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PREP

Promotion of Resource
Efficiency Projects

SUSTAINABLE TRANSPORT – SOLUTIONS FOR GROWING DEMAND

I. ISSUE 2005



WISIONS

SUSTAINABLE DEVELOPMENT IS POSSIBLE

WISIONS is an initiative of the Wuppertal Institute for Climate, Environment and Energy, carried out with the support of the Swiss-based foundation Pro-Evolution, to foster practical sustainable energy projects.

Sustainable development is possible. Numerous innovative and valuable contributions from different countries, fields and institutions have shown that an appropriate reconciliation of economic, ecological and social factors is not unrealistic utopia.

We have made a promising start, but the greatest challenge still facing us in the 21st century is to learn how to use the world's resources more efficiently and in an ecologically sound and socially balanced way. It is therefore necessary to foster projects of potential strategic global importance by supporting them so they can be implemented locally. Examples of good practice need to be actively promoted to a wider audience.

WISIONS promotes good practice in resource efficiency through its publication of relevant successful projects in its Promotion of Resource Efficiency Projects: **PREP**

WISIONS also provides consulting and support to ensure the potential seen in visions of renewable energy and energy efficiency can become mature projects through its Sustainable Energy Project Support: **SEPS**



Photo: Barbara Meinert

SUSTAINABLE ENERGY PROJECT SUPPORT - SEPS

Realistic visions and concepts of effective projects for sustainable energy exist, but much needed implementation sometimes fails. **SEPS** has the key objective of identifying projects with the real potential to be of strategic importance in renewable and efficient use of energy.

By providing technical and other forms of support, **SEPS** seeks to overcome existing barriers and will help clean and efficient energy become commonplace.

The most promising renewable and energy efficiency concepts are selected using transparent analysis based on internationally recognised criteria. The selection process is done via an annual call for applications. Once a project is selected, **SEPS** can provide additional guidance and support, for example:

- Practical expert advice and knowledge transfer for an effective implementation
- Potential financial support to assist with project implementation
- Guidance and support for obtaining additional funding
- Promotion to relevant institutions, decision makers and scientists
- Publication on www.wisions.net

SUSTAINABLE TRANSPORT

SOLUTIONS FOR GROWING DEMAND

Transport enables individuals to move from one place to another, to go to work or to participate in social life and it also facilitates the movement of commercial goods. Transport supports the financial and social development not only of individuals but of whole regions. Therefore it is indispensable in this day and age and the demand for it is growing worldwide.

Apart from all its positive effects transport also has several adverse effects on our health and on the environment. More than 600,000 people die every year in road accidents and about 50 million people are seriously injured. The World Health Organisation estimates that traffic accidents will be the second main cause of death and injury in developing countries by 2020. Additional health risks derive from polluting substances emitted by vehicles such as sooty particles, sulphur dioxide and heavy metals.

Certain technical solutions have been developed in response to the need for more sustainable transport. These include, for example, lower fuel consumption - which is particularly significant in light of the current high oil prices. Technical advancements such as low-weight vehicles or hybrid concepts can improve energy efficiency in the transport sector. Alternative drives such as fuel cells, as well as alternative fuels like bio fuels or hydrogen, are interesting in terms of their potential to increase levels of renewable energies used. Of course, it is not only passenger cars that are of interest, but also two wheelers, means of public transport and the freight sector.



Photo: Nikolai Bockholt

In addition to technical improvements, structural changes in transport activity are also essential on the road to sustainable transport. In view of the ever-growing volume of transport, it is evident that technical improvements alone will not outweigh this development. Structural improvements focus mainly on decreasing the volume of private car use. Corresponding examples include the enhancement of Public Urban Transport or abatement strategies based on innovative settlement structures and short-distance material cycles.

