

netWORKS - Papers

**Number 3: Network-Related Infrastructures
under Pressure for Change –
Sectoral Analysis Public Transport**

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Preface

The threatening decline in municipal infrastructure, a dramatic fall in public infrastructure investment, the privatisation of public enterprises, and the introduction of competition in infrastructure markets are only a few aspects under discussion in the debate on the future of key local government services.

The precarious financial situation of German local authorities compounds all problems, providing the backdrop to current changes in local infrastructure sectors. At first glance, at least, local authorities appear to be reacting to the growing crisis with viable solutions. For instance, the privatisation of public enterprises brings desperately needed income, and rids local authorities of future financial burdens.

However understandable this focus on the financing issue may be from the local authority point of view, municipal infrastructure problems are far more complex, and the long-established models for resolving them are unlikely to work in the future.

Developments are now often considered to constitute a shift in paradigm. New demands on the infrastructure require changes in the political, legal, and institutional framework and in how these key economic sectors are handled. What new regulatory models are needed and how are they to be implemented in a context of forward-looking, sustainable infrastructure development at the local level?

In view of the vital importance of the municipal infrastructure for the economy as a whole and of new, complex problems, netWORKS is investigating the regulation of infrastructure at the local government level in an interdisciplinary approach. The project application describes the task as follows: "Network-related infrastructure systems, which are key elements in modern societies, are undergoing radical change, which can be regarded as socio-ecological transformation. Important drivers are liberalisation and the privatisation of (formerly) public functions. The core of the socio-ecological problem under study is the break up of the old public utility service structures and the lack of regulation for this transformation process. The research association aims, in collaboration with practitioners, to develop and test tools and strategies for regulatory intervention in the socio-ecological transformation process. This must be particularly at the local government level, in order to guide it into a corridor of sustainable development, to keep options for formative action open, and to avoid exacerbating socio-ecological problems."

Research is concentrating on the future organisational structure and regulatory problems in municipal water management. In the first phase of the project, however, it is beginning with a comprehensive assessment of the current situation in the telecommunications, energy, public transport, and water sectors.¹ Whereas far-reaching liberalisation was implemented years ago in the telecoms and energy sectors, which have thus had a great deal of experience with the process, discussion on a future framework for the water and public transport sectors is far from over, and, at least in Germany, has received new impetus from European Union initiatives.

¹ The appendix contains a complete list of the sectoral reports published by netWORKS as well as the "cross-sectional analysis" linking them.

On the basis of an analysis of current structures and liberalisation options in these sectors, assessment aims to identify future regulatory requirements and permit conclusions to be drawn about the future development of local authority water management. In considering the future of local government infrastructure policy, the water issue is a particularly apt example. In the water sector there is strong pressure for change, although the extent and direction of reform is only apparent in outline. But the discussion on water management issues is often highly emotional, owing to the high demands society makes of the sector and the particular inertia displayed by the relevant stakeholders.

To ensure findings are approximately comparable, the sectoral analyses obey a certain classification structure. Sector-specific aspects have naturally preventing application of the structure in all cases.

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1. Status of Liberalisation and Privatisation in the Public Passenger Transport Sector

1.1 The Initial Situation: Classical Status and Changes

Classical status

Since the beginning of the 20th century, public transport by tramway, bus, and underground has become established in Germany largely as a municipal and government service provided by companies in municipal or government ownership. Public passenger transport is a public service allowing people to be mobile without having to use a private vehicle.² 26 million people use public transport each day. More than 250,000 people are employed by some 6000 private and municipal companies supplying public transport services.

In towns and cities, urban public transport is generally provided by municipality-owned undertakings. State railways (Deutsche Reichsbahn, Deutsche Bundesbahn, from 1994 Deutsche Bahn AG) have been the most important suppliers in local passenger rail transport. Private companies have so far had only a small share of the market. Most transport undertakings cover the complete production chain from planning (networks, timetables) to the operation of services. The service area for municipal transport companies is generally restricted to the territory of the proprietor municipality or municipalities. The many private transport companies serve strictly limited areas, single lines or single journeys, sometimes as subcontractors of public companies. Surpraregional services were traditionally provided only by railway and post bus undertakings, now subsumed under the bus services of Deutsche Bahn AG.

As cities have spread and metropolitan regions have developed, regional suburban rail networks have developed – over and beyond the historical *S-Bahn* networks in Berlin and Hamburg. In addition, local authorities and/or transport companies have formed transport associations (*Verkehrsverbünde*) providing customers with regionally integrated services. They coordinate or control cooperation between the regulatory authorities “*Aufgabenträger*”³ and / or transport companies, for example between German Rail and local transport undertakings, as well as cooperation between municipal transport companies on fares and timetables. But every region has developed its own structures.

There was no or limited competition in public transport. This was probably because public transport services become attractive only when individual services and modes of transport are efficiently integrated. For example, bus and tram services must be coordinated temporally as regards routing and line scheduling (service hours and frequency, transfer

2 In 2000, the 82.26 million people in Germany owned a private vehicle fleet of 39.8 million (registered) cars (excluding those owned by legal persons), 2.8 million motorcycles, and 74.5 million bicycles.

3 The regulatory authorities referred to as “*Aufgabenträger*” are the “buyers” of public passenger transport services pursuant to the Regionalisation Act. For rail transport they are either the state governments themselves or regional units within states, depending on the arrangements laid down by state public transport legislation. The regulatory authority in local transport is generally the county borough (“*kreisfreie Stadt*”) or the county (“*Landkreis*”). In Berlin, for instance, a state government department, the Senate Department for Urban Development, exercise this function.

scheduling) and spatially (transfer points), and fares must be integrated. In public transport, “surplus value” accruing in the system (exceeding the summed value of individual unconnected services) is generated only by the sum of individual, integrated, interrelated services. The public passenger transport network (in rail traffic), for example, had always been considered a natural monopoly that could be better served by a single actor than by several providers. Moreover, public transport receives substantial government and municipal subsidies, and experience, especially in urban regions, suggests it will have to rely on this source for the foreseeable future.

Changes in legislation

The legal framework for public transport at the European level includes the Council Regulation (EEC) No 1893/91 of 20 June 1991 amending Regulation (EEC) No. 1191/69 on action by Member States concerning obligations inherent in the concept of a public service in transport by rail, road and inland waterway.” It has been in effect in Germany since 1 January 1996, also applying for all companies operating in the public transport field. In order to improve the commercial independence of transport undertakings, the Regulation stipulates that all obligations imposed on the public service in the field of transport, i.e., all transport services, which cannot be met cost-effectively are to be terminated. It does, however, permit the relevant transport services to be “imposed” on the competent authority if an adequate service is to be ensured. This can be agreed by contract. Any losses arising from such a contract or imposition are to be compensated to the undertaking (Bundestag 2000).

The further strengthening of the European Internal Market may provoke considerable changes in European and national universes of action for public rail and road transport. In the revised draft of the EU Commission available since February 2002 on the amended version of Regulation 1191/69 (Market Opening Regulation – Transport) arrangements for market entry are specified. Within the framework of the EU, economic policy favours opening the transport market to small and medium-sized enterprises in “controlled competition.” Public transport is to be controlled and financed by the regulatory authority through the award of public service contracts in competitive tendering and not, as has hitherto been the case, by mostly public enterprises. Little will change with regard to public interest (*gemeinwirtschaftlich*) transport undertakings, whereas self-financing undertakings (*eigenwirtschaftlich*) will be strongly affected.⁴ The award of public service contracts, which already applies in local passenger rail transport, would be extended to the rest of public transport, for the granting of a concession requires a “public service contract” – public co-financing would as a rule involve such a contract. The proposal provides for the mandatory tendering out of transport services (e.g., also where municipalities have semi-autonomous operators (*Eigenbetriebe*) and for integrated modes of transport), so that ultimately the distinction between public interest and self-financing

4 On the distinction between *eigenwirtschaftlich* and *gemeinwirtschaftlich* transport undertakings see chapter 1.2.

undertakings could be eliminated. The following modes of transport can be excepted from tendering procedures:

- metro (underground) services,
- light rail services,
- services in smaller networks with annual operating expenses of up to € 3 million.

In addition, the proposal provides for purveyors of services to be excluded from the contract awarding process if they receive or already have more than a 25 percent share of the market (Köhler 2002).

According to the draft regulation, the pressure of competition will increase through the EU – as will pressure to establish a framework for it. Public transport is to be liberalised at least “a little.” Liberalisation in this context means introducing elements of competition into the development and provision of public transport services. The privatisation of a service can result from liberalisation (but not necessarily). More specifically, privatising transport means that services are provided by a private sector undertaking and/or in private responsibility. Privatisation does not mean that the task or responsibility for the task is transferred to private entities. The regulatory authority and liability remain public and, in the case of public transport, usually municipal.

Distribution of responsibilities for the product between the “producer” (the transport undertaking) and the “buyer” (the politically and legally responsible, mostly communal entity) will markedly modify the roles of transport companies and the public sector. In local passenger rail transport or in the heavy rail sector, this process has been largely implemented with the introduction of transport service contracts and tendering procedures pursuant to state regionalisation legislation.

At the international level, too, negotiations in the framework of GATS (General Agreement of Trade in Services) address the opening of public transport markets. GATS, one of three agreements on which the World Trade Organisation, WTO, founded in 1995, is based, specifies the areas to be liberalised for international trade in services. The principles of GATS are equitable market access, equal treatment for domestic and foreign suppliers, and the on-going opening of markets. The WTO plans for the GATS agreement on the liberalisation of services to come into force in 2005. It is still not certain to what extent public transport will be affected. So far it has not been included. Since the EU is extremely interested in better access to other markets, it is expected to open up many services for others, and may possibly include public transport (VCÖ 2003).

The timetable for introducing controlled competition in public transport and the arrangements to be decided depend at the moment on decisions to be made by international and national bodies, and are difficult to predict. Actors at the European level are the European Parliament, the European Court of Justice and Advocate-General, the European Commission, and the Council of Ministers. Owing to the multiple lines of decision, it is not only likely that controlled competition will be introduced – the most probable outcome – but that the market will also be completely liberalised and competitive tendering prescribed if the Commission proposal is rejected or ignored. For actors

continue to differ or have not (yet) coordinated their positions (status 5/2003). The European Parliament had modified the original Commission proposal to allow local authorities to choose between their own operations and competitive tendering. But the amended Commission proposal only partly accepts the recommendations of Parliament. A first reading of the Commission proposal has not yet taken place in the Council of Ministers. Some members want a liberalised market and wish to impose a general tendering obligation on the public transport sector under a concessions directive. The European framework for the future regulation of the public transport market is thus still an open issue.⁵

At the national level, public transport is regulated by the federal and state governments and, in some cases, by courts already applied to. In the course of liberalisation, the regulatory authorities and transport undertakings, as well as approval authorities face completely new tasks.⁶ Public transport undertakings, the public sector, and politicians will be assuming different roles in the future than those they play today. Changes are emerging in the system of public-sector co-financing for public transport and in the role played by local authorities (as owners of transport undertakings, as regulatory authorities, and as financiers).

1.2 Legal and Institutional Basis for Regulation (Current Legislative Status)

Concession Awarding, the Federal Passenger Transport Act and State Regionalisation Acts

Public passenger transport includes “the universally accessible transport of passengers in regular urban, suburban and regional services ...” (RegG). Within public passenger transport a distinction is made between rail transport (tramways (*Straßenbahn*), suburban rail services (*S-Bahn*) and the underground (*U-Bahn*)), and road-bound transport (buses,

5 It is also unclear what detailed conclusions are to be drawn from the ruling of the European Court of Justice in “OVG Magdeburg” (Case C-280/00 Altmark Trans) of 24 July 2003. The court ruled, that public subsidies for the operation of scheduled services in urban, suburban, and regional transport are subject to State aid control by the EU. But they are legally permissible if the transport undertaking has previously been entrusted with a clearly defined transport service and State aid is not too high. It may only compensate for economic disadvantages caused by the service provided. The compensation parameters have to be “objectively” and “transparently” determined beforehand. They are thus compensation for services rendered by the recipient undertaking in the performance of public service obligations.

In the case Altmark Trans GmbH, Regierungspräsidium Magdeburg / Nahverkehrsgesellschaft [NVG] the matter at issue is the granting of licences for regular bus services in Stendal County by the Magdeburg regional administrative authority. The question to be settled was whether a German public authority was allowed to grant a firm a concession to operate a regional scheduled bus service if the firm required public subsidies (C-280/00 Vorabentscheidungsersuchen des deutschen Bundesverwaltungsgerichts im Rechtsstreit Altmark Trans GmbH, Regierungspräsidium Magdeburg /Nahverkehrsgesellschaft [NVG] Altmark GmbH).

6 Under Para. 11 of the Passenger Transport Act (PBefG), the state government designates an “approval authority.” It issues licenses for the operation of public transport services. The approval authority can be a *Bezirksregierung* or *Regierungspräsidium* or, as in Berlin, the Senate Department for Urban Development. In Berlin the approval authority is even located in the same section, albeit in another subject area as the public regulatory authority or *Aufgabenträger*.

collective taxis). Public transport by train is termed local passenger rail transport (*Schienerpersonennahverkehr/SPNV*) (General Railway Act (AEG) Para. 2 (5)). The “remaining public passenger transport” (according to Para. 8 (1) Passenger Transport Act) includes “*Straßenbahnen*,” trolley buses, and motor vehicles providing regular services.” The “*Straßenbahn*” a term referring in everyday parlance to trams, is defined as including elevated railways (*Hochbahn*), underground railways (*Utergrundbahn*) and suspension railways (*Schwebbahn*) (Para. 4 (2) Passenger Transport Act), but not suburban rail systems (*S-Bahn*).

The Passenger Transport Act regulates the award of concessions for the “remaining public passenger transport,” i.e., “*Straßenbahn*” and bus services.

The Passenger Transport Act distinguishes between self-financing (*eigenwirtschaftlich*) and public interest (*gemeinwirtschaftlich*) transport services under Para. 13 and Para 13a Passenger Transport Act. In principle, the Passenger Transport Act lays down that public transport is to be self-financing (Para. 8 (4) Passenger Transport Act). Only if self-financing services cannot provide an “adequate service” are public transport services to be supplied on a public interest or *gemeinwirtschaftlich* basis. Public subsidies are justified for this purpose. “Adequate” in this context is not to be understood in the general sense of “just adequate or sufficient” service. What is to be deemed “adequate” is defined by the competent regulatory authority on its own responsibility, and depends on what economic, social, ecological, and transport policy goals it is pursuing.

As so far defined (Para 8 (4) Passenger Transport Act), costs are covered in transport services if expenditure is met by proceeds from fares, income from compensation and refund arrangements in the fares and timetable fields, and by other income in the commercial law sense. There is legal controversy on whether income from public service conglomerates (e.g., cross-subsidisation by a power utility) can be included, and whether funds from capital increases, owner contributions, or other public-sector subsidies (from municipalities) can be taken into account.

The distinction between self-financing and public interest services determines whether public transport services have to be allocated by competitive procedures. At present, most public transport lines, especially in regional transport, operate on a self-financing basis without initial tendering pursuant to Para 13 Passenger Transport Act. The influence of the regulatory authority is therefore limited to setting framework requirements for the local transport plan. However, there can be competition for self-financing services between rival tenders in terms of fares and timetables if there is more than one applicant for the concession. If a “better” application is filed, the approval authority can award a line concession to the applicant if the incumbent does not wish to “go one better.” However, this procedure tends to be theoretical. In practice there is hardly ever competition for concessions because of controversial financing practices. As a result, the prerequisites for awarding concessions in public interest transport services under Para. 13a°Public Transport Act, namely implementation of the principle of lowest costs for the community at required standards of quality, hardly ever come to bear in practice.

Existing licensing law puts the approval authority (*Genehmigungsbehörde*) de facto in a much stronger position than the regulatory authority (*Aufgabenträger*). Self-financing forms of concession give municipalities as regulatory authorities responsibility for ultimately non-binding planning, but exclude them from the decision on which undertaking is to supply the transport services laid down in the local transport plan. Although the approval authority awards concessions for scheduled services in compliance with the local transport plan, the plan is relevant for the decision on the “best” application for the operation of public interest transport services only to the extent that concessions cannot be awarded if they contradict the provisions of the plan. Because the approval authority merely has to “take account of” the provisions of the local transport plan (cf. Para 8 (3) Passenger Transport Act) and weigh them against the interests of the transport undertakings, this has in practice usually led to approval authorities placing greater value on protecting the vested interests of the “incumbent undertaking” as provided by the Passenger Transport Act than on conceptual statements in the local transport plan. Consequently, the award of a new concession is actually an extremely rare event. Competition tends to take place “on paper.”

The dichotomy of self-financing and public interest concessions is matched by a certain difference in public authority competencies. In licensing self-financing services, the approval authority acts largely alone, whereas in licensing public interest services, the approval authority and the municipal regulatory authority act together. In the case of public interest services, the municipal regulatory authority can determine the scope and quality of public transport locally.

1.3 Public Transport Planning

The current term “public transport plan” comes from the Passenger Transport Act (PBefG). In Germany, public transport plans have been instruments for the planning and design of public transport services since amendment of the Passenger Transport Act in 1996. The public transport plan strengthens the planning powers of the regulatory authority and introduces elements of public service in the sense of planning for public welfare (*Daseinsvorsorge*) and competition into the Passenger Transport Act, originally based on industrial law.

