

Parking Management – A Challenge for a Sustainable Transportation in Tirana

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ABSTRACT

The rapid growth of the transportation sector during the last decade in Albania has created many problems particularly in Tirana such as air pollution, energy consumption, and loss of urban ‘living space’. Different from the traditional approach, where supply is always provided to meet demand, the sustainable transportation is environmentally sensible, society fair, and economically sound. Therefore, the need for a detailed and comprehensive transport policy, to encourage sustainable transport, is essential for Tirana. One of the most crucial transportation management strategies that can be regarded to achieve more sustainable transportation system is parking management. The objective of this research was to study the nature and level of the parking problem and to evaluate the impact of parking management regulations enforced by Tirana Municipality in 2015.

In order to accomplish this, a license plate survey for the selected pilot study area was performed. Next, two parking management strategies, parking pricing and parking duration limitation were decided for the pilot study area.

The results of the analysis showed that approximately 39% of the on-street parking demand could be decreased due to parking pricing and parking duration limitation strategy applied at the same time.

INTRODUCTION

The significant increase in car ownership and suburban sprawl has overloaded the road network in Tirana, making it insufficient and problematic. The main problems, associated with increasing urban traffic and congestion, in some European cities are; air pollution, energy consumption, economic efficiency, and loss of urban ‘living space’ (European Commission, 2004). The reaction to the pressure created by additional traffic demand has often been to increase the level of supply, in other words provide additional road space. This traditional approach of providing supply to meet demand is no longer always appropriate. Brundtland Commission [2] defines sustainable transportation as: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Sustainable transportation is affordable, operates fairly and efficiently, offers a choice of transport mode, supports a competitive economy, limits waste emissions, uses renewable resources, and promotes equity within and between successive generations. In other words, it is environmentally sensible, society fair, and economically sound.

One of the transport management strategies and initiatives that can be regarded to achieve more sustainable transportation system is parking management. Parking is an essential component of the transportation system. Parking problems can be often defined either in terms of supply (too few spaces are available, somebody must build more) or in terms of management (available facilities are used inefficiently and should be better managed), and the later (management solutions) tend to be better than the former (expanding supply) because they

support more sustainable transportation (Litman, 2006). Current parking planning practices tend to favor generous parking supply and minimal parking prices, which have unintended and undesirable consequences: they increase development costs, reduce housing affordability, cause dispersed land use patterns (commonly called sprawl), and increase automobile travel which exacerbates various problems including traffic congestion, roadway costs, crashes and pollution emissions (Shoup, 1999; Litman, 2006). Parking management refers to policies and programs that result in more efficient use of parking resources. Parking management can significantly reduce the number of parking spaces required in a particular situation, providing a variety of economic, social and environmental benefits.

Research's Goals

The major goal of this research is to understand the nature and the level of the existing parking problem in Tirana and evaluate the estimated impact on the new parking regulations. To reach this goal this research focused on the objectives listed below:

1. To search the literature about the old and new concepts in parking management strategies,
2. To study the nature and level of the parking problem in Tirana through site observations,
3. To recommend and evaluate parking strategies for the pilot study area in particular.

LITERATURE REVIEW

Transportation in Tirana

Tirana, the capital city of Albania, has a population of approximately 610,000 habitants, and this number has almost doubled last 15 years (Instat 2011). The city is highly urbanized with its average population density of 145 persons/ha. On the other hand, the number of vehicles, in particular passenger cars constantly doubled every 5 years. Passenger cars comprise approximately 77% of all vehicles on roads.

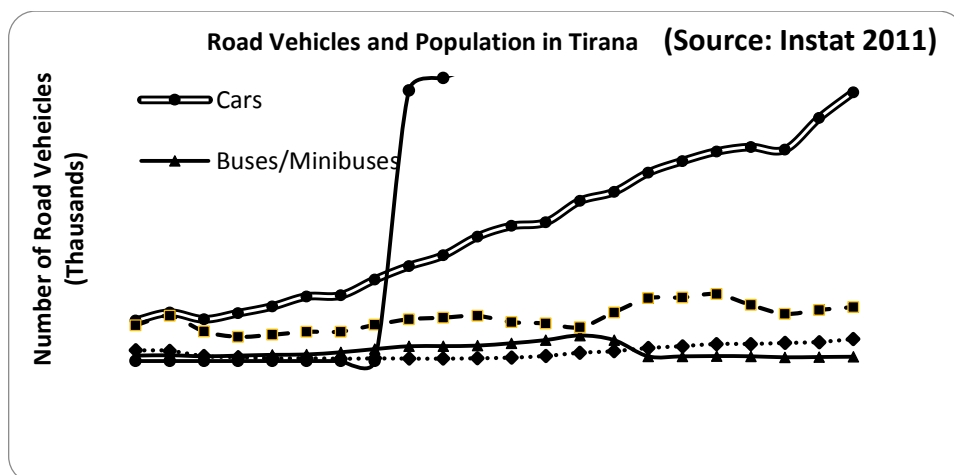


Figure 1 Road vehicles number and population fluctuation in Tirana

Changes in Legislation on Parking Management of Tirana

The legislation on parking management and policy making has been quite dynamic in the past, hence making it problematic for traffic management of Tirana.

