

# Smart Mobility for Urban Sustainability

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# Sustainable Urban Transport

The biggest challenge of sustainable transportation policy in urban areas is **to decrease car use in densely populated areas** where the highest traffic flows are observed.

**The sustainable transport means less energy and land consuming investments** without decreasing an indispensable mobility.



# 10 commandments for sustainable urban transport

In the cities facing really big transportation problems

**the Decalogue for Sustainable Urban Transport Strategy,**  
could be very helpful.



# *I. Promotion of public transport modes*

**Better accessibility and higher attractiveness of public transport modes can be done by:**

- **Development of high quality public transport networks, even when it decreases the road capacity**
- **Preferences for public transport vehicles in traffic**
- **More convenient interchanges**
- **Convenient and environmental friendly public transport vehicles**
- **Smart Travel Planner.**



## *II. Car restrictions within the cities*

**Can be done by high charging of using more cars in a household and limiting their number to 1 in case of households within parking charging zones.**



### *III. Fuel prices can never go down*

**Lowering fuel price makes people who choose public transport because of economical reasons going back to the car use. Profit gained when the market fuel price goes down should feed the city fund for public transport development.**

During last 3 years fuel price in Poland dropped by 26.7% i.e. by 1.58 PLN/l – ca. 0.8 PLN/l on average during last 36 month. As Polish drivers buy per year ca. 19m m<sup>3</sup> of fuels they paid during this period ca.45bn PLN less. Assuming that the fuel price will not decrease and these gains are kept on eco-found account, construction in Polish cities of 500 km of rail rapid transit + 2000 modern trams or 900 km of urban expressways, as by-passes for decreasing the through traffic.



## ***IV. Ecological transport tax***

**Each car ride is automatically taxed and the tax amount depends on the city district, journey length, emissions, the noise level and on the day time (the highest during pick-hours).**



## *V. Promotion of more environmental friendly vehicles*

**Buying more expensive hybrid or electric car should be awarded with a couple of gains, connected with its purchase (lower VAT and registration fees) and use (entering limited access zones, lower parking fees, etc.).**

**Car-pooling should be awarded also by allowing to use the bus lanes.**





## *VI. Equal access to PT modes*

**Can be done by arranging better conditions of functioning in the city environment for the handicapped and those who can not use private vehicles, and are fully dependent on the city transport.**



## ***VII. Co-financing of transport investments***

**All real estate owners should participate (by paying a higher tax) in financing all local investments which increase accessibility of their houses, flats and plots.**



## ***VIII. Sustainable spatial planning policy***

**Revitalization of urban areas with multifunctional and intensive land use, which makes that transportation needs are lower and more journeys can be covered by walking and cycling.**



# ***IX. Better telecommunication services***

**Access for everyone to high quality telecommunication and Internet networks, which can in many cases substitute travels and, what's probably the most important, makes tele-working possible.**



## *X. Better goods transport management*

**Deliveries within the city should be served by smaller (instead of HGV) and more environmental friendly (using alternative fuels) vehicles or, if possible, by train.**



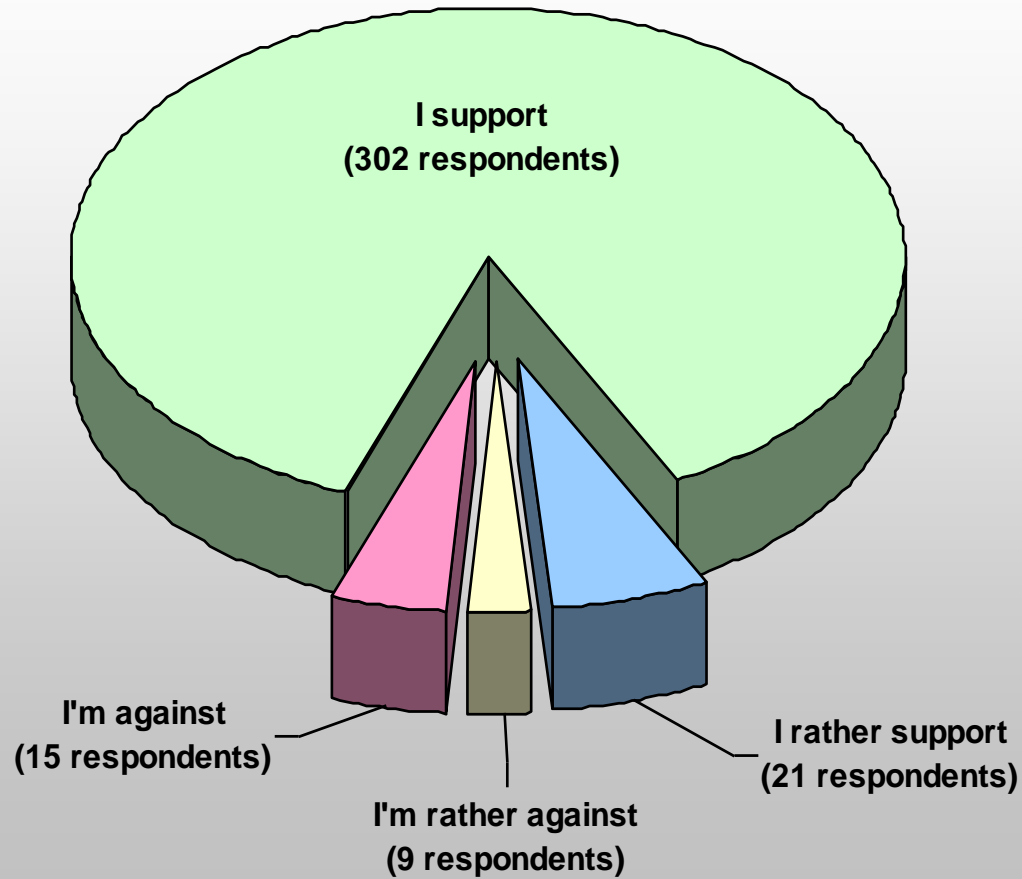
## Public opinion on the Decalogue

The survey was conducted by the Road and Bridge Research Institute during the X-th Public Transport Days on 17-18 September 2011 in Warsaw.

**347 respondents fully filled-in the questionnaire, including 188 men (54.2% of respondents) and 159 women (45.8%).**



## Decalogue acceptance



# **Coordination of spatial and transport planning policy is the best way of sustainable city growth management**

**It helps in organizing multifunctional and intensive land use which forms a good basis for development of environmental friendly and more attractive for people public transport rail modes.**





**In Warsaw coordination of spatial and transport planning policy follows the guidelines prepared in three main city documents:**

- **“Development strategy for the city of Warsaw until 2020”,**
- **“The study of Warsaw spatial development conditions and directions of development”,**
- **“The strategy for sustainable development of Warsaw transport system by 2015 and subsequent years”.**



**Due to the presence of similarities in buildings quality and land development, the area of Warsaw has been divided into three basic functional zones:**

- the downtown zone (including an identified city center area),**
  - the urban zone and**
  - the suburban zone,**
- for which development guidelines and directions of change have been formulated.**



## Three city zones (downtown, urban areas, suburbs) differing in:

- access restrictions for cars and heavy vehicles,
- requirements concerning the public spaces and conditions for pedestrian and bicycle traffic,
- level of privileges for public transport,
- requirements concerning the number of parking spaces,
- level of parking fees diversified also on the basis of parking time.



# Parking policy

for offices

- In the downtown: 5 – 18 parking places/1000 sq. m.
- In urban area: 18 -30
- In the suburbs: 25 – 40

**For offices, trade and service facilities minimum 5 places for bicycles should be provided per 1000 m<sup>2</sup> of usable area.**



# Changing drivers behaviour

Could be done using **enforcement or incentives**.

**The rule „user/polluter pays” should be applied.**

Enforcement can use some urban transport policy measures, supported by the ITS tools.

It can be very efficient, and must be used in some cases, but people hate it and can start to be against the whole idea of sustainability.

