



## **Annex 1**

### **Local Implementation Framework - Berlin**

## Table of Contents

	<b>Page</b>
1 Berlin.....	3
1.1 Physical Implementation Framework.....	3
1.2 Legal and Institutional Framework.....	8
1.3 Technical Framework.....	9
1.4 Appraisal Groups.....	10
1.5 Institutions Responsible for HEAVEN Implementation.....	13

## List of Tables

	<b>Page</b>
Table 1: City Descriptor for Berlin.....	6
Table 2: Names and institutions of main HEAVEN users in Berlin.....	10

## List of Figures

	<b>Page</b>
Figure 1: Potential sites for Berlin's HEAVEN demonstration site.....	3
Figure 2: Transport volumes in three potential sites.....	4
Figure 3: Berlin implementation plan for the Decision Support System.....	10

# 1 Berlin

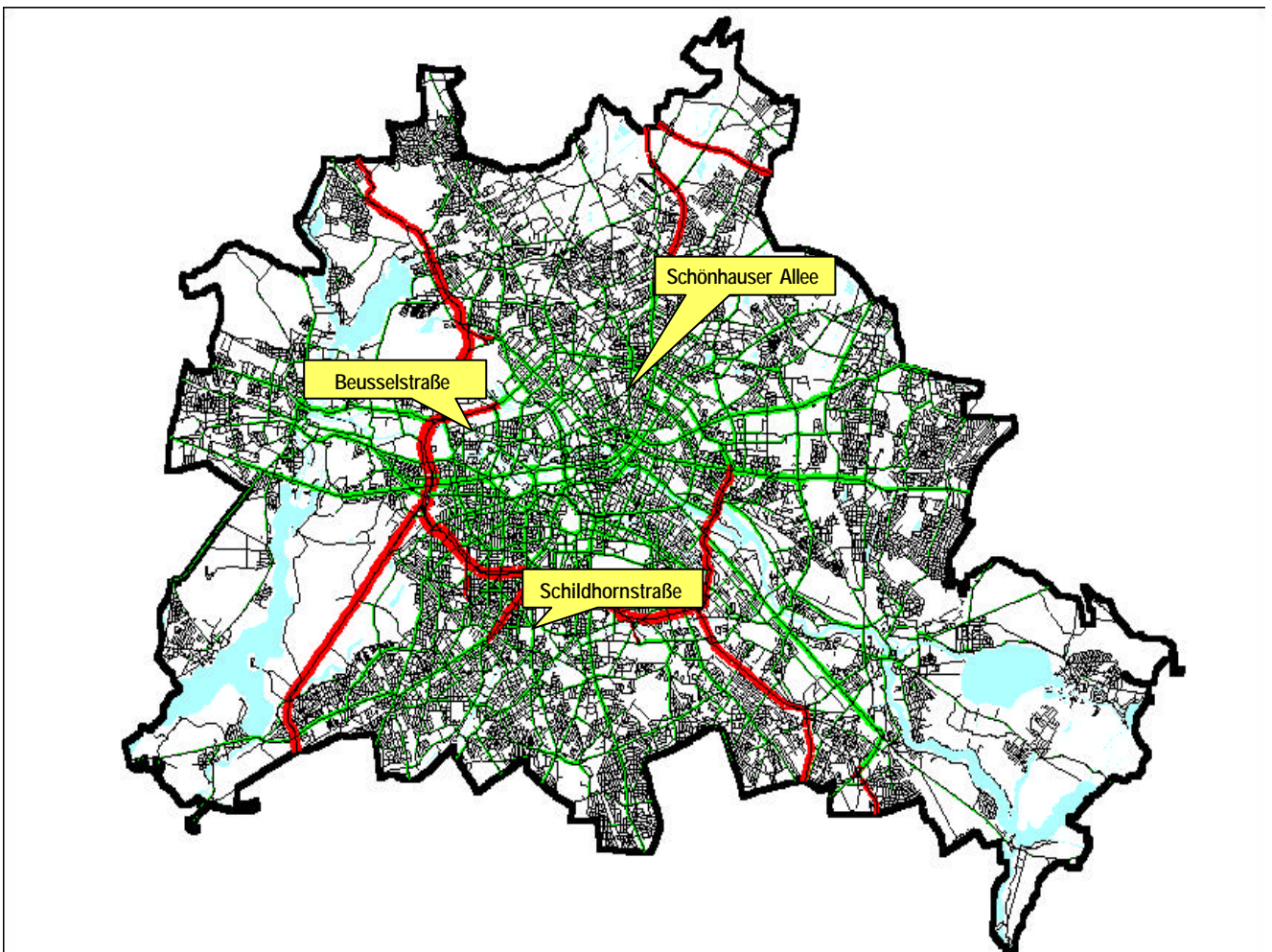
## 1.1 Physical Implementation Framework