In this brochure, **WISIONS** focuses on the significance of innovative strategies in the field of sustainable transport. **WISIONS** presents a number of projects from around the globe that have been successfully implemented, with the intention of further promoting the particular approaches used by these projects. Using a key number of internationally accepted criteria, the main consideration for selection of the projects was energy and resource efficiency, but social aspects such as the inclusion of local population were also of relevance. The assessment of the projects also included the consideration of regional factors acknowledging different needs and potentials.

All projects that fulfilled **WISIONS** application criteria were independently reviewed, and four of them, with the potential to make a significant impact on global energy and resource efficiency, are published in the following pages. **WISIONS** is pleased to present good practice examples from ambitious projects which have been successfully implemented on different continents. All of these projects are appropriate within their local context and have been developed to a level which meets **WISIONS** selection criteria. Although uniquely designed for a particular setting and problem, the projects presented can be adapted to different situations or can provide valuable information from their implementation phase. Links to the illustrated good practice examples shown in the brochure, as well as a couple of other issue-related projects, are available on www.wisions.net

The selected projects are not intended to represent the only possible directions to take in the field of sustainable transport but they do demonstrate promising approaches.

The next **PREP**-brochure, which will follow the same objectives - namely to collect, evaluate and promote good practice examples - will highlight the issue of "Sustainable Tourism".



Photo: Jenny W.

EMBARQ – CITIES ON THE MOVE

Location:

Mexico City, Shanghai, and other medium and large-sized cities

Project's Aim:

Comprehensively and systematically improve the sustainability of urban transport

Methodological Solution:

Promote sustainable urban transport in developing countries



EMBARQ was founded by the World Resources Institute and the Shell Foundation in May 2002 to act as a catalyst for socially, financially and environmentally sound solutions to the problems of urban mobility in the developing world. EMBARQ's stance is that the technical challenges of sustainable transport, although daunting, are secondary to the governance challenges, and that broad stakeholder engagement, the formation of partnerships and institutional capacity building are crucial. Working with politically and financially empowered authorities at local and global levels, EMBARQ can dramatically reduce the associated risk, the time input and the complexity involved in addressing major transport problems. This, in turn, allows EMBARQ to design and implement sustainable best practice solutions which promote effective public transport and integrate it with non-motorised modes (i.e. walking, biking).

Through the formation of public private partnerships, EMBARQ has turned the attention of the private sector towards the needs of cities, their citizens and their environment. EMBARQ has also proven that the design and implementation of sustainable urban transport models in the developing world can translate into economic opportunities for forward-thinking business. EMBARQ emphasises the need for cities to develop, maintain and use quantitative indicators of access, pollution and safety in assessing the health of

their transport systems, and sees these indicators as vital to the proper framing of corrective measures and to the monitoring of progress (or problems) in achieving goals.

BENEFITS

The major environmental benefit of EMBARQ's work is a reduction in local air pollution, which improves the quality of life, increases life expectancy and, in addition, gives rise to health cost savings for millions of city-dwellers. A further environmental benefit of EMBARQ's activities is a reduction of transport-related carbon emissions, which account for about one third of the global carbon emissions linked to climate change. EMBARQ's efforts to improve mass transit have enhanced mobility for all sectors of society, but the benefits will be felt most by lower-income citizens who tend to have fewer affordable transportation options and, therefore, less access to services and employment opportunities.

EMBARQ's work also promises a wide range of positive economic gains. For example, the Bus Rapid Transit (BRT) corridors it is promoting in Mexico City and Shanghai will improve fuel economy per capita, and shortened commuting times will reduce the cost of travel and allow people to spend more time at work or with their families.

METHODOLOGY

EMBARQ is undertaking projects in several cities in the developing world. As an example, below is a description of EMBARQ's activities in Mexico City:

- Creation of strategic partnerships with the Mexico City government (May 2002), the World Bank, and private sector stakeholders.
- Creation of the Centre for Sustainable Transport (CTS) (www.cts-ceiba.org) in Mexico City to manage projects on the ground and liaise with city authorities on a day-to-day basis. As an independent, non-partisan organisation within a Mexican NGO, CTS will continue

to exist under future changes of government, maintaining the continuity of its personnel, networks, and projects.

