

SOLUTIONS AND MEANS OF ALTERNATIVE TRANSPORT IN THE CONCEPT OF SUSTAINABLE DEVELOPMENT

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Abstract

The paper aims to achieve an overview of innovative initiatives on alternative transport in recent years in the context of increasing emissions of greenhouse gases. In this context are presented the main problems caused by motorized traffic in the urban agglomerations. Also, there are mentioned measures that could be implemented in busy urban areas. On this occasion are mentioned both new technical solutions and new means of alternative transport type. Additional, specific projects and programs are highlighted using bicycle transportation. There are mentioned initiatives regarding urban transportation completed in European projects such as: CIVITAS, EFFECTS etc. The examples and figures are mainly focused on Romania.

Keywords: Alternative transport, sustainable development, traffic, innovative transport solution, bicycle

JEL Classification: R40, R41, R11, Q51, Q53

1. Introduction

The issue of reducing total greenhouse gas emissions mainly based on decreasing fuel consumption, fuel produced from mineral resources, in order to reduce the negative environmental impact, is a major focus of the past 20 years [1]. In this respect several European countries and not only they have had interesting and innovative initiatives materialized in projects that, in some cases, were funded by specialized financial organizations in the European Commission.

This paper aims to bring to the fore such initiatives as a synthesis of best practices generated by the implementation of these initiatives and/or projects. On this occasion are highlighted creative ideas and innovative solutions on alternative transport and sustainable development of the local communities, as well [2].

Air pollution in Europe in the period 1990-2004 showed that despite reductions of emissions, high concentrations of fine particles and ozone at ground level also brings still problems in many cities and surrounding areas [5]. Fine particles in suspension are now generally recognized to be the main threat to human health coming from the air pollution. The World Health Organization (WHO) estimates that about 100 000 deaths a year could be linked to air pollution in cities from Europe, shortening life expectancy level by a year on average.

A major cause of air pollution and noise problems is represented by the increasing of motorized traffic which causes and reduces green space and quiet area of town centers. This major cause induces people to move from the city to the suburbs and the countryside. The new low-density urban areas lead to wider use of individual means of transport, which emphasizes existing problems.

On the other hand, we have to be aware relating to the major pollutants that are coming from the vehicles: particulate matter, hydrocarbons, carbon monoxide, nitrogen oxides, greenhouse gase, sulfur dioxide etc. In order to avoid all of these we need to implement few technical measures: we have to design much cleaner vehicles, we have to use new fuel technologies to produce eco-fuels, we need to reconsider to use oil to a reduced scale for “feed” classical engines and we need to redesign old engines in order to reduce the fuel consumption and use eco-fuels.

The main problem for the cities is related with the traffic levels. In this regard, local administration has to be guided by an adaptive and evolutionary approach of understanding the traffic. Specifically, based on studies and research of traffic, every city hall is required to build a system that cover traffic monitoring in real time.

This is necessary not only for local public transport but for the entire assembly represented by all means of transport that crosses the city.

2. Traffic management solutions efficiency and specific initiatives

A monitoring system can signal in real-time the major events in traffic: accidents, traffic jams, queues in traffic, damaged roadways but in the same time identify the adverse weather conditions unfitted to smooth traffic. All these situations negatively influence the levels of air pollution and even of the soil, and an increased amount of noise pollution. From the point of view of the minimal features of monitoring system it would be necessary:

- Monitoring system has to have video and audio components but with the mounting of cameras in every crossroads, every main thoroughfare of the city but also in roundabouts;
- Monitoring system has to be integrated with the work of public utility and emergency services (police, ambulance, fire brigade, the special emergencies services), and the relationship with local police to be developed through the creation of a Jointly Supervisory Body;
- To use computer applications for mobile devices, i-phones, i-pads, smartphones etc. of crowd-sourced type such as Waze, Google Traffic who can inform in real time the loadings/traffic levels on each street, avenue or road and that provide solutions of decongesting traffic routes;
- Monitoring system also has to contain a subsystem of communication and warning alert for traffic problems in order to obtain traffic fluidity and traffic decongestion.

The monitoring system is not the only solution in order to underline the negative impact on the environment. Each local administration should identify proactive and viable alternative for the transport [4].

Urban mobility management plans to discourage individual car transport and encourage the use of the bicycle and the public transport system.