During the lifetime of the HEAVEN project, the HEAVEN DSS will be implemented and tested in a small area of one main road in Berlin. This is due to a number of reasons:

- dynamic traffic data will not be available for the whole city of Berlin until the demonstration phase starts;
- the efficiency of measures should be tested in a small area before they are implemented on a large scale.

It is therefore the top priority that the demonstration site meets the criteria of transferability to other areas and, in addition, the mix of implemented measures should fit into the future transport and environmental policies of the city.

Figure 1: Potential sites for Berlin's HEAVEN demonstration site



The selected demonstration site was short-listed from three candidate sites in the inner city area of the "large dog head" ("Grosser Hundekopf"). The rationale for selecting the site was based on 11 criteria. It was based on environmental, traffic-related, political and other considerations. Potential sites were screened according to the following list:

1. environmental aspects (high levels of air and noise pollution, residential area with large numbers of people affected, reliable data regarding both aspects);

2. no infrastructural measures are planned that will bring about a reduction of traffic volumes;
3. social structure of residents living around the site should be characterised by incomes above average and high environmental awareness;
4. site should be located close to social institutions (schools, kindergartens, homes for the elderly etc.) and institutions with a high number of visitors (shops in shopping streets, offices etc.);
5. site should be included in the detection network of the transport management centre, which is currently being set up;
6. site should be a 'political hot spot' (e.g. area with a number of complaints by residents or legal actions);
7. there should exist some experience with the implementation of innovative measures in the area;
8. if possible the site should also include an area with neighbourhood management (which is a temporary non-profit, public-funded advice centre in social hot spots);
9. site should be located in a district which is willing to co-operate with the HEAVEN project;
10. if possible the site should also include an area within Berlin's urban regeneration programme;
11. site should be suitable for transfer of the approach to other areas

Against this background the Beusselstrasse site was chosen because – compared to the alternative sites (Schönhauser Strasse and Schildhornstrasse) – it is located in a district with a very co-operative administration and is particularly suited for transfer, i.e. tested measures can be easily taken up by other districts or other cities. Co-operation at the local level was regarded as a basic pre-condition as HEAVEN measures will be implemented in a main road and therefore political and administrative support at all levels must be sustained. In addition, the existing neighbourhood management will guarantee effective involvement of residents, shop-owners and tradesmen in the area (7369 inhabitants and 2946 employees live along the road in the chosen area [Teilverkehrszone] – furthermore there are 19 kindergartens serving 210 children). Technical aspects such as existing and planned detection within the network of Berlin's future transport management centre also contributed to the selection of the site. Additional environmental data will be collected by installation of mobile measuring equipment.

**Figure 2: Transport volumes in three potential sites**



Finally, the Beusselstraße area was selected because the additional criteria of high share of truck traffic leading to high pollution levels exists. In fact, noise levels in this area often exceed the health-related noise thresholds in German legislation (night: 55 db(A), day 65 db(A)). Although counter-measures are not mandatory for existing roads these threshold values are considered as target values which should be achieved in the long term.

For Beusselstraße the Berlin Noise Map reveals an average assessment level for

day hours (6-22 h) between 72 and 74 db (A)  
 night hours (22-6h) between 66 and 67 db (A)

using 1998 traffic data as a basis.

