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ID 1548 | UNSUSTAINABLE GROWTH OF URBAN TRANSPORT: QUESTIONING MAINSTREAM SUSTAINABILITY SOLUTIONS FOR TURKISH CITIES

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1 INTRODUCTION

The automobile, supported by bus, has become the transportation mode which formed the urban physical structure after the beginning of the years of Second World War. By this technology, it was possible for the city to develop in any direction. Initially, urban development occurred between train lines, and then the cities started to develop fifty kilometers away from the central core for the average half-hour journey (Newman & Kenworthy, 1999). When the effects of car dependence are considered in urban areas in terms of sustainability concerns for the future of environment, society and economy, it is obvious that an automobile based urban pattern cannot be sustained.

As opposed to car dependency, mainstream solutions are put forth as public transport, walking and cycling. In addition, decreasing policies for car use such as congestion charging, traffic calming, disincentive tax measures for car entrances to city centers and awareness raising campaigns and policies have been seen as supplementary solutions to sustain the future of urban transport. The positive feed backs of those mainstream sustainability solutions have been observed in positive manner over years in especially U.S and Europe –in cycling friendly cities such as Copenhagen, Amsterdam, Strasbourg, Antwerp-. However, cities in Turkey has still been experiencing the hazardous outcomes of car dependency and unsustainable urban transport. Whether the policies has been taken consciously or unconsciously concerning making urban transport more sustainable, there have also been several sustainable solutions in particularly public transport in Turkish cities. These are new urban rail investments, pedestrianization projects, cycling lanes and bike-sharing systems. Therefore, the main question is that "Have sustainability precautions worked so far in cities in Turkey or not?"

In this research, firstly, unsustainable transport concept will be mentioned together with its sustainable solutions as public transport walking and cycling. Then, unsustainable urban transport, namely car dependency, in Turkey will be revealed to constitute a base for research question. Finally, sustainable transport solutions in cities of Turkey will be critically discussed concerning the effects of new public

transport, walking and cycling investments. Finally, the expected outcome of research will be that it has been so difficult to overcome the dominance of neo-liberal urbanization and transport policies through only sustainability impacts on transport.

2 WHY CAR DEPENDENCY IS UNSUSTAINABLE?

In the late 1960s, both public and policy makers tended to reconstruct central urban areas in order to create more space for traffic such as roads and parking spaces. In the early 1970s, many Western countries realized the negative urban and health impacts associated with the excessive use of automobile, and prepared regulations to reduce emissions of pollutants per vehicle kilometer for cars and other kinds of road vehicles together with considering noise emissions of them (Wee, 2007).

The use of automobiles has significantly increased during the last few decades. Between the years of 1970 and 1990, the number of passenger kilometers by private car per capita experienced an abrupt rise by 90 percent in Western Europe and 13 percent in the United States (Jakobsson, 2004). Road traffic that depends on motorized vehicles is a fundamental contributor to particularly environmental problems at a global scale. Steady growth of motorized traffic threats the quality of life in urban areas, and private car use is an important source of these problems. In this instance, reducing negative effects per vehicle through new technologies cannot make a significant impact to completely control these problems; instead, changes in volumes of car traffic are necessary (OECD, 1996).