- Ongoing grant support, strategic advice and technical assistance on the planning, design, and implementation (2004-2005) of a Bus Rapid Transit (BRT) system, which will stretch 20 kilometres along the city's main thoroughfare.

- Testing of best engine/fuel combination for new high-capacity, low - emission buses for the Mexico City Federal District Government, with the support of the Global Environment Facility. The results of these tests are expected to be incorporated into the city's future bus-purchasing decisions.

- Creation of the Mexico City Diesel Retrofit Project, to retrofit a fleet of Mexico City buses with tailpipe control technologies, measure the resulting reduction of emissions of dangerous pollutants and assess the feasibility of applying this technology to all of the city's diesel buses. This project, undertaken with the support of the US Environment Protection Agency, represents one of the first efforts of its kind in the developing world.

- Contribution to the development of methodology to measure and monitor Greenhouse Gas (GHG) emissions savings from BRT.

SUSTAINABILITY

EMBARQ realises that in order to effectively address the worldwide crisis of unsustainable transport it must expand its operations on a global scale. With this in mind, EMBARQ has been developing a financial strategy which balances its independent, not-for-profit mission with a greater ability to harness

the resources of the private sector. The objective of the strategy, which will be completed in the autumn of 2005, is to ensure a sustainable financial footing for EMBARQ as it scales up its operations.

FINANCIAL ISSUES

It will take enormous financial resources if cities are to achieve EMBARQ's mandate of comprehensively and systematically improving the sustainability of urban transport. Recognising this, EMBARQ acts as a catalyst for sustainable transport solutions, strategically allocating its limited resources to leverage the capital, know-how, and networks of other stakeholders. EMBARQ is, therefore, very efficient at ensuring that its resources are exploited to their greatest potential. In Mexico City, for example, by virtue of its technical and management expertise and its ability to inclusively convene empowered stakeholders, EMBARQ has used a relatively modest resource base - roughly USD 1.5 million, together with USD 1 million of in kind contributions from bus manufacturers and more than USD 5 million from the World Bank/Global Environmental Facility (GEF) - to persuade the Mexico City government to develop a BRT system, the initial stages of which involve investment of more than USD 75 million.

OBSTACLES

EMBARQ is aware that its mission to improve the sustainability of urban transport in the developing world is very ambitious and will require massive financial and technological resources. To date the majority of EMBARQ's support has come from philanthropic sources. While EMBARQ has been very successful in

leveraging these for maximum impact, it recognises that in the long-term a much larger resource pool is required to fulfil EMBARQ's mandate, and the financial strategy under development will address this need.

City-dwellers have a vested interest in the state of their city's transport system, and although transport initiatives such as BRT are beneficial to the community at large some individuals or groups (taxi operators, for example) may suffer adversely and so oppose EMBARQ's work. Nonetheless, it is EMBARQ's experience that, on the whole, citizens are eager to support any initiative they perceive as legitimate and beneficial.

REPLICABILITY

Given the long timescales involved in transport projects it is too early to fully review and assess EMBARQ's model, much less develop an inventory of globally replicable best practices. That said, EMBARQ is confident that its early successes in Mexico City and Shanghai indicate the fundamental soundness of its model, and preliminary analyses from its financial plan indicate that there is an enormous, untapped global market for proven and cost-effective sustainable transport solutions.

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CAR-REDUCED LIVING IN AN EXISTING RESIDENTIAL AREA IN HALLE (SAALE), GERMANY

Location:

Halle (Saale),
Germany

Project's Aim:

Car-reduced living
in an existing
residential area

Methodological Solution:

Public private
partnership



Since 1998 Halle (Saale), supported by the German Federal Environmental Agency, has been carrying out the pilot project "Autoarmes Wohnen im Bestand am Johannesplatz" (car-reduced living in an existing residential area at Johannesplatz). A practical concept for car-reduced living was developed for the existing inner-city residential area at Johannesplatz (1.5 km from the city centre).