Annual mean air pollution levels measured along Beusselstraße in 1999 during the RUBIS kerbside monitoring programme (measurements according to 23rd Regulation in the German Federal Pollution Control Act) amount to

6.8  $\mu\text{g}/\text{m}^3$  for soot

5.1  $\mu\text{g}/\text{m}^3$  for benzene

58  $\mu\text{g}/\text{m}^3$  for nitrogen dioxide

Thus, in 1999 the concentration values in the 23rd Regulation were not exceeded. However, NO<sub>2</sub> pollution levels are higher than the annual limit value of 40  $\mu\text{g}/\text{m}^3$  set by Directive 99/30/EC. Benzene also slightly exceeds the recently adopted EU-wide limit value for benzene of 5  $\mu\text{g}/\text{m}^3$ .

Given that both limit values must be attained by 2010 the aim of reducing air pollution of NO<sub>2</sub> below 40  $\mu\text{g}/\text{m}^3$  is clearly a long-term goal, so is the attainment of noise pollution levels below the noise thresholds mentioned above.

The area therefore met most of the selection criteria previously defined. Furthermore the area is connected with a highway exit which is a common feature for a number of main roads along the inner ring road highway. A positive demonstration outcome would favour similar highway entrances or exit areas in other districts in the future. To sum up, it is of importance for the evaluation of HEAVEN measures that no other TDMS are being tested or enforced in this area ensuring that the HEAVEN project intentions can be carried out without conflict.

With respect to the current transport policy in Berlin the goal is to decrease the growth of individual car traffic in order to establish an environmental and social orientated city development. Protection of people against harmful effects of traffic is a cornerstone of this approach. The political objective is to reach a modal split in the inner city area (where the demonstration site is located) of 60% public transport to 40% individual car traffic. In the Central Business District (CBD), which for example includes Potsdamer Platz, the modal split should be 80% to 20%.

As 42% of Berlin main roads are affected by noise exposure levels of between 65dB (A) and 70 dB (A), this relates to 168,000 inhabitants. During night hours approx. 25,000 residents are affected by noise levels of more than 65 dB (A). Only 50,000 of the 240,000 residents on major roads are exposed to less than 55 dB (A) during night hours. According to administrative sources Berlin's strategy plan "Urban Development Plan - Transport" (Stadtentwicklungsplan StEP-Verkehr) should aim to reduce disturbance by traffic noise levels by 5 dB (A) for at least 75,000 residents along major highways.

Berlin's strategy plan "Urban Development Plan - Transport" (Stadtentwicklungsplan StEP-Verkehr) still has to be completed. Objectives are yet to be defined. A sustainable strategy should guarantee environmental protection, social development, mobility for everyone, reduction of air pollution and noise, support of public transport, economical traffic, bicycle traffic and quality of life in inner city areas. The "Urban Development Plan - Transport" will contain scenario techniques to receive plausible forecasts concerning future transport demands and different measures in the fields of administration, public affairs, infrastructure, traffic management, transport organisation and financial aspects, to shift transport demand from private car traffic to public transport. The final version will be available in 2002.

Table 1: City Descriptor for Berlin

			Remarks
<b>City</b>			
Area	890	Km <sup>2</sup>	ref. Year 2000
Population	3.4 mio	Pers.	
Population density	3820	Pers./Km <sup>2</sup>	
<b>Road infrastructure</b>			
Total road network	5210	Km	ref. Year 2000
Urban roads	190	Km	
Highways	59	Km	
Traffic sensors	Approx. 25	No.	The traffic data for the HEAVEN project will be delivered from traffic detectors which will be installed in 2001. It is planned to install the first 40 detectors of a total number of approx. 130 in summer 2001. In a second step the other detectors will be installed by the end of 2001
<b>Public transport network</b>			
-Rail	245	Km	ref. Year 2000
-Tram	181	Km	
-Underground	143	Km	
-Bus	1261	Km	
<b>Total Emission/Energy*</b>			
CO	109.301	T/a	ref. year 1999
NOx	25.332	T/a	
SO <sub>2</sub>	10.281	T/a	
HC	49.085	T/a	
PM	8.540	T/a	
Energy	305.000	Tj/a	ref. year 1998
<b>Share of Emissions/ Energy from vehicle traffic</b>			
CO	70	%	ref. year 1998
NOx	49	%	
SO <sub>2</sub>	4	%	
HC	26	%	
PM	48	%	
Energy	-	%	
<b>Vehicle fleet composition</b>			
Passenger cars, with catalyst	58,1	%	(ref. Year 1997)
Passenger cars, without catalyst	20,9	%	
Passenger cars, Diesel	14,6	%	
Light duty vehicles			included in Passenger cars
Heavy duty vehicles	6,3	%	
Buses	0,2	%	
<b>Air quality monitoring</b>			
Stations	21 BLUME monitoring stations 45 RUBIS monitoring sensors	No.	