According to Newman and Kenworthy (1999) that problems of car dependence cover a wide range of issues, varying from economic efficiency, environmental responsibility, social equity, and human livability. The effects of automobile dependence on the efficiency of economy, firstly, start with infrastructure costs. A significant amount of costs for new urban infrastructure emerges, because older infrastructure in the city is underutilized. In fact it is obvious that, as long as the urban development is low density and sprawled rather than transit oriented, monetary sources will still be wasted. Then, transportation costs come for the issue of economic efficiency. It is important to mention that the total costs of an automobile-based urban transportation system exceed transit system costs by 30% to 40%. Moreover, this system could become completely automobile-based with a little focus on public transport; therefore, the land use structure has to be on the basis of more concentrated and non-motorized movements including public transport. In addition, time costs of an automobile based urban transport system also exist as a constraint. Urban traffic mostly creates congestion, and cities have been oriented their way out towards it. Therefore, people lose most of their time for travelling from one destination in a city to another, and it has to be reconsidered that the solution for the problem of time loss necessitates land use changes in order to reduce the need to travel. The last problem of economic efficiency on the basis of automobile dependence is land waste which refers to the use of urban land for car parking and new road construction. The loss of available productive land for excessive parking and road space is not only the concern of economic constraints, but social as well as environmental ones. Secondly, the constraint of social equity on automobile dependent cities stands initially together with inequalities in being car-less. In any city, a significant part of population cannot drive, because of being too young, too poor, too old, or just disabled and being thus disadvantaged. Then, the issue of inequalities in location comes. The people living in middle, outer and fringe suburbs created in the era of the car are access disadvantaged because of lack of transit, which is often the case in car-dependent cities. This kind of a disadvantage has two key characteristics: primarily, the policy makers focus on transportation rather than land use policy approach which reduce the need for car travel; and secondary, they give priority to private cars over public transport and non-motorized modes. Furthermore, there are constraints of automobile dependence on human livability. Initially, the issue of loss of community constitutes one of the significant automobile-related constraints. The interactions between neighborhoods and communities are decreased, because together with the domination of automobile on urban transport, pedestrian or transit system travels -which cause accidental or casual interaction between people-lessened. Therefore, it is evident that walking, cycling and public transport play crucial role in considering the quality, and more interaction of human oriented aspects of access and transportation. Moreover, loss of urban vitality stands as another part of constraints. The vitality and culture of the city is decreased when urban spaces are dominated by automobiles instead of people. The main problem here is structuring our cities according to car use and an emphasis on private rather than public space.

Urban transport is also highly related with injuries and deaths as a result of accidents and this probably have the most dramatic unfavorable influences on both objective and experienced quality of life of

survivors, their families and friends. Besides, it can be extensively considered that serious accidents have irreversible impacts on victims due to drunk or careless driver who fatally injures someone else (Gifford, 2007). Motor vehicle accidents constitute 44% of total accidental deaths in the United States; in addition, approximately about 45,000 people have been died every year in the last 30 years for that reason (Best, 2005). In Table 3, statistical data can be seen including population, number of people with driver license, total motor vehicle accidents, deaths and injuries between 2002-2011 for Turkey. When the number of people with driving license is considered almost in parallel with the number of motor vehicles in traffic, it can be obviously seen from the table that the number of total motor vehicle accidents -constituted much of them from car involvements- raised almost threefold in number between the years of 2002 and 2011. In those accidents, important numbers of them involved death or personal injury which increased also in parallel with the number of driver in traffic and total accidents. In addition, almost each year, an approximate average number of 4300 people were killed, and more people also injured. In this case, it is evident that motorized traffic has a direct effect on not only human health, but its existence, and if the increase in the use of motorized vehicles -especially private cars- continues, the condition will be very dramatic as expected.

YEARS	Population (Thousand)	Number of People with Driving License	Total Motor Vehicle Accidents	Accidents involving death and personal injury	Number of people killed	Number of people injured
2002	69 626	14,994,960	439 777	65 748	4 093	116 412
2003	70 231	15,488,493	455 637	67 031	3 946	118 214
2004	71 794	16,151,623	537 352	77 008	4 427	136 437
2005	72 065	16,958,895	620 789	87 273	4 505	154 086
2006	72 974	17,586,179	728 755	96 128	4 633	169 080
2007	70 586	18,422,958	825 561	106 994	5 007	189 057
2008	71 517	19,377,790	950 120	104 212	4 236	184 468
2009	72 561	20,460,739	1 053 346	111 121	4 324	201 380
2010	73 723	21,548,381	1 106 201	116 804	4 045	211 496
2011	74 724	22,798,282	1 228 928	131 845	3 835	238 074

Table 1 - Number of driver license, persons killed, persons injured, motor vehicles and population between 2002-2011 in Turkey - Source: (Turkish Statistical Institute, 2012)

Thus, the seriousness of the circumstance has to be stated that on the one hand, a car based urban transport system damages particularly the environment, climate, and nature; and on the other hand, it affects human health and quality of life in general. It is evident that car use has unfavorable results on three phases of sustainability: on economy, society, and especially environmental quality; therefore, the answer of the question about what we undoubtedly should not sustain anymore for urban transport appears more clearly. In short, a car-based urban travel pattern cannot be sustained, and some kinds of sustainable solutions have to be considered in policy making.