The idea is simple: you have to give to the people a safer alternative, more convenient, faster and cheaper to transport by personal car, and this is possible with a public transportation system that would serve to ease any point in town with a high frequency. From here it will be solved many problems: reduced congestion, reduced pollution, increased urban space availability, increased traffic safety, pedestrianization is done with greater ease and sidewalks are back to pedestrians.

An example of good practices is the rapid transit system, known as bus rapid transit, an innovation developed under the administration of Jaime Lerner in Curitiba already in the 70s. Today, more than 166 cities around the world have adopted this model of operation for the urban public companies. It is a system easy to be deployed, with a low initial investment, with low operating costs which can operate profitably and autonomously in financial terms.

An example of a rapid transit system, based on buses, with superior operating parameters of any subway system in the world is the system from the Guangzhou City, China. There are several major features of the system:

- exclusive / dedicated road corridors;
- payment before boarding, in closed boarding stations (similar to a metro system);
- boarding at platform;
- the use of bi-articulated vehicles with a high capacity on major routes;
- strong and attractive brand identity.

Another example of a successful project is an alternative to the taxi system called Uber. This project was implemented in Berlin and included taxi services as: Alligator Shuttle and electric version Clever Shuttle. These services are designed to transport in taxi regime different people which are taken along the way but with similar destinations in order to reduce transportation costs, reduce pollution and traffic decongestion.

Many people look cycling as a hobby, omitting the fact that in most Western cities this two-wheeled vehicle is a means of transport that is legitimate as possible [3].

3. Projects and programs specific alternative transportation

In many European countries including Romania in the last decades were implemented specific projects and programs related to alternative transportation, in general, and to bicycles, in particular. For instance, in Romania many initiatives were supported by Green Revolution Association which represents a very active organization in terms of promoting projects that are mainly focus on using bicycle. In the following paragraphs will be described some of these projects.

The program StudentObike

Over 30,000 students have pedaled bikes StudentObike, provided by Raiffeisen Bank and Green Revolution Association. Since the launch of the project in October 2010, over 45,000 students have used bicycles in cities included in the project: 12,000 in Bucharest, 9,000 in Iasi, 7,000 in Brasov and 4000 in Cluj-Napoca, according to representatives of the Green Revolution Association [7].

Bike2Work Project

Bike2Work is a project co-funded by the European Union, held under the aegis of the European Cyclists Federation (ECF) and is mainly aimed at encouraging transport employees to and from work by bicycle.

Green Revolution Association was joined this project with other organizations of 11 European countries (Netherlands, Germany, Denmark, Austria, Italy, Slovenia, the UK, France, Croatia, Malta and Bulgaria).

The campaign was developed in the period 2015-2016 and has proposed to change behavior and mentality of employees, and also to encourage employers to meet the needs of cyclists. The project Bike2Work promoted bike as best alternative transport for the journey to work and back [7].

CycleLogistics Project

A project developed from May 2011 to April 2013, CycleLogistics is a project funded by the European Union through the Intelligent Energy Europe Program (IEE), with coverage of 11 countries in Europe, which aims to reduce energy used in urban transport of goods. Green Revolution Association supported the initiative CycleLogistics and, between September 10, 2013 and April 30, 2014, has implemented various actions to promote the bicycle as a primary means of travel and transport of light goods [7].

Also is important to mention that the European Union has financially supported projects such as CIVITAS, EFFECT etc. by which was encouraged and developed the use and implementation of new modes of public transport such as cycling tracks and hybrid vehicles. Meanwhile, new green technologies for the houses construction and transport infrastructure are currently being studied, are experimented or being implemented. CIVITAS initiative was represented by several schemes: CIVITAS I, CIVITAS Plus, CIVITAS II having as fundamental support an integrated urban transport in a modern, sustainable, clean and economical way.

4. Figures and statistics regarding bicycles in Europe (2012 vs.2015)

According to the report called COLIPED (The European Two-Wheeler Parts and Accessories Industry Association): EUROPEAN BICYCLE MARKET / Industry & Market Profile created in 2012, in Romania is getting about 4% of total production of bicycles in Europe while in Bulgaria the percentage is around 7% (figure 1).

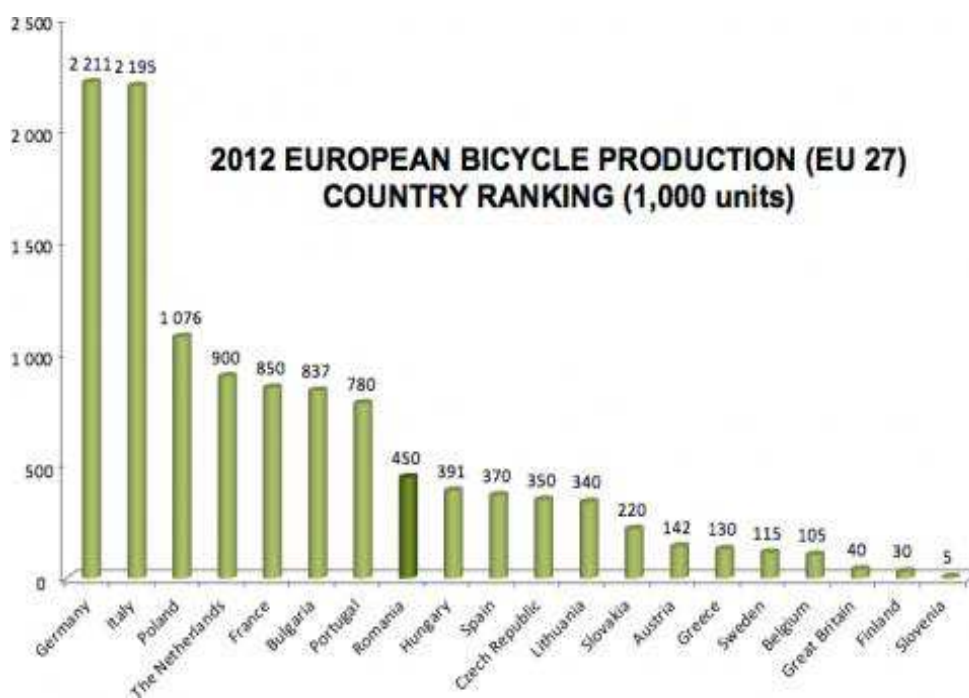


Fig.1. Countries from EU ranked by European Bicycle Production (2012)

Source: COLIPED Report (The European Two-Wheeler Parts and Accessories Industry Association): EUROPEAN BICYCLE MARKET / Industry & Market Profile (2012 statistics)

On the other hand it could be observed that Romania is ranked on the 8th place in EU 27 related to the total production of bicycles with a total production five times smaller than the leader Germany.

By comparison, the similar report (COLIPED) but for the year 2015, put Romania on the 6th place in the EU28. As is presented in that report at page 15, Romania has doubled the production (900.000 units towards 450.000 units in 2012). By country share Romania' production cover almost 7% from total EU28 production.

Also according to the same report Romania was ranked on the third position in the production of bicycle'

parts and accessories in Europe, slightly behind Germany. Romania made rather spare bike while Bulgaria rather assembles bicycles (figure 2). Romania is placed near to Germany and has a production 2.5 times smaller than Italy, the leader on the market.

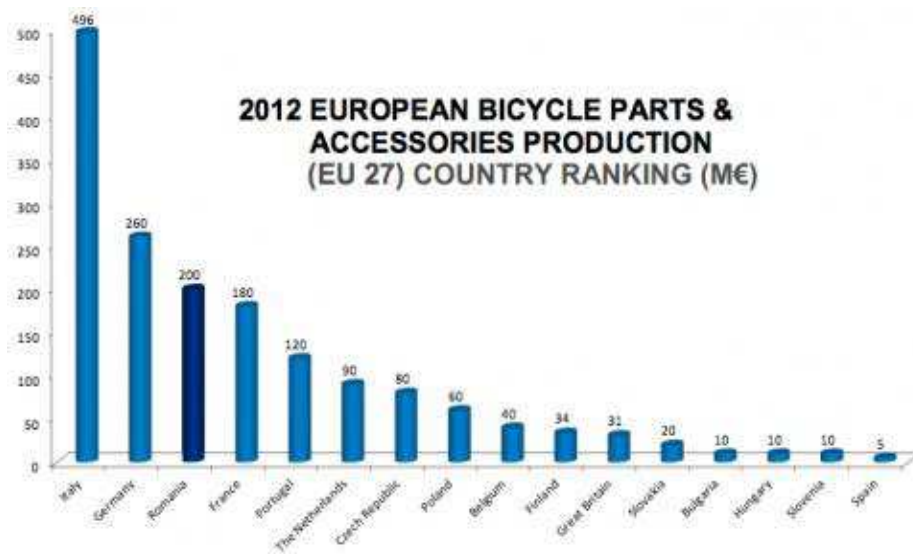


Fig.2. Countries from EU ranked by European Bicycle Parts and Accessories Production (2012)

Source: COLIPED Report (The European Two-Wheeler Parts and Accessories Industry Association): EUROPEAN BICYCLE MARKET / Industry & Market Profile (2012 statistics)

Also, taking in account the COLIPED Report from 2015, as is shown at page 18, Romania is ranked on second place, related to the production of bicycle parts and accessories, after Italy and at the same level with Germany (equivalent of about 300 M€).