Pollutants measured	PM 10, NOx/NO2, CO, Benzene Noise	
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## 1.2 Legal and Institutional Framework

With respect to the legal framework the European directives have set or will set the limit values for air and noise. Air quality limit values were set in EU directive 1999/30/EC for sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide and oxides of nitrogen (NO<sub>x</sub>), particulate matter (PM) and lead in ambient air. Another recently adopted Directive introduces new limit values for benzene and carbon monoxide. The assessment and management of environmental noise is currently the subject of a proposal for a Directive (COM (200) 468 – 2000/0194 (COD)). In particular this proposal introduces noise indicators (L DEN and L NIGHT) which determine harmonised methods of assessing noise pollution and which might serve as a basis to set future noise limit values to avoid, prevent and reduce harmful effects on human health due to the exposure to environmental noise. The proposal sets out requirements for noise mapping and ensures that information on environmental noise and effects is made available to the public.

In Berlin the current air quality situation with respect to the limit values set out in Directive 99/30/EC and in the recently adopted Directive on benzene and CO<sub>2</sub> is as follows:

- for SO<sub>2</sub>: compliance achieved
- NO<sub>2</sub>: annual mean levels along main roads are in a range between 40 and 65 µg/m<sup>3</sup>. Hence, the limit value of 40 µg/m<sup>3</sup> is currently not achieved. However, compliance is to be expected within the required attainment period (2010).
- Benzene: As for NO<sub>2</sub>, exceedance of the limit value still occurs on some main roads, but compliance is to be expected within the required attainment period (2010).
- PM<sub>10</sub>: There is exceedance of the annual limit value and, to a larger extent, of the 24h limit value both at traffic sites and in residential areas. Compliance is expected by 2005, except in traffic hot spots where exceedance of the 24h limit value (not more than 35 daily values above 50 µg/m<sup>3</sup>) may still occur.
- lead: no problems

The issue of noise has already been stated in the previous chapter.

As HEAVEN products are designed as support tools for decision-making in the area of transport and environment, integration in the institutional context is essential for future operation. In Berlin the main actors, who will use the DSS and the common information platform, are:

- transport and environment departments in the Ministry for Urban Development with responsibilities for planning, monitoring and controlling (cp. chapter 4.X.4). Since autumn 1999 the areas of transport and environment have been merged in one ministry under the control of the same deputy minister who also has responsibilities for housing and building. This comprises the department of transport (i.e. with sections for fundamental planning of transport policy, development of transport which is a newly created section with personnel from the former separate ministries), department of integrated environmental protection and department for environmental policy. On district level responsibilities remain with traditional departments for civil engineering, environmental protection and urban planning. HEAVEN tools will be used by all departments involved, by the Primary Traffic Authority (Oberste Strassenverkehrsbehörde) as a section of the Ministry for Urban Development and the Traffic Authority (Strassenverkehrsbehörde) as a section of the police department in Berlin.
- cross-institutional co-operation relates mainly to inter-departmental decision-making between the dual level of city and district and intra-departmental decision-making within the Ministry of Urban Development. HEAVEN will not be able to remove institutional boundaries, but co-operation between different authorities opens opportunities to develop common strategies for quick solutions in the field of traffic management. The availability of online data will reduce the period of time required for status-quo analysis and validation by decision makers and their supporting authorities. How road traffic problems will be solved depends on the importance of measures. Measures of more importance such as constructive or legal measures have to be planned by the Ministry for Urban Development. Solutions developed by civil engineers have to be agreed by the Primary Traffic Authority (oberste Straßenverkehrsbehörde) which is part of the Ministry for Urban Development. The Primary Traffic Authority instructs the police road authority to give police ordinances to the local city district authorities for civil engineering to execute the measures.