In the public transport plan the regulatory authority defines whether and to what extent transport services are to be provided in its area, thus laying down what services are required in the sense of “*Daseinsvorsorge*.” Public transport plans are therefore also a basis for licensing and tendering procedures.

As public transport has been regionalised, the federal states have adopted their own public transport legislation. State law regulates the preparation and content of the public transport plan. The public transport plan is drawn up by the local regulatory authorities. In particular, the plan:

- records and analyses existing transport infrastructures,
- formulates goals for the development of public transport services,

- estimates the volumes of traffic to be expected,
- develops plans for the efficient design of public transport.

Furthermore, the public transport plan has to take account of regional and state planning concerns, issues of environmental protection, and of the principles of economic efficiency and thrift. There are no fundamental differences between the states in detailed provisions on the subject. The plan is the appropriate level at which to address issues of particular local concern (e.g., Agenda 21 decisions, special consideration for senior citizens and children, the promotion of tourism, and gender-specific interests).

The public transport plan is not the only planning instrument available. Others are usually provided by state legislation. Berlin, for example, has an Act on the Functions and Further Development of Public Passenger Transport in the State of Berlin of 27 June 1995. "Taking into consideration the goals of urban development and regional planning and taking account of the demand for transport, urban development, and the interests of environmental protection, the Senate Department responsible for public transport shall prepare a requirements plan for public passenger transport (public passenger transport requirements plan). It shall cover long-term planning for the rail infrastructure and other major public transport investment measures. After a period of five years, the Senate Department responsible for transport shall examine whether the requirements plan is to be updated taking into consideration the goals and elements stated in sentence 1." (Para. 5 Requirements Plan for Public Passenger Transport). In addition to a public transport plan, which, as in most states, is limited to five years, Baden-Württemberg has introduced a so-called Public Transport Development Plan to deal with the longer-term fundamental development of the transport situation (Public Passenger Transport Act Baden-Württemberg Para. 11 (5)).

Public transport plans are thus becoming both regulatory tools in local government transport policy and in urban and regional development, as well as the basis for the provision of public transport services. In the public transport plan the regulatory authorities define their ideas on establishing and ensuring adequate transport for the population through the services provided by public passenger transport systems. In the case of self-financing lines, the approval authority has to take the plan into account even where – as described under 1.2 – the qualitative content of the plan plays no role in deciding between tenders for concessions. In the case of public interest services, the plan takes effect through the political self-commitment of the regulatory authority or its role as the basis for the work of local public transport companies and transport associations. The plan thus constitutes an important transmission belt for policy. It provides competitive guidelines for the administration and, through its self-commitment impact, provides transport undertakings with a measure of planning stability.

1.4 Financing and “State Aids”

Financing Structure and Pressure for Change

In view of prevailing transport policy and spatial and social conditions, public transport in Germany is largely financed by government (on this section see UBA 2003).

The financial basis for local public passenger transport has so far been a range of local, state and federal government subsidies and funds. The possibilities of cross-financing and tax advantages offered by municipal utility conglomerates are exploited, as well as federal funding under the Community Transport Financing Act (GVFG). In addition, there is assistance in offsetting losses through owner contributions from the municipal proprietors of transport undertakings, and statutory compensation payments for school and disabled persons transport (Para. 45a Passenger Transport Act, Para 62 Disabled Persons Act). The infrastructure of public transport (tunnels, tracks, bus stations), finally, is partly the property of local authorities, partly that of transport companies. With these various types of support, funding, and financing arrangements, a system of “spaghetti financing” has developed to pay for public transport.

The financing framework of public transport is changing because budgetary subsidisation is no longer affordable, local authorities no longer have the means at their disposal for co-financing projects, and because “State aids” to undertakings are now permitted without competitive tendering only if they constitute compensation for services provided in the performance of public service obligations. Instead of being cross-financed between utilities subsidised by the federal and state governments, local public transport has to be paid for out of the current budget of the responsible authority if there are no new sources of finance (such as a dedicated public transport tax). The institution of procedures for awarding contracts and transport service contracts requires transport authorities to assume long-term financial obligations.

In its present form, it is highly unlikely that the financing system can survive. In the light of the pending introduction of controlled competition with mandatory tendering for public transport services, and the ruling of the European Court of Justice cited in footnote 4, it is doubtful whether in future it will be possible or permitted to finance municipal transport undertakings through cross-subsidisation – not available to competing companies – from municipal power and water utilities as well as sewage and sanitation services.⁷

Owing to the municipal budgetary crisis provoked by shortfalls in tax revenue and high social welfare expenditure, municipal subsidies are no longer possible at the level needed to maintain services at the existing standard or as required by the public transport plan. Many local authorities no longer have the means even to co-finance investment pursuant

⁷ See the Federal Cartel Office press release of 17.04.03 according to which the Office issued an abusive practices order against the Mainz *Stadtwerke* (public utilities grouping) for excessive network use charges. In the explanatory memorandum the Office remarks that lowering charges was financially reasonable “even in view of the fact that the Mainz *Stadtwerke* makes a contribution from the power business to financing public transport.”

to the Community Transport Financing Act.⁸ Without co-financing, many local authorities or transport undertakings cannot avail themselves of federal subsidies for new or extended railway routes and bus infrastructure. These funds are available only to better-off municipalities, since they are still able to raise the necessary co-financing. The money can be used for local road construction instead of public transport.

Competitive arrangements decided at the EU level, too, may have considerable financial impact if public subsidies to companies are classified as anti-competitive "State aids." Both the current amendment to the relevant EU Regulation 1191/69 as well as a case concerning public transport financing pending before the European Court of Justice make it likely that the reporting requirement for "State aids" under EU law (cf. EuGH 2002) will, in view of the aim of opening up the transport market for small and medium-sized European undertakings, provoke more intensive and fundamental discussion of the financing of public transport in Germany.

What are the dimensions involved?

In the discussion on public transport spending, the high level of subsidies for public transport is a popular target of criticism (the cost of road transport, by contrast, is not addressed). Major municipal budgets already bear costs of motor traffic that often exceed € 100 million a year without this being obvious from the budgets themselves.⁹ A complete and transparent picture of current public transport financial data, let alone of the entire transport sector, is difficult to obtain, since public transport is the responsibility of state and local governments, and every state has its own arrangements for financing and developing public transport. Data on public transport undertaking earnings and allocations are not public and are often not even fully known to the local authorities as public owners.

The larger and more important transport undertakings in Germany (more than 90 % of the total public rail and road transport market) are members of the Association of German Transport Operators (VDV). The services provided by all VDV members, including DB AG (German Rail) throughout the country are used by some 9.1 billion passengers each year (VDV 2002a).

In 1997, the annual turnover of road and rail-bound public transport was about € 23 billion. One third came from passengers (proceeds from fares) and two thirds were provided by the public purse. Public transfer payments for public transport from federal, state, and local government amount to some € 15 billion each year. The federal government alone

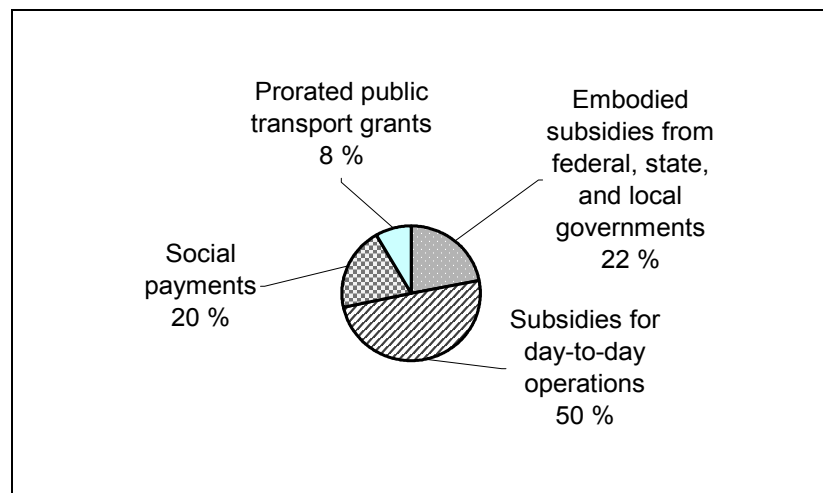
8 The Community Transport Financing Act grants only pro rata subsidies. The amount of co-financing (ca. 10% to ca. 50%) depends on a number of criteria, including state arrangements.

9 By comparison, in 2000 municipal spending on motor traffic in three selected cities (Bremen, Dresden, and Stuttgart) amounted to between € 65.4 million and € 104.8 million as opposed to income from motor traffic of between € 9.2 million and € 20.7 million (mainly parking fees and traffic fines). In these three cities, the per capita "covert subsidies" for private motorised transport amounts to between € 110 and € 145. See ICLEI (ed.), *Wie viel zahlt die Kommune für den Autoverkehr? Aufdeckung versteckter Subventionen für den Pkw*, im Auftrag des Umweltbundesamtes, November 2001.

contributes some € 8 billion (50 %) to this sum pursuant to the Regionalisation Act and the Community Transport Financing Act (BMVBV 2000).

For 1997 the sources used have been broken down (Rönnau et al. 2003). Almost half of these subsidies were received for day-to-day operation and about 22 % for investment.

Figure 1: Employment of Subsidies for Public Transport by All Territorial Authorities in 1997 (total € 14 billion, without Saarland)*



*Source: Hans-Joachim Rönnau et al. (2002): Finanzierung des öffentlichen Nahverkehrs. Politische und wirtschaftliche Verantwortung trennen. In: Der Städtetag, No. 12, 9-14.

The share of embodied subsidies for public transport shown in figure 1 amounted in 1997¹⁰ (without Saarland) to € 3.17 billion of € 14.45 billion. The most important sources of investment assistance measures are the Community Transport Financing Act (GVFG) with € 1.8 million, the Regionalisation Act (RegG), and state-specific public transport acts, totalling € 1.37 million. The Regionalisation Act regulates allocations from the federal government for improving traffic conditions in municipalities in the fields of local road construction and public transport. Under the Regionalisation Act, the federal government allocates so-called regionalisation funds to the states for rail-bound public transport.

In 1997, € 7.17 billion was paid to subsidise day-to-day operations. This sum includes operational grants of € 3.95 billion (€ 3.22 billion for local passenger rail transport and € 0.73 billion for public passenger transport) from the federal government pursuant to the Regionalisation Act, payments by shareholders to finance day-to-day operations especially for municipal transport undertakings in compensation for losses from municipal public service conglomerates and from increases in contributions or capital (estimated amount: € 2.38 billion), from VAT relief for local transport to the amount of € 0.43 billion, and other measures (including exemption from motor vehicle tax) totalling € 0.41 million.

Social payments include compensation payments for school transport and disabled persons. In 1997, € 2.9 billion was spent on social policy grounds: for student travel by

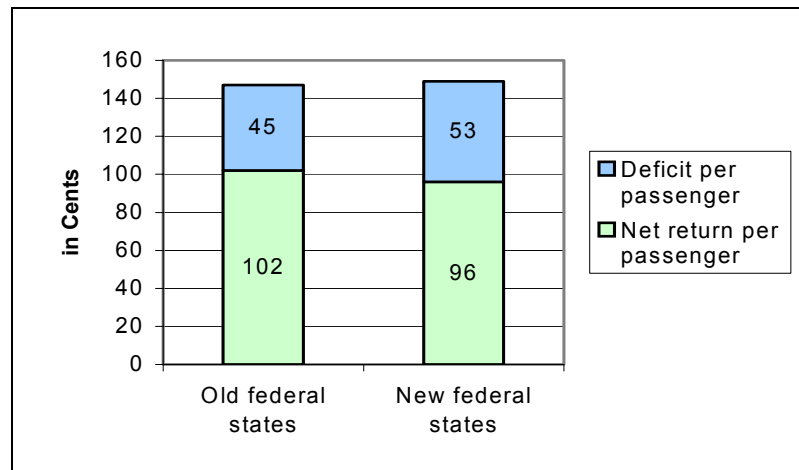
¹⁰ More recent analyses of the employment of subsidies are not known.

public transport under Para. 45s Passenger Transport Act and Para 6a General Railway Act in local passenger rail transport, as well as under other state and local government arrangements (total: € 2.44 billion) and pursuant to the Disabled Persons Act (€ 0.46 billion). In addition, the federal government provided € 1.21 billion in prorated local public transport financing for local passenger rail transport and especially for German Rail (DB AG).¹¹

There are differences between transport undertakings in East and West German states with regard to the level of cost effectiveness. Owing to the different initial situation after the change in regime, the VDV still shows cost recovery ratios for undertakings operating in the passenger transport sector separately for the old and new states in Germany. In the old federal states, the cost-cover figure is 70 % and in the new federal states 64 % (VDV 2001). Proceeds include both revenue from fares and from compensation payments accruing to transport undertakings on a statutory basis.

With the expected introduction of controlled competition in public transport, the regulatory authorities will, over and above their planning and organisational functions, be assuming additional financial responsibility for expenditure and income in public transport.

Figure 2: Expenditure and Net Revenue of VDV Members
(without Deutsche Bahn AG local passenger rail transport) 2000*



*Source: Graphic by German Institute of Urban Affairs with Data from VDV (Verband Deutscher Verkehrsunternehmen) (2002a): VDV Statistik 2001, Köln.

The changes brought about by the EU in the legal framework for public services will fundamentally affect the “vested rights” and status of municipal transport undertakings, provoking greater competition between enterprises. This requires reorganisation of the present financing system (and regulatory regime). The proposals of the pertinent

¹¹ Since the employment of proceeds earned by DB in the framework of DB Holding AG from the various companies is not published in transparent form, it cannot be discussed at this point whether – as some (e.g., Ilgmann, 2003) suspect – regionalisation funds are used within the DB group to cross-subsidise long-distance transport or other DB services.

organisations have been tabled. There is discussion about pooling resources from the different sources and allocating them to public transport authorities on a given basis (e.g., population, surface area, share in public transport) (Umweltbundesamt 2003).

The Association of German Transport Operators (VDV) has demanded that the process of financial erosion should be stopped as swiftly as possible and that financing by the public purse be supplemented by a dedicated 2 cent share in petrol tax for county and urban public transport. Furthermore, the VDV demands tax advantages for the construction and overhaul of municipal infrastructure (VDV 2002b).

The German Association of Cities and Towns has suggested financing public transport from Regionalisation Act funds. Local authorities “expect that the ‘regionalisation funds’ available under Para. 8 Regionalisation Act can be made available and used in future for co-financing the new tasks and obligations of municipal regulatory authorities also for municipal road-bound public transport” (DST 2002).

2. Ecological Impacts of Public Transport

2.1 Resource Consumption by Public Transport (Noise, Energy, Exhaust Gases, Land, Money)

Certain political goals are associated with public transport. They include not only social and traffic issues but also ecological objectives. The bus and train have a high environmental bonus in the eyes of the public. Since public transport cannot operate completely without pollution and adverse impacts on the environment, this bonus consists in the relative advantages of public transport over private motorised traffic, especially the private car. Public modes of transport have appreciable advantages in energy consumption, in greenhouse-gas emission, and in land consumption.

Rail-bound modes of transport (operating with electricity) emit no pollutants in the immediate street space, and where, as in many cities, they run completely or partly underground, they take up no land. They use less energy and fewer resources than buses and private cars. The emission of pollutants by older trams and rail vehicles, however, is sometimes very high. Also a problem, especially with surface rail traffic, is noise pollution (cf. VCD 2001a).

Buses do worse. Particularly problematic are the higher particle and nitrogen oxide emissions of diesel buses. Only with particle filters do diesel buses reach the emission level of natural gas buses. If they come onto the market at reasonable prices, technologies currently in the development stage will be able – thanks not least of all to stricter limit values for diesel vehicles – to bring the diesel bus much closer to the environmentally friendly level of the natural gas bus.

In spite of the reservations mentioned, the average passenger car lags far behind public road and rail transport in most environmental categories. Of urban means of transport, the car uses by far the most land in moving traffic (without parking space). The tram needs

only a third as much, the bus less than half the carriageway space, considerably alleviating parking-space pressure in inner cities and residential areas. Land now required for stationary vehicles could, moreover, be used for other purposes, which would substantially enhance dwelling environmental quality. Buses and rail-bound transport modes are also much safer (VCD 2001b).

However, certain improvements in car technology will make themselves felt in the future. The still marked gap between public transport and private motorised traffic will narrow considerably in the years to come if the environmental potential of public transport remains unexploited. Low-fuel vehicles, for example three-litre cars, will reach the environmental level of public transport when fully occupied, because in recent years most public transport operators have made no effort comparable to those made by car makers to reduce pollutant and noise emissions. There is considerable scope for catching up in this field, especially when one considers the environmental legitimization of public co-financing for the whole public transport system at current levels.

2.2 Public Transport as an Environmental Protection Instrument (Avoidance of Motor Vehicle Environmental Pollution)

The major, still unsolved environmental problems with urban traffic include land use, noise, energy consumption, and CO₂ emissions. Environmental pollution can be reduced by shifting traffic from polluting means of transport (e.g., the car) to less polluting modes (e.g., bus/rail).

