

Soft Approach in Planning and Transport¹ Saving Resources and Decreasing Pollution

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Abstract—The *soft approach* stands for change in traffic policy and regulatory measures which calls for different organization and control of the traffic network. This paper shows examples of best practices which present the possibility of improvement and advancement of the environment by using the *soft approach*, as well as the “green” and “brown” agenda. The domain of planning also includes the use of the “green” and “brown” agenda, which are being implemented through different programs of improvement, as well as through recycling of brownfield spots and their use as significant urban resources for new purposes.

Key words—*soft measures*, “green agenda”, “brown agenda”, *sustainable mobility*

I. INTRODUCTION

The indicator of the living environment in cities is air pollution levels as an accompanying phenomenon of urbanization and, particularly, the development of traffic. Besides a positive effects of the development of an urban network, the accompanying negative influences contribute to the degrading of the living environment (4, pp 8). Traffic influences the environment by occupying space, by visual degradation, increasing air pollution, noise and vibrations levels and using non-renewable resources.

These problems are reacted upon within urban and spatial planning through the classical approach (*hard approach*). The measures include urban deconcentration and polycentric concept of settlements, ring roads and network differentiation where large green surfaces act as tampon green zones around industry. These measures focus on high

investments in infrastructure. The planning measures also include environmental protection by means of technological development and technical inventions, with the use of recyclable materials, a new kind of fuel.

The *soft approach* implies a change of traffic policy and regulatory measures which call for different organization of traffic networks. The *soft approach* predicts improvement of driving conditions under the slogan “better mobility – better

life”. The use of a “green agenda” and “brown agenda” is planned, both of which are carried out through different programs as *greenways* or green boulevards which have a positive visual and psychological effect (4, pp 37), as well as recycling of brownfield spots and their use as significant urban resources for new purposes.

This paper specifies examples of best practices which present the possibility of improvement and advancement of the environment with the use of the soft measures, as well as the “green agenda” and “brown agenda”.

A. New Approach and Strategy

The planning strategies moves from *hard approach*, which is focused on high investment in infrastructure, towards the *soft approach* which envisions advancement of driving conditions under the slogan “better mobility – better life”. The *soft strategy* aims toward the community’s decreased dependency on cars, the improvement of the role of movement, etc. These measures can contribute to the creating of a harmonic community with less carbon monoxide – *low carbon city*.

The construction of roads has not solved the problem of urban traffic. As they are extending, city roads attract additional traffic, thus quickly creating congestion. Therefore, there is necessity for an integral transportation system. The coinciding factors that are recognized are the economic development and the possibility of car purchasing. Economic development influences the acceleration of the urbanization process – dependency on automobiles has created urban sprawl as a consequence. The consequences have proven that the pollution emissions contribute in a wider scale to global climate changes, while in a narrower scale they diminish urban life quality. The question is how to advance mobility in a consolidated urban zone without disturbing the urban balance? Further economic development and urbanization will cause the increasing of urban mobility whose demands generate environmental, economic and social pressures.

B. *Mobility and Soft Measures for the Management of Urban Mobility*

The use of the strategy requires the examination of each city's specific characteristics. Measures which are efficient in one case are not necessarily efficient in another one. Experiences confirm that in order to advance a city's transportation system, it is not enough only to envision the extension and construction of roads, as well as to develop the transportation policy with the support of adequate institutions; they also show that a highly important segment is to win support from the public and users when it comes to the use of efficient transportation measures. One of the western countries' experiences is the use of the car-sharing concept, i.e. the distribution of car usage, as well as the introduction of public bicycles. In order for that measure to be successful, it is necessary for the public bicycle traffic to be integrated into the transportation system.

For the creation of a new form of urban transport, it is necessary that the private sector and vehicle manufacturers, but also local management and users, become integrated into the transportation system. Traditional vertical planning focused on regulation needs to be fulfilled with horizontal planning which includes all actors and the area of potential stakeholders. Urban mobility demands not only measures prescribed by law and regulation, but also decisions on the behalf of individual users, community, companies and organizations. We cannot change the environment we live in, but we can direct our efforts in order to improve our experience of transport and movement. Horizontal measures are often more practical and flexible than the vertical regulatory measures. Nevertheless, vertical measures are very successful when demands are simpler. However, demands for mobility are increasingly specific and the measures are sometimes inefficient. Therefore, the methodological approach needs to be combined.

C. *Better Mobility – Better Life*

The goal of this thesis is to identify potential existing soft measures, as well as innovative decisions developed within social organizations, companies and individual users and to promote those measures with the aim of optimal use of existing transportation benefits by measuring its influences on the environment (safety, pollution) and improve the transportation service for a handicapped group.

The criteria measuring the improvement are:

- Demonstration of practicality and implementability without major investments,
- Demonstration of innovation in the sense of new decisions which are made in the context of the existing surrounding,
- Demonstration of sustainability in the sense of specific demands of mobility which are constantly implementable,
- Adaptable, easily understood, economically easily implementable in other cities as well.

Projects chosen and presented at the Expo Shanghai 2010 are the Programs for car sharing, parking sharing, public bicycle system connected to subway stations (3, pp 28-31).

The programs come with the involvement of different participants with clearly defined responsibilities and connection between the community, companies, inhabitants and users.

1) *Car Sharing – Example Of The City Of Wuhan (PR China)*

This project was initiated in 2009 with the aim to decrease energy consumption, reduce traffic congestion and pollution emission and promote a more harmonic relation to the environment (3, pp 30). The project has envisioned the development of the following measures:

- Entrusting organization and management to the local council of the community which has organized the agency for every neighborhood.
- The rules of usage are standardized; users are registered and have stickers which simultaneously provide a feeling of belonging to the community, as well as differing them from the unlicensed participants;
- All participants sign a contract stating that they jointly bear the responsibility of risk. The contract contains details such as identity, vehicle characteristics and insurance. Every participant's right is also defined by the contract;

Additional measures are envisioned, as well, in order to encourage owners to join the program, in relation to financial benefits.

Certain problems and weaknesses of the concept's implementation are represented in the lack of regulation and the policy of car-sharing, which needs to be improved in order for new users to join.

2) *Public Bicycle System – Example of The Subway Station in the Suburbs of Shanghai (PR China)*

While the urban zone extends its limits, inhabitants living in the suburbs encounter great transportation problems. Despite different policies implemented in various cities, as well as the spreading of subway lines into suburban zones, the problem was not solved efficiently.

With the idea of improving the mobility of suburban zones' inhabitants, the bicycle company in Shanghai and the city's local administration have jointly envisioned the project of public bicycles and traced two lines: *Line 1* – from the center and *Line 2* – from the High-tech Park to the station. A 1200 bicycles were introduced as the first step in the zone of *line 1* with 170 stations for rent and another 6000 bicycles for *line 2* zone with more than 25.000 citizens that applied for renting. This project (5, pp 32) was supported by the Local authority, as was the policy of providing land, as well as by the bicycle company through the operationalization of the renting program – construction and system management.

The program represents a partnership between the private sector and Local authorities which will be further developed in

the course of implementation. The project is focused on the connection between bicycle lines with the subway station in the suburban zone. The bicycle company has developed technical patents for the advancements of the service as a special system of locking, network platform management etc.

3) Shared Parking – Example of the Old City of Ningbo (PR China)

Lack of parking space represents a great issue in historical cities. Making existing parking space more efficient is a subject of challenge for research. Ever since the project of *shared parking* has been implemented in downtown Ningbo in 2008, great success and effort has been directed at research of innovative policies of charging the parking space, designing the parking space and its operationalization and management (3, pp31). For example, charging parking rates has accelerated the maximizing of parking resources usage. Also, there is necessity for demands of new buildings contributing to enlargement of parking space and of investing in public parking. These measures are effective in decreasing pressure in urban zones for parking spots, reduction of illegal parking, by means of improving urban transportation system and guaranteeing greater comfort which better suits the users – citizens. It offers a more efficient choice for old cities with a dense urban construction where the demolition or extension of existing structures is difficult to accomplish.