## 1.3 Technical Framework

A traffic management centre is currently being erected in Berlin consisting of several component services: pre-trip information; collective on-trip information and management for road traffic; individual on-trip information; operational control and information systems for public transport; logistic information systems for commercial traffic; and weather and environmental information. HEAVEN contributes to the environmental component of the traffic management centre. The basis for the Berlin HEAVEN system will be the traffic management centre which will be established in 2001. The traffic management centre will collect real time traffic data from 158 measurement points in the city of Berlin. With traffic modelling tools, traffic in the whole city will be modelled on the basis of the measured traffic data. By using forecasting models, traffic forecasts can be made by the traffic management centre. Based on this traffic data a couple of models will be used to calculate emissions resulting from the existing or forecasted traffic situation:

- IMMIS<sup>lärm</sup> - calculates the emission of noise
- IMMIS<sup>em</sup> - calculates the emission of the traffic in the streets
- IMMIS<sup>net</sup> - calculates a spatial background level of air pollution
- IMMIS<sup>cpb</sup> - calculates specific individual pollutant concentrations

The combination of data from the traffic management centre and the existing models allows for the modelling of pollution levels in real time and at the street level for each major street in Berlin. The calculated levels can be compared to the different environmental information measurements in Berlin:

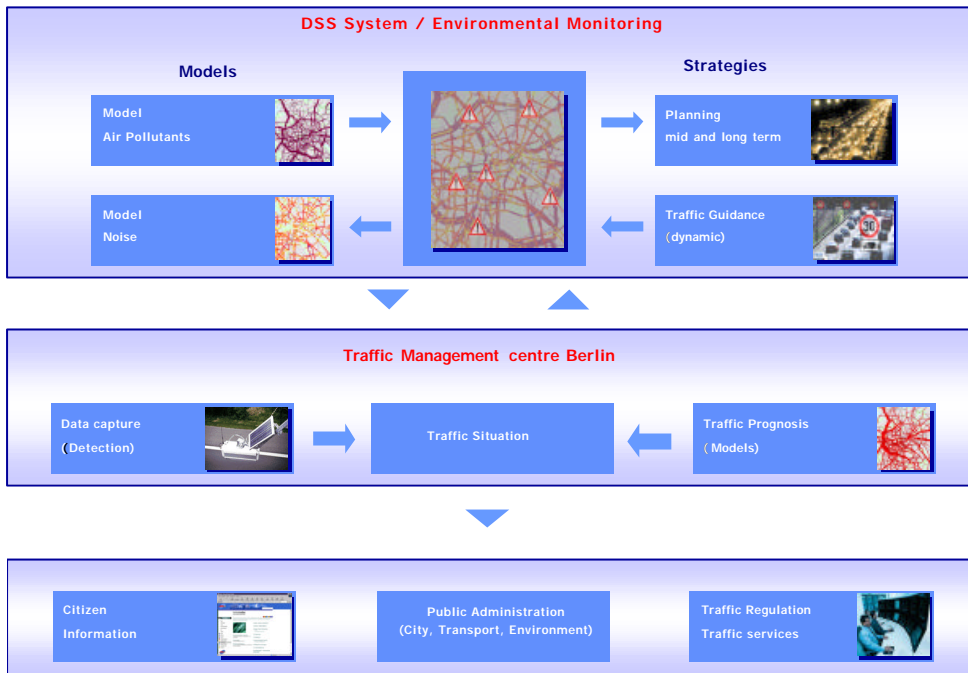
- Air emission register for Berlin's urban areas  
Noise emission register for Berlin's main traffic network  
Air quality measurement network

