownership rates and the lowest public transport share, is now confronted with challenges like energy consumption, greenhouse-gas emissions, and social as well as economic cost of transport. It is easier to solve traffic problems and social problems within traditionally kept cities like Munich.

Sustainability thus demands a changed agenda for the high-industrialized Ruhr area, where traditionally problems used to be solved by technical fixes and with investments. Spatial and social trends have to change: There are still old urban cores, the densely populated cities of 3,000 persons per square kilometer. But the cities also have lost population; the social networks widely have been expanding into the sub-urban regions with less than 125 persons per km<sup>2</sup>. But: Economically sustainable public transport, and also the affordable social infrastructures demand higher density.

The North-Rhine Westphalia Transport Masterplan of 1990 had made an approach to learn from the city of Zuerich with its low-cost public transport solutions. With an average of about 60 \$ per capita on public funds Zuerich had reached a far better modal share, than the high investments of the state in costly GVFG investments. The 1990 plan was not very successful; the traditional approach of investing in trunk roads and costly high-speed rail as well as in underground rail still is very popular amongst politicians. But the financial restraints and the unsuccessful centralization concepts may have paved the way for bottom-up approaches and smaller solutions. The consequence for the German GVFG financing investments top-down would be: Let the municipalities decide what public-transport concept they prefer, and let them decide about the use of national and state grants.

Not only the cities of the central Ruhr area need a change from the car-oriented thinking but also the citizens. In the coal-and-steel boom area car use became a synonym for wealth and social rise. This certainly is an aspect comparable to those metropolitan areas, to the mega-cities of the developing countries. The paradigm-shift in spatial development towards car-free urban life-styles within the old-industrial areas may be of importance for sustainable development in general.

### 3.2 Berlin

#### Topics of Interest

Similar to the Rhine-Ruhr case it may be of interest to share some experiences with and around the Capital City of Berlin. The following topics are looked at:

- Co-operation between Berlin and Brandenburg in Land-Use Planning
- Regional Transport Association ( *Verkehrsverbund Berlin-Brandenburg VBB*)
- the Urban Transport Development Plan ( *Stadtentwicklungsplan-Verkehr STEP-V*) of Berlin

#### Situation of the City and the Region

Today, all of Berlin is a city-state, one of the German *Laender* with a population of 3.5 million. Between 1945 and the German reunification in 1990 the city was divided into two parts. West Berlin belonged to the Federal Republic of Germany (FRG); it has been surrounded by East-German territory. East Berlin was the capital city of the East German state (German Democratic Republic GDR). After reunification, which can be seen as an integration of East Germany into the Federal Republic, also both parts of Berlin were unified, becoming the national capital city

The West Berlin model of institutions was grafted onto the East. The city is ruled by the Berlin House of Representatives, the Parliament that elects the Mayor and Senators. The city-state comprises of 23 local district authorities or Boroughs, with the municipal planning sovereignty. Berlin covers 889 square kilometers.

Brandenburg also is a Federal State like Berlin, but it does not have Berlin's double-function as the City-State.<sup>81</sup> Berlin is completely surrounded by the State of Brandenburg, which is partitioned into authorities that include 14 districts and 4 autonomous cities, as well as at municipal level with 153 municipalities and 61 towns. In addition, for purposes of regional planning, five regional planning communities had been created between the state level and the municipalities. These form a "pie-slice structure" around Berlin. A joint planning co-operation has been established in order to match interests and spatial development.

The Berlin – Brandenburg Region consists of two very different partners: the city of Berlin is surrounded by the much more extensive and largely rural region State of Brandenburg. The population density of Brandenburg is extremely low; also a sub-urbanized development according to the common "Western model" (as e.g. in Europe and in US) has not taken place around Berlin. (See graph Berlin – Brandenburg in the Annex to Chapter 3.2.) In fact, fragmented and relatively autonomous local governments surround the Capital City.

The lacking sub-urbanization until 1990 was founded in the political situation of both FRG and GDR. It was not possible for West-Berlin citizens to live within the surrounding area<sup>82</sup>, and the land-use concept of communist East-German government did not allow sub-urban development. Urban development focused on large-scale housing.

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<sup>81</sup> Other German City-States are Hamburg and Bremen

<sup>82</sup> In 1961 the border became a massive wall built by GDR to stop migration to the West.