Over the last decade, the concept of car-free living in newly built residential areas has been discussed. The principal idea has been that anyone who lives without a private car and, therefore, travels by environmentally friendly means, should benefit from car-free surroundings. Until the Johannesplatz project, no projects with the focus on car-free or car-reduced living in existing residential areas had been carried out, despite the fact that about 30 or 40 per cent of households in inner-city residential areas in Germany do not possess a car. These residents do not see the benefit of their car-free status in their surroundings but, conversely, suffer the impact of other people's cars. These residential areas are usually densely built and historically are not suitable for heavy traffic (in terms of both parked cars and traffic circulation).

As part of a long process of urban renewal the concept was modified to focus on making residential areas car-reduced, rather than car-free. To that aim, a design to improve the surroundings by using traffic calming measures and denoting other sections as car-

free was combined with a mobility management policy, specifically targeting groups of private households at Johannesplatz. The major attraction of the concept is the incorporation of small sections of streets with varying traffic regulations (car-free, car-reduced or traffic-calmed) into an effective area-wide system. The urban renewal process is supported by a public private partnership of the City of Halle (Saale) and the housing cooperative "Bauverein für Kleinwohnungen e.G.", which owns the majority of the apartments at Johannesplatz.

BENEFITS

The car-reduced residential streets are now used only by residents. As a result of the area-wide system through traffic has been effectively eliminated. A mandatory speed limit of 30 kmph applies to all streets in the area, which has led to a visible reduction in traffic speed. The public park at Johannesplatz was fenced off as a no-parking area and work was undertaken to turn the compacted soil where parking had previously been allowed into a green space. Pedestrians can move easily and safely in the car-free area. This public space is now used by children as a playground, by teenagers as a meeting point and by adults as a place to congregate and chat with neighbours. The number of personal injuries caused by road traffic accidents has decreased significantly in the residential area.

METHODOLOGY

Stage by stage an area-wide system of car-free, car-reduced and traffic-calmed sections of streets was implemented. One street section was closed using bollards and became car-free. By doing this, the residential area was relieved of through traffic which was effectively eliminated.

In the western area of Johannesplatz provisional lane markings (denoting a white prohibited zone) were extended along the road and, therefore, the street in front of the schools was narrowed.

The public transport company and the housing cooperative now offer a 'residents' ticket': an annual season ticket for travel on public transport at a reduced price. By doing this the proportion of households with season tickets for public transport doubled between 1998 and 2001. About 80 per cent of adults are now frequent or casual users of public transport.

At Johannesplatz itself an outlet of the car-sharing provider "teilAuto Halle e.V." was established, with two vehicles for use. This was the first time in Germany that a car sharing outlet was set up in public street space – a situation which is not usually legally permitted but an exception was made for this demonstration project. The car-sharing company has judged the trial to be a success and is planning to expand.

SUSTAINABILITY

Due to an intensive consultation process with residents a consensus was reached on all measures taken. For this purpose the City of Halle (Saale) commissioned a local, neutral moderator. Additionally, the Wuppertal Institute for Climate, Environment and Energy was instructed on behalf of the German Federal Environment Agency to provide scientific advice and evaluation of the whole project. Three quarters of the residents were of the opinion that the measures taken were positive.

FINANCIAL ISSUES

All measures were low budget and followed the principle of traffic management rather than new construction.

Specific work undertaken included:

- coloured road markings and other non-expensive road reconstruction
- signage for traffic guidance
- creation of blind alleys instead of reconstruction

The most expensive work was the covering of cobblestones with tarmac – but this would have happened even without this project.

The permanent consultation process with the residents of Johannesplatz required further investment: a two-year contract for the services of the moderator who organised the consultation.