Public transport can reduce traffic-related environmental pollution such as CO₂ emissions, air-borne pollutants (e.g., soot particles and nitrogen oxides), noise emissions, and energy and material consumption. A VCD study (VCD 2001b) compared primary energy consumption, air-borne pollutant and climatically relevant gas emissions, as well as noise and space requirements in petrol and diesel cars, diesel and natural gas buses, and trams, suburban rail and underground. In order to provide the same volume of traffic in passenger kilometres, buses need less than a third of the fuel and emit correspondingly less CO₂. However, if the environmental advantages of public transport are to be maintained, it is necessary to reduce the noise pollution caused by road and rail vehicles, to deploy low-emission vehicles and improve the occupancy level of vehicles without neglecting the quality of services (safety, cleanliness, comfort, on-schedule performance, etc.).

The ecological advantage of public transport is relativised if largely emission-free, non-motorised modes of transport (bicycle, pedestrian traffic) are available as alternatives to private motorised transport.

3. Market Situation

3.1 Supplier Structure (Market Players)

In 2000, 6,420 undertakings in Germany provided licensed public road passenger transport services by bus and tram.¹² The enterprises employed a total of 181,870 people exclusively or largely in road passenger transport (see also: Statistisches Bundesamt 2002). The economic focus of 5,166 of these undertakings was public road passenger transport, 2,632 in regular services and 2,534 in tourist travel (non-regular services). Another 441 companies mainly ran travel bureaus or engaged in tour operator activities, while 306 ran taxi services and rental car services with drivers. 507 companies were engaged mainly in other sectors (including the energy and water sectors) and supplied public road passenger transport only as a sideline. Public road passenger transport undertakings had over 85,730 buses/coaches and 9,268 trams and related vehicles at their disposal. These figures show that, with an average workforce of under 30 and fewer than 15 vehicles per company, the sector is dominated by small and medium-sized enterprises. (Only) the large companies among them are members of the VDV (cf. 1.4). According to Spitzner (2002), public transport is a field with a strong technological orientation in which almost only men are employed.¹³

In 2000, undertakings in the sector earned € 10.2 billion in public road passenger transport services. 52 % of these earnings came from regular services and 18 % from non-regular services. 16 % was received in compensation payments from public authorities, and 13 % was in payment for travel under contract to third parties. Average income per company was € 1.59 million, although 78 % of undertakings earned less than € 1 million.

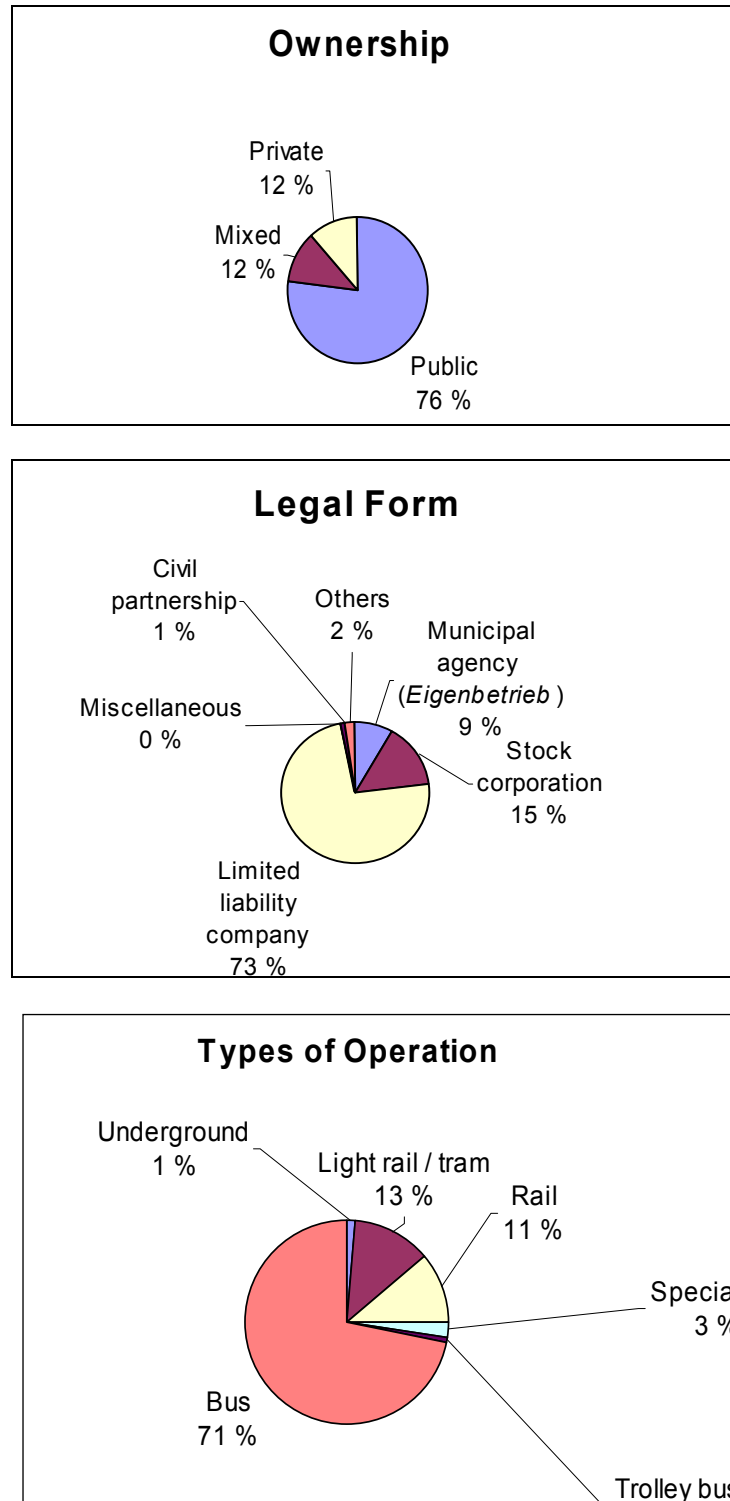
As per September 2001, 93 % of all transport enterprises were privately owned. With 30 % of the workforce employed in public road passenger transport, they earned 39 % of income from transport services. Another 5.6 % were municipal and quasi-public enterprises, with 57 % of the workforce and 46 % of income. On average, each employee of public road passenger transport enterprises generated € 56,000 in income (private companies: € 73,000, municipal and quasi-public enterprises: € 45,300 per employee).

On 1 August 2001 423 enterprises were members of the Association of German Transport Operators (VDV), which covers more than 90 % of the entire rail and road market. 76 % of these undertakings were publicly owned, 12 % partly private, and 12 % fully private. 73 % were limited liability companies (*GmbH*), 15 % were stock corporations (*AG*), and 9 % were semi-autonomous municipal agencies (*Eigenbetrieb*).

12 They include both undertakings operating regular services under their “own” concessions under Para 13s or 13 Passenger Transport Act (cf. 1.2) as well as subcontractors.

13 He also claims that the male actors in the sector design the transport system from their “male ‘normal’ working conditions” perspective, losing sight of societal, sustainability-relevant economic rationales and practical considerations (Spitzer 2002: 56).

Figure 3: Structure of VDV Members: 423 German Public Passenger Transport Undertakings as per 1. August 2002*



*Source: Graphic by German Institute of Urban Affairs based on VDV (Verband Deutscher Verkehrsunternehmen) (2001): Statistik 2000, Köln.

3.2 Product Development

The subject of product development is a relatively new one in public transport. In most enterprises, the services offered have usually “developed in the course of time.” Moreover, public transport has always been determined largely by technical parameters. Product development in the sense of designing services to meet the needs of existing and potential passengers is a quite recent concern in the public transport sector. Since the 1980s, a step in this direction has been taken with the introduction of “differentiated services.” This has been motivated firstly by economic constraints, and secondly by a desire to win new groups of customers for public transport in the pursuit of social and ecological goals (VDV 1994).

Initially the approach was restricted to types of service for low-demand times and areas, but recently greater emphasis has been placed on differentiating “classical” public transport in terms of different types of use and demand. This includes various categories of service like neighbourhood buses or express buses. The familiar distinction in rail transport between, for example, regional trains and regional express trains, is increasingly being applied in road-bound public transport, as well.

Another subject that has become more important is that of marketing. In public transport, too, an integrated marketing approach is increasingly being pursued, covering the entire gamut of product introduction and development. Attention is being paid to the different requirements of customer groups who use public transport in different phases of life and for different purposes, so that their needs can be more specifically taken into account.¹⁴ The development and imposition of quality standards in the context of controlled and regulated competition is on the agenda.

Classical Public Transport

The precondition for the economic efficiency of public transport is to bundle demand spatially and temporally. It permits the “classical” form of public transport, bound by timetables and scheduled stops, and served by regular buses or trams or local passenger rail transport.¹⁵

Existing products – vehicles, types of operation, instrumentation and information technology – are continually being modernised as technology progresses in the course of replacement investment.

14 Whereas most attention used to be paid to commuter and school traffic, a growing role is now being played by shopping traffic, excursion traffic, transport of bicycles, event services, services for the disabled, etc.

15 A regular or scheduled service is “a regular transport link between specific starting points and terminals allowing passengers to get on or alight at specific stops. It does not require that a timetable with specified times of departure and arrival exist or that intermediate stops be provided” (Para. 42 Passenger Transport Act).

Thus demand elements (demand stops, demand service with advance notice) supplement timetable, stop, and line-bound services.¹⁶ At stops and stations served by the rest of public transport, scheduled timetables are also increasingly being supplemented by information on departure times actually to be expected.

More and more small towns are setting up local bus lines to supplement the regional services that have long been operating. Senior citizens and school students in particular, and at times tourists, appreciate the improved mobility opportunities. Local buses enhance the image and attractiveness of small town centres.

Technical improvements to available vehicles allow environmental noise and exhaust gas standards to be met in large measure. Depending on interior fittings and design, modern vehicles offer improved passenger comfort (low floors, spaciousness, transport of wheelchairs, perambulators, and bicycles). In heavy rail transport, locomotive-drawn trains are increasingly being replaced by railcars. Other innovations include the use of electronic media for information and sales (electronic timetable service, online departure times information, e-ticketing).

The development of operational and transport services in public road passenger transport are shown in the following table.

¹⁶ The Passenger Transport Act offers scope for experimentation and action with respect to demand services not belonging to “classical” public transport (cf. Mehlert 2001).

Table : System Performance and Traffic Volumes in Public Road Passenger Transport in Germany*

	1991	1996	2001*
System Performance – Vehicle Kilometres (in mio.)			
Municipal undertaking	2 575	2 558	2 606
Surburban rail	268	323	358
Tram	358	296	261
Trolley bus	6	5	4
Bus	1 943	1 935	1 983
Private undertakings	1 239	1 219	1 285
Traffic volumes – Passengers (in mio.)			
Municipal undertakings	7 121	7 058	7 121
Private undertakings	570	591	625
Taxi and rental car transport	435	.	.
Traffic Volumes – Personenkilometer (in mio. pkm)			
Municipal undertakings	47 745	43 614	44 670
Privat undertakings	32 002	31 152	30 349

*Source: DIW (Deutsches Institut für Wirtschaftsforschung) (2003): Verkehr in Zahlen 2002/2003, Berlin.

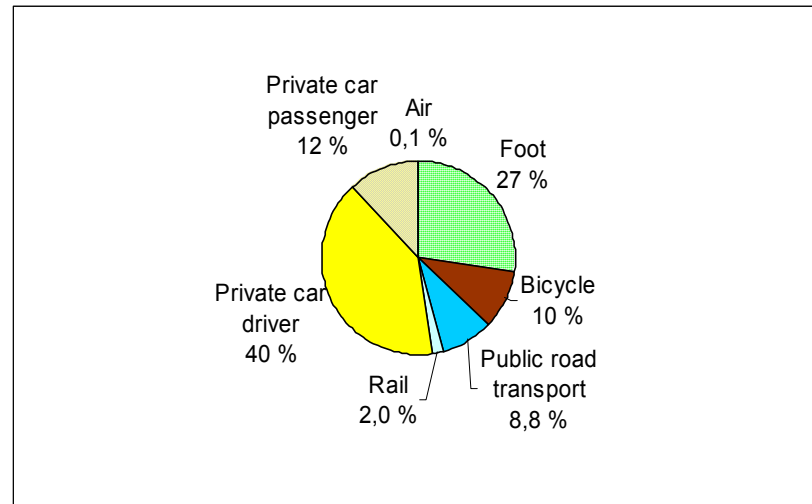
The number of employees declined over the corresponding period from 257,000 in 1991 to 184,000 (1996) and 162,000 by 2001 (DIW 2003).

3.3 Public Transport Demand and Choice of Transport Mode

“Modal split” is the distribution of displacements (journeys) among different modes of transport in passenger traffic between a place of departure and a destination. The extended modal split includes pedestrian journeys and journeys undertaken by vehicular modes of transport.¹⁷ According to the breakdown supplied by the DIW (figure 4), private motorised transport predominates. Public road passenger transport has a share of 8.8 % and rail transport 2 %.

¹⁷ The “main means of transport” is taken into account. In spite of the distances to the stop/station usually covered on foot, the distances covered by public means of transport count as public passenger transport.

Figure 4: Transport Mode Shares in Passenger Transport. All Journeys 2000*

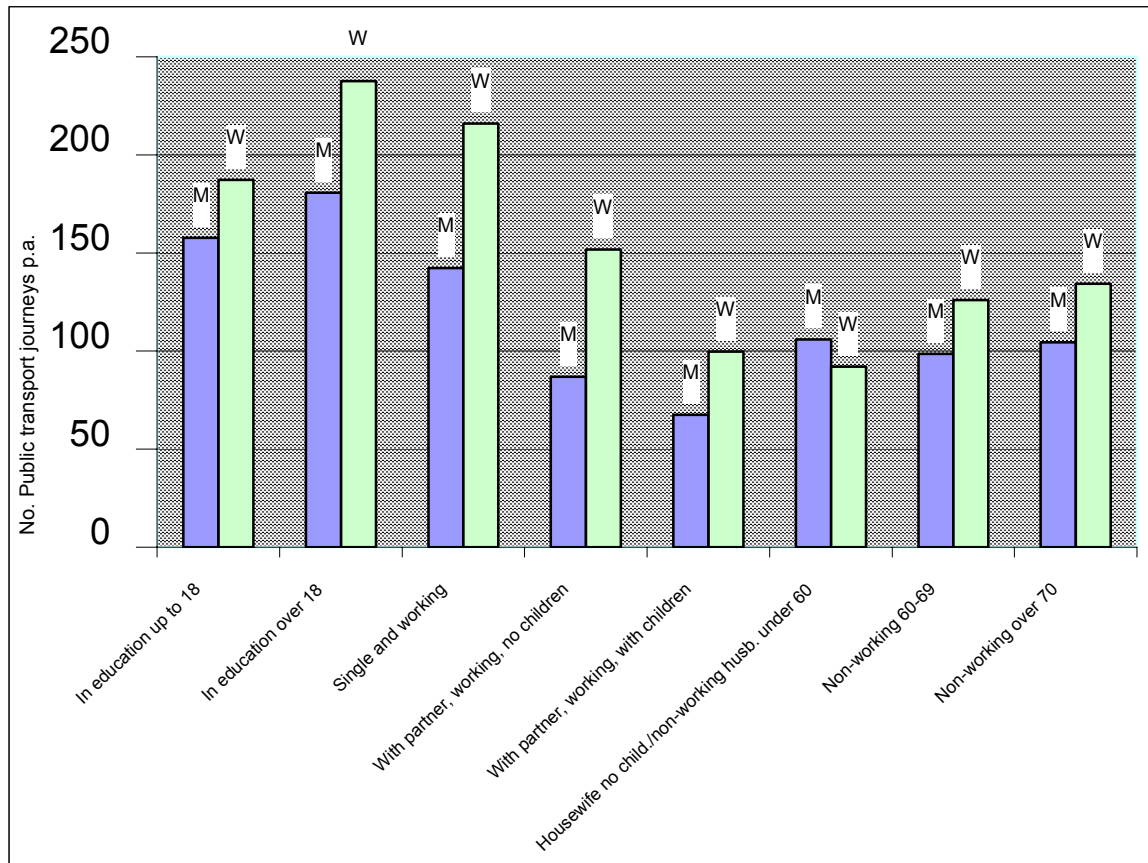


*Source: Graphic by the German Institute of Urban Affairs, data from DIW, (Deutsches Institut für Wirtschaftsforschung) (ed.) (2002): Stagnation des Personenverkehrs in Deutschland, DIW-Wochenbericht, No. 42.

Public transport use in Germany in terms of passenger journeys by males and females in various phases of life for 1997 is shown in figure 5. The figure shows that the most intensive use of public transport, measured in terms of the number of journeys per year, is made by persons in education and by single persons in employment. Other groups travel much more rarely or relatively more frequently by other means of transport. Of all groups, women use public transport somewhat more often than men.

Studies of the use of modes of transport in relation to vehicle ownership show that public transport is used much more frequently by people who have no car of their own than by car-owners. Transport behaviour depends heavily on car-ownership and the private car fleet. Anyone who has no car is eight time more often a passenger on public transport than someone who owns a car. Older women have many fewer cars than men, although gender-specific differences are slight among younger people.

Figure 5: Public Transport Use in Germany: Male and Female Passenger Journeys in Different Phases of Life 1997*



*Source: Graphic by the German Institute of Urban Affairs, data from W. Brög (2000): Der nicht motorisierte Verkehr und seine Einbindung in ganzheitliche Mobilitätskonzepte, Dokumentation „Mobilitätsforschung in 21. Jahrhundert – Verkehrsprobleme und Lösungsansätze“, Köln.

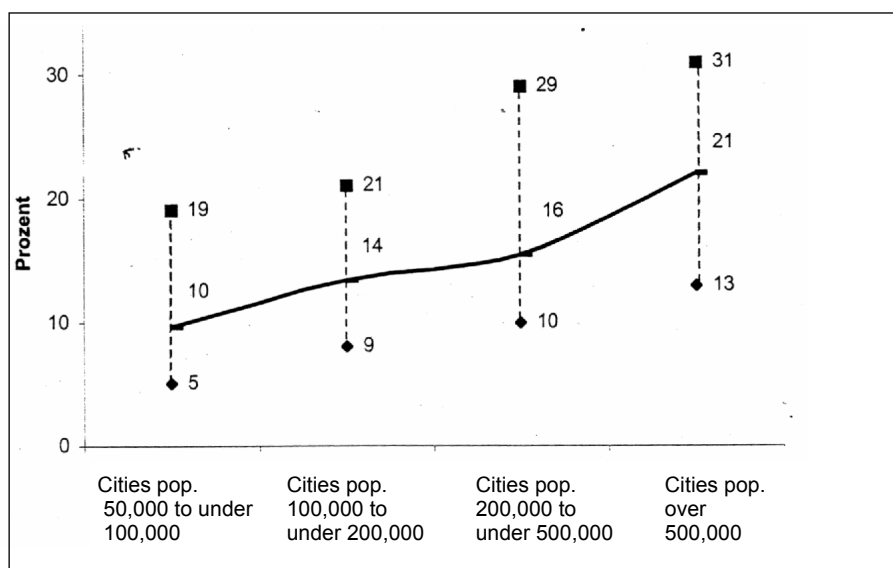
3.4 Demand Effects of Settlement Structure

Attractive public transport services and a high degree of modal split depend on the spatial conditions prevailing in a region (cf. Apel 2003). Overall, the motorisation rate (number of private cars per 1000 inhabitants) correlates clearly with settlement structure and thus with the concomitant, more or less urgent “obligation” to have a private car. In contrast to urban areas with a multiplicity of services for basic necessities available close to the home, with doctors, schools, and social venues within walking distance, for people living in the outskirts of cities and rural areas such amenities can be reached only by private vehicle (or by taxi, pick-up services, or privately organised transport services). Children, senior citizens and other people without their own cars often have to depend on the “mom taxi” or neighbourhood help. It is not surprising that the motorisation rate is much higher in

peripheral residential areas than in the inner city.¹⁸ The average number of cars per household is inversely proportionate to the size of the community. More than 90 % of all visitors to recreational amenities with large catchment areas come by private car.

While heavily built-up settlement cores with a radius of about three kilometres around a city centre offer favourable conditions for the wide-spread use of bicycles, larger metro areas have much more of an affinity for public transport. In rural areas and in thinly populated peripheral areas there is far less potential for public transport. According to a study by Prognos AG (VDV 2001) the share of public transport differs considerably in terms of passenger journeys by urban dwellers in proportion to the size of the population. Whereas public transport in cities with a population of between 50,000 and 100,000 takes a 5 % to 19 % share, in larger cities with a population over 500,000 the figure is between 13 % and 31 % (figure 6).

Figure 6 Resident-weighted mean and range of public transport share in “extended modal split”, in relation to passenger journeys by residents of cities of different population size* 1



*Source: Prognos (2001): Die Bedeutung des öffentlichen Personenverkehrs in Deutschland. Expertise im Auftrag des Verbands Deutscher Verkehrsunternehmen (VDV). Kurzfassung, Basel.

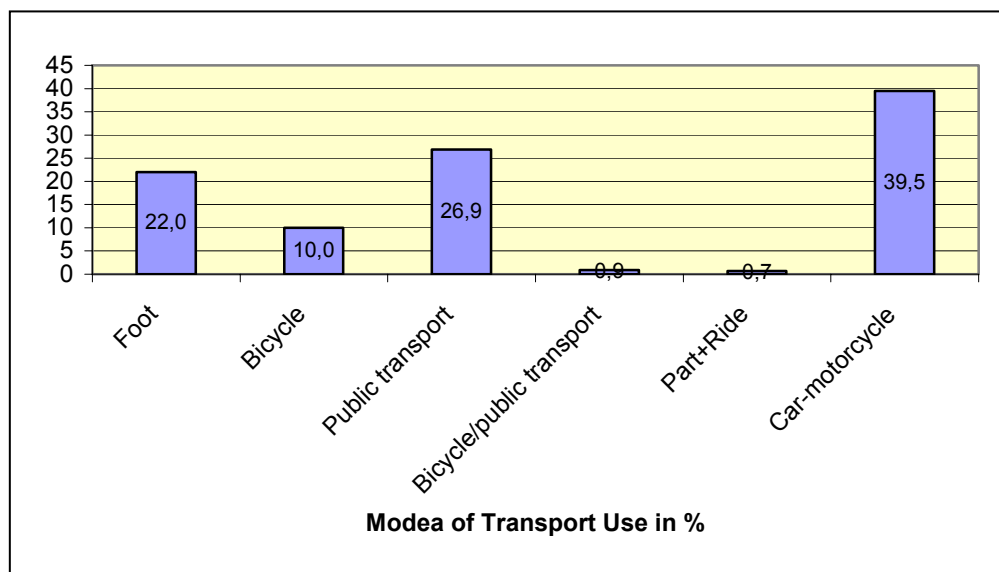
1 Aid to reading the chart:

The mean value of the public transport share in the extended modal split is 10 % in cities with a population of between 50,000 and 100,000 in terms of resident journeys, ranging in this category of cities from 5 % to 19 %. Extended modal split: takes into account journeys by all means of transport, also on foot and by bicycle.

18 In the literature many other factors are mentioned that play a decisive role in car-ownership. Car-ownership is determined by a whole range of factors like settlement development, income development, the status and role of the car, and the cost and qualities of the car and public transport services. Motorisation decisions are at times made in consequence of locational decisions. It is likely that many factors (cost of parking space, image of car-owner or a certain make, income level) are to be explained by the settlement structure and the different socio-spatial services in different areas.

In major cities like Berlin, Munich, or Hamburg, public transport plays a dominating role in traffic. It can partly compete with private motorised transport, and is used by people with a choice between modes. In thinly populated rural regions, in contrast, public transport plays only a minor role. Figure 7 shows the example of the current modal split in Berlin: over 28 % of all journeys are undertaken exclusively by public means of transport or in combination with bicycles (Bike + Ride) or car (Park + Ride). While Berlin shows the highest figures in Germany, public transport takes a sometimes much greater share of traffic in other European cities.¹⁹

Figure 7: Break-down of Passenger Transport by Mode in Berlin 2000*



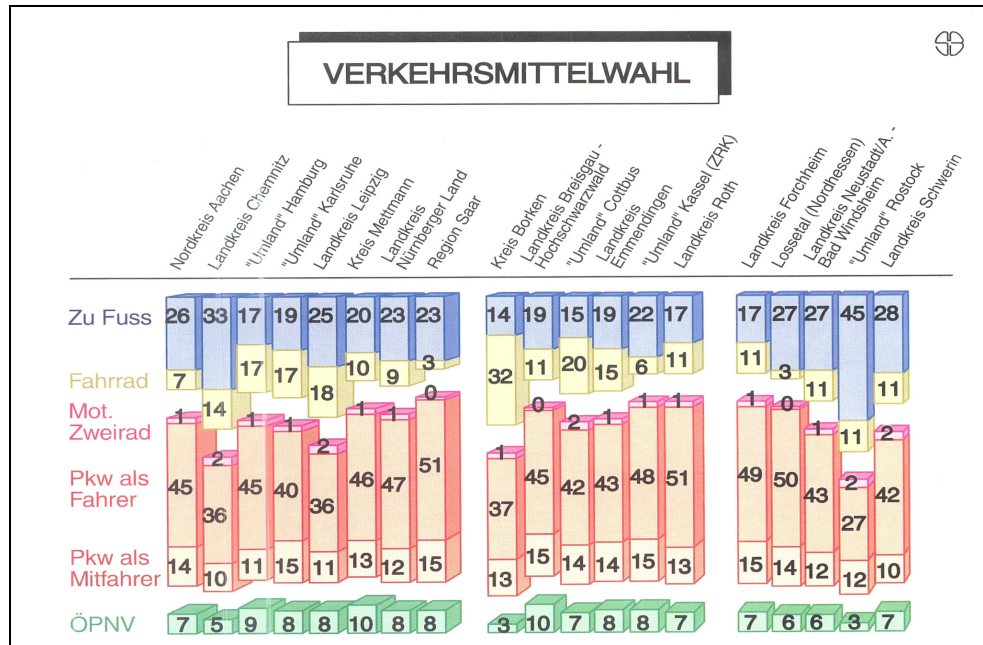
*Source: Senatsverwaltung für Stadtentwicklung (ed.) (2001): Berliner Verkehr in Zahlen, Berlin.

The choice between modes of transport is a quite different matter in areas with low settlement density and dispersed settlement structures. It is striking that the mean distances travelled by people in rural areas are scarcely shorter than those in the city, and that the number of journeys per capita and the time spent travelling hardly differ. Figure 8, interpreting mobility data from 19 rural regions collected for the VDV in 1994 by the Institut Socialdata, shows that public transport shares vary between 3 % in Borken County, where bicycles are much in use, and 10 % in, for example, the Breisgau-Hochschwarzwald County, which pursues a very active public transport policy.²⁰

19 A benchmarking study conducted in 40 European cities for the EU (EU 2002) showed much higher modal split values for public transport in Bucharest (51 %), Prague (46 %), Brno (39 %), Athens (33 %), Madrid and Barcelona (both 31 %).

20 e.g., fare association, low public transport prices, project Breisgau S-Bahn (cf. ZRF 2003).

Figure 8: Choice of Transport Mode in 19 Rural Areas* 1



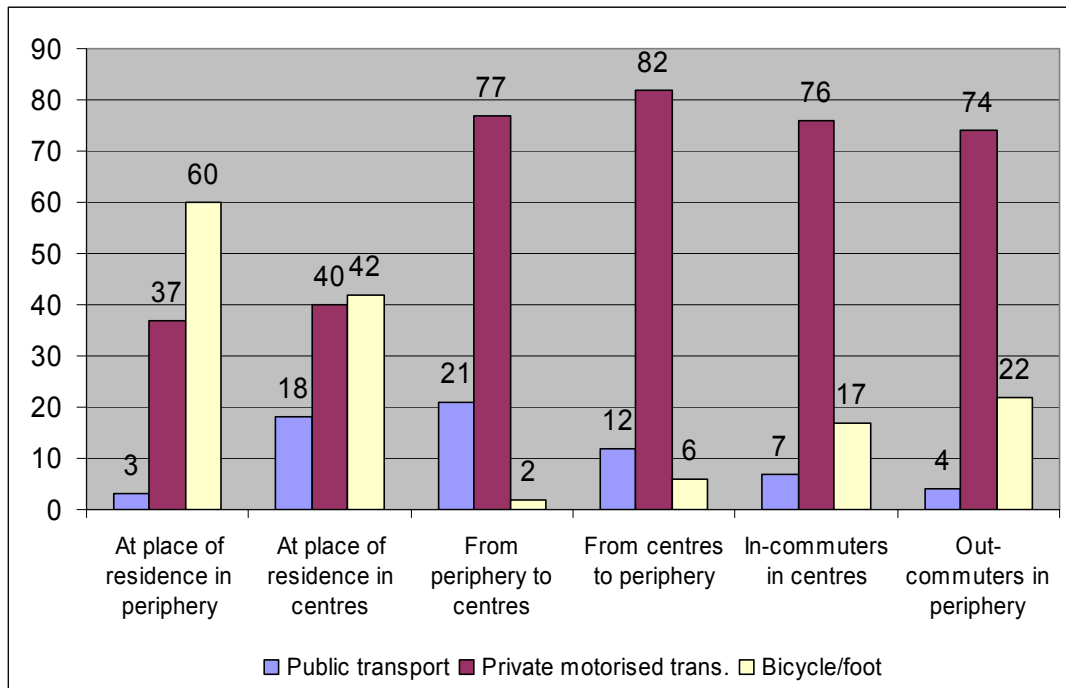
*Source: Verband Deutscher Verkehrsunternehmen (VDV) (ed.), Institut Socialdata (comp.) (1994): Differenzierte Bedienungsweisen. Nahverkehrsbedienug zwischen großem Verkehrsaufkommen und geringer Nachfrage, Köln.

1 Foot – Bicycle – Motorcycle etc. – Car driver – Car passenger – Public transport.

A more detailed analysis of traffic structures and the use of means of transport by in and out commuters and at the place of residence in low-density areas and in centres shows that 57 % of all journeys undertaken by people living in the country are internal traffic in the place of residence, and 43 % of journeys are undertaken as commuters or to other places. Figure 9 shows that public transport at the place of residence in low-density areas is used by between 3 % and 4 % of transport users. Comparably high shares (21 %) are taken by in-commuters from outlying areas to the centre and at the place of residence in centres (18 %).

Owing to low demand, there are few traffic axes in rural areas that would justify conventional regular bus services operating in fixed cycles. A multi-stage, flexible system is to be recommended for public transport which integrates and interlinks existing services (e.g., school bus), and which in sub-areas and at periods of low or dispersed demand operates in response to requirements. Demand for railway lines and regional express buses concentrates in commuter links to centres. Local authorities have the task of ensuring that railway stations can be easily reached from surrounding settlements, especially by bicycle and on foot. The need for “Park + Ride” with private cars is largely limited to individual places or stations that serve residents commuting into major cities.

Figure 9: Use of Modes of Transport by In and Out Commuters and in Place of Residence in Low-Density Areas and Centres*



*Source: Graphic by German Institute of Urban Affairs, data from Verband Deutscher Verkehrsunternehmen (VDV) (ed.), Institut Socialdata (comp.) (1994): Differenzierte Bedienungsweisen. Nahverkehrsbedienug zwischen großem Verkehrsaufkommen und geringer Nachfrage, Köln.

Owing to the growing settlement of outlying areas and the consequent decrease in density, the specific costs of public transport are increasing. Extension of service areas to include the larger settlement areas increases both the fixed costs of public transport (especially for rail services, but also for the necessary investment in extending the bus network) and for current operating costs. As a rule, these additional costs are not compensated by greater revenue – e.g., because of existing zone fares and flat fares. In addition to one-off investment costs, permanent follow-up costs are thus generated, which overtax the capacity of many local authorities.

3.5 Demand Effects of Forecast Demographic Changes and Migratory Movements

Demographic development

In the decades to come, Germany can expect a marked fall in population. This will particularly impact the public transport “market.” The data and forecasts published by the Federal Statistical Office go as far as 2050.

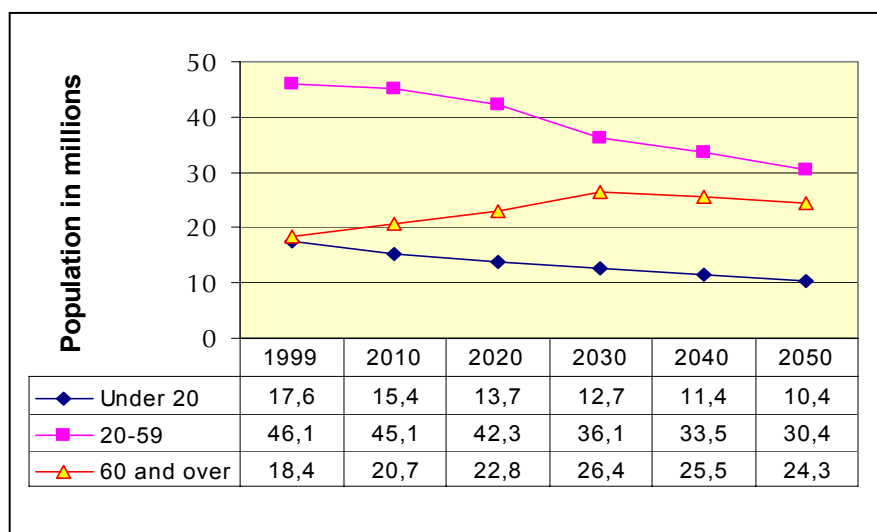
Owing to years with low birth rates and low reproduction rates (each woman having an average 1.4 children), the population of Germany will markedly decline after 2015, and by

2050 today's 82 million may fall to only 65 million (first scenario) or 70 million (second scenario) (Statistisches Bundesamt 2000). This difference between scenarios is due to assumptions about the migration balance (+ 100,000 p.a. or + 200,000 p.a.). In order to assess the effects of this development for traffic, three age groups are looked at separately. The under 20s, the group between 20 and 60, and people over 60. The three groups differ greatly in demand for transport and motorisation.

People under 20 are children or mostly in education, and are not normally earning an income of their own. Except for a section of the 18 to 19 year-olds, they also have no driving licence. The younger members of the group, e.g., pre-school children, travel seldom, older members more frequently. People between 20 and 59 years of age constitute the "economically active population." They have the opportunity to earn an income of their own, and most travel a great deal because of occupational obligations and family ties. People over 60 undertake fewer and fewer motorised journeys per day the older they become and because of a fall in gainful employment (cf. Brög 2000).

Figure 10 shows the development of these age groups for the decades up to 2050 given a migration balance of + 100,000 persons per year. There are strong declines in size among younger people and economically active birth cohorts between 20 and 50 years of age. Until 2030 there are increases among senior citizens. By 2050, the number of people in the "under 20" age group will fall from a 1999 figure of 17.6 million to 10.4 million. For the public transport sector, school travel is one of the core functions and an important basis for financing. The forecast decrease in numbers will be considerable. The demographic effect will intensify dramatically in about 2015. The 12 to 13 year-old age group, for example, will diminish in Germany from 950,000 in 1999 to 800,000 in 2010, and 520,000 in 2050.

Figure 10: Population Forecast for Germany 1999 to 2050
with Immigration at +100 000/Jahr*



*Source: Graphic by the German Institute of Urban Affairs based on Statistisches Bundesamt (2002): Straßenpersonenverkehr 2001: Personalabbau setzt sich fort, press release (15 May, 2002).

Siedlungsstruktur und Motorisierung

It remains to be seen how motorisation will develop in the future. Neither the importance of the car nor settlement development or transport policy can be reliably predicted at the present time. Depending on the observer's standpoint and interests, a further increase in motorisation can seem just as plausible as a decline in private motorised transport.

By North American standards, where there is already an average of more than one car per adult, Germany could expect to have substantial potential for growth in motorisation. But this is unlikely owing to the much higher density of population in Germany than in the United States and Canada. Since resource consumption by motor vehicles is one of the main causes of the CO₂ emissions that generate climatic change and thus makes the avoidance of motor vehicle traffic advisable, more restrictive conditions for car ownership could be introduced in Germany. Even today there is evidence that motorisation and car use may have reached saturation under present conditions. Declining traffic volumes since 1998 and a fall in the number of new vehicles registered after 1999 are first signs – unexpected by many – of saturation in Germany (DIW 2002, VDA 2003).

If a cautious scenario is chosen, assuming that today's level of motorisation among the two younger age groups remains unchanged but that older generations "catch up" by retaining their existing rate of motorisation, the demographic effect will mean still greater growth in specific motorisation in the decades to come than today.²¹ This also means that the group of customers with a particular affinity for public transport, people without a car of their own, will not only become smaller on account of the demographic effect but their share in the total population will decrease, as well.

On the basis of these postulates on the development of motorisation, figure 11 shows the impact on the composition of "public-transport affinitive" customer groups for the 20 to 59 year olds who have no car. The figure will fall from 11 million to 7 million. Despite the forecast that senior citizens will retain driving licences and vehicles in old age, the number of senior citizens without a car will remain at about 12 million, owing to growth in the size of this age group. Senior citizens will thus become the chief group of customers for public transport.

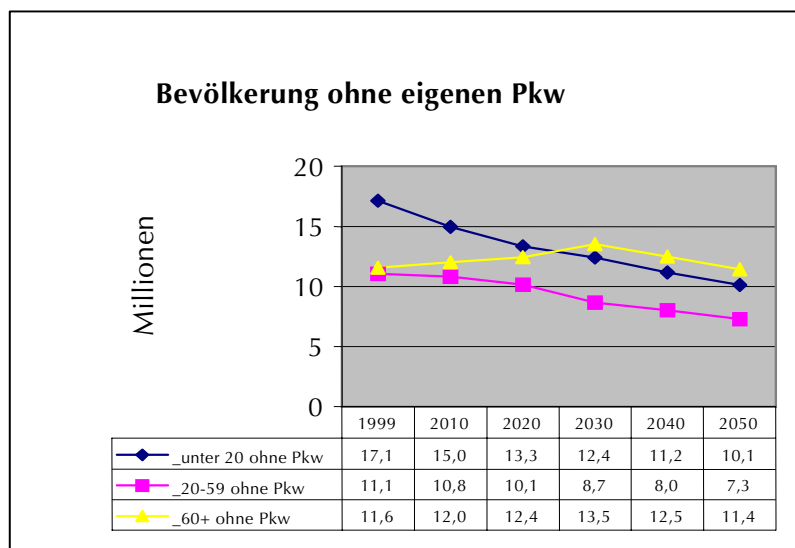
21 These results are based on own postulates and calculations taking account of the benchmark figure 520 cars per 1000 inhabitants and data from Deutsche Shell 2001 and DIW 2003.

Under 20 year-olds are mostly not permitted to drive and have no driving licences. Some 18 to 19 year-olds have a car of their own. The resulting motorisation rate is about 25 cars per 1000 inhabitants. This will not greatly change.

20 to 59 year-olds usually have a private car. If corporate car fleets are also allotted to this age group, three-quarters of the people in the age group are "motorised" (ca 700 to 800 cars per 1000 pop.). A high degree of saturation can be assumed.

Many people over 60 years old have never had a car or a driving licence, can no longer drive for health reasons, or have too low an income. The current level of motorisation is between 350 and 400 cars per 1000 population. More future senior citizens, in contrast, will have a driving licence and vehicle when they accede to this age group. The existing family car will be retained. The senior-citizen private car fleet can therefore be expected gradually to approach the motorisation level of the younger generation. However, the volume of travel markedly decreases as people grow older.

Figure 11: Model Calculations on the Development of the Non-Car-Owning Population in millions* 1



*Source: Calculations by the German Institute of Urban Affairs.

1 Under 20 without car – 20-59 without car – Over 60 without car

If the private car fleet is considered in relation to the group of the population engaged in gainful employment – in simplified terms the age group 20 to 59 – each of these economically active persons today has on average to earn the current expenditure for 0.92 cars. Because of the decline in the economically active population, this figure will rise to 1.2 cars by 2050. The disposable income of working people will therefore have to be distributed over a larger vehicle fleet than in the past. This means that purchasing power and taxable capacity per car will decrease.

It remains to be seen what specific consequences this will have. If it does not lead to lower motorisation rates, as posited in the scenario, existing cars will perhaps be used for a longer period, will be driven less, or the proportion of low-consumption small cars will increase. However, it is not unlikely that a decline in private-household disposable income will not be at the expense of motorisation alone but also at the expense of private purchasing power for public transport services, and, because of lower tax receipts, also at the expense of government capabilities.

3.6 Funding

The amounts provided by state governments and municipalities to finance public transport differ considerably. Berlin, for example, spends € 283 per resident, Lower Saxony only € 67. The national average is € 105. Among other factors, the differences depend on population density, and thus on network density and on the share of rail-bound networks (suburban rail, underground, tram) (cf. Rönna et al. 2002).

The amount of funding available also depends on the financial strength of the state government, local authorities, and municipal transport authorities. The level of subsidies from public service conglomerates, in particular, depends on the earnings position of municipal utilities. Local authorities' budgetary position influences public-transport financing as does the political priority accorded public transport.

Existing development instruments, mostly involving earmarked funding that can be used only for investment purposes, lead to misallocations. The resources invested have not been earned. Subsidies are provided today in the form of non-repayable grants, for the most part paid directly to transport undertakings, bypassing the statutory regulatory authorities. Cost effectiveness is no requirement. At the same time, this hampers systematic control and diminishes the transparency of aid owing to the many different support measures. Development instruments, largely directed towards specific goals and primary investment in infrastructure, tempts recipients to "grab" grants. The earmarking and expenditure orientation of funding separates financial responsibility from task responsibility, and fails to link financial aid with any directly measurable or controllable improvement in public transport services. One example is the promotion of maintenance and storage facilities in rural areas, which in many cases is accompanied by a thinning out of services (cf. UBA 2003).

Apart from permitting a wide variety of useful measures, investment aid for specific projects pursuant to the Community Transport Financing Act has sometimes led to particularly elaborate construction projects being undertaken or rationalisation projects which have, however, meant cuts in services for customers. One example is platform extension on the Berlin underground line 6, which allowed the use of six-carriage instead of four-carriage trains, whereupon the former three minute interval peak-hour service was replaced by a five minute interval service with more passenger places.

A clear misallocation was caused by the method of calculating compensation payments for school passes pursuant to Para. 45a Passenger Transport Act (cf. UBA 2003). Transport undertaking receipts per student monthly pass are about 50 % higher than from a sold adult season ticket. Since the subsidies paid for school and student transport are calculated in terms of passenger kilometres (and not in terms of the shortest distance between home and destination), transport undertakings can often augment their grants through detours. This has meant that transport enterprises concentrate on serving their "captive customers" (school students, the disabled, etc.).

Compensation payments under Para. 45a Passenger Transport Act became a general basic means of financing public transport, especially outside metro areas. In view of declining numbers of school children, the funds for public transport financing through school transport, which is the backbone in rural areas, will be considerably reduced.²²

22 In certain regions, e.g., in rural parts of East Germany, the dramatic nature of this development is already apparent.

3.7 Potential Effects on the Labour Market and Employees in Public Transport

Higher labour costs put the profitability of municipal public transport enterprises and their competitiveness at a severe disadvantage vis-à-vis private competitors. At the same time, the headquarters of transport undertakings have developed extensive administration-like structures to deal with complex wage and labour arrangements. This is likely to be because the trade unions (especially ÖTV, the Union of Transport and Public Service Workers, now ver.di) have in the past had great influence in the public service.

Municipal public transport enterprises are therefore making a considerable effort to lower staffing costs and to rationalise. To some extent subsidiaries are being set up which are not burdened with historical, costly works agreements. From the point of view of employee representatives, the welfare state is being dismantled. The ongoing transition to competitive conditions is thus likely to entail considerable strife, dissension, and costly redundancy schemes.

The trade union ver.di is mobilising "...against wage dumping in public transport: ... hiving off, escaping from collective agreements, changing owners. This is what the employers in public transport are up to. Their aim is to weaken worker rights. Costs are been cut on the backs of employees. Quality in services and social welfare are falling by the wayside. This must be prevented. ... In wage policy and corporate policy, and in general transport policy" (ver.di 2003).

At the same time, however, competition offers a promise of additional employment and income in small and medium-sized industry. The overall effect from the perspective of the national economy is likely to become apparent only when it emerges how the efficiency gains expected to be generated by competition are used.

4. Changing Role of Local Authorities

4.1 The Role of Municipalities as Regulatory Authorities

Since the "regionalisation" of public transport under the Regionalisation Act, state governments and municipalities have been authorities responsible for local public transport. Owing to the current legislative situation and likely changes in framework conditions, they will have to perform the following functions:

- prepare a public transport plan to define transport services quantitatively and qualitatively,
- invite tenders for and order public transport services under public service contracts (**transport service contract**),
- **control**/supervise and secure the services agreed under transport service contracts,
- **finance** the price offered by the transport undertaking for overall public transport services,

- **plan and finance infrastructure** on the basis of state and federal government aid under the Community Transport Financing Act, including subsidisation of vehicles,
- participate and collaborate in the development of **fare concepts**.

Most public authorities have neither the skills nor the financial resources to perform these functions. In more rurally structured areas, the responsible authorities were confronted with the subject in detail only as a consequence of the public transport legislation. They now have to perform an additional function.

In cities with their own transport operations, the problem is different, owing to the long tradition of municipal transport utilities. They have to consider how and whether their organisational structures can be adapted to competition, and the tasks of public transport planning, hitherto performed largely independently by municipal transport operations, can be assumed by regulatory authorities. For there is a wide range of approaches and possibilities, to which must be added the question of what the future can hold for municipal transport undertakings.

As far as the organisation of public transport in competition for concessions is concerned, the following issues have to be addressed:

- What administrative and management functions accrue? Should these functions be performed within the administration or entrusted to a municipal or hived-off organisational entity, and with greater bias towards the administrative authorities or to the company?
- What are the advantages and disadvantages of separating operation and infrastructure?
- What can be privatised? What should in any event be retained under municipal control, and where can the regulatory authority limit itself to setting framework conditions?
- What preconditions have to be established for promoting small and medium-sized enterprises?
- Is the formation of vehicle pools useful? How are they to be financed and how can vehicle procurement be handled without distorting competition?
- What possibilities do collective bargaining law and tendering procedures offer to safeguard jobs?
- What adjustments are needed in public transport financing (aids, grants, combination utility payments, revenue sharing in transport associations)?

For the actors involved, the important thing is to set the universe of actions and to tackle the new tasks and opportunities that the changes bring. The risks associated with this development are obvious – degradation of municipal transport undertakings to mere “hackney coachmen,” the development of new “control bureaucracies,” and the acceptance of new oligopolies. In the light of the financial crisis facing local authorities and

the risks associated with future public transport financing, there are plans, which have been put into effect in some municipalities, to dispense with municipal transport undertakings.

Other municipal functions are closely related to responsibility for public transport. They include:

- urban planning/urban development,
- responsibility for road infrastructure,
- budgetary planning (allocation of funds),
- mobility management (controlling traffic and influencing modal split),
- civil engineering and building (station/stop design and access, holding yards at stations/stops etc.).

If local authorities succeed in increasing the density of new locations or using existing transport structures, this facilitates economic development with public means of transport.

In fulfilling the local authority task of diminishing traffic load and assuring mobility in conformity with sustainability criteria, public transport is now one of a series of instruments which partly strengthen public transport and partly compete with it. Like public transport, the promotion of bicycle transport eases the pressure of motorisation on the population and encourages them not to use their own motor vehicles. This is also the case where distances are too great for bicycle traffic if bicycle and public transport can be combined in transport chains (Bike + Ride, bicycle take-along).

Transport behaviour can be influenced not only on the supply side by “hard,” expensive measures but also by “soft” measures like information, communication, and education. School traffic education teaches not only road safety but increasingly deals with the entire subject of mobility. Students are thus made familiar with public transport.

4.2 Road Traffic Authority

Road traffic authorities are established in county boroughs and in counties. Road markings for bus lanes or tram routes, traffic light systems and other traffic signs are ordered by the “road traffic authority.” The arrangements allow scope for favouring public transport over other modes of transport – by designating special routes and granting priority in traffic light systems.

In the design of roads and in road traffic law arrangements, public transport can, for instance, be furthered by establishing tram rights-of-way and bus lanes, “environmental roads,” the construction of bus stop islands and bus caps,²³ and preferential switching in traffic light systems.

²³ Bus caps are bus stop areas projecting into the carriage way from the pavement, mostly in roadside areas used for parking before and beyond bus stops, and which make it easier for buses to approach the kerb

4.3 The Role of Municipalities as Public Transport Operators

The possibilities open at the political level for assuming legislative responsibility and control of public transport through the ownership of transport undertakings will not always be available as in the past. How can “*Daseinsvorsorge*” – planning for the public welfare – and the public interest be safeguarded under competitive conditions? Both public transport undertakings and authorities have to resolve the issues of responsibility for and availability of infrastructure and vehicle fleets, the integration of services provided by enterprises, sub-units, and local authorities, quality assurance and supply planning in order to achieve a coherent identity (fully coordinated public transport).

5. Specific Characteristics of Networks and Technological Situation

5.1 Rail Transport

In the past, public transport networks were typically regarded as natural monopolies because, owing to bundling advantages, a single supplier was able to serve the market more efficiently in developing and operating such networks (Knieps 1999).

The rail networks required for rail transport, unlike roads, are not directly and generally available. With few exceptions, the heavy railway network is a monopoly of the DB Netz AG. Access to the network is regulated through the award of route concessions and by route prices (cf. 6.2).

Municipal networks for rail transport (e.g., underground systems) and their central control are in one hand. In suburban rail and tram networks, vehicles belonging to several undertakings operate.

One unusual development is the operation of light rail services on conventional rail rights-of-way (e.g. in Karlsruhe, Kassel, and Saarbrücken). This requires vehicles that are approved for both types of operation, and the legal conditions for operation and approval for both modes have to be met. The “Karlsruhe Model” is the first project in Germany to have succeeded in overcoming the obstacles to linking up existing conventional rail routes with the light rail network and procuring a suitable vehicle (cf. KVV 2003).

5.2 Bus Transport

Since the road network is available for general use and is accessible to the public at large, the economic importance of public transport network capacities in bus transport is in limiting access to the market (conditional on concessions under Paras 13 and 13a of the Passenger Transport Act). The construction of bus stops merely requires a directive under road traffic law for an appropriate traffic sign to be installed. The quality demands made on public transport, whether from an operational point of view (integration in public transport control and information communication networks) or from the standpoint of customers (use of existing bus stations, bus stops, fare and operational cooperatives) also

requires cooperation with the providers of the other services, for example the incumbent or dominant transport providers in a region, or infrastructure, administrative, and management organisations.

5.3 Information Systems

In the field of customer information, the establishment of supraregional electronic information services constitutes a factual association, since general and accurate timetable information requires data from all providers to be included.

5.4 Vehicle Availability

Whereas vehicles for scheduled bus services are largely standardised, local rail networks and heavy rail show a great deal of technical differentiation (e.g., gauges, power systems, points technology, signalling technology, platform lengths, platform heights, distances between tracks), which makes it difficult to use existing vehicles flexibly elsewhere. This means that, to some extent, every operator first has to procure or convert vehicles to serve new routes. Furthermore, the vehicle industry has long delivery times and vehicle procurement is also impeded by oligopolistic structures in the vehicle industry.