According to a recent comparison between sales of cars and bicycles in the European Union, the bikes are better sold. With two exceptions (Belgium and Luxembourg), in the other 25 EU countries in 2012 were sold more bicycles than cars. And Romania is one of the countries with the biggest contrasts between the volumes of bicycles vs. cars sold (figure 3).

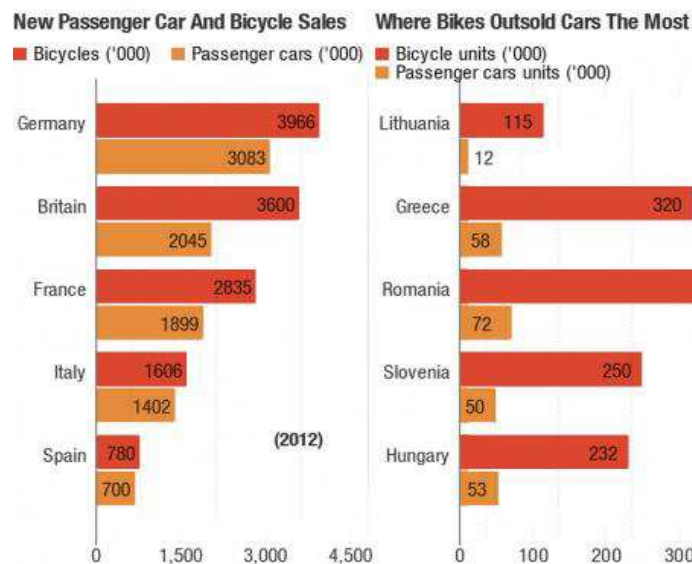


Fig.3. Countries from EU ranked by car and bicycle sales (2012)

Source: In Almost Every European Country, Bikes Are Outselling New Cars, October 24, 2013

(<http://www.npr.org>; <http://www.acea.be>)

In the same time, COLIPED Report from 2015, at page 22, ranked Romania in the 11th place regarding bicycle sales in the EU28 with about 400.000 units from a total of 20.751.000 units. By comparison with the level achieved in 2012 by Romania is a very small increase (5%).

5. Conclusions

In the context of a large number of road congestion, increasing concentration of greenhouse gases in the atmosphere and the fact that light goods are often transported on very short distances with heavy duty vehicles is requested to replace motorized vehicles with bikes for transport of light goods. The main action area is within European cities, prone to pollution and congestion, mainly cause is represented by cars. The advantages of using bicycles and cargo-bikes can be mentioned [8]:

- Decreased energy consumption and CO2 emissions;
- Decongestion, decrease noise and pollution;
- Expanding the space available for citizens;
- Increasing the quality of life in urban areas.

In 2012 Romania was ranked as the third country in the production of bicycle parts and accessories in Europe, slightly behind Germany. Romania is achieved at that time rather spare bike while Bulgaria rather was assembles bicycles. In Romania, in 2012 were sold officially 380.000 bicycles, compared with just 72,000 cars, the trend remained unchanged in Slovenia, Hungary and in many other countries in the region, while the ratios of sales in Western states were more balanced [6], [9], [10].

In 2014 in Romania, the bicycle industry was producing annual revenue of 45 million euro. This figure is about 20 times lower than in France, where every year the amount reached 850 million. The undisputed leader in Europe remains Germany. The bicycle industry produces in Germany annual revenues of 2 billion euros. In each of the past five years, the Romanian market increased even by 15 percent. The statistics placed the local market in the eighth place in the EU, Romania being responsible for 4% of total production achieved by the 28 markets of the member states of the union. In 2015, in the EU28, Romania is placed in the first part of hierarchy as is follows: 6th in the total bicycle production, 2nd related to the production of bicycle' parts and accessories and 11th place regarding bicycle sales [11].

In order to explain the trends we could declare that the evolution in terms of selling bicycles is favourable to this transportation mean rather for trends regarding cars selling. This is not meaning that in absolute figures are more bicycles that cars but we could say that people are aware of advantages generated by using bicycles: improved health, saving costs, less pollution.

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