Additional costs came from the research (Wuppertal Institute), introduction of private capital (housing cooperative and car-sharing provider) and for public space and moderator (City of Halle).

OBSTACLES

At the beginning of the project, greater restrictions on car usage by residents (i.e. completely blocking off sections of streets to create car-free zones) were considered, but these measures would not have been feasible due to the resistance of resident car-owners.

The progress which has been made to date towards car-reduced living is not as far-reaching as initially hoped. The proposed strategy of giving priority to car-free households to rent apartments was barely adopted. This was due to the poor state of the housing market in Halle where several tens of thousands of apartments lie vacant (approximately 20 per cent are unoccupied). The housing cooperative was never in the position of being able to give priority to a car-free household over a car-owning household.



REPLICABILITY

Implementing car-reduced or car-free living in an existing residential area requires the following preconditions: a resolute public private partnership, intensive participation and positive project communication, proper choice of location, extensive car-reduced surroundings, promotion of car-independent mobility, letting apartments to car-free households, and project development integrated into the urban renewal process.

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HALLE ★ Die Modellstadt

Wohnungsbaugenossenschaft

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SUSTAINABILITY IN THE PUBLIC URBAN TRANSPORT MARKET (SIPTRAM)

Location:

Europe, for example
Göteborg, Sweden

Project's Aim:

Increasing public
transport use

Technical Answer:

Competitive
tendering

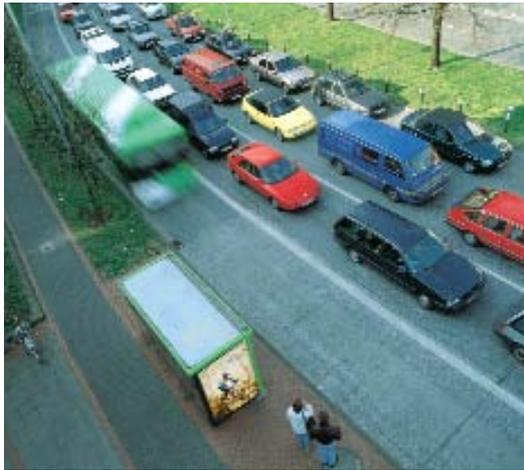


Photo: üstra Hannoversche Verkehrsbetriebe AG

Urban transport systems are subject to liberalisation (also known as competitive tendering), which is perceived partially as a threat, and partially as an opportunity to make systematic improvements and to develop high environmental and quality standards. The SIPTRAM project aims to encourage local and regional authorities across Europe to improve the environmental and quality standards in urban public transport through the competitive tendering process.

Competitive tendering combines elements of competition with effective regulation to ensure high quality and social standards. It refers to the awarding of an exclusive right to operate a route, or a network of routes, to an operator (or possibly a consortium) following a competitive process. Along with, or instead of, an exclusive right, the authority may also grant subsidies to the successful operator in compensation for the fulfilment of public service requirements.

The project has three objectives:

1. To trigger exchange on good practices between local politicians as well as between local technical experts involved in public transport

2. To explore how a dialogue between procurers, suppliers, manufacturers and regulators can lead to a mutual increase both in environmental and social standards as well as in the cost-effectiveness and quality of public urban transport

3. To enhance the commitment of local authorities and other parties to high quality and sustainable public transport, therefore strengthening political objectives in the course of public transport tendering

The project has been funded by the European Commission Directorate-General for the Environment under the Community Framework for Co-operation to promote Sustainable Urban Development and is being developed by ICLEI - Local Governments for Sustainability, the Verkehrsclub Deutschland (VCD) and European Federation for Transport & Environment (T&E).

BENEFITS

The introduction of competitive tendering was very successful in the Greater Göteborg area, as well as in the rest of Sweden. The main aim and effect was to achieve better public transport operating with the same levels of public subsidy. The main indicator of success is the number of passengers transported. In actual fact, between 1990 and 1997 the number of bus-km decreased by 7 per cent, while the number of passengers increased by 7.5 per cent. Therefore, the system is now used much more efficiently.