**So, incentives are better!**



## **We'll concentrate on improving travel info by the implementation of the Smart Eco-travel Planner (SEP)**

It should provide reliable advising for optimal travel planning, according to:

- actual traffic conditions,
- road accidents,
- PT strikes and
- air pollution,

taking into account also personal circumstances.

Personal needs, habits and limitations should be aploaded by each system participant to the **SEP's Personalized Internet Portal (PIP)**



# PIP should cover the following data:

- Home and workplace locations
- Working hours
- Other obligatory trips (taking children to school, sport activities, church, etc.)
- PT season ticket, if any
- Using own bicycle or a city bike
- Accepted cycling and walking distance, depending on weather conditions
- Car type (for calculation emissions – or e-car)
- Location of favorable P+R
- Member of a carpool team?
- User of car-sharing system?
- Accepted travel time limit
- Accepted travel cost (for taxi or call-a-ride service)



**If something unusual** (have to take a car because of a heavy luggage, etc.)

**PIP should be informed before.**

**Before each travel** (obligatory during pick-hours from home and work) suggestions on the most suitable travel mode , with **detaile route description** (in case of PT – what time at what bus stop, where change for metro; also best route for cycling and walking) is **available on ones PIP or a smart phone.**

Those choosing car will get for their on-board navigation an optimal route, according to actual traffic constraints and air pollution in particular area. **Using e-car or car instrumented for eco-driving, and following suggested guidance will be awarded**





# Tasks for the main PIP stakeholders

**Individuals:** To inform PIP on travel needs and try to follow social behavior principles

**Big companies** (workplace providers): to promote tele-working, decrease capacity of parking lots, participate in PT season tickets cost, provide cycling infrastructure (a shower, etc.)

**PT Authority:** to improve quality of operations, adjust capacity to demand, inform ARTS on-line on PT vehicles location

**Traffic Control Center:** Avoiding traffic jams (alternative routes), informing ARTS on-line on traffic constraints, parking capacity and sectoral traffic speed



# Tasks (cont.)

**Environmental Dpt.:** to inform ARTS on-line on air pollution in particular areas

**ARTS operator within Traffic Management Center:** to gather and proceed data, advice individuals, coordinate PT and road traffic

**Media:** to promote idea of sustainable transport using celebrities and individuals with their success stories

**City Hall:** to implement sustainable transport policy measures (including MILU) and calculate gains of changing drivers behavior



# Business Model

Financial Div. of the City Transport Dpt. **calculates gains** of the lower car use:

- Lower costs of road construction and maintenance
- Shorter travel times
- Better environment
- Better inhabitants health
- New workplaces
- Green City image

**minus costs** of ARTS implementation



# BM (cont.)

**The profit** should be used for:

- Further improving of environmental friendly travel modes (PT, P+R, cycling, etc.)
- Tax relief for participating companies
- **Incentives for individuals** (everyone gathers points for each eco-friendly choice): free PT season tickets, access to the „rare goods“: best kindergarten, star concert free ticket, etc.



# Rules of competition for individuals

- **Each travel mode decision is calculated** in PIP – comparing with using average (for the city) car emissions during pick-hour.
- **Social cost** (covers: emission, noise, other travellers time losses, risk of traffic accidents) **of each travel is measured** in Euro and changed on points.
- **Using a car with higher emissions one receives minus points**, when travel by e-car, a new car, on alternative fuels, etc. is awarded with plus points. **Higher number of plus points you'll receive choosing PT modes, cycling or walking.**
- Those with the highest points number are periodically awarded and presented by media.



# SEP implementation costs

More complicated system (as presented for the year 2030) will cost more, but its **efficiency in changing:**

- **drivers behaviour,**
- **decreasing pollution**
- **and improving traffic conditions**  
**will be higher.**

**C/B analysis should be applied.**

Each city have to decide what quality of TMC and PIP to choose  
– according to its budget surplus and expected gains.



***All seminar participants  
are asked to disseminate the  
questionnaires in their cities,  
helping this way in checking  
acceptance for my Business Model.***



# Thank you for your attention!

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