Air quality monitoring data in Berlin is collected at 20 measurement stations; noise is collected in the BLUES database. Air and noise modelling and forecasting is conducted using a variety of software (IMMIS<sup>luft</sup> and IMMIS<sup>lärm</sup>) which will be enhanced during the project lifetime to meet local and project orientated objectives. This relates to improving the real time monitoring functions of the models. In the context of HEAVEN, near real time traffic data, collected from a network of measurement points and environmental data will be processed and used to develop a co-ordinated information DSS which identifies the emissions from near real time traffic monitoring and supports the implementation of goal-orientated TDM strategies to reduce air and noise pollution in the main traffic road network. An essential task of this new system is the dynamic examination and preparation of information about traffic and the environmental situation in specific urban hot spot areas.

As soon as the traffic management centre is in operation, noise and air pollution levels in Beusselstraße can be modelled in real time without the need for additional infrastructure. However, it is possible that the traffic management centre will not be fully operating within the time frame of the HEAVEN project. Should this situation arise, traffic detectors will be erected in the Beusselstraße area to model traffic for the area independent of the traffic management centre. This data will then be used to calculate and forecast pollution levels.

The figure below presents the system of integrated traffic and environmental data to be implemented in Berlin in order to achieve a DSS HEAVEN product.

Figure 3: Berlin implementation plan for the Decision Support System



## 1.4 Appraisal Groups

With a population of approximately 3,4 million Berlin has a government that has the status as one of Germany's 16 federal states. In addition, decision making is decentralised at 23 district parliaments and authorities. On 1 January 2001, the number of districts has been reduced to 12 with an average size of approximately 250,000 inhabitants per district. As the process of restructuring will not be completed by the deadline of this report, no contacts will be named for district level as districts will be merged.

At city level, authorities often bring together policy areas under one organisation, the ministry department. In Berlin policy areas of the HEAVEN project (transport and environment) are integrated in one Berlin ministry with common departments for transport planning. On the contrary, authorities at district level operate according to traditional departmental structures.

As the list of public and interest groups interested in the HEAVEN project is beyond the scope of this section of the Draft Evaluation Plan, only main users are listed.

Table 2: Names and institutions of main HEAVEN users in Berlin

HEAVEN User Category	Names of User Organisations	Names of Key Individuals in Organisations
<b>Authorities as Direct HEAVEN Users</b>		
<b>Traffic/ Transport Departments</b>		
-	- Ministry of Urban Development Transport Department An der Urania 4-10 10787 Berlin	- Dr. Ural Kalender
-	- Ministry of Urban Development Transport Department, Section Transport Development Planning An der Urania 4-10 10878 Berlin	- Dr. Friedemann Kunst

<b>HEAVEN User Category</b>	<b>Names of User Organisations</b>	<b>Names of Key Individuals in Organisations</b>
<b>Environmental Departments</b>		
-	- Ministry of Urban Development Environmental Policy Department Brückenstrasse 6 10173 Berlin	- Dr. Manfred Breitenkamp
-	- Ministry of Urban Development Environmental Policy Department Section Air Pollution Brückenstrasse 6 10173 Berlin	- Dr. Klaus Kutzner
<b>Health Departments</b>		
-	- Ministry of Social Affairs, Women and Labour Public Health Department Oranienstr. 106 10969 Berlin	- Dieter Lullies
-	- Landesamt für Arbeitsschutz, Gesundheitsschutz und Technische Sicherheit Alt-Friedrichsfelde 60 10315 Berlin	- Arno Oddoy
<b>Urban Planning Departments</b>		
-	- Ministry of Urban Development Urban Planning and Land Use Department Am Köllnischen Park 10179 Berlin	- Julian Wekel
<b>Decision Makers (directly or via administration) as Indirect HEAVEN Users</b>		
<b>Urban Development</b>		
-	- Ministry for Urban Development Minister Württembergische Str. 6 10707 Berlin	- Peter Strieder
<b>Traffic/ Transport</b>		
-	- Ministry for Urban Development Minister Württembergische Str. 6 10707 Berlin	- Peter Strieder
<b>Environment</b>		
-	- Ministry for Urban Development Minister Württembergische Str. 6 10707 Berlin	- Peter Strieder
<b>Health</b>		