3 SUSTAINABLE SOLUTIONS TO CAR DEPENDENCY

According to the report prepared by International Economic Development Council in Washington (2006), the principles of Smart Growth can be listed as:

- Mix land uses
- Use land efficiently
- Create a range of safe, convenient, and affordable housing opportunities and choices
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place
- Preserve natural lands, farmland, and critical environmental areas
- Strengthen and direct development toward existing communities
- Provide a variety of transportation choices

- Make development decisions predictable fair, and cost-effective
- Encourage community and stakeholder collaboration in development decisions (International Economic Development Council, 2006)

Calthorpe (1993) presented the urban design principles associated with Transit Oriented Development in his book as:

- A compact and transit supportive development urban growth on regional level,
- Location of housing, jobs, commercial activities, parks and civic uses within walking distance of transit stops,
- Formation of street networks that are pedestrian friendly and directly connected to local destinations,
- Provision of a mix of housing types, densities, and costs,
- Protection of environmental quality and high quality open spaces,
- Making public spaces the focus of building orientation and neighborhood activity
- Encouragement of infill and redevelopment along transit corridors in the existing neighborhoods (Calthrope, 1993).

As expected, a variety of solutions to the problem of automobile dependence can be mentioned as restrictions for using cars, and improving public transport services and biking and walking conditions. This requires a careful management of the urban transport system. In the 1980s, concepts of congestion management and travel demand management were tried to be discussed referring to problems in cities, inter-city corridors, and activity centers that produce urban traffic (O'Flaherty, 1997). These management measures can help to accomplish one or more of the following targets:

- Reduce the need to make a trip
- Reduce the length of a trip
- Promote non-motorized transport
- Promote public transport
- Promote car pooling
- Shift peak hour travel
- Shift travel from congested locations
- Reduce traffic delays (OECD, 1994)

According to May (1997), there are some ways to restrict automobile use as vehicle ownership taxes, fuel taxes, parking measures, congestion charging, traffic calming and charging for road use.

3.1 IMPROVING PUBLIC TRANSPORT, WALKING, AND CYCLING

The most efficient passenger transport mode for long distances and at the corridors that travel demand is high in urban transport is public transport. In cases of short travel distances pedestrian travel and transport through cycling can also be efficient alternatives (Sutcliffe-Babalık, 2012). It can be seen that public transport systems provide significant advantages for passenger travel when compared to car use. At most five people can be carried by car; on the other hand, the passenger capacity of a bus changes between the ranges of 40 or 120 which means that 8 or 24 times more people can be carried by public transport. Automobile and public transport is also differentiated in terms of the necessity of road use. For example, a 12 lane road is needed for 40,000 people to cross over a bridge; on the other hand, only 4 lanes for bus, and two lanes for a light rail system is needed (Illich, 1992). In addition, another advantage of public transport systems compared to the car is the efficiency for energy consumption, that is, per passenger transported per kilometer automobile consumes five times more energy compared to bus and metro, and automobile creates 125 times more air pollution compared to bus. For these reasons, improving public transport plays a key role within the framework of sustainable development strategies. Consequently, sustainable urban development objective necessitates a high quality and sufficient capacity public transport system (Sutcliffe-Babalık, 2012). Another sustainable mode for urban accessibility is walking. Pedestrian oriented regulations -especially in city centers- can make people use their car less for transportation and, also it contributes to decreasing unsustainable impacts of automobile on the streets or open public spaces. According to Tumlin (2012), pedestrian planning principles include several critical issues including that most of the needs of daily life should be available within walking distance; buildings