After 1990, sub-urbanization started immediately, but is far away from the level of sprawl of average West-German cities. Shortly after 1990, Berlin and Brandenburg acknowledged the need for coordinated land-use planning, to avoid detrimental development.

### **Co-operation between Berlin and Brandenburg in Land-Use Planning**

The relationship between Berlin and Brandenburg is difficult for a bundle of reasons:

- There is heavy competition for business investment in that region.
- Brandenburg attracts tax-paying residents to move out of Berlin.
- Housing in Brandenburg, especially in local locations, is far less expensive than in Berlin.
- German tax-system rewards long-distance commuting by deducting income tax – this remunerates housing of Berlin workers in Brandenburg.
- Berlin provides public services, but Brandenburg will benefit from the fixed share of personal income tax.

The controversial economic interests weaken the willingness for joint planning especially on the Brandenburg-side.

In February 1992, the political decision was taken between both states over the implementation of the Joint Spatial Development Programmes (LEPro) and the Joint Spatial Development Plan (LEPeV) for the area described above. A Joint Spatial Development Department (GL) started work 1996. The objective of the GL is to provide plans for the development of the joint planning area of Berlin-Brandenburg.

The joint development plan of Berlin and Brandenburg lays strong emphasis on sustainability. The conflicts of interest for reserving available open space for leisure, relaxation, nature conservation and for economic activities is evident. Berlin has a long tradition of in “green” planning. Development of the City of Berlin went along the rapid-rail system (the S-Bahn). Between the railway-orientated settlement areas, “green fingers” penetrated into the urban landscape of Berlin, and outward to a belt of regional parks.<sup>83</sup> The Berlin-Brandenburg overall concept for Regional Planning (to be valid in all areas of the states) is the “Decentralized Concentration”.

In the Joint Spatial Development Area (in the English version of the document<sup>84</sup> named “Joint State Development Plan for the Sphere of Mutual Influence”) the problem of sprawl development is addressed as follows: “The plan confronts the anticipated settlement pressure and the resulting attempts of suburbanization in and around Berlin with a double strategy. On the one hand, settlement development should be steered towards the limited number of suitable locations. Concentration of the settlement development is the one aspect, while protection of open spaces is the justified other aspect. They complement and condition each other. Without sufficient agglomeration of the existing settlements large-scale protection of open areas will scarcely be possible under growing development pressure. (...) With this conception

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<sup>83</sup> This section makes reference to: Laganin, Ozren (-): Joint Spatial Development Program in Brandenburg, Germany. [www.rec.org/REC/Programs/REREP/BERCEN/PDF/Ozren.doc](http://www.rec.org/REC/Programs/REREP/BERCEN/PDF/Ozren.doc)

<sup>84</sup> The informative brochure is as pdf-file available at: [www.stadtentwicklung.berlin.de/planen/fnp/download/engl\\_v1.pdf](http://www.stadtentwicklung.berlin.de/planen/fnp/download/engl_v1.pdf); as well as at: [www.brandenburg.de/land/mlur/g/gplan\\_en.pdf](http://www.brandenburg.de/land/mlur/g/gplan_en.pdf)

the fears should be alleviated which the experiences of other metropolitan areas have produced. Without the regulating effect of spatial planning there is the danger that an increasingly mono-functional center will be surrounded by unstructured urban sprawl. While the center threatens to be suffocated in traffic jams and environmental chaos it is surrounded by rampant fat belt which eats it way into the hinterland, thus precluding the development chances of the wide periphery.”

### **Regional Transport Association (Verkehrsverbund – VBB)**

The establishment of transport associations under changing financial conditions has been described on the example of the Frankfurt region in Chapter 2.2. It followed a process of geographic expansion, from smaller to larger units. The case discussed hereafter<sup>85</sup> is different for two reasons: Because of the specific political history, the Berlin-Brandenburg model started “from scratch”, and it established cooperation between two Federal States.

The joint planning co-operation in the Berlin-Brandenburg region spreads over a total area of 30,365 km<sup>2</sup>, around 6.013 million inhabitants. Berlin attracts not only an increasing amount of commuters but also is the center for high-class shopping and leisure. Additionally, the three large and famous universities cause high traffic flows. Since after re-unification the car ownership in the Eastern part increased manifold, the mobility behavior there changed totally. But also in the former West-Berlin transport pattern changed because there is no wall around the city anymore. This makes leisure trips around attractive.

The area defined above is serviced by the Regional Transport Association – VBB, set up in 1997. .