HEAVEN User Category	Names of User Organisations	Names of Key Individuals in Organisations
-	- Ministry für Social Affairs, Women and Labour Oranienstr. 106 10969 Berlin	- Gabriele Schöttler
<b>Public &amp; Interest Groups as Other Stakeholders</b>		
<b>Citizens</b>		
<b>Residents organisations in "Hot Spot" Areas</b>	- Moabiter Ratschlag e.V. AG Verkehr Beusselstrasse 74 10553 Berlin	- Andreas Szagun
<b>NGOs</b>		
-	- BUND AG Verkehr Crellestr. 35 10827 Berlin	- Torsten Laube
-	- Gesellschaft für Lärmbekämpfung e.V. Kaiserdamm 90 14057 Berlin	- Detlef Bramigk
<b>Research Institutions</b>		
-	- Technische Universität Berlin Geschäftstelle Public Health Skr. HAD 38 Hardenbergstr. 4-5 10623 Berlin	- Sabine Gottwald
-	- Wirtschaftsforschung gGmbH Berlin Treskowallee 8 10313 Berlin	- Gert Eckhardt
<b>Chambers of Commerce / others</b>		
-	- Chamber of Commerce Berlin Department Environment and Energy Fasanenstr. 85 10623 Berlin	- Johann Behrends
-	- Stiftung Warentest Lützowstr. 11-13 10785 Berlin	- Barbara Barlage
<b>Public Transport Operators</b>		
-	- Der Polizeipräsident in Berlin Straßenverkehrsbehörde Gothaer Straße 19 10823 Berlin	- Florian Trageheim
-	- Der Polizeipräsident in Berlin Regelungszentrale Platz der Luftbrücke 6	- Eberhard Müller

HEAVEN User Category	Names of User Organisations	Names of Key Individuals in Organisations
	12101 Berlin	
-	- ADAC Berlin-Brandenburg Abt. Technik und Umweltschutz Bundesallee 29-30 10717 Berlin	- Jörg Kist
-	- Berliner Verkehrsbetriebe Abt. Bautechnische Anlagen Siegfriedstr. 44 10365 Berlin	- Wulf Heineking
-	- Fuhrgewerbe-Innung Hedemannstr. 13 10969 Berlin	- Gerd Brettschneider
-	- Verband der Spediteure Berlin und Brandenburg e.V. Juliusstr. 52 12051 Berlin	- Gerhard Ostwald

## 1.5 Institutions Responsible for HEAVEN Implementation

The conditions for implementation are set by the Berlin Minister for Urban Development, the Deputy Minister for Transport and Environment in accordance with the policy laid down in the coalition treaty between the conservative party and the social democrats. The agreement contains a clause about progress towards an environmentally orientated transport policy and towards protection for residents against negative effects of vehicle traffic. Within the timeframe of this government, setting up a new transport management centre, which incorporates the HEAVEN DSS, is regarded as a cornerstone. As mentioned HEAVEN implementation will be achieved by close co-operation between city, district level institutions and traffic-controlling bodies. As the DSS is a component of the currently envisaged Berlin transport management centre, a public-private body which will be run by a Siemens-Debis consortium for the next ten years, it is obvious that responsibilities for implementation are already determined as part of the current transport policy of the Berlin state government.

The transport management centre is designed to address traffic situations on the main road network and, in addition, to include environmental data in the process of transport demand management. The HEAVEN product will be integrated into this structure as the environmental component. Thereby dynamic information and controlling instruments are designed to be developed step by step (e.g. SMS via WAP-Handy and Internet cp. [www.vmz-berlin.de/vmz/](http://www.vmz-berlin.de/vmz/) for basic information). The use of HEAVEN products is an implicit goal in the transport management centre.