



# **SOLUTIONS Knowledge Sharing Kit Cluster 1: Public Transport**

**[www.urban-mobility-solutions.eu](http://www.urban-mobility-solutions.eu)**



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## About SOLUTIONS

SOLUTIONS aims to foster knowledge exchange and boost the uptake of innovative sustainable urban mobility solutions through the further exploitation of existing knowledge.

The main focus of the SOLUTIONS project is on the exchange between cities from Europe, Latin America and the Mediterranean.

The project looks at the following thematic areas:

- public transport
- transport infrastructure
- city logistics
- integrated planning / sustainable urban mobility plans
- network and mobility management
- clean vehicles



## Introduction to Cluster 1: Public Transport

**Public Transport:** A crucial factor for achieving healthy and liveable cities and metropolitan areas

**Issues:** traffic congestion, traffic pollution, carbon emissions and energy consumption

**Main focus:** learn how to improve the public transport capacity and efficiency in an environment friendly pattern through policy making, technical improvement, integrated planning, etc.

-> Requires detailed discussion about ITS, BRT, subsidies, funding, pricing mechanisms, corresponding infrastructures & energy policy



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<b>SOLUTIONS for</b>	<b>Type of impact</b>
<b>BRT system construction and operating with high level service</b>	<b>Improve (Shift)</b>
<b>Trolley bus systems</b>	<b>Shift (Improve)</b>
<b>Metro systems</b>	<b>Shift (Improve)</b>
<b>Use and operate clean vehicles such as CNG, LPG, LNG in public transport system</b>	<b>Improve</b>
<b>Use new technology vehicles such as electric and Hybrid vehicles in public transport system</b>	<b>Shift (Improve)</b>
<b>ITS for public transport</b>	<b>Improve</b>
<b>Integrated planning of public transport network</b>	<b>Improve</b>
<b>Financing public transport</b>	<b>Improve</b>
<b>Integrated fare system</b>	<b>Improve</b>
<b>Eco-driving for professional drivers</b>	<b>Improve</b>
<b>Bus priority</b>	<b>Improve</b>
<b>Bike sharing and public bicycles</b>	<b>Shift (avoid)</b>

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## **Solution 1.1: BRT system construction and operation with high level service**

### **Objectives and implementation**

- Provide high level public transport service
- Increase public safety
- Enhance logistics function
- Supported through dispatching information systems
- Best implemented along main roads of cities and metropolises
- Will reduce congestion, increase passenger volume and reduce public transport carbon emissions.

## Solution 1.2: Trolley bus systems

### Objectives and implementation

- Public transport mode using electric propulsion
- Can be operated with renewable energy
- Reduces fossil energy use by maintaining (or even increasing) carrying capacity
- Support cities in achieving their climate goals
- Best implemented in the built up area of a city
- Effective means to implement electromobility in cities
- No local air pollution and less noise emissions
- Positive impact on local emissions



Trolley bus in Gdynia, Poland



## Solution 1.3: Metro systems

### Objectives and implementation

- Rapid public transport mode on rails without the need to change the structure of road networks and built up areas
- Almost independent from the topography of cities
- Best implemented in areas with the need of mass capacity in PT
- Metro systems attract passengers from other transport modes (private cars)
- Shift of passengers from private cars reduces congestion and emissions from cars

## **Solution 1.4: Use and operate clean vehicles such as CNG, LPG, LNG in public transport systems**

### **Objectives and implementation**

- Reduces air pollution and carbon emissions from public transport
- Compressed natural gas (CNG), liquefied natural gas (LNG) together with liquefied petroleum gas (LPG) have higher fuel efficiency and much lower emission of pollutants than diesel
- CNG, LPG and LNG vehicles can be operated in cities of all sizes
- Potential for considerable impact on air quality
- Reduces heavy reliance on traditional fossil fuels



CNG bus, Delhi, India (Markus Spring)



## Solution 1.5: Electric and hybrid vehicles in public transport systems

### Objectives and implementation

- A good opportunity to test and implement electromobility
- Electric vehicles help to reduce local air pollution and noise
- Hybrid vehicles have greater flexibility due to the extended range offered by a conventional aggregate
- Aims at attracting more passengers to clean public transport
- Scope: city and metropolitan wide
- Works best along dedicated corridors



Figure 3: Hybrid bus, Germany



## **Solution 1.6: ITS for public transport**

### **Objectives and implementation**

- Helps passengers to receive real-time information on arrival and departure times of vehicles
- Provides further information services to travellers
- Allows for monitoring of vehicles and traffic situations to respond to disruptive situations
- Can be applied at subway and bus stations
- Can be applied on board of vehicles using GPS and GPRS
- Raises the attractiveness of public transport: shift from other transport modes
- Ensures the safety of public transport operation
- Makes management effective and convenient



## **Solution 1.7: Integrated planning of a public transport network**

### **Objectives and implementation**

- Align the public transport network and operation with the overall urban planning layout
- Often a subset of sustainable urban mobility planning
- Keep travel distances between urban functions short, efficient and manageable by walking, cycling and public transport
- Cross-sector cooperation inside the administration is important
- Best applied in cities (or areas of cities) with insufficient public transport capacities



## **Solution 1.8: Financing public transport**

### **Objectives and implementation**

- Make sure that public transport has sufficient investment capital to keep high quality service and to keep up with increasing demand
- Balance between high quality service and affordable pricing
- Driven by participatory decision making & good transport planning practices



## **Solution 1.9: Integrated fare system**

### **Objectives and implementation**

- One of the basic conditions to provide convenient access to a public transport system in a city
- Allows transfers within or between different transport modes with a single ticket that is valid for the complete journey
- Public bicycles or carsharing could be included



## **Solution 1.6: ITS for public transport**

### **Objectives and implementation**

- Eco-driving has the potential of saving up to 20% of fuel
- Improve eco-driving skills of bus drivers to improve energy use efficiency and reduce emissions
- Applied to professional drivers of buses, subways and light rail systems
- Reduces fuel costs & wear and tear of the vehicles



## **Solution 1.11: Bus priority**

### **Objectives and implementation**

- Increase the average travel speed of public transport buses in cities
- Buses will be given priority at intersections and hence reduce travel time while operating
- Applied at intersections along given bus routes in cities

## Solution 1.12: Bike sharing and public bicycles

### Objectives and implementation

- Fixed rental bicycle systems will solve the 'last mile' problem in urban transport systems
- Provide truly door-to-door travel connections
- Provides means of transport for population in high-dense residential areas
- Best combined with public transport hubs
- Drivers are safe cycling infrastructure & good access to installations



Foshan, China



# Thank you!

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