Year	Decision
2004	Decision by KRRTRSH on 27.04.2004 foresees <u>tow underground parking</u> ; <ul style="list-style-type: none">- at Parku Rinia,- at Sheshi Italia,
2013	Decision by KKT on 15.02.2013 foresees <u>10 underground parking</u> at; <ul style="list-style-type: none">- Train station,- Near Durres street – Mine Peza street (Kafe “Flora”)- Near “Skandarbeg square” between bank and “Pallati i kultures”- “Avni Rustemi” square- Parku Rinia,- “Vellezerit Frasheri” square (near tween towers)- Backyard of Primeministers office- “Bunker”Park in front of Ronger hotel- East side of “Qemal Stafa” stadium- Sheshi Italia,
2015	Decision by Municipality Council on 11.11.2015 foresees; <ul style="list-style-type: none">- Creation of “Tirana Parking” as an on-street parking management institution- Concesion agreement for underground parkings as BOT for 35 years at<ul style="list-style-type: none">o at Parku Rinia capacity 1300places

Currently, two public parking; Qemal Stafa stadium (Italia square) and Selman Stermasi stadium, previously managed illegally by other people has started managed by Tirana Municipality in 2015. Another parking area is planned to be constructed and managed by the municipality near “Aslan Rusi” sport centre. [6]

Current parking fees, which were set in 2003, are 100ALL/hour. The municipality operates several parking services in some commercial street, where tickets are collected manually instead of an automatic box. Last year, Tirana City Council approved the creation of the "Tirana Parking" Agency and specified parking fees for the four zones of Tirana as 20, 40, 60 and 100 ALL/h. It was decided that resident will not pay any charge at the areas where they live. [6] This new regulation will enable remote roads to be charged less. This new regulation foresees. As stated in the decision the main goal of Tirana Municipality is to centralize and control the management of parking facilities based on the following requirements:

- 71 roads/arteries in Tirana to be priced (curb parking),
- hourly prices to vary between 20-100 ALL,
- pricing to be between 7:30-20:00,
- 60% of the roads to be priced, 40% free for residents and handicapped people,
- weekend pricing in case of social activities,
- time restrictions up to 2 hours or 4 hours to be applied in some roads,
- existing parking areas privately owned will be licensed and continue their activity

Parking Management

Parking facilities are an essential component of the transport system, because every vehicle requires a space for parking at its destination. An adequate, comfortable, easy to find, free, near to the destination, and cheap parking has been the most fundamental requirements of drivers for years. Nevertheless, providing a space for every vehicle in any time not only burdens a financial cost on governments but also imposes an environmental problem on the whole population (European Commission, 2004).

As it is shown in Figure 2 the parking generation supply is a crucial component of the automobile dependency cycle. The need for parking supply is increased by automobile oriented land use planning. As a result of this parking supply generation, formation of dispersed development patterns is inevitable. The loop in Figure 1.2 encourages vehicle usage, decreases alternative modes and creates urban sprawl. One of the most efficient elements that could help to break this cycle is parking management.

Parking Management includes a variety of strategies that encourage more efficient use of existing parking facilities, improve the quality of service provided to parking facility users and improve parking facility design (Litman, 2006). On the other hand, Parking Management can help address a wide range of transportation problems and help achieve a variety of transportation, land use development, economic, and environmental objectives. More accurate and flexible parking requirements mean that parking standards reflect the parking demand and costs at a particular location, taking into account geographic, demographic, economic, and management factors.

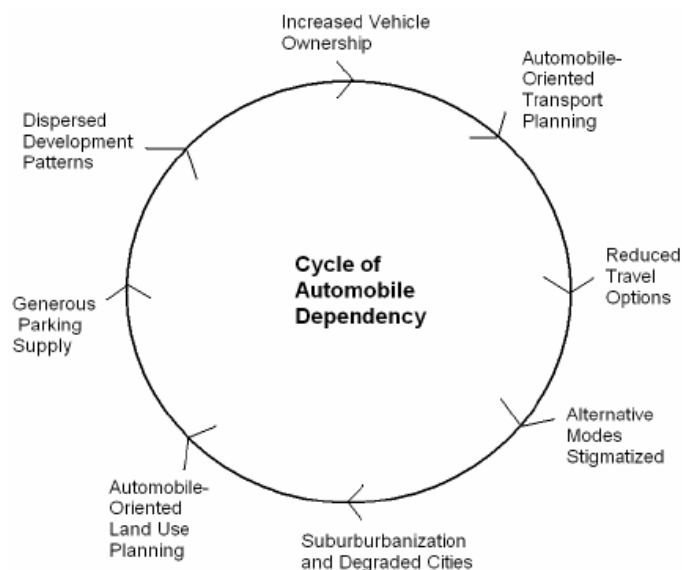


Figure 2 Vicious cycle of automobile dependency (Litman, 2006)