In bus transport, too, vehicle procurement can present a problem (e.g., new double-deckers or buses with high environmental standards not yet available in Germany in standard production).

6. Linkage with other Infrastructure Sectors

Public transport has technical, organisational, and legal links with other infrastructural fields.

6.1 Public Transport as an Element of Road Transport

Buses operating in scheduled services and trams are – if they are not assigned special off-road rights-of-way – part of general road traffic. They are equally subject to traffic regulations and are technically associated through their joint use of street space. The joint use of carriageways and traffic facilities generates interaction. This can take the form of congestion, but also of special interactions that can cause considerable “incidents” (e.g., blockage of a track).

The Highway Code contains rules that afford public transport particular protection (e.g., Para. 20 StVO “Public Transport Vehicles and School Buses”). The provision states: “(1) Omnibuses in scheduled service, tramcars, and specially designated school buses that halt at bus or tram stops (traffic sign 224) may be passed, even by oncoming traffic, only with caution. (2) If passengers are getting on or alighting, vehicles may be passed on the right only at a walking pace and at a distance that excludes any danger to passengers.

They are not to be hindered. If necessary, the driver must wait. (3) Omnibuses in scheduled service and designated school buses that are approaching a bus stop (traffic sign 224) and have switched on hazard warning lights are not to be overtaken. (5) Omnibuses in scheduled service and school buses are to be allowed to depart from designated bus stops" (StVO 2001).

Arrangements imposed under traffic law (marking of traffic lanes, restriction of lanes, streets, or entrances for regular bus traffic) and the setting of traffic light systems can "prioritize" public transport. From a constructional point of view, too, public transport can be advantaged. For example, traffic control may concentrate on keeping public transport routes clear.

Pedestrian routes for passenger access to public transport and stops are located on or at sidewalks. A number of requirements have to be satisfied in locating and designing stops. For instance, decisions must be made between optimum location in the pedestrian way network, the most attractive location for waiting, as well as road safety and the flow of general traffic or cycles traffic (cycleways).

Public transport routes have a wide range of intersections with other traffic routes: pedestrian crossings, side streets, level crossings, bridges and underpasses, etc.

The efficiency of subsystems depends on the technical and legal design of the nodes (e.g., right of way, traffic lights setting, etc). With regard to traffic nodes, the question of who bears the cost and takes responsibility for technical and legal organisation has to be settled. One example is the data integrated network between operational and traffic control centres for acceleration measures and traffic information systems. Another example is the crossing of electrified rail routes with tramways or electric tramway and trolley bus systems.

6.2 Public Transport and Rail Transport

The railway network also serves basically for freight transport and long-distance rail transport. The infrastructure company (network operator) is DB Netz AG. It assigns "routes" to bidding enterprises and charges a "route fee." DB Netz, as part of DB AG (Holding) is accused of discriminating DB competitors in awarding routes or in customer information, of charging unreasonable route prices, and of disadvantaging routes not operated by DB companies (DB Cargo, DB Regio, DB Reise + Touristik) and companies in which DB has an interest when it comes to investment (cf. Mehr Bahnen 2002). The setting up of a route agency is planned with the task of preparing timetables and supervising the award of routes by DB Netz. In local passenger rail transport, 10 % of services are operated by companies not belonging to DB; in long-distance transport the figure is only 1 %. It has been theoretically possible for local passenger rail transport routes to be awarded to DB competitors since 1996. State governments have varied widely in the use they have made of this option.

6.3 Energy Supply for Underground, Light Rail, Trams, and Trolley Buses

Electrically operated public transport systems need a comprehensive electrical infrastructure made available by the enterprises themselves, and which may also be procured from others. It includes power stations, substations, and overhead catenary systems.

This infrastructure interfaces with the technical mains grids for electricity supply.

6.4 Underground Service Lines

Inner city street spaces are lighted and drained. Road networks, power networks, and the sewerage system thus constitute an interconnected system. Furthermore, street spaces accommodate not only traffic routes but also a wide range of technical networks required to provide properties with services (sewerage, water, telephone, gas). When roads and underground railway systems are developed, the laying of service lines plays an important role. For heavily used urban streets there are bundling models for the efficient organisation of the various service line routes.

6.5 “Stadtwerke” – Municipal Public Utilities

Within the multi-utility *Stadtwerke*, municipal utilities are linked in a management and financing association.

This involves the tradition of cross-financing public transport from energy supply surpluses and the possibilities of “tax optimisation” within the grouping.

This financing association is extremely fragile. Competition law requires a distinction to be made between “buyer” and “enterprise,” non-discriminatory structures to be established, and State aids, too, to be granted only on a competitive basis. This is problematic from a financial point of view, because the liberalised power and water segments of the *Stadtwerke* will in the long run probably no longer be earning any profit worth mentioning.

7. Future Organisational Structure in Public Transport

7.1 Distribution of Functions between Municipalities and Public Transport Undertakings

For the efficient use of the role associated with regulatory responsibility for public transport, changes in organisational structures are needed. The details of these changes will be determined by changes in legal requirements that are not yet fully apparent, and on political and material allocation decisions (cf. 4). Well chosen interfaces between regulatory authorities and public transport undertakings are needed for optimum function performance and the clear-cut distribution of responsibilities. The role of the approval authority also needs to be redefined and efficiently integrated, and the administrative and

management functions involved in exercising regulatory responsibility for public transport need to be efficiently performed.

Experts disagree on whether the separation (decoupling) of regulatory authority and operation is an advantage or a disadvantage, and what risks or opportunities it offers.

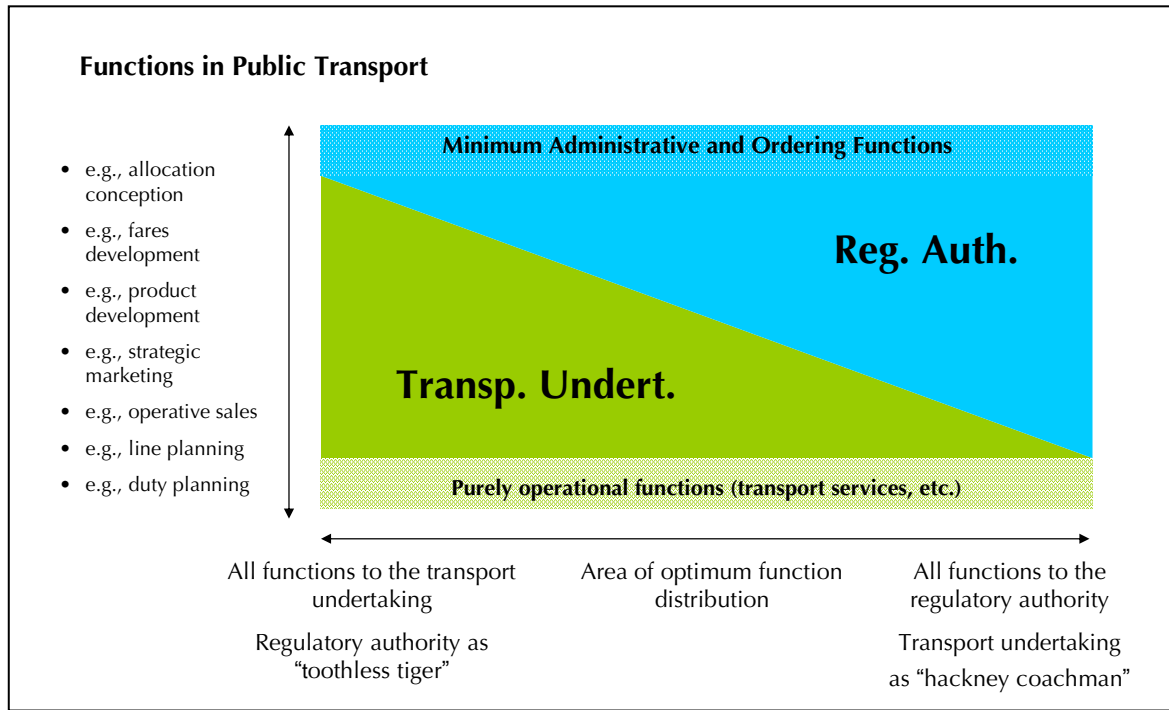
Public transport undertakings and their representatives, in particular, have so far regarded the coupling of regulatory responsibility with public transport operation primarily as an advantage.²⁴ One argument is that it allows entrepreneurial creativity, rapid reaction to passenger demands, direct contact with customers, and economically efficient action. The disadvantages are seen as a lack of coordination, a failure to take the public interest into account and the favouring of special interests.

A “strong” regulatory authority with far-reaching responsibilities for services and quality is expected to ensure advantageous coordination and integration, coordinated traffic and settlement planning, the effective utilisation of public funds, and a coherent identity. The development of a “bureaucrats” public transport system is feared, together with a failure to take customer demands into account, frictional losses, and political intervention in favour of special interests.

Separating “buyer” and “producer” therefore raises the question how functions are to be shared between regulatory authorities and transport operators. Figure 12 shows how a broad range of tasks that lie between minimum administrative and ordering functions and purely operational functions (transport services, etc.) is to be assigned to one of the two levels.

²⁴ Differences of opinion on the coupling and decoupling of regulatory responsibility and transport operation have repeatedly been debated at Difu conferences and seminars.

Figure 12: Distribution of Functions between Regulatory Authority and Transport Operator*



*Source: Volker Eichmann (2003): Wettbewerb bei Bus und Bahn – wie funktioniert das? Überarbeitete Fassung des Vortrags zum Workshop „Gewerkschaftliche Anforderungen aus Ausschreibungen im SPNV und ÖPNV“ am 20./21.2.2003 in Werl, www.difu.de/extranet/vortraege/.

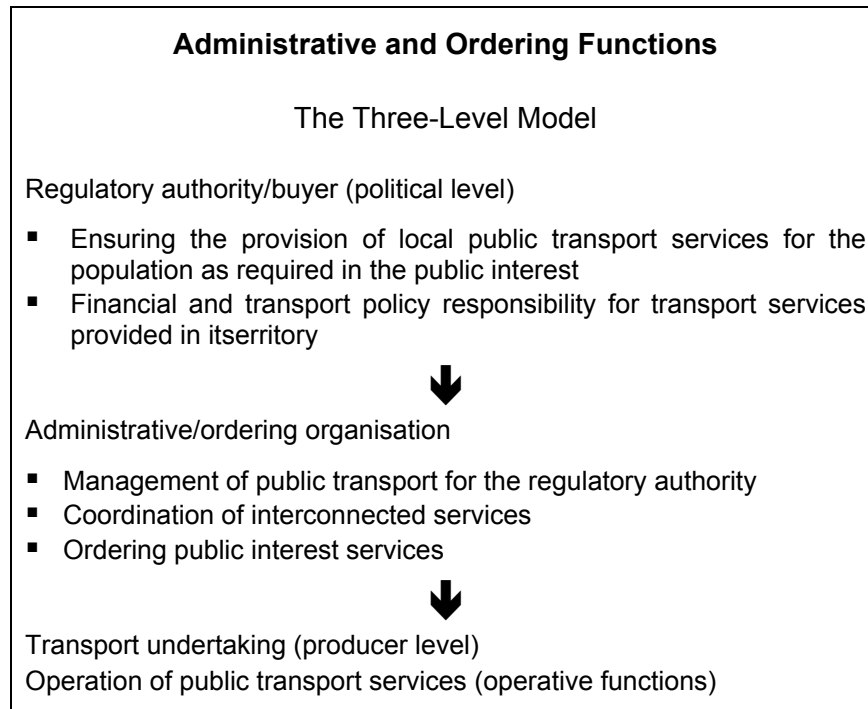
7.2 Development of an Administrative and Ordering Organisation/ Management Company

Because the public authority entrusted with regulatory responsibility for public transport does not automatically have the staff at its disposal with the needful legal, economic, and planning abilities, and since the assumption of such additional functions is seen with a critical eye within the administration, the question arises whether an administrative and ordering organisation or management company should be set up. Below the level of the regulatory authority as decision-maker, the planning, organisational, and operative management of the transport undertaking can be entrusted to a transport management company at the "administrative level" (cf. DST 2002: 22 ff.). The transport management company performs contractually agreed functions of the regulatory authority.

In addition to the statutory separation of regulatory authority and operation (two-level model), a three-level model is under discussion. Further possibilities for function differentiation, e.g., separation of so-called administrative and management tasks, could produce a four-level model.

In the three-level model, an administrative and ordering organisation entrusted with management, coordination, and ordering functions would be established between regulatory authority and the transport undertaking.

Figure 13: Example for Task Allocation of Administrative and Ordering Functions in the Three-Level Model*



*Source: Graphic by German Institute of Urban Affairs based on Jan Werner (2002): Möglichkeiten der Aufgabenzuordnung zwischen Aufgabenträger und Verkehrsunternehmen, unpublished input to "Management Business Game" of the German Institute of Urban Affairs, Berlin.

Because of historical structures, competence for planning, organising, and, to some extent, financing public transport is often vested in municipal transport enterprises and, especially in interconnected areas, in transport associations. These competence areas would have to be separated off from the transport undertakings and integrated into the transport management company in order to create an organisational structure in line with the principles of free competition.

For the administrative and ordering level, partly in cooperation with transport undertakings, the following competencies come into question: fare structure calculation, receipts accounting and distribution, network planning, joint timetable and its coordination, coordinated public relations and uniform passenger information, coordination and control of operational management, processing of local transport data and reporting on service operation.

7.3 Separation of Infrastructure and Operation

In road passenger transport, infrastructure (i.e. road traffic management) and the operation of services has so far been largely separate, whereas in rail transport it has been under one roof. In this segment, too, decoupling is under discussion. It must be decided how the infrastructure needed for public transport is to be managed, maintained, and financed. This involves the construction, operation, and maintenance of routes, stations, and operational infrastructure, especially in the case of rail-bound transport, including the coordination and control of operational management, e.g., by means of computerised command and control systems and malfunction/incident management, as well as passenger information at stops and stations (static/dynamic). But the provision of vehicles may also be included (cf. Mietzsch 2002).

If all transport undertakings are to be given access to the infrastructure at the same financial, non-discriminatory conditions in keeping with the principles of free competition, this institutionalised separation of infrastructure and network organisation on the one hand and operation (operational management) on the other appears to be appropriate. Especially in metro regions heavy demands on the network infrastructure make it more difficult for external transport undertakings to obtain access, for the incumbent local enterprises already have a functioning infrastructure at their disposal.

If the infrastructure remains in public ownership, non-discriminatory access for all potential service providers can be ensured. The function of the infrastructure operator can, as in general road transport, be performed by the regulatory authority itself in a manner not affecting competition. It can be operated by the *Stadtwerke* or by municipal transport undertakings (as before) if the operation of services is hived off.²⁵ The operators of the infrastructure company, too, can be within the municipal administration or subjected by contract to the requirements of the regulatory authority. Cities and counties therefore also have the possibility of establishing an independent public or private organisation for this purpose, e.g., in the form of an infrastructure company. An infrastructure company can unite construction, operation, and maintenance of the necessary infrastructure under one roof (cf. DST 2002).

The possibility of continuing to operate the infrastructure under the responsibility of the *Stadtwerke* is associated with the hope of preserving the municipal utility conglomerate and retaining co-financing (subsidisation and conglomerate tax advantages) of public transport through profitable operations: "From a tax-law point of view, the integration of the infrastructure in a municipal group of enterprises could be useful in order to take advantage of tax offsets. Offsetting taxes within utility groupings is unlikely to be useful for the public transport operations if a transport company other than a municipal undertaking is awarded a concession" (Mietzsch 2002).

Possible tasks for an infrastructure company are the planning, construction, operation, and maintenance of immobile facilities (e.g., elevated and underground routes, tunnels,

25 The option practised in London of tendering out the operation of the infrastructure (Underground) privately to companies while retaining ownership (and operation of services) in public hands is not currently being considered in Germany.

stops, bus and tram stations, central control offices, etc.), especially for rail-bound modes of transport like trams, light rail, and underground.

Another option would be the provision of vehicles (tramcars and underground trains as well as buses). Especially for short-term contracts, this would be useful to avoid any procurement problems detrimental to competition provoked by the use of non-standardised vehicles. In the case of rail-bound transport, a vehicle pool could be established, for example, from which undertakings could lease the vehicles they require. The owner of the rail vehicles would remain the infrastructure company. In bus transport, the provision of vehicles by the infrastructure company is hardly necessary, since the total useful life for buses is shorter than for rail vehicles, and transport companies can use them after expiration of a transport service contract in other transport areas.

Still another option would be participation in the planning, construction, operation, and maintenance of bus lanes, signal systems, and safety engineering. Since the responsibility for local road construction lies with the competent public works departments, the infrastructure company has the possibility of collaborating in the setting up of bus lanes and priority circuits in traffic light systems to increase round-trip speeds.

7.4 Distribution of Functions between Regulatory and Approval Authorities

In order to eliminate the fuzzy juxtaposition of and opposition between regulatory authority and approval authorities (*Aufgabenträger* and *Genehmigungsbehörde*), plausible structures need to be developed. Planning, organisation, and financing should be brought together under the roof of the municipal regulatory authority. The control instruments of the authority, the transport service contract and the public transport plan, should be upgraded.

For this purpose, the planning and licensing powers of approval authorities under the Passenger Transport Act need to be restricted. In concession award procedures, the approval authority could be given the task of checking the legality of the regulatory authority's allocation decision.

7.5 Eliminating the Dualism of Self-Financing and Public interest Services

Because of the considerable public funding provided for public transport, the legal dualism of self-financing and public interest services for licensing purposes makes no sense, for "self-financing" services are usually subsidised. This dualism exists not only in German passenger transport law but also in the pertinent EU Directive 1191/69 (cf. 1.1, 1.4).

It would be sensible to abolish the artificial distinction between self-financing and public interest services and replace it by uniform ordering of public transport services. Ordering should be a function of the regulatory authority alone, which would determine all the framework conditions of the service to be ordered.

7.6 Tendering, Contract Awarding, Transport Service Contracts

Many experts expect the development of the European and national universe of actions for public transport to result in the effective separation of “producer” and “buyer.” Cooperation between transport undertakings as “producers” and regulatory authorities as “buyers” would then be organised on a contractual basis. By ordering a service and concluding a transport service contract, the quality and quantity of the transport service is agreed between the regulatory authority and the transport company. Where necessary, the service contract also ensures compensation payments for loss-making transport services provided in the public interest or for policy reasons.

Whether such a contract needs to be put out to tender or whether other methods of allocation are possible is currently a subject of legal controversy.

The question of what type of specification of services by the transport operator ensures the optimum outcome in a contract award procedure or a transport service contract is still not answered. The alternatives are being debated under the headings “constructive” and “functional” specifications. Thus the technical, qualitative demands on a transport service (e.g., attractive infrastructure provision, high on-schedule performance, dynamic schedule synchronisation, cleanness, environmental qualities) can be functionally or constructively defined.

Functional specifications set the goal of the service (e.g., attractive infrastructure provision, high passenger figures, low emissions), whereas constructive specifications provide a detailed schedule of tender items.

The discussion about the most suitable specification of services is taking place against the background of legal reliability in procedures for awarding contracts (unambiguous specifications), and of controlling (measurability of service provision through technical data and measurement of customer satisfaction), for without transparent evidence of performance, public funds cannot be spent as agreed under transport service contracts for defined performances.

Another important issue, especially for interconnected services in metro regions and major cities, is the scope of the services to be allocated, and thus the formation of lots, as well as the term of contracts. In this regard, too, it is still uncertain what criteria should apply. Among those proposed are the operational and planning criteria of optimum integration of transport services from the customer's point of view, or service-delivery, social and municipal policy aspects stemming from the (strong) role of the (erstwhile) municipal agency, such as support for smaller and medium sized local companies (that the EU also wishes to see), which would necessarily mean that calls for tenders have to be kept on a small enough scale to allow not only the largest local operator in a municipality to bid.

Questions in connection with the formation of lots are concerned with how a possible transition to competitive tendering can be organised, what different lot sizes may be appropriate for the different transport operators and what requirements need to be imposed to ensure the integration of a uniform public transport service.

7.7 Distribution of Cost and Revenue Risks

Through the distribution of cost and revenue risks between buyers (e.g. municipalities as regulatory authorities) and producers (companies) of transport services, customer orientation and the quality of the service provided can be influenced. Two forms of contract are under discussion: gross cost contracts and net cost contracts.

In the gross cost contract, the producer receives only the revenue agreed by the tendering authority (buyer). Fare revenue accrues to the buyer or is credited against the agreed payment. Revenue risk is borne by the tendering authority (buyer). The company (producer) therefore has no incentive to canvass new customers, since performance of the contract is oriented on pre-determined criteria (e.g., service frequency).

In the case of the net cost contract, the transport company bears the full revenue risk. Revenue earned by the company is not credited against the payment under the contract. The company thus has an incentive to win new customers because it can increase its revenue.

At first glance, the net cost contract seems to take better account of customer needs, and could therefore contribute to enhancing the attractiveness of public transport. However, experience has shown that certain problems are associated with this type of contract. Net cost contracts prove problematic particularly in transport and fare associations with a number of operators because the necessary powers in determining fares and services are not transferred to the undertakings owing to the uniform design of services, fares, and market approach. Furthermore, net cost contracts offer no system of incentives for the transport firms to pursue transport and environmental policy goals of public interest if they are not additionally agreed under contract.

One possibility to offer undertakings additional incentives over and above the agreed performance is the incentive contract (basic incentive plus bonus). The incentive contract attempts to combine the public interest in high-quality and efficient public transport services with entrepreneurial interests. Such a contract provides for a performance-related bonus to be paid when certain goals are attained. The supplementary performance-related payment is over and above the contractually agreed price. In addition, agreements can be concluded on bonus or penalty payments in order to determine how any shortfall in the contractually agreed quality of service or in pre-determined quality goals (e.g., increasing passenger numbers, on-schedule performance, customer satisfaction, cleanness, etc.) is to be assessed.

Experience figures on the reasonable level of incentives and of bonus and penalty amounts are still lacking. Determining reasonable levels is important where transport companies are allowed to operate on a profit basis and, for example, inordinately low penalties could lead to losses of efficiency for economic reasons alone.

8. Regulatory Requirements

8.1 Policy Targets, Superordinate Planning and the Provision of Public Services

Regulation is needed to discipline network-specific market power to attain certain goals. Policy targets in public transport are, in particular, the provision of public services (*Daseinsvorsorge*), mobility policy, and environmental protection.

Under the Regionalisation Act (Para. 1 (1)) the provision of an adequate service for the population in public passenger transport is regarded as an element of “*Daseinsvorsorge*,” i.e., providing services for the public in the sense of planning for the public welfare. Under most state local transport legislation, public transport is defined as a non-mandatory²⁶ public service task in the competence of the local authority. This function is the responsibility of the municipal regulatory authority, which decides on matters of task performance.

Public transport plays a salient role in most communities – not only in local transport policy, but also in federal and state policy. Public transport is the cornerstone of mobility policy. In enumerating the key factors for efficient and attractive public passenger transport of May 2000, the federal government: “... sees efficient and attractive public passenger transport as an indispensable contribution towards resolving present and future demand for mobility in cities and towns. ... By securing mobility, the burden of private transport on urban regions is eased and equivalent living conditions are ensured in the regions. Furthermore, bus and rail transport helps diminish environmental load and reduce emissions impacting the climate. Local passenger rail transport, in particular, by handling large commuter flows, brings its special, systemic advantages efficiently to bear. Public transport quality is increasingly becoming a locational factor in competition for investment and jobs. Finally, bus and rail transport helps improve traffic safety” (BMVBW 2000).

8.2 Integration of Public Transport Services

Attractive public transport offers passengers the means of travelling between demanded starting points and destinations. In order to achieve this, various authorities and service producers work together: different authorities with responsibility for local passenger rail transport and the rest of public transport, the various transport undertakings with their specific services, infrastructure companies, the suppliers of transport information, and sales organisations (ticket sales). The customer is interested in fully coordinated services. This means uniform and coordinated timetables for high service quality in the entire network (instead of competition of little benefit to the customer, e.g., through parallel services); simple, through fares; an understandable and cross-system information and guidance system; simple and uniform inquiries and complaints management; and – where transfer is necessary – dynamic schedule synchronisation of modes and operations. What

²⁶ In contrast to the mandatory autonomous local authority task, as in Saxony-Anhalt (Para 3 (1) ÖPNV-LSA).

is required is a largely standard design for interfaces and operating facilities (“uniform surface”).

These functions engender integrative tasks, which have so far been performed – with varying success – by transport associations, within municipal transport undertakings, or – probably the exception – on the basis of voluntary inter-operational cooperation.

With more operators coming onto the market and greater competition, such integrative tasks generate an increasing need for regulation.

8.3 Regulatory Requirements for the Infrastructure

The introduction of competition has meant that potential competitors have to be given non-discriminatory access to infrastructure, and customers have to be provided with coherent services. This affects:

- vehicles, especially the procurement of purpose-built vehicles for local passenger rail transport or bus services (double-deckers);
- in rail transport the provision of the network and the availability of routes and vehicles – this includes the construction, operation, and maintenance of transport ways, stations and stops, and the operating infrastructure;
- information systems for operational management coordination and control, e.g., computerised command and control systems), for passenger information (e.g., Internet information systems, passenger information at stops (static/dynamic), up-to-date transfer information), and;
- malfunction management, including operational management in the event of incidents.

Without the institutionalised separation of network and operation, incumbent transport operators retain decisive locational advantages, since they already have a functioning network infrastructure.

8.4 Competition Law Regulatory Requirements

The need for competition law regulation in the field of public transport, which has in the past been largely served by municipal monopolies, arises from the demand for the efficient use of public funds and to provide market access to small and medium-sized companies. Initial experience in local passenger rail transport in Germany and in results from several regions in Scandinavia give reason to hope that public transport services can be supplied 20% more cheaply than at present.

On the subject of regulatory requirements for competition policy reasons, moreover, the documentation of the federal government’s mobility drive in 2002 states: “Competition ensures good services and favourable prices for transport customers. For this reason, European policy on giving all transport service providers access to the market must be consistently pursued. ... The principles of non-discrimination and mutuality must be more

strongly observed. In the course of EU enlargement, EU community law is to be adopted. Transition periods are to be coordinated with market liberalisation. Public transport markets are to be opened up throughout Europe to controlled competition which takes account of planning requirements for the public welfare (*Daseinsvorsorge*) and the safeguarding of social interests" (BMVBW 2002).

Experience in London and Scandinavia shows that a range of options are conceivable. Instead of the development of small and medium-sized enterprise structures as pursued by the EU, the formation of oligopolies is conceivable. Market development on the supply side can depend on many factors. In London, maintenance and storage facilities for buses are now operated by various large companies, and in Copenhagen the small firms that initially operated at dumping prices have been replaced by oligopolies.

8.5 Taking Stock: Transformation of Public Transport in Municipalities as Institutional Change in Network-Related Infrastructure

In the context of sustainable urban development, public transport remains an important municipal responsibility. Public transport makes an indispensable contribution to sustainable development and mobility, especially in big cities. From the point of view of the customer and the municipality, government intervention is needed to attain the urban and regional policy goals associated with public transport, and to ensure integration, public welfare, and access to the infrastructure for all enterprises. Local authorities face the task of securing and developing attractive public transport services, while key framework conditions are likely to change decisively in the near future. This includes the development of competitive structures in public transport together with the separation of regulatory responsibility from operational management, and a future in competition for municipal transport undertakings. At the same time, local authorities face financial problems of unprecedented dimensions.

The new role of municipalities as "buyers" of public transport brings risks (cuts in services) and opportunities (efficiency gains). The introduction of competition in public transport also raises the question of the new role to be played by municipal transport undertakings. Municipal administrative authorities and politicians, as well as municipal transport undertakings, will have different roles to play in future.

As we have seen in chapter one, public transport in German municipalities has so far been provided in relative autonomy by transport enterprises operating within the territory of a municipality or in local passenger rail transport. In some fields there have been relatively close links between the municipal territorial authority and the (mostly municipal) transport company with respect to financing, organisational entrenchment in the municipal administration and implementation of municipality decisions. Under the impact of various external influences, in the first place EU-wide competition law and law relating to the award of contracts, these links are being reorganised or dissolved. It is still too early to say what forms this will take in detail. The separation of the "buyer" authority from the "producer" undertaking will engender new role and functional structures.

For the municipality, the uncertain distribution of tasks between approval authority, regulatory authority, departmental administration, and transport undertaking has been problematic. This has given rise to uncertainty about the future role and importance of municipalities in controlling and designing public transport. If transport services are pre-determined by the regulatory authority and allocated to undertakings, economic, legal, and planning competence on the part of the tendering authority is needed. Procedures for awarding contracts, as well as the conclusion and current control of transport service contracts require legal and economic competence in contract management and in controlling on the part of the responsible authority. In addition, municipalities often lack sufficient experience and know-how in preparing public transport plans to enable them to exploit to the full the new possibilities for imposing far-reaching qualitative and quantitative performance targets. Most municipalities also lack the legal expertise for formulating contracts with (private) transport companies. There is accordingly much to be said for introducing an additional, third level (management or administrative level), placed organisationally between the municipality in its function as regulatory authority (with extended powers and new functions) and multiple transport undertakings.

Administrative and ordering functions can be assigned within the administration or entrusted to an outside organisation. In order to ensure the independence of tendering procedures, distortion of competition must be avoided. It is therefore advisable to have local and regional administrative and ordering functions performed by separate organisational units because of differing requirements. The regulatory authority and the administrative level together constitute the new regulatory and control regime for public transport (cf. chapter 7).

Municipal public transport policy has in the past been implemented by municipal public utility groupings (*Stadtwerke*) and semi-autonomous municipal agencies (*Eigenbetriebe*), whereas in the future the public transport plan and the transport service contract will be the regulatory authority's chief instruments of control. The public transport plan is developing into the key public transport control instrument. It is becoming the essential "transmission belt" for policy, guidelines for the administration in developing competition, and which, in its self-commitment, ensures planning security for suppliers. In the course of the transformation we have outlined, the conditions for the (social and ecological) regulation of public transport are changing. In upgrading the function of the public transport plan as an instrument for defining transport policy goals, it could prove possible to develop it into an instrument of "socio-ecological" regulation."²⁷

The legal framework of public transport – hitherto set by the Passenger Transport Act, etc. – will be more strongly determined by the law relating to State aid, cartels, the award of contracts, as well as budgetary and tax law. Presumably, the practice of declaring all public transport services to be "self-financing" in spite of the support received, and

27 "Socio-ecological regulation" refers to regulatory problems in complex nature-society interlinkages. In addition to political, economic, sociological/social, and socio-cultural dimensions, the extended concept of regulation includes technical and ecological (physical-material) aspects. In a theoretical sense, one can speak of socio-ecological regulation in reference to problems caused by closely interlinked complexes of specific regulatory arrangements in different fields and arising or persisting nature/society problems and their dynamics.

automatically allocating these services to the municipality's own transport undertakings will soon cease for legal reasons. The criteria for awarding line concessions under the Passenger Transport Act will facilitate market access for private suppliers. The extent to which new framework conditions for public transport develop, and how fast, especially for contract award procedures, depends mainly on decisions to be made by the bodies now dealing with the issue. The actors concerned are not only the federal and state governments but also the European Parliament, the European Court of Justice and Advocate-General, the European Commission, and the Council of Ministers.

In the light of the local authority financial crisis, a concept is needed that can ensure long-term financing stability for public transport and which avoids misallocations through the inefficient earmarking of State aid and subsidies. The present system of financing leads to inefficiency and intransparency, and is far from sustainable. The resources invested are not earned. Subsidies are provided today in the form of non-repayable grants, for the most part paid directly to transport undertakings, bypassing the statutory regulatory authorities. Funds are not employed on an economically efficient basis. At the same time, this hampers systematic control and diminishes the transparency of aid owing to the many different support measures. The development instruments tempt recipients to "grab" grants. The earmarking and expenditure orientation of funding that is sometimes to be found today seems inefficient, since it separates financial responsibility from task responsibility, and fails to link financial aid with any directly measurable or controllable improvement in the performance of public transport services. In order to secure financing and thus to employ these tools effectively, changes in the legal framework and far-reaching organisational measures are needed.

9. Prospects: Sustainable Infrastructure Management

9.1 The Importance of Public Transport for Urban Society

Efficient and sustainable public transport is intended to ensure the mobility of all sections of the population and to contribute to the good and comfortable accessibility of dwellings, places of work, shopping and sports centres, and recreation areas. These goals are stated in all state public transport acts.

Public transport can provide mobility for non-motorised sections of the population only if area-wide and attractive services exist and people do not depend on the availability of a car for personal mobility. For people without a car to be mobile, the service, quality and pricing of public transport must be right.

Besides providing a practical service for the population, public transport has important social, urban, and environmental policy goals to attain. Public transport is a locational factor in the urban quality of life and environmental protection. A change in modal split to the advantage of public transport enhances the attractiveness of inner cities and improves the residential environment. As motor traffic increases in volume, not only environmental pollution, land consumption, and health hazards augment. Considerable costs accrue,

which cities, in particular, have to bear. Any further increase in private motorised transport will be an additional financial burden on local authorities and will diminish residential environment quality in cities. For this reason it is in the own best interests of municipalities to shift a growing proportion of intra-urban traffic to public transport, and to establish the legal, financial, and institutional preconditions for this to occur. To persuade a significantly larger number of motorists to transfer, public transport must be strengthened. In view of empty public coffers, this can succeed only if the money spent on public transport is used as efficiently as possible.

9.2 Current Problems

Public transport is currently confronted by a critical financial position in local authorities; the “public transport affinity” (bundling capacity) of demand is sinking owing to progressive urban sprawl and the vacation of once densely populated areas provided with special infrastructure facilities (e.g., tram routes or railways – so far mainly in East Germany); there will be demographic changes owing to dwindling numbers of school students and – in the long run – an overall decline in population; and, finally, uncertainty about the future legal framework hampers decision making. In this context, local authorities face the task of establishing a viable financing basis and sustainable organisational structures.

9.3 Emerging Problems Caused by the Changes (Potential Socio-Ecological Problems)

To all appearances, most municipalities have not yet faced up to this task. Public transport still operates without major friction, and there is still no predicting when and to what extent competitive and financing pressure will increase. As political experience has shown, many will prefer to take small, cautious steps one at a time. Even then, numerous minor financing decisions will be needed, to be debated in the context of other issues, with the danger of public transport being successively obliged to help consolidate budgets to the detriment of existing fully coordinated services. The future of public transport will depend on the right conceptual, strategic, and financial decisions being made at the local level as well as in primary and secondary legislation. Otherwise, the concentration on highly frequented routes will intensify, and public transport will offer less and less of an alternative to the private car, prejudicing ecological, economic, and financial sustainability and furthering dependence on private motor transport and urban sprawl.

9.4 “Socio-Ecological Public Transport Planning”: Sustainable Infrastructure Management in Relation to Technical Infrastructure, Costs, Resources

The new planning instrument of the “public transport plan,” which promises to be decisive for future development, has so far been used primarily for the sectoral regulation of public transport. It has limited relevance, is not yet fully developed, and its focus tends to be on

the operator rather than the customer. This does not do justice to the socio-political function of public transport.

The netWORKS research association seeks to take account of the effect matrix of resources, environmental conservation, costs, and demand structure in the context of the transformation process of network-related infrastructure. Discussion is needed on whether the public transport plan of the future can be developed into an instrument of complex, socio-ecological regulation that goes beyond the sectoral aspects of public transport.

Abbreviations

AT	Aufgabenträger – public authority with responsibility for planning and supervising public transport.
BMVfW	Bundesministerium für Verkehr, Bau- und Wohnungswesen – Federal Ministry of Transport, Building, and Housing
DB	Deutsche Bahn AG – German Rail
DIW	Deutsches Institut für Wirtschaftsforschung – German Institute for Economic Research
DST	Deutscher Städtetag – German Association of Cities and Towns
EU	Europäische Union – European Union
EuGH	Europäischer Gerichtshof – European Court of Justice
GATS	General Agreement on Trade in Services
ÖPNV	Öffentlicher Personennahverkehr – public passenger transport
ÖSPV	Öffentlicher Straßenpersonenverkehr – public road passenger transport
ÖV	Öffentlicher Verkehr – public transport
SPNV	Schienenpersonennahverkehr – local passenger rail transport
UBA	Umweltbundesamt – Federal Environmental Agency
VCD	Verkehrsclub Deutschland – Germany Automobile Club
VCÖ	Verkehrsclub Österreich – Austrian Automobile Club
VDA	Verband der Automobilindustrie – German Automobile Industry Association
VDV	Verband Deutscher Verkehrsbetriebe e.V. – Association of German Transport Operators
VU	Verkehrsunternehmen – transport undertaking/company

Laws and Regulations

AEG	Allgemeines Eisenbahngesetz (AEG) vom 27.12.1993 (BGBl. I S. 2396, 1994 I S. 2439), zuletzt geändert durch Gesetz zur Umsetzung der UVP-Änderungsrichtlinie, der IVU-Richtlinie und weiterer EG-Richtlinien zum Umweltschutz vom 27.7.2001 (BGBl. I S. 1950)
EU-Verordnung (EWG) 1191/69	Verordnung zur Änderung der Verordnung zur Festlegung des Anwendungsbereiches der Verordnung (EWG) Nr. 1191/69 in der Fassung der Verordnung (EWG) Nr. 1893/91 im Straßenpersonenverkehr und zur Änderung der Verordnung zur Festlegung des Anwendungsbereiches der Verordnung (EWG) Nr. 1191/69 in der Fassung der Verordnung (EWG) Nr. 1893/91 im Eisenbahnverkehr (BGBl. 1994 I 3630)
Gesetz über die Aufgaben und die Weiterentwicklung des öffentlichen Personennahverkehrs im Land Berlin	Gesetz über die Aufgaben und die Weiterentwicklung des öffentlichen Personennahverkehrs im Land Berlin vom 27.6.1995 (Gesetz- und Verordnungsblatt für Berlin Nr. 35/1995, S. 390)
GVFG	Gesetz über Finanzhilfen des Bundes zur Verbesserung der Verkehrsverhältnisse der Gemeinden (Gemeindeverkehrsfinanzierungsgesetz – GVFG) vom 18.3.1971 [Ursprünglich verkündet am 23.3.1971; BGBl. I S. 239; in Kraft getreten zum 1.1.1971] in der Fassung der Neubekanntmachung vom 28.1.1988; BGBl. I S. 100, zuletzt geändert durch Artikel 49 Gesetz zur Gleichstellung behinderter Menschen und zur Änderung anderer Gesetze vom 27.4.2002 [BGBl. I S. 1467, 1480]
ÖPNVG Baden-Württemberg	ÖPNVG Baden-Württemberg Gesetz über die Planung, Organisation und Gestaltung des öffentlichen Personennahverkehrs (ÖPNVG) vom 8.6.1995 [GBl. S. 417], [Verkündet am 22.6.1995 als Artikel 1 des Gesetzes zur Umsetzung der Bahnstrukturreform und zur Gestaltung des öffentlichen Personennahverkehrs in Baden-Württemberg (GBl. S. 417), geändert durch Artikel 37 der 5. Anpassungsverordnung vom 17.6.1997 [GBl. S. 278, 282]
PBefG	Personenbeförderungsgesetz – PBefG vom 21.3.1961 (Bundesgesetzbl. I S. 241), in der Fassung der Bekanntmachung vom 8.8.1990 (BGBl. I S. 1690), zuletzt geändert durch Artikel 2 Abs. 4 des Sechsten Gesetzes gegen Wettbewerbsbeschränkungen vom 26.8.1998 (BGBl. S. 2521)
RegG	Gesetz zur Regionalisierung des öffentlichen Personennahverkehrs (Regionalisierungsgesetz); in: Gesetz zur Neuordnung des Eisenbahnwesens vom 27.12.1993 (Eisenbahnneuordnungsgesetz – EneuOG; BGBl. I, S. 2378, 2395).
Schwbg	Gesetz zur Sicherung der Eingliederung Schwerbehinderter in Arbeit, Beruf und Gesellschaft. Schwerbehindertengesetz (SchwbG) in der Fassung der Bekanntmachung vom 26.8.1986 (BGBl. I S. 1421, 1550), zuletzt geändert durch Art. 9 des Gesetzes vom 19.12.1997 BGBl. I S. 3158).
StVO	StVO 2001, BMVBW: Straßenverkehrs-Ordnung Stand: 14.12.2001 (BGBl. I S. 3783), www.bmwbw.de .

References

- Apel, Dieter (2003): Der Einfluss der Verkehrsmittel auf Städtebau und Stadtstruktur, in Handbuch der Kommunalen Verkehrsplanung, Chap. 2.5.7.1, 35. Lfg., Heidelberg.
- BMVBW (Bundesministerium für Verkehr, Bau- und Wohnungswesen) (2000): Eckpunkte für einen leistungsfähigen und attraktiven öffentlichen Personennahverkehr, Berlin, www.bmvbw.de/OePNV-.343.htm.
- BMVBW (Bundesministerium für Verkehr, Bau- und Wohnungswesen) (2002): Mobilitätsoffensive. Handlungsempfehlungen für die Mobilität der Zukunft. www.bmvbw.de/Mobilitaet-.643.9269/Mobilitaetsoffensive.htm.
- Brög, W. (2000): Der nichtmotorisierte Verkehr und seine Einbindung in ganzheitliche Mobilitätskonzepte, Dokumentation „Mobilitätsforschung im 21. Jahrhundert – Verkehrsprobleme und Lösungsansätze“, Cologne.
- Bundestag (2000): Liberalisierung im ÖPNV. Der Aktuelle Begriff 11/00. www.bundestag.de/aktuell/begriff/2000/11_2000.pdf.
- DIW (Deutsches Institut für Wirtschaftsforschung) (ed.) (2002): Stagnation des Personenverkehrs in Deutschland, DIW Wochenbericht, No. 42.
- DIW (Deutsches Institut für Wirtschaftsforschung) (2003): Verkehr in Zahlen 2002/2003, Berlin.
- DST (Deutscher Städtetag) (2002): DST-Diskussionspapier zur zukünftigen Rolle der Städte als Aufgabenträger im ÖPNV, Stand Februar 2002, Berlin.
- Eichmann, Volker (2003): Wettbewerb bei Bus und Bahn – wie funktioniert das? Revised version of paper for the workshop „Gewerkschaftliche Anforderungen an Ausschreibungen im SPNV und ÖPNV“ on 20/21.2.2003 in Werl, www.difu.de/extranet/vortraege/.
- EU (Europäische Kommission, Generaldirektion Energie und Verkehr) (ed.) (2002): Statistische Indikatoren zum lokalen und regionalen Personenverkehr in 40 europäischen Städten und Regionen, Bürgernetz Benchmarking Initiative, Bericht, Ergebnisse der allgemeinen Indikatoren, Brüssel.
- EuGH (Europäischer Gerichtshof) (2002): Pressemitteilung vom 19.3.2002 zu den Schlussanträgen des Generalanwalts Philippe Léger in der Rechtssache C-280/00.
- Gorter, M., et al. (2000): Bedeutung „weicher“ Angebotsmerkmale bei der Angebotsgestaltung sowie ihre Berücksichtigung bei der Einnahmeaufteilung und Vergabe von Leistungen im Wettbewerb, Forschungsprojekt im Auftrag des BMVBW (FE-Nr. 70.543/1998), Berlin.
- ICLEI (ed.): Wie viel zahlt die Kommune für den Autoverkehr? Aufdeckung versteckter Subventionen für den Pkw, im Auftrag des Umweltbundesamtes, November 2001.
- Ilgmann, Gottfried (2003): Bahnreform: Ziel verfehlt, in: Bahn-Report, 1-3.
- Knieps, G. (1999): Price Cap als innovatives Regulierungsinstrument in liberalisierten Netzsektoren. Paper delivered at 32. Verkehrswissenschaftlichen Seminar, 6-8 10.1999 in Hinterzarten.
- Köhler, U. (2002): Die Liberalisierung des Marktes im ÖPNV. Diskussionspapier zur Expertenrunde der Schader-Stiftung am 5./6.12.2002 in Seeheim-Jugenheim, November 2002, www.schader-stiftung.de/docs/papier13.nov.oepnvinternet.pdf.

- KVV (Karlsruher-Verkehrsverbund) (2003): Das Karlsruher Modell, www.karlsruhe.de/KVV/kvv3.htm.
- Mehlert, C. (2001): Planung und Umsetzung von AnrufBus-Systemen, in: Handbuch für Kommunale Verkehrsplanung, 27. Lfg., Chap. 3.3.3.9.
- Mehr Bahnen (2003): Mehr Bahnen. Vereinigung für Wettbewerb im Schienenverkehr. Homepage www.mehrbahnen.de (Schwarzbuch, News).
- Mietzsch, Oliver (2002): Der ÖPNV im Spannungsfeld zwischen Daseinsvorsorge und Marktöffnung. Beitrag der Arbeitsgruppe Kommunalpolitik, Friedrich Ebert-Stiftung. In: www.fes.de/kommunalpolitik/OEPNV.htm.
- Prognos (2001): Die Bedeutung des öffentlichen Personenverkehrs in Deutschland. Expertise im Auftrag des Verbands Deutscher Verkehrsunternehmen (VDV). Kurzfassung, Basel.
- Rieke, H. (2002): Fahrleistungen und Kraftstoffverbrauch im Straßenverkehr, DIW Wochenbericht, Nr. 51-52.
- Rönnau, Hans-Joachim, et al. (2002): Finanzierung des öffentlichen Nahverkehrs. Politische und wirtschaftliche Verantwortung trennen. In: Der Städtetag, No. 12, 9-14.
- Rönnau, Hans-Joachim, et al. (2003): Umweltpolitische Handlungsempfehlungen zur Finanzierung des ÖPNV, im Auftrag des Umweltbundesamts, Berlin/Wuppertal (UBA-Texte 29/03, Band A, Sozio-ökonomische Grundlagen).
- Senatsverwaltung für Stadtentwicklung (ed.) (2001): Berliner Verkehr in Zahlen, Berlin.
- Deutsche Shell GmbH (ed.) (2001): Shell Pkw-Szenarien. Mehr Autos – weniger Verkehr? Szenarien des Pkw-Bestands und der Neuzulassungen in Deutschland bis zum Jahr 2020, Hamburg.
- Spitzner, M. (2002): Zwischen Nachhaltigkeit und Beschleunigung. Technikentwicklung und Geschlechterverhältnisse im Bereich Verkehr. In: Technologiefolgenabschätzung – Theorie und Praxis, 11 Vol., No. 2, 56-69.
- Statistisches Bundesamt (2002): Straßenpersonenverkehr 2001: Personalabbau setzt sich fort, Pressemitteilung vom 15.5.2002, www.destatis.de/presse/deutsch/pm2002/p1650191.htm.
- Statistisches Bundesamt (2000): 9. Koordinierte Bevölkerungsvorausberechnung des Bundes und der Länder zur Bevölkerungsentwicklung bis 2050, Wiesbaden(pdf).
- UBA (Umweltbundesamt) (2003): Konzeption zur Finanzierung eines umweltverträglichen öffentlichen Personennahverkehrs (ÖPNV). Diskussionspapier Stand April 2003, Berlin.
- VCD (Verkehrsclub Deutschland) 2001a: Umweltstandards im ÖPNV. Ein Leitfaden für Entscheidungsträger, Bonn.
- VCD (Verkehrsclub Deutschland) 2001b: VCD-Fakten: Bus, Bahn und Pkw im Umweltvergleich. Der ÖPNV im Wettbewerb, Bonn.
- VCÖ (Verkehrsclub Österreich) (2003): Globalisierung darf Umwelt und Soziales nicht überrollen, Verkehr aktuell, Ausgabe 01, www.vcoe.at.
- VDA (Verband der Automobilindustrie) (2003): Aktuell. Homepage www.vda.de/de/aktuell/statistik/jahreszahlen/allgemeines/index.html.
- VDV (Verband Deutscher Verkehrsunternehmen) (ed.), Institut Socialdata (comp.) (1994): Differenzierte Bedienungsweisen. Nahverkehrsbedienung zwischen großem Verkehrsaufkommen und geringer Nachfrage, Cologne.

- VDV (Verband Deutscher Verkehrsunternehmen) (2001): Statistik 2000, Cologne.
- VDV (Verband Deutscher Verkehrsunternehmen) (2002a): VDV Statistik 2001, Cologne.
- VDV (Verband Deutscher Verkehrsunternehmen) (2002b): Zukünftige Finanzierung des allgemeinen ÖPNV – Ein Diskussionspapier, Cologne.
- VDV (Verband Deutscher Verkehrsunternehmen) (2002c): VDV aktuell 2002, www.vdv.de/publikationen/verzeichniss_entry.html?pstg_id=67&pe_ref_id=12306.
- Ver.di (2003): Mehr Zusammenarbeit. Mitteilung auf der homepage des Fachbereichs Verkehr vom 8.5.2003, www.verdi.de/0x0ac80f2b_0x000b7621.
- Werner, Jan (2002): Möglichkeiten der Aufgabenzuordnung zwischen Aufgabenträger und Verkehrsunternehmen, unpublished. Input for „Management Business Game“ of the Deutschen Instituts für Urbanistik, Berlin.
- Wilhelm, S./C. Mehler/Zöllner, (1998): Planungshandbuch für den ÖPNV in der Fläche, FE 70491/96 des Bundesministeriums für Verkehr, Bonn.
- Wolf, Rainer (2003): Umweltpolitische Handlungsempfehlungen für die Finanzierung des ÖPNV. Rechtliche Grundlagen für die Finanzierung des öffentlichen Nahverkehrs, im Auftrag des Umweltbundesamts, Freiberg (UBA-Texte 29/03, Teil B).
- ZRF (Zweckverband Regio-Nahverkehr Freiburg) (2003): Zweckverband Regio-Nahverkehr Freiburg (ZRF) und REGIO-VERBUND GmbH, www.regioverbund.de.

Appendix

netWORKS Papers

The findings of the netWORKS Research Association are published in the series netWORKS Papers, the full text of which is published in the Internet and in printed form in a small edition. Local authorities may order these publications free of charge – as long as stocks are available – from the German Institute of Urban Affairs. Academic customers and the specialist community can download the texts free of charge from the project platform www.networks-group.de. The following Papers have appeared to date:

- Kluge, Thomas/Scheele, Ulrich
**Transformationsprozesse in netzgebundenen Infrastrukturektoren.
Neue Problemlagen und Regulationserfordernisse Berlin**
Berlin 2003 (netWORK Papers, No. 1)
- Kluge, Thomas/Koziol, Matthias/Lux, Alexandra/Schramm, Engelbert/Veit, Antje
**Netzgebundene Infrastrukturen unter Veränderungsdruck –
Sektoranalyse Wasser**
Berlin 2003 (netWORK Papers, No. 2)
- Bracher, Tilman/Trapp, Jan Hendrik
**Netzgebundene Infrastrukturen unter Veränderungsdruck –
Sektoranalyse ÖPNV**
Berlin 2003 (netWORK Papers, No. 3)
- Scheele, Ulrich/Kühl, Timo
**Netzgebundene Infrastrukturen unter Veränderungsdruck –
Sektoranalyse Telekommunikation**
Berlin 2003 (netWORK Papers, No. 4)
- Monstadt, Jochen/Naumann, Matthias
**Netzgebundene Infrastrukturen unter Veränderungsdruck –
Sektoranalyse Energie**
Berlin 2003 (netWORK Papers, No. 5)