Berlin-Brandenburg has set up the *Verkehrsverbund* in 1997. In the Berlin case, the model has been conditioned completely by the already existing BVG, the large public company that operates the Berlin city transport system. BVG, being in operation since 1928, had both required expertise and qualified human resources to run an association like VBB. An alternative to the establishment of VBB would have been to extend BVG – but this was either not politically acceptable for Brandenburg or was not chosen for conceptual reasons: There are good reasons to separate the coordinative and planning function from operation. This would be of actual importance when Berlin would start tendering services, which basically is the goal of the European Commission. For the time being, tendering is not demanded from cities when their municipal company parallel to buses is operating tram and underground lines. So does BVG.

Reality is that BVG offers most services and transports most customers within the BVV partners. BVV and BVG have very different cultures, BVV being established as limited company with a commercial attitude, while BVG traditionally being closely linked with the City Authorities (the Berlin Senate). BVV would like to act more freely and take more initiatives regarding Berlin transport. But it is depending on BVG – not only as the largest operating arm but also in marketing and public visibility. Basically, the functions of both BVV and BVV are well separated, and complement each other.

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<sup>85</sup> Partly based on website of VBB: <http://www.vbbonline.de/>

Info also at: [www.emta.com/berlin\\_autorite.htm](http://www.emta.com/berlin_autorite.htm)

The formal picture: The VBB is focused on co-ordination and control of the public transports system in Brandenburg. It works through co-operation agreements signed with:

- the railways (S-Bahn and Regional lines, since the VBB services a huge area),
- BVG, as operator of all the transport systems available in Berlin,
- Some 43 bus companies (local and regional operators, both public and private).

The Verkehrsverbund Berlin-Brandenburg has been registered as a GmbH, limited partnership company, subject to private law. The company's shareholders are: the Brandenburg Land (33.3%); the Berlin City-State (33.3%) and the Brandenburg cities or districts (33.3%).

The number of travels per year (in 2002) is given by BVV as follows:

- Regional rail: 41.200.000
- Urban Rapid-Rail (S-Bahn<sup>86</sup>): 305.000.000
- BVG Buses, underground, Trams, ferries: 799.000.000
- Other pt (mainly buses in Brandenburg): 129.500.000

It is clear that the partners are of very differently sizes: The "other pt" is made by more than 40 Brandenburg bus operators.

The co-operation has achieved some success: The regional railways demand has increased between 10% and 15% since that date, and S-Bahn passengers by 4%. One important contribution of BVV was integrate and to optimize bus operation. The bus-tables have brought in compliance with the regional rail stations and services.

VBB responsibilities are basically the following:

- Planning of public transport supply
- Co-ordination of tariffs between all operators in the area
- Approval of tariff increases
- Co-ordination of timetables
- Control services and up to what point they meet the co-operation contract requirements.

As regards tariffs: A single ticket is used that allows riding any transport mode and number of stages, as long as the time term and geographical boundaries are not exceeded. The monthly and annual travel cards are generally used by 80% of the passengers.

BVV gives information on ticket and revenues as follows:

Ticket revenues in Brandenburg

- Local and regional railways incl. S-Bahn : 46.2 million €
- Local public road transport (bus and tram) : 91.5 million €

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<sup>86</sup> S-Bahn is operated separately.



Ticket revenues within the Berlin “ABC-area” (Berlin and suburbs)

- Local and regional railways incl. S-Bahn : 206.9 million €

Subsidies for local and regional public transport

- Berlin: 368.1 million €
- Brandenburg: 385.2 million €

Revenue from pass: about 55% coverage of operation cost

Revenue from individual ticket: about 75 percent of operation cost

It must be said that these data are of limited value because to the underlying information is not available. The Senate Administration gives the subsidies (and other expenditures for transport) as follows (in 2002):

- BVG: 420.3 million €
- S-Bahn: 221.4 million €
- Regional rail: 10.7 million €
- Public transport investments: 140.8 million €
- Road construction: 92.0 million €
- Road maintenance: 168.7 million €
- Cycle lanes: 1.5 million €

The Berlin Senate is one of the few city / state administrations delivering the expenditures and the sources of financing in comparison. Although the latter do not directly fit into the topic of this Berlin case, it hereafter will be given.

Vehicle taxes: 194.3 million €

National transfer for regional rail: 347.7 million €

Special grants for capital: 2.0 million €

GVFG for pt investments: 49.2 million €

Parking fees, others: 3.6 million €

Berlin general budget: 423.9 €

(Source: Senate Administration for Urban Development, see below)

### **Urban Transport Development Plan (*Stadtentwicklungsplan-Verkehr STEP-V*) of Berlin**

The Berlin authority responsible for transport planning as well as for urban planning is the Senate Administration for Urban Development, which – as Berlin also has the function of a Federal State – would be comparable to a State Ministry for Transport. The close connection between the transport department and the planning department, being within the same administration under one minister, made it possible to develop an unusual transport planning concept.

Not only transport planning and urban planning was brought together, also the environmental issues were integrated at earliest stage. This goes back to the fact

that the Department of Environment additionally belongs to that ministry, under the same politician. And a further unusual aspect has to be mentioned: The government invited external experts to give advice to the responsible officials, and additionally formed a “round table” of urban stakeholders– from the business community to green NGOs.

The plan was named “Transport Development Plan Berlin’s Green Transport Plan - A Strategy Towards a more Sustainable Mobility”. It should be kept in mind that the process was run by the Berlin authorities voluntarily in so far, as there were no legal requirements for these consultations. In several respects it looks like an advanced SEA-process, but in fact SEA<sup>87</sup> (in German: SUP – *Strategische Umweltprüfung*) is not even mentioned in the documents. It also has not played a role in the work meetings with external experts.

The aspects discussed in the remarkable broad consultation process were:<sup>88</sup>

- The Visions: „To where we want to go?” “How should our city look like in 20 years?” The mobility needs should be met in future, but with reduced undesired impact of traffic.
- The Goals: Quality goals for the economical, social and ecological dimensions of sustainability were defined and subordinated into 42 operational targets.

Visions and goals were adopted by the Berlin Senate (Government) and by the parliament, before discussion about measures started. (Usually consensus on goals is easier to reach than on measures.) The perception of problems also was subject of consensual discussions, e.g.

- Public transport too expensive
- Dwindling financial resources

In the next step approaches for solution were jointly developed between experts and citizens. E.g.:

- Travel time disadvantage in the Eastern boroughs can be reduced
- Inner city truck traffic can be reduced to about half it’s present size (the re-routing concept is working well)
- The increase in traffic can be mitigated)
- The unfavorable trend of modal split (less pt) can be inverted

Preliminary Conclusion:

In almost all areas of action, the development would head into the right direction. The economic and social questions are getting somewhat more attention than the ecological aspects. The reason for car traffic growth has been defined as:

- The development of the spatial structure continues to increase trip length.
- Infrastructure measures stimulate further motorized traffic (classical conflict of interests)

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<sup>87</sup> In Chapter 2 it has been explained that SEA/SUP has not been implemented formally into German law.

<sup>88</sup> Source: Projektgruppe Verkehr of the Senate Administration on Urban Development (2003): Mobil 2010 – Stadtentwicklungsplan Verkehr, Berlin

Some of the basic recommendations to be implemented into the practical decisions of the Senate were:

- The promotion of bicycle traffic will be continued and strengthened.
- More attention must be paid to the causes of increasing traffic (traffic-saving spatial development; regulatory politics framework)

All this may not sound very surprising, or innovative. But in the detailed application of the recommendations into the experts' working steps it initiated new thinking, looking for alternatives, leaving traditional planning routines behind. While in normal General Transport Plans trends are modeled, and outcomes in terms of transport volumes as well as emissions have to be accepted, the consequence of the consensus-building on visions and goals led to the insight, that the following modal-split changes must be reached (- which then decide about investments and non-investments).

Modal Split (1998) 2015					
	Walking	Cycling	Public Transport	Passenger Car Driver	Pass. Car Co-Driver)
Total Area	(25) 23	(10) 13	(27) 30	(29) 26	(9) 8
Central District	(39) 37	(11) 14	(26) 29	(17) 14	(7) 6
Central Core	(52) 51	(11) 14	(15) 18	(15) 12	(7) 6

The figures are not based on wishful thinking but realistic targets. The STEP working group is convinced these can be reached when clearly identified measures are taken. The planning departments have detailed the projects and measures. These – and further material – are available as downloads<sup>89</sup>.

<sup>89</sup> <http://www.stadtentwicklung.berlin.de/planen/stadtentwicklungsplanung/de/verkehr/download.shtml>

## 4 What lessons can be learned for Mexico City Metropolitan Area?

### 4.1 Problems and Solutions in General

Mexico City has, like all major cities of the world, (a) transport problems, and especially (b) environmental problems with transport.

- (a) These transport problems again can be broken down into two categories: accessibility problems of the poorer part of the population, i.e. of those who cannot afford a car<sup>90</sup>. Economic and social progress depends upon individual mobility. So the challenge for transport planners is to provide reliable mobility at low cost (both travel time and fares). The second part of the (a) category of transport problems is congestion, and meets the car user mainly at morning and afternoon peak-hour on the radial main roads between peripheral housing and central business district. The time losses of course also hit the bus passengers. In the end it is a burden for the whole society.
- (b) The environmental problems of transport also meet the whole society. Focusing on air pollution:<sup>91</sup> The impact on those living at or near the roads is highest. But peripheral housing areas are impacted by certain pollutants, too. The reasons for poor air quality in Mexico City under given unfortunate meteorological and topographical conditions are high specific emissions of vehicles (emissions per kilometers driven) and the amount of kilometers driven. In countries without those unfortunate conditions, with strictest emission standards and modern excellent maintained fleets, high traffic volumes may not lead to poor air quality. But Mexico City has to take urgent and comprehensive actions. The problems to be tackled include high shares of old cars and buses and lacking efficiency of I&M<sup>92</sup>. The amount of kilometers driven daily causes air pollution, traffic volumes have to be addressed. The areas of actions for this task are transport planning and urban land-use planning.<sup>93</sup>

Although this analysis is far too simplified, it already can be made clear that there is a complex bundle of transport and environmental problems to be addressed. This text especially aims at the problem of high traffic volumes as one main reason for poor air quality. Transport planning and policy are key factors, as well as the structure of land use. But there is not only the environmental impact to be assessed but also the social and economic aspects. Often these are competing targets: safe walking and (maybe even) cycling and short distances to working and shopping facilities will especially benefit the poor, while the private-car ownership may benefit from some more ring-roads and large parking-lots around shopping. Another conflict of interest: Low technical requirements for buses may enable operators to offer low

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<sup>90</sup> In East Asian countries use of two-wheelers had to be discussed additionally.

<sup>91</sup> Social cost of traffic accidents and noise ought to be calculated as well.

<sup>92</sup> An high level of I&M efficiency is realizing California. I&M quality control is important..

<sup>93</sup> The aspects of taxis circulating around to find customers and inefficiently used (mini) buses should only be mentioned here.

fares; the environmental (health) cost will be shifted to society in general. High public investments in costly metro-extensions will offer better mobility across the city. But this investment is competing with budget allocation for e.g. schools, health-care, and safety.

Which balance of public investments and planning model is chosen in MCMA is up to policy-making there. Sharing previous experiences and actual concepts of cities in other countries will certainly improve quality of MCMA decisions.

### Planning Objectives and Planning Regulations

Germany has a long record of intensive transport planning on national, state and community level. The objectives and concepts have changed during the last decades: Now “sustainable mobility” has been acknowledged as a major general objective in principle – but this has not resulted in consensus of the stakeholders about measures. There is a broad gap – still – between the industry (automobile manufacturer, truck operators, business community in general) on the one side, and a majority of citizens (not only environmental activists, but all those negatively affected by traffic) on the other side.

The conflicting interests can especially be observed in local and regional issues. When controversial discussions with and between local politicians about road transport projects in urban and sub-urban areas have come to a decision in favor of a road construction project, the debates normally will be continued during the plan approval phase (*Planfeststellungs-Verfahren*). The controversies will focus on the question if the responsible authorities had analyzed all relevant environmental and social impacts correctly. Objections will be made both from private citizens affected, and by public interest bodies. After plan approval has been issued, the fight will be shifted to the legal level, the opposing NGOs and private citizens will go to administrative court and claim that procedural mistakes had been made by the authorities.

The fact that the institutional set-up described in Chapter 2.1 allows such comprehensive struggle about transport infrastructure projects has its negative sides and its positive sides.

- The negative side: Decisions take long years to reach implementation<sup>94</sup>, even when a broad majority is in favor of a project.
- The positive side: Many project ideas have been scrapped because of the resistance and the long-lasting disputes<sup>95</sup>. Amongst those there are projects, which no one of the promoters nowadays will support. It turned out finally that indeed the solutions were not useful.

Strengthening the rights of citizens and NGOs – not to mention the rights of the other authorities whose topics are touched by a transport project – would certainly be desirable also in the MCMA. The ideas of the EIA Directive of the European Union

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<sup>94</sup> The German Federal Parliament for that reason has issued a law to shorten the procedure for a limited number of German Re-Unification Projects (*Verkehrsprojekte Deutsche Einheit*). But except those, the complex procedure is still valid.

<sup>95</sup> In the 70s far more highways had been planned in the Rhine-Ruhr area. Some had to be given up because the project approval could not be brought to a politically acceptable result. Others had to be re-planned several times after subsequent court decisions, and finally were significantly down-graded in line and width.

(implemented 1985) and the SEA Directive, which has to be implemented by all members in July 2004, would be useful to Mexican conditions, too.

The related sections in Chapter 2.1.2 describe the German legal system of implementing EIA and SEA, which has its advantages and disadvantages. German EIA implementation had its positive aspect certainly is the simplified approach of bringing it into operation, without the risk associated with the development of a completely new environmental law.<sup>96</sup> But on the negative side one has to see that major integrative elements of EIA are not applied appropriately because of the isolated thinking in dominating “Specialist Laws” (*Fachgesetze*).

SEA is not yet transposed into German law; this has to be reached within few weeks<sup>97</sup>. Some European neighbors are ahead. The German SEA approach will be similar to EIA, with all its positive and negative sides. It certainly will be of interest for Mexico to analyze the different approaches.

Because SEA has not been applied in “real-world” in plans and programs (the case studies either were of theoretical nature, like the FTIP analyses, or it was made voluntarily. There are no real experiences to conclude from. It would be highly speculative to draw any conclusions from that about effects of SEA. Certainly it will take some 5 to 10 years to assess the impact and, hopefully, the progress in transport planning.

### Transport and Land-Use Planning

German landscape around large cities is sprawled but the situation would be much worse (e.g. as in the US) when spatial planning had not been in place. The “Principle of Countercurrent”, the combination of top-down and bottom-up in regional planning is a very democratic concept. It also agrees to the strong position of community self-government, i.e. its strong backing within the constitution.

But the strong institutional and legal backing of this system could not avoid suburbanization, and growth of car-oriented housing areas. The lesson to be learned, without here discussing it in detail: Economic interests often are stronger than planning concepts. Cost of housing, tax deductions for commuters, but especially the interests of commercial investors often have superseded public planning authorities. It will be of importance come to strengthened land-use regulations.

The Rhine-Ruhr case discusses deficiencies in public transport and the aspect of poly-centrism. The Case of Berlin-Brandenburg (see 3.2 and below) gives some ideas about planning targets, and about planning practice across state borders.

### Transport Financing

Two areas are of interest: Road infrastructure construction, and public transport operation. Some lights have been put on the debate of “fair distribution” of transport taxes and the distribution of revenues between the modes. It is fact that public

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<sup>96</sup> The reason for needing much longer time for national implementation, and exceeding the time frame set by EU may be the attitude of German officials: “We are already doing all this environmental thing. Why should we take over strange ideas?” Germany at that time just had brought vehicle emission control forward against resistance from many sides within other EU member states.

<sup>97</sup> It is hard to believe that this will be reached.



transport is highly subsidized in Germany. One can raise the question if this is economically justified. But, to make it short, as long as car and truck traffic is not paying its social and environmental cost, subsidizing the alternatives is the only way to provide acceptable public transport and, for goods transport, some competitive rail supply. Both are necessary to avoid more damages for human and natural environment.

The EU is focusing on fair competition within the modes. Private bus and rail operators have to receive comparable funding when they provide comparable services as the public companies. One may regret the trend from public services to free markets but this on the other side could bring improvements for transport customers. In Germany the process is not as far as it is for instance in UK, where bus and rail services have been privatized some 15 years ago. The experiences there also give serious warnings.

#### 4.2 Some Lessons from Rhine-Ruhr

The Rhine-Ruhr Case Study may be of use in two directions:

- (a) It can be read as a warning not to extend both highway networks and offer lots of parking space in the midst of the urban centers; this will lead to ever-increasing congestion. Although the public transport system is not bad, the modal share is extremely low. It looked politically attractive in previous years to finance competing modes when public budgets were not yet scarce. The economic situation has changed. Road congestion is still high, and the public transport sector is under financial pressure. Slowly we can see the insight growing that it is not possible to solve traffic problems by ever-increasing road investments.
- (b) The German structure of financing investments has led to economically non-sustainable solutions. The Municipal Transport Financing Act (*Gemeindeverkehrs-Finanzierungsgesetz – GVFG*) has caused rather ambiguous effects. On the one side, certainly useful improvements of public transport (tram lanes, underground-metro, also co-financing of vehicles) have been reached. But because support from Bund and Land to municipal projects only focused on investments, providing 80 to 90 percent financing, the local level did not take over full responsibility for a certain strategy. Of course it was attractive for a city to build e.g. a metro with only minor burdens to the own budget. This prohibited the local decision makers to find the economically best solutions – these may have been a better bus network with some dedicated bus lanes. Today many disadvantages can be seen: The metro<sup>98</sup> requires longer distances between stations than a tram or a bus system; metro riders have to walk longer for access. The operation costs are high and the aspect of public security in the late evenings often is critical. If the cities would be responsible for total cost – maybe with Bund and Land providing financial support without limitation on infrastructure – public transport would be more efficient. Here the comparison with the Swiss example of Zuerich is very useful; see some details in Chapter 3.1.

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<sup>98</sup> It also is important to see that trams also were shifted to underground operation to provide more road space for vehicle traffic.

The lack of co-operation between communities and the competition for investors (both developers for settlements and for commercial facilities) also has contributed its share to the traffic increase. Although it must be admitted that the German regional planning schemes to a certain extent also has worked well in the Rhine-Ruhr region against urban fragmentation, this could have been reached more effectively with better cooperation between neighbor cities.

The State Chancellery, being in the State of North-Rhine Westphalia responsible for regional planning, is strengthening regional cooperation with legal procedures and financial aid. This may be a chance to force the neighbor cities to cooperate better.

#### *4.3 Some Lessons from Berlin-Brandenburg*

The Berlin area (Berlin plus surrounding counties of the State of Brandenburg) gives a unique example for regional development because the wall over long years hindered sub-urbanization. When the historic changes of 1989 and the re-unification of 1990 took place, the public and the urban planners already have reached a more critical position towards the automobile. This was different during the 50s and 60s in Germany, when the negative effects of private car ownership and urban sprawl have not yet been seen.

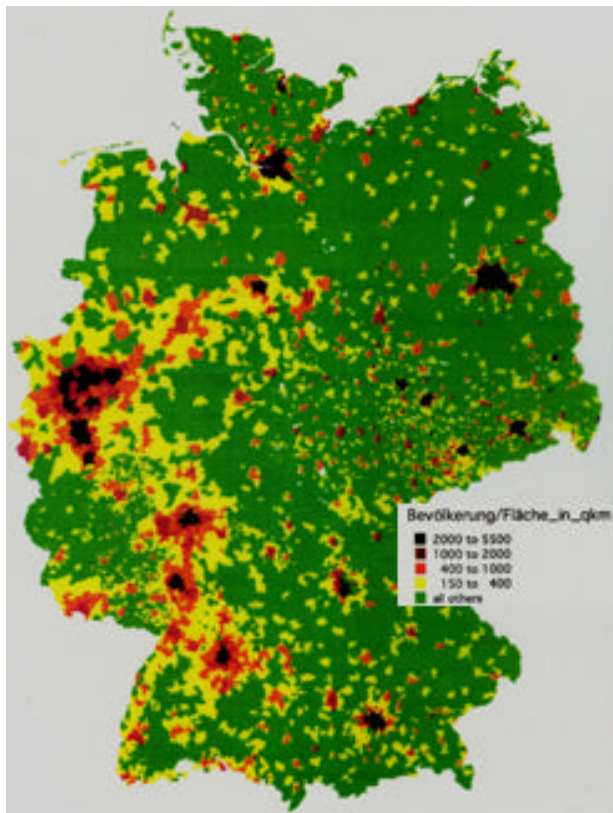
For urban structures, the shift of the average citizen from public transport to the private car marks the shift from living around stations towards to sub-urban sprawl development. Berlin now has the chance to avoid such model. The Case of Berlin may be useful with respect to this chance (a). Also worth looking at is the planning process *STEP-Verkehr*(b).

- (a) There is a demand of citizens of Berlin moving out to the surrounding rural areas to build own houses; housing there is cheaper, and there are social trend within the society to take advantage of the freedom reached. The Joint Regional Plan Berlin-Brandenburg is aiming at steering this. The problem: It is in the economic and political interest of the State of Brandenburg, and especially of the small communities around Berlin, to attract settlers from Berlin. But it has been agreed in the planning process to allow growth on of those communities with high-quality regional rail connection with Berlin.
- (b) Urban transport planning has to be democratized in order to avoid a standstill in infrastructure investments; the energy of protesters especially in Berlin is enormous. The increasing transport demand with the Umland, as well as the strengthened economic ties with the new Eastern EC member states requires the planning authorities to modernize the transport network. On the other side, citizens (NGOs as well as private citizens) will not accept the old-fashioned planning concepts of widening and extending the road network – even if most of the road investments would come from the national level. But it would not be possible for the Berlin government to mitigate citizens' protest by improving public transport supply, because the city practically is bankrupt. The way to balance conflicting interests of the stakeholders was the STEP process. The most important element of consensus building was the joint definition of objectives. This was the basis for the following steps, which – naturally – raised differences about the weighting of the various targets.

Although the political situation and the social topics within the MCMA will be rather different, adoption of the STEP process strategy may be of useful.

## Annex to Chapter 1

Graph1 to Chapter 1: Population density of Germany. On each of the 5 differently colored areas, lives 20 percent of the German population.



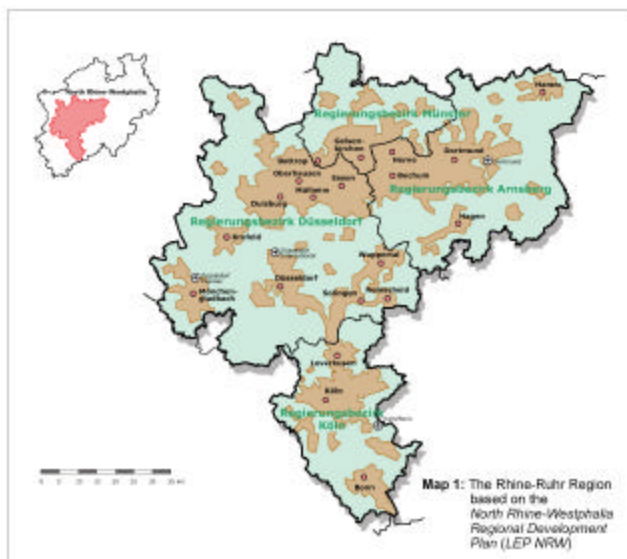
## Annex to Chapter 2

Table: List of Administrative Levels and Administrative Tasks

Federal Republic of Germany ( <i>Bund</i> )	Federal States ( <i>Laender</i> )	District/ Level (County, <i>Kreis</i> )	Municipal Level ( <i>Kommune</i> )
Defense Foreign service Federal office for the Protection of the Constitution Federal border guard Justice Statistical office Federal revenue administration National roads, highways National waterways, navigation National public transport Airports and aerospace, railways Labor affairs and services Postal services and telecommunication Federal bank Regional development Improvement of agricultural structure and protection of the coasts	Security, police Civil protection Justice Statistical office Primary, secondary, vocational, technical and higher education Hospitals Health protection Regional/spatial planning Regional development Environmental protection Federal state roads Public transport Ports Airports Agriculture, forests, fishing Economic promotion	Public order (including civil protection, foreigner affairs, traffic control, construction regulations) Secondary and vocational education Hospitals Health administration Social security Youth affairs Refuse and waste collection & disposal Culture (theatres, museums, libraries) District roads District Public transport Regional planning and economic promotion Agriculture, forests, fishing Environmental protection Electricity	Police, public order (including fire protection, civil protection, construction regulations, foreigner and asylum matters) Civil status and electoral register Kindergarten, primary, secondary, vocational, technical, and adult education and education for mentally disabled Hospitals in major cities Health services Social security Homes for the elderly Housing Town planning Water & sewage Refuse and waste collection & disposal Cemeteries Environmental protection Municipal roads Local public transport Ports, beaches Gas, heating, water, electricity supply Economic promotion Tourism Tax office Youth work Pension matters

## Annex to Chapter 3

### Graph 2 to Chapter 3.1: Rhine-Ruhr Area



**Graph 3 to Chapter 3.2: Berlin and surrounding counties within the State of Brandenburg.** The red line marks the boundaries of the joint planning region.