Reducing reliance on private automobile, shifting travelers' and goods' movement to other modes and increasing transit ridership has appeared as the major objective of planners and policymakers at all levels. They have formulated some strategies some of which have been tested and have indicated good results and some others have not been applied yet due to lack of political and institutional reforms but are expected to show beneficial outcomes. The most important strategies would be:

- Shared Parking,
- Parking Pricing,
- Unbundled Parking,
- Financial Incentives (Cashing-Out Employer-Provided Parking),
- Parking Regulation,
- More Flexible Standards,
- Increasing the Price of Parking, Based on a Tax on Revenues,
- Increasing the Price of Parking, Based on a Tax on Parking Spaces,
- Parking Impact Fees,

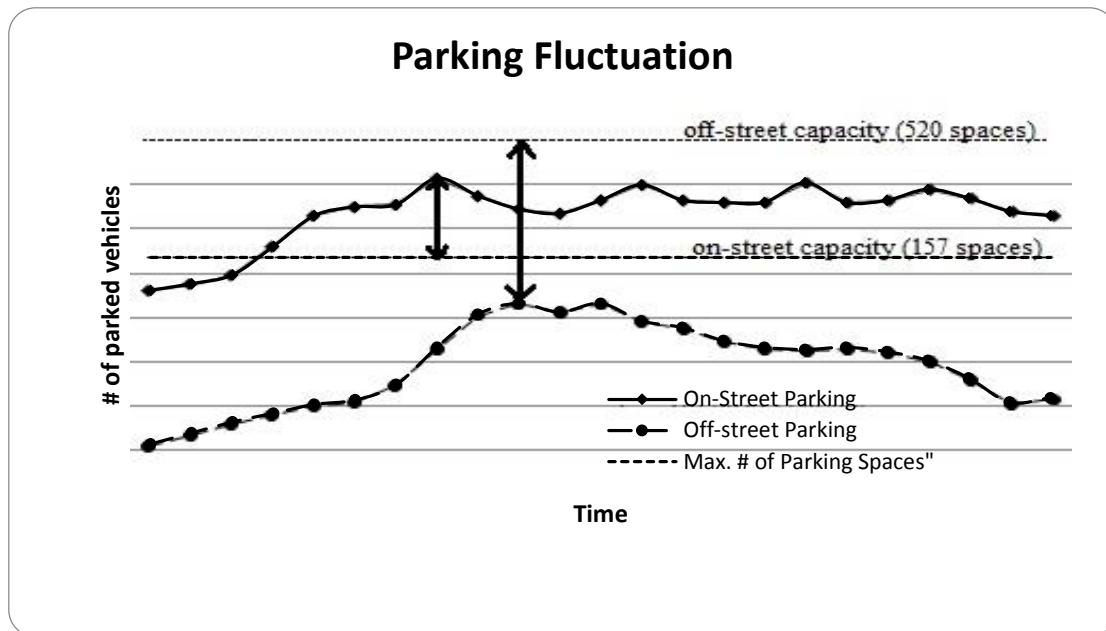


Figure 4 Total daily fluctuation of on-street and off-street parking

As a rule of thumb (Shoup 2004), the parking occupation (accumulation) of more than 90% is considered to be saturated. Hence, all the curbs in the study area were saturated, ranged from 100% to 150%. The total mean of on-street peak parking accumulation was 113%, meaning that a large number of cars were parked illegally. On the other hand, for the off-street parking facilities, the rates were far below the capacities and only one third of the total capacity was used at the peak accumulation. Hence, not the insufficiency but the inefficiency is an evident problem in this area.

Observed Parking Problems

Some violations such as invasion of sidewalks by parked vehicles, usurpation of parking spaces, and illegally parked vehicles were only some of the major parking concerns detected in the study area. Double parking has been defined as another major problem which was pretty common in the main artery during the rush hours. As a consequence of this double parking behavior, the capacity of the main artery was significantly decreased and thus the traffic congestion and delays were increased.

EVALUATION AND DISCUSSION

Development of Parking Strategies for the Pilot Study Area

Parking strategies used in “Myslym Shyri” pilot study area were basically related to *parking pricing*, and *parking duration restriction (limit)*. It is thought that these strategies are the simplest and the most easily comprehended ones by users (Litman, 2006).

Parking Pricing Strategy

Percentage of drivers willing or obliged to leave using the cars because of pricing strategy is not part of this research. However, this value is assumed to be 13% referred to another study

in Istanbul (Barhani and Ergun, 2007). This value is thought to be conservative keeping in mind the income level of Istanbul is higher than Tirana. Thus, a fraction of drivers (13%) was anticipated to leave their cars, reducing the demand required for accommodation of the vehicles.

Parking Duration Limitation Strategy

Finding the percentage of drivers who will not use on-street parking facilities due to parking duration limitation was based on the following assumptions:

- Prohibit on-street parking duration more than 4 hour (1). Four hour limits are generally applied to prevent commuters from using parking spaces. They will be forced to use off-street facilities,
- Use the 85th percentile parking demand of each on-street parking (2). Thus, the majority of parkers is supported,
- Decide the minimum of the values above. MIN {1, 2}

Parking duration limