

The Importance of Urban Transportation, Managements and Strategies for Sustainable City

B.A Süleyman Ay ,

Faculty of Architecture, Istanbul Technical University, Istanbul, Turkey

E-mail: aysuleyman33@gmail.com

Abstract

In urban planning, the need for sustainable solutions is increasing day by day to facilitate and improve human life. With the developing technology, cities are tried to be transformed into sustainable cities by using smart city technologies. This article is about current problems in urban transportation planning and new developments. It is also an introduction to the subject. Papers on this issue emphasize how physical mobility is still an important priority for urban life. Five features have been identified regarding emerging urban transport, management and strategies. The first descriptive feature, the relationship between land use and transportation. The second is sustainable urban mobility, which estimates future generations and resources to improve the quality of life in cities by prioritizing physical and biological health. The third feature is the concept of accessibility and mobility in urban and pedestrian. The fourth feature is the concept of “road diet” that managers use persistently but do not succeed in. The last distinguishing feature is the recognition that urban transport planning is a communication-oriented activity and new transport services in relation to other professions and policy sectors. Herein, the cities, which are exemplified numerically and visually, have been selected among the cities which may be examples to the other developing cities of the world.

Keyword: Urban Transportation; Land Use; Sustainability; Road Diet; Urban Planning.

1. Introduction

Sustainable development and transportation can be defined as providing a secure and satisfying material future for all in a egalitarian society sensitive to the basic needs of people. For human health, medical doctors are also sustainable planning for development. Instead of waiting for crises to occur, they predict and manage problems. In the medical science, it is necessary for individuals to participate in community decisions and to support socially beneficial projects and to take their counterparts for sustainable cities if they need to be informed in order to maintain healthy habits. Sustainability is also important in terms of transportation planning. Because transport activities cause significant resource

consumption, external costs and often uneven distribution of impacts. Sustainable transport requires fundamental changes in transport planning practice. It requires a more comprehensive analysis of impacts, including indirect and cumulative effects, and the consideration of more solution options. It also requires the community to participate in the determination of options and assessment criteria. These are good planning principles that are particularly necessary for sustainable planning. Sustainable urban development depends on the city being a life, opportunity and welfare center. Solutions are needed to reduce the amount of additional urban land that can be used for the most efficient use of space and which can be devoted to development. A specific agreement on the problems and the strategies that can be implemented are largely known. However, developments in integrating sustainability into daily decisions are slow to disappoint. Land use and urban transportation are the crucial points for sustainable cities. Land use and transportation are interdependent, similar to a chicken and egg relation (Morimoto,2012). The use of transportation routes and the types of vehicles used in transportation affect land use and land use also affects transportation routes. Whether they are positive or negative depends on how meticulous you are working and your analysis. To emphasize only the use of vehicles in urban transportation and to use the public transportation vehicles more than necessary is a great threat against nature, human nature and then health. For this reason, we need to integrate walkways and bicycle paths into urban transport, which minimizes carbon emissions in order to activate and highlight urban mobility. With the closure of Seoul Chenoggye Highway in Seoul and the conversion to the valley, air pollution decreased, air transportation increased, public transportation increased bus and subway usage rates, noise pollution was reduced, wind corridor was formed, and there was a significant decrease in the number of vehicles used in the surrounding regions (Keun Lee, 2006). New transportation movements are also included in urban transportation, which is important for sustainability. These are shared mobility; traditional public transport and private vehicles. This includes integrated mobility platforms, which are combined with the implementation or interface of route planning, reservation and payment possibilities of different types of transport. As an option to traditional taxis, the combination of passenger and driver with mobile applications is a part of the new transportation movements. In addition, unmanned transport and management of transportation vehicles contribute to new transportation movements. To put it in a nutshell, transportation and land use for sustainable cities is an integral whole. In addition, the concept of road diet, new transport mobility, urban mobility and the concept of walking-based transport that minimizes carbon emissions are essential for sustainable cities.

2. Land Use and Transportation

The increase in urban population does not only mean that there will be more people living and working, but also means that more transport of passengers and cargo to the urban transport network will be installed. The increase in travel is dominated not only by the amount of travel but also by the expanding growth in the urban area as well as from the distance. The strategy chosen to tackle urban transport problems will determine the level of impact that people and their environment have. It is widely accepted that a well-managed urban transport system deeply affects the overall urban economic and welfare of society, and ineffective urban transport will become the main suspicion of a city's liveliness, competitiveness and sustainability reduction. Problems due to lack of carrying capacity; this lack of transportation, mismanagement of the use of transportation facilities, widespread use of land and the travel demand model, the efficiency of the vehicle, etc. can be positioned with. urban transport operations such as activities in road transport, inability to control the parking areas on the street, the construction of a public transport network and not controlling urban development. In fact, as the unemployment rate in Indonesia increased in parallel with the financial crisis, road network capacity was narrowed due to the penetration of the road network operator into the pavement and highway, and all of them reduced the road capacity by 50% (Lubis, Isnaeni & Nurjaya, 2003). However, the adverse effect of transport from land use is less well known. From the dense urban fabric of medieval cities where daily mobility is pedestrian, there is some uncertainty that evolution cannot be possible without a railroad road until modern metropolitan areas are expanded with densely populated traffic volumes. and then, the private car that makes it almost equally as a place to live or work in every corner of the metropolitan area. However, exactly how many land planners, investors, firms, and households influence the location decisions of the transport system is not even fully understood by many urban planners (Pandya & Katti, 2012). Urban land use and transportation are very close to each other, a common wisdom between planners and the public. The basic principle of transport analysis and foresight is the spatial separation of human activities and the need for travel and the creation of goods transportation. By following this principle, it can be easily understood that suburbanization of cities is linked to the increasing spatial division of labor, and is therefore linked to constant mobility. In addition, the distribution of residential areas, industrial areas, trade areas and other areas of equipment according to urban areas affects people's daily life, business life, shopping life and educational life. The distribution of these equipment will create transportation networks brought by the business network between them, as well as changing the transportation networks for people to reach these equipment. Distribution of infrastructure services

to urban areas and the transport system creates new opportunities for spatial interactions and can be measured as accessibility. Distribution of accessibility opportunities also shapes the land use system as it will guide the basic decisions.

3. Sustainable Urban Mobility

Sustainable transport, one of the first concepts of sustainable urban mobility, implemented by the OECD and then completed by the European Transport and Environment Experts Group contributes positively to the economic and social state without prejudicing human health and the environment (Miranda & Correia, 2010). Sustainable urban mobility is socially inclusive and environmentally sustainable as a result of a set of transport policies and movements aimed at providing broad and democratic access to urban areas that do not create spatial segregation and prioritize non-motorized and public transport modes.

On the other hand, in scientific studies to promote sustainable urban mobility, the use of bicycles for transportation and hiking has long been addressed and supported, because it provides more equality among community members due to their low cost characteristics and is healthier lifestyle (Providelo & Sanches, 2010). Reduce traffic noise and does not cause pollution, and the reduction in emissions tends to be significant if motor vehicles are replaced by cars for short distances (Litman, 2011).

While creating sustainable cities, our goals in urban mobility should be; to analyze the problems of cities in order to benefit from their growth opportunities while transforming cities into sustainable cities, to provide a space for interaction and dialogue between stakeholders from the public and private sector committed to create more sustainable and smart mobility systems, to share the best practices and new trends in the field of sustainable urban mobility, to formulate recommendations to develop sustainable mobility models adapted to the needs and characteristics of different urban areas, to display the key technologies and innovations developed by leading companies and start-ups aimed at creating more sustainable urban mobility systems.

4. Concept of Accessibilty and Mobility in Urban and Pedestrian

According to the mobility approach, the basis of transportation activities is defined as the movement of people and goods. The journey is expressed as passenger-kilometer or tonne-kilometer. For this approach, increasing the amount of travel per unit is the main benefit. According to this angle, motor vehicle drivers are in the forefront as a transportation system user, similar to the traffic perspective. Because the passenger-km and ton-km, which are defined as travel, are carried out by motor vehicles. But in this approach, the basis for the user definition is the intensity of use of the species that make the trip. To give a similar example, pedestrian and bicycle movements, campus, holiday areas, such

as the important types of transportation; and individuals using these types can also be considered as transport system users.

Accessibility is defined as the ease of people and business activities to reach the desired goods, facilities and activities (Bhat et al., 2000). Access; some sporting activities are the main target for all transport activities, including the movement of people and goods, except riding and sightseeing tours. This angle considers developing access opportunities as the general benefit of society and the development of mobility is a way to achieve this goal. The traffic perspective is a subset of the mobility approach according to this approach, and the mobility perspective is a subset of accessibility. Therefore, the approach to accessibility includes other approaches (Victoria Transport Policy Institute, 2003).

According to the accessibility point of view, the transportation system user is a business with all individuals who want to reach any goods, services or activities and where a portion uses a combination of access options in the transport system considered. This angle takes into account all types of transportation, such as public transport, inter-regional transport, non-motorized transportation, which are of potential importance as an access option. Public transport and accessibility studies have generally evaluated accessibility as a method and perspective rather than efficiency indicator (Benenson et al., 2010). The evaluation of public transportation scenarios produced by transportation planners in public transport planning is done by traditional indicators. Productivity indicators, such as distance, operating costs, travel time and ease of access to stops, are the determinants of which scenario to choose. As a result of scenarios determined by traditional indicators, factors such as user perspective, land use status and urban population density can be excluded. For this reason, accessibility is a criterion that should be taken into consideration in public transport planning in order to include land use situation. In addition, mobility sub-types, such as communication and shipping services, are the types of transport systems, according to this aspect (Victoria Transport Policy Institute, 2003).

As a result of the studies examined, it has been determined that planning and land use planning studies are frequently studied and studied in the past years. However, it is understood that the relationship between accessibility and accessibility with public transport is not fully completed the process of development and needs to be studied. It is observed that land use and transportation are directly related to the concept of accessibility and this relation has not been clearly defined in all aspects, and studies in this area are insufficient. It is seen that the concept of public transport has an important place in the relation of accessibility concept with transportation and accessibility criteria should be

utilized in public transportation planning. It has been concluded that techniques and methods for using accessibility criteria or components are open to improvement during the stages of public transport planning. The use of accessibility as a criterion of efficiency in public transport planning and the methods and techniques that are likely to be established about it will bring a new perspective to the concept of accessibility and its applications (Gulhan, Ozuysal, 2017).

5. Road Diet

The concept of Road Diet is the state of conducting physical interventions to the road or transportation axis in order to achieve systematic improvements in transportation. Addition or expansion of paths / pavements, addition or extension of boulevards (landscape strips), addition a bike path to one or both sides of the road, adding tram routes separated by usually in the middle of the road, expansion of remaining traffic lanes, add a center turn strip to turn on traffic adding a recycled center strip, the concept of inin road diet en can be physically applied, such as by converting the right-most or left-most travel lane to a fault lane.

As the concept of continuous way in Turkey diet is used by insertion of the wrong physical, we can understand the amount to be made by way of increased traffic in parallel with the increase. Extending ways to tackle traffic congestion is like an obese man loosening his belt to cure himself. Road diets, which convert four-lane highways to three-lane cross sections, are an innovative solution to address mobility and safety concerns under budgetary constraints. These improvements can assist in the development of multimodal corridors with minimal impact on automobile mobility, while retaining the original right of way. Past research has focused on evaluating road diet safety, but minimal guidance exists on determining when such conversions are appropriate from an operational perspective (Kirk, Stamatiadis, 2014). Will a Road Diet Make Traffic Worse? Because a road diet conversion reduces the number of through lanes, there is a common misconception that road diets result in more congested and difficult to travel roadways. When applied in the right locations, however, road diets can maintain the effective capacity of the roadway for automobiles while improving levels of service for other modes of travel. Generally, traffic flow along a road diet conversion is not only safer, but smoother and more predictable for a variety of users.

6. New Transport Services

Transportation in recent years; There are many new transport services to relieve traffic, to reach the desired location in a shorter time, to reduce the amount of emitted gas and to revitalize the security element. New transport services have no impact on urban carbon emission as much as other titles. This is because people can travel more crowded in public transport. The 21st century is increasingly

concerned with the lack of specific use of the environment and natural resources, the lack of urban planning and the social problems caused by the reduction of quality of life for large urban residents. So it's time to rethink urban mobility. Today, an alternative stance is related to the services that can be seen in the growing popularity of short-term rental systems of vehicles, accommodation vehicles. Housing, work areas (collaborative work - for example, Impact Center), etc. In this context, the sharing economy changes as a new paradigm that provides access to goods and services beyond its ownership. While the concept of tedir sharing “is nothing new, the sharing of time between services, products, personal skills and foreigners is seen as a key feature of the development of the stakeholder economy, whose popularity has grown rapidly in recent years and increased the success of the economy. Platforms such as Uber and Airbnb.

New transport services in general; shared mobility options other than traditional public transport and transportation, integrated mobility platforms (MaaS) combining routes of planning, booking and payment possibilities of different types of transportation with application or interface, travel sales practices (Ride Selling) as an option to traditional taxis, combining the vehicle with a driver with mobile applications, autonomous mobility unmanned transport and management of transportation vehicles are.

Currently, environmental concerns and the need for more socially- and financially-efficient modes of transportation are guiding the new generation of transportation users. In this context, shared transportation modes are improving the indicators of population mobility by complementing public transportation and by reducing the number of vehicles per capita, parking spaces, and fixed costs (Baptista, Melo & Rolim, 2014)

7. Conclusion

Sustainable development and transport is to ensure a safe and satisfying future for all those who are sensitive to the basic needs of people in an egalitarian society. Sustainability is also important in terms of transportation planning. Transport activities lead to unbalanced consumption of important natural and artificial resources and limitation of new resources. Sustainable transport requires fundamental changes in transport planning. A more comprehensive impact analysis, including indirect and cumulative impacts, and more solution options should be considered. It also requires the community to be included in the selection and evaluation criteria. These are the principles of good planning, which are especially necessary for sustainable planning. Sustainable urban development depends on the ability of the city and its inhabitants to live at a high level of prosperity. Solutions are needed to reduce the amount of additional urban land that can be used for the most efficient use of the area and

which can be allocated to development. Land use and urban transport are very important issues for sustainable cities. These titles affect each other to a great extent. Whether they are positive or negative depends on how meticulous you are working and your analysis. Excessive use of vehicles in urban transport and the loss of the importance of public transport are a great danger for nature, human nature and later health. Urban mobility, which is important for sustainability, includes bicycle transport and pedestrian access, as well as new transport movements. As an option to traditional taxis, combining the passenger and driver with mobile applications is part of the new transport movement. In short, transportation and land use for sustainable cities is an inseparable whole. In addition, the concept of road nutrition, new mobility of mobility, urban mobility and the concept of walk-based transport which minimizes carbon emissions are very important for sustainable cities.

References

- Baptista, P., Melo, S., Rolim, 2014, C. Energy, Environmental and Mobility Impacts of Car-Sharing Systems: Empirical Results from Lisbon
- Benenson, I., Martens, K., Rofe, Y., & Kwartler, A., 2010, Public Transport Versus Private Car GIS-Based Estimation of Accessibility Applied to the Tel Aviv Metropolitan Area, *The Annals of Regional Science*, 47, pp. 499 - 515
- Bhat, C., Handy, S., Kockelman, K., Mahmassani, H., 2000, A City Development of Accessibility Index: Literature Research lik, Texas Transportation Department Research Project
- Gulhan, G., Ozuysal, M., 2017, In Accessibility and Demand Model in the Context of Transportation Planning, pp. 147 - 156
- Keun Lee, I., 2006, Cheong Gye Cheon Restoration Project
- Kirk, A., Stamatiadis, N., 2014, Simulation Based Guidelines for Road “Diets”
- Litman, T., 2011, Well Measured—Developing Indicators for Sustainable and Livable Transport Planning; Victoria Transport Policy Institute: Victoria, BC, USA
- Lubis, H., Isnaeni, M., Nurjaya, S., 2003, Urban Transport and Land Use Planning Toward the Sustainable Development (Case Study of Bandung Metropolitan Area)
- Miranda, D., Correia, S., 2007, Analysis of Sustainable Urban Mobility Using Spatial Statistics, *Operations Research and Sustainable Development*
- Morimoto, A., 2012, A Preliminary Proposal for Urban and Transportation Planning in Response to the Great East Japan Earthquake, Chapter 2: Transportation and Land Use, pp. 22-23
- Pandya, R., Katti, B.K., 2012, Dynamism of Transportation and Land Use Interaction in Urban Context

Providelo, J., Sanches, S., 2010, Perceptions of Individuals About the Use of the Bicycle as a Mode of Transportation

Victoria Transport Policy Institute, 2003, Measurement of Transport: Traffic, Mobility and Accessibility, Travel Demand Management Encyclopedia