In Göteborg all environmental standards included in the tendering process were achieved. Through this, competitive tendering contributed to getting buses on the road with EURO 3 standards earlier than the legal requirements demanded. The aim of increasing the share of renewable resources, hence decreasing the reliance on fossil fuels, was achieved two years early; in 1998 fuels from renewable sources accounted for 15 per cent of total fuel consumption.

METHODOLOGY

In 1998, the city bus fleet in Göteborg consisted of 117 diesel buses with CRT-filters, 94 diesel buses without a filter and 38 biogas or natural gas-fuelled buses. Today Västtrafik operates a total of 93 CNG buses, 10 biogas buses and 32 ethanol buses. However, the biogas and ethanol buses are not used in Göteborg but in smaller towns in the southwest of Sweden. Around 40 different bus operators currently have contracts with Västtrafik AB. Around half of the total bus traffic commissioned by Västtrafik operates in the Greater Göteborg area.

SUSTAINABILITY

Competition has resulted in major cost savings in traffic operation whilst improving social and environmental standards. These savings can be used to increase the service levels and to reduce ticket prices. Competitive tendering can also enable rapid modernisation of bus fleets therefore improving environmental standards whilst service quality remains high.

In Göteborg, bus drivers' wages were kept constant by tendering requirements in the first years. However, since 1999 the wages have been increasing due to the growing demand for public transport services and the generally low levels of well trained staff in the employment market.

FINANCIAL ISSUES

The total cost of running the system increased slightly between 1991 and 1998, while the rising passenger numbers and slight fare increases led to a decrease in public subsidies from the city of Göteborg by 30 per cent. Cost recovery increased from 30 per cent in 1991 to 60 per cent in 2003.

OBSTACLES

The original rationale for setting up SIPTRAM was to promote competitive tendering in public urban transport as an opportunity rather than a threat or an obligation to improve environmental and social standards. These objectives are still relevant today in addressing the needs and problems faced by local governments and are becoming more relevant as the move to public private partnership increases and funding for local governments is reduced. However, the original objective has slightly changed due to the fact that many local authorities are sceptical about competitive tendering; therefore competitive tendering was promoted as one way of improving public transport.



Photo: üstra Hannoversche Verkehrsbetriebe AG

REPLICABILITY

For cities which are willing to undertake a similar project, it is recommended that specific emission levels are set as a criterion when tendering, rather than demands for specific technology. This means, theoretically, that the body which sets the tender will benefit from the reduction in emission levels, whilst the suppliers are responsible for providing the technology necessary to achieve the reduction.

It is important to highlight, however, that local framework conditions can be very different and that competition is not a must, but can be one of many mechanisms to help improve public transport.

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IMPROVEMENT OF TRANSPORT CONDITIONS IN SIBIU, ROMANIA

Location:

Sibiu, Romania

Project's Aim:

Regenerate urban public space and provide facilities for residents and visitors

Methodological Solution:

Transport strategy focusing on reduced car usage and on limited parking in the city centre



Photo: Karin Rossmark

Sibiu is an up and coming Romanian city which has been experiencing a substantial economic growth over the last few years. Rapid growth in private car usage has accompanied the increased prosperity of its population. The local public transport, on the other hand, is unable to meet the needs of the population. With its old and unappealing vehicle fleet, unreliable services and overloaded buses, the public transport service is avoided by residents who switch to using private cars as soon as they can afford it.

Since 2000 the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH (on behalf of the German Ministry for Economic Cooperation and Development), by means of the German-Romanian Cooperation Project "Rehabilitation of the Historic Centre" has supported the municipality of Sibiu in the renovation of houses and the conservation of urban space in the historic centre. The awareness that traffic management is an important issue has resulted in technical assistance for the development and implementation of a sustainable urban transport strategy. In light of Sibiu's forthcoming role as European Cultural Capital in 2007 and its application to be

awarded UNESCO World Heritage status, the development of a sustainable transport strategy for the city is of particular importance.

