

EUROPEAN TRENDS AND STRATEGIES ON SUSTAINABLE URBAN MOBILITY

Elena Valentina DUMITRU¹, Cornel NIȚU², Cornelia Maria NIȚU³

Abstract. *Urban transport systems are an integral part of the European transport system and hence of the common transport policy in accordance with Articles 70 and 80 of the EC Treaty. The European Union can encourage authorities at local, regional and national level to adopt long-term integrated policies on the continued development of public transport services and can also help authorities find interoperable solutions. Establishing common standards for the entire single market allows for a larger volume of production, while reducing the cost to the customer.*

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1. Introduction

Transport is related to all aspects of urban life: leisure, education, business and industry. Ensuring an efficient urban public transport system is therefore necessary in order to avoid large and costly disturbances in urban life.

Following the Rio de Janeiro conference in 1992, the Agenda 21 document was adopted, a document on sustainable development that supports a number of environmental management policies [1]. These include the following principles:

- *Precautionary principle:* if it is clear that a proposal will damage the environment, measures should be taken to protect the environment without waiting for scientific evidence of damage.
- *Polluter pays principle:* the total costs associated with pollution (including monitoring, management, greening and surveillance) should be borne by the organization or person responsible for the source of the pollution.
- *Clean air* is an essential element of a sustainable city for several reasons:
- *Quality of life:* The European Commission estimated in 2005 that citizens in the European Union have a lower life expectancy of around 8 years only because of air pollution with fine particles;
- *Economic costs:* Clean air also brings an increase in the welfare of society by eliminating the cost of health services for citizens suffering from pollution [2].

¹PhD Stud, Valahia University of Targoviste, Targoviste, Romania (valy_1973_d@yahoo.com).

²PhD Stud, Valahia University of Targoviste, Targoviste, Romania.

³PhD Stud, Valahia University of Targoviste, Targoviste, Romania.

Worldwide there is a wide variety of ways in which transport energy is used, as it can be seen in Table 1.

Table 1 Various transport patterns in the world

<i>PARAMETER</i>	<i>ASIAN CITIES</i>	<i>EUROPEAN CITIES</i>	<i>CITIES IN THE US</i>
FORM OF OWNERSHIP OF CARS (CARS PER 1000 PERSONS)	109	392	608
WALKING AND CYCLING (% OF WORK TRIPS)	19	18	5
THE ROLE OF PUBLIC TRANSPORT (% OF TOTAL KILOMETERS TRAVELED)	48	23	3
USE OF CAR PER PERSON (KM / INHABITANT / YEAR)	1397	4519	11155
ENERGY USED PER PERSON (PRIVATE PASSENGER TRANSPORT, MJ)	6969	17218	55807

(source: Hurford, N. *City Blueprints. Pathways to Sustainable Mobility*. Power Point presentation)

2. Impact of public transport on the environment

Transport is one of the main sources of pollution in Europe, especially in urban areas, ports and airports. The main pollutants resulting from the combustion, for all transportation, include nitrogen monoxide and nitrogen dioxide (collectively referred to as compounds NO_x), particulate matter (PM), carbon monoxide (CO) and volatile organic compounds (VOC).

Also, PM emissions are due to mechanical processes caused by brakes, tires and road surface interaction, which are not currently regulated. VOC emissions also result from the evaporation of petroleum products, such as when supplying cars at petrol stations or supplying storage tanks. All these emissions together with the resulting secondary compounds (e.g. ozone - O₃) can cause adverse effects on human health and the environment in general [3].

The main fuels used in transport and which are sources of pollution are the following:

- Gasoline;
- Diesel;
- Natural gas;
- Liquefied petroleum gas (LPG);
- Biodiesel.

Electric vehicles do not produce significant emissions when driven in urban areas, but power plants producing electricity can have a significant impact.

Power plants using fossil fuels (especially coal or petroleum products) are a major source of SO₂ and NO_x.

A comprehensive strategy to reduce pollutant emissions from cars includes four key components [4]:

- ever-increasing standards for new cars;
- clean fuels;
- programs to ensure proper use of in-service vehicles;
- planning of related activities.

3. External transport costs

Transport costs are classified as they follow:

- **Accounting costs.** Includes all expenses incurred in connection with the provision of services: staff, amortization, fuel, maintenance, repairs, etc .;
- **Economic costs.** They are associated with alternative cost theory or opportunity cost theory. The cost of an action is equivalent to the value of opportunities that have been dropped for action;
- **Social (external) costs.** They appear when someone other than the carrier or the beneficiary is affected in some way by the provision of the transport service. The external cost consists of additional resources that a third person has to spend to maintain their initial standard of living.

The category of Social (external) costs consists in environmental costs, those indirect costs that are not paid by the actors responsible for them (the polluters), but by the society as a whole.

External costs are the costs incurred due to the destruction of the environment or of the health of people.

As a result, there is a tendency to excessively use the transport sectors at high external costs.

Environmental costs are an integral part of the externalities and there are several ways through which they can be calculated [5].

Estimating external environmental costs is a matter of dispute in politics and science. Protagonists claim that prices should reflect true environmental value and therefore should not be recovered from society, but from responsible actors. Skeptics claim that it is impossible to make truly reliable estimates of external costs and these estimates are arbitrary and therefore unnecessary [6].

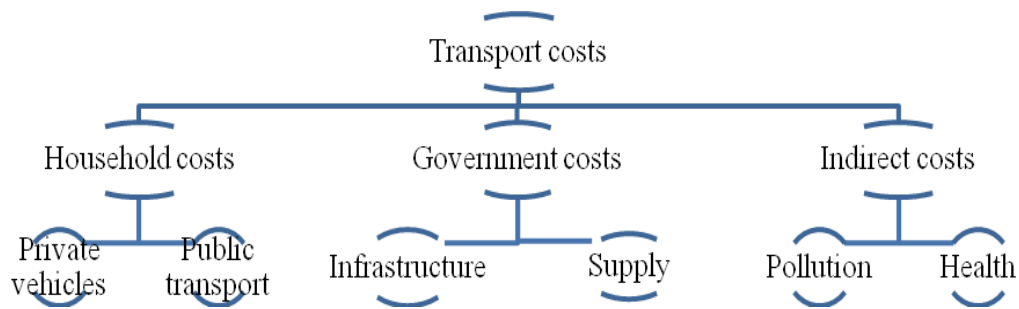


Fig 1. Costs of transport activities.

(source: *Benefits of Transport CO₂ Reduction for cost. CATCH Fact sheet series*)

The European Union acknowledges that urban public transport plays a fundamental role in achieving the objectives of economic competitiveness, social cohesion and sustainable urban growth. Mobility is a fundamental necessity of 21st century life that provides access to primary activities and education, communication and relaxation services. Today, however, operational mobility models are unsustainable and cities suffer from congestion resulting from high traffic, pollution and the degradation of some community and social functions. In this context, the research objectives on urban mobility introduced in the Research Framework Program are relevant: improving the mobility of people and freight transport, developing efficient, safe and intelligent urban transport systems, new technological, economic and regulatory elements, new and accessible public transport systems. Urban public passenger transport is vital for the future development of cities and must contribute to ensuring a quality standard of living for the inhabitants in a safe and healthy environment.

The global vision of the International Union of Public Transport - IUPT is to double the percentage of public transport by 2025, in terms of accessibility, reliability and safety. A key element of EU transport policy, including the urban public policy, is the internalization of external costs and the assessment of costs and environmental impact over the lifetime of equipment and services. In the context of reducing pollution and streamlining TPUC activities, the management and reduction of energy consumption in the buildings of a TPUC company is an important aspect, often neglected and in the shadow of the main task of reducing fuel costs in the core business. Sustainable urban mobility depends on a complex set of legislative, institutional, operational and strategic elements. In Romania, especially in recent years, a series of formal institutions emerged without the normative acts that could support their action being built. The legislative gap in our country, coupled with the lack of clarification regarding the public utility services, their management, control and development, leads to an institutional chaos that removes us from the bottom.

The natural order in which we have to fit clearly shows that first of all we need to establish the competent institutions and bodies in conjunction with the emergence of the impetuous normative acts necessary to carry out the subsequent processes. In the next stages, short, medium and long-term projects are needed to adapt to the trends of society, economy and technology, to provide funding for their implementation and development.

Conclusions

Unfortunately in our country, we still cannot overcome the first stage, which makes it difficult even to keep operational current public transport services increasingly removing the prerequisites imposed by sustainable urban mobility.

Probably, with the development of ITS (integrated transport services) throughout the European Union, the pressure on our country will increase, thus being directly forced by the circumstances to start the whole process described above, but basically hopping over some essential steps not to create problems regarding the adaptation of existing service operators.

R E F E R E N C E S

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