The scheme of *shared parking* space is essential for the future. Firstly, due to circumstances, the residential zone in old cities is close to public buildings, and the inhabitants and employees have different parking demands, so therefore the scheme of usage allows for the parking resources to be fully used in residential zones and public buildings. Secondly, in new locations where the majority of buildings are public, a certain number of parking spots are envisioned for public use and added to the parking space according to the scheme of usage of local residential buildings. This scheme promotes an efficient use of land based on the concept of sharing. Of course, risk control is of high importance and calls for discussion and coordination of stakeholders, its legitimacy and clearly defined user needs.

4) Use of the Green and Brown Agenda in the Recycling of Urban Space – Example of Rehabilitation of Seoul (Korea)

The Initiative for Climate Improvement suggested Seoul to be the leading city in the world and to implement the Building Retrofit Project which renovates existing structures with the aim of improving energy efficiency – as agreed at the 2nd C40 summit in New York, USA (1, pp8). The Building Retrofit Project includes the construction of a total of 87 buildings (45 public and 42 private buildings) with the slogan “Green buildings, green transportation, green energy”.

Energy efficiency principles, the so-called *green criteria*, were implemented through design and the construction of new buildings; it is suggested that all new buildings should be designed in a way to increase the use of new and renewable energy sources.

Construction of green buildings is encouraged by providing tax benefits for those built as eco-friendly. In the beginning, the program included around 60 environmentally friendly

buildings. Also, the increase of new or renewable energy to 12.2% is expected during the construction of a new part of the city which follows the traditional Korean style and design.

Seoul has a diversification of energy spending from combined solar and geothermal energy. There are resources for reconstruction of structures which will be used for the processing of large amounts of energy with a significant decrease of CO₂ emissions.

The use of the *green agenda* principle was implemented during the reconstruction of the province located along the Han River (2, pp6). The location which was used for waste, up until the early 1990s, was turned into a city park by a creative reconstruction. The park surface will be used for new and renewable energies as an orientation point with the suggested zero-energy buildings, hydro pumps, and photovoltage benefits. Also, Seoul is the leading city in distribution of eco-friendly energy – it has become the second city in the world and attracted the Fraunhofer Institute for Solar Energy Systems (ISE) – the leading institute of new and renewable energy sources in the world. The reconstruction of a freeway into a river and city park represents an inventive and creative example and contribution to the use of the *brown agenda* principle and the reviving of brownfield spots (Figure 1.)



Fig. 1. Figure 1. Transforming a Freeway into a River and Public Park

In order to improve transportation an integrated system for mass transportation has been developed. The new tariff system was introduced which enables users to travel through the city with one ticket, changing subway trains for buses, with no extra charge. In addition to this, a linear bus system is used, enabling better transport and avoiding congestion.

This model of integrated transportation system increases the use of public transportation in Seoul, having a major role in the decreasing of CO₂ emissions and quickly transforming it into an eco-friendly public transportation. The fuel used by buses, which were the biggest air polluters due to the use of diesel motors in the past, was changed for compressed natural gas so that they stop generating emissions. The introduction of electric vehicles, hydrogen vehicles, TNG hybrid taxis and electric bicycles is planned in the city, as well as 418 lines of

bicycle lanes until 2014, which would provide a safe and pleasant surrounding for bicyclists (2, pp7).

All those efforts are directed at decreasing the concentration of particles in the air, and they have already been decreased for around 10%. These reconstruction programs point out the fact that if the programs are continually promoted, the air quality in Seoul will be comparable with the air in European cities' gardens.

II. CONCLUSION

Due to different social and cultural contexts, existing urban structures and local organizations, there is no unified decision and solution which can raise urban mobility, high quality of transport and improvement of the environment. Advanced programs have a future since they explain a way of supporting mobility and reduce CO₂ emission and other negative effects, by focusing on organization and coordination in circumstances where a transportation network and other conditions supporting further development have already been built.

Therefore, all stated examples are open for improvement and development, in order to be promoted and implemented in different locations.

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NOTES ⁱ This article was at: Zaytoonah Engineering Conference: Environmental 2016/ Environmental Design and Innovation, Amman 2016