By implementing a parking policy and restrictive traffic routing, the transport strategy is intended to discourage driving and parking in the city centre. At the same time, by improving the infrastructure and service quality of public transport it is hoped that residents and non-residents will be encouraged to use these services.

BENEFITS

Focusing on the historic centre, both the parking policy and the new traffic routing will discourage non-residents to travel by car into the centre. Residents of the historic centre will be free from the current high pollution levels. Public space can be re-allocated, allowing for additional green space or landscaping to improve the urban environment. It is also anticipated that the historic centre will benefit economically from the extended car-free zones with the development of high quality shops and restaurants.

An immense reduction in energy consumption (i.e. fuel) can be achieved through a shift from private car usage to the use of public transport. The improvement of the public transport system, together with the restrictions put upon private car users, will also contribute to social justice and equality as it is generally the poorer sectors of society which rely on transport at reasonable costs.

METHODOLOGY

With the new circulation concept, the pedestrian zone will be extended and a centre-wide one-way system with loops will be introduced. Further traffic calming measures are planned for residential roads with the introduction of access and speed restrictions. In the long term the redesign of these roads is intended to create a safe environment that is resident and child friendly.

Additionally, a restrictive parking policy has been developed that includes residential and short-term parking. While residential parking permits have already been introduced, the implementation of short-term parking with higher parking prices and reduced parking time according to the proximity to the historic centre is planned within the next months.

For the upgrading of the public transport system, a sophisticated SWOT analysis of the current infrastructure and service has been conducted. With the focus on inexpensive, quick-to-implement measures, an action plan has been worked out that aims to address the problem areas.

SUSTAINABILITY

The general public was involved in the planning process in Sibiu, during which three major public consultations took place where the concept was presented and people could raise their concerns. At the end of the GTZ project in 2007, an urban rehabilitation agency will be established to continue the work. Knowledge transfer was provided through workshops, study tours and general cooperation. It is intended that this agency will also continue to consult on transport issues.



Photo: Karin Rossmark

FINANCIAL ISSUES

Requiring low levels of time input and limited financial investment, the project is reasonably efficient. Financial support of the project was restricted to consultancy services, while the municipality pays for the implementation.

For a period of one and a half years support was provided to the transport project by experts on a short-term basis, followed by one long-term assignment lasting 8 months. In addition to the concepts which were developed for the project, workshops have taken place with the purpose of providing information and training for local partners, and a study tour to Germany was organised for one of the local partners during the project period.

OBSTACLES

The major obstacles which needed to be overcome during the project were the shortage of reliable data, gaps in knowledge, lack of experience of local partners and uncertainties about regulations. In order to make the development of a comprehensive transport strategy possible, a comprehensive and accurate database has been compiled and knowledge has been transferred to local partners.

The active support from the municipality and its personnel was a key factor in the success of the project. Unfortunately, due to restricted funding it was not possible to expand the project e.g. to implement the public transport improvement strategy or to undertake further training of municipality personnel in modern transport planning techniques.

REPLICABILITY

It is likely that the principles of the project will be replicated, since it is a comprehensive strategy and the general objectives are applicable to all cities. With low investment costs and the possibility for the implementation to take place stage by stage according to the municipality's budget it would be, in addition, easily adoptable by most developing countries.

Investments in infrastructure need a comprehensive and reliable database as well as modern transport planning procedures. The Sibiu project serves to demonstrate how such data and models can be developed.



Photo: Karin Rossmark

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More information about **WISIONS**, application criteria for **PREP** and **SEPS**, as well as prior **PREP**-issues are available at:

www.wisions.net

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- I. Issue 2004 Resource Efficient Construction
- II. Issue 2004 Water and Energy – Precious Resources

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