should be in relation with sidewalks rather than parking lots; road traffic has to be calmed; lighting should be arranged for the benefit of pedestrians; people should feel safe. Even if all these principles are applied in the design of a walkable environment; at first glance, walking may not seem as an alternative transport mode compared to car or public transport; however, if urban planning and design of an area includes efficient regulation principles that focuses on facilitating pedestrian movements particularly in short distances, it can seriously affect the appearance of car in the areas in which the car existence is not desired -particularly in city centers- due to wishes for the efficient pedestrian use of urban space and for a less polluted, more equal urban social environment. Cycling stands as a transport alternative which can contribute significantly to sustainability of our urban transport future. Using bicycle as a transport mode has been common travel choice for many years in the globe: there are a number of cities where people ride their bicycle from their home to school, or to work, or to a leisure activity, or to the opposite direction, and now this can be considered as a permanent culture, in other words, “cycling culture”. Learning from the experience of such cities with a cycling culture, many other cities in the world started to invest in cycling infrastructure by developing bikeways, bike lanes, and building bike parks. In order to further encourage the usage of this mode, which is one of the most sustainable modes of travel since it requires no energy and emits no pollution, many cities in the world also started to launch bike-share systems.

4 ANALYSIS OF TURKISH CITIES IN TERMS OF SUSTAINABLE TRANSPORT SOLUTIONS

In this preliminary research, it will be mentioned that there have been implemented sustainable solutions in cities, and t is not still obvious that whether these interventions contributed the sustainability level of those cities and car dependency has decreased or not. In further part of the research, cities of İstanbul, Ankara, Konya, Samsun, Kayseri, Gaziantep will be investigated through figure demonstrations in order to open and trigger new discussions on research issue. The critical hypothesis here is that although there have been urban rail, cycling and pedestrianization implementations in Turkish cities, the interventions inciting automobile use in the city have also been continuously increasing. Consequently, it has become questionable whether the sustainable transport interventions have worked effectively or not. The expected outcome of research will be that it has been so difficult to overcome the dominance of neo-liberal urbanization and transport policies through only sustainability impacts on transport.

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ID 1573 | MOVING TO ACCESS IN TRANSPORT PLANNING: IDENTIFYING BARRIERS, DESIGNING STRATEGIES

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1 INTRODUCTION: THE ACCESSIBILITY APPROACH

Accessibility is a well-established concept in planning research. It measures the ease of reaching destinations or activities, or the potential for interaction (Hansen, 1959). In very general terms, accessibility can be defined as the level of ability to successfully reach a certain object, place, event, or person. It is a key concept for understanding the social and economic life of cities in particular and societies in general.

The purpose of this paper is to inform the 'accessibility approach' to transport policy, planning, and investment by means of critically analysing its implementation barriers in professional circles and how to overcome them. We argue that it is necessary to focus less on technological issues such as what are the best instruments and decision-making tools to promote the accessibility approach. There is now sufficient knowledge about that (Papa et al. 2016). Now, the priority is to identify the institutional, organisational and cultural barriers to this approach.

Mobility and transport networks can facilitate accessibility, but only to a certain extent. Defining accessibility as what is granted by mobility is a reductionism. In our view, mobility is in many cases a necessary condition for accessibility, but rarely is a sufficient one. Traditional transport planning has in numerous instances failed to realise this important nuance. As a result, traditional transport planning has frequently equated implementing measures aimed at increasing mobility to improvements in accessibility levels. That is not necessarily a very accurate way of understanding what happens. This is fully acknowledged by the accessibility planning approach. In fact, accessibility planning recognises that the absolute opposite to that might be closer to the truth: increasing mobility might represent less accessibility (Ferreira and Batey, 2007).

Conflicts between accessibility planning and the dominant transport planning culture have been a barrier to effective implementation of accessibility planning (Bertolini et al. 2005; Bertolini, 2012). This approach of 'mobility-first' planning and investment has largely failed to deliver on the broader urban goals relating to economic growth, social integration, and sustainable development. Conversely, implementing accessibility-based performance measures can allow regions to pursue more coordinated objectives around economic opportunity, social equity, well-being, and health.

Several reasons should encourage the application of the accessibility planning approach., as the potential benefits of using the accessibility approach in applied planning practice are massive. Among other benefits, it facilitates understanding with much greater accuracy how different social groups are served in different ways by the transport system and by public and private services. It also facilitates identifying with higher precision what prevents people from reaching certain places and develop or maintain certain connections. This happens because it offers valuable insights on matters as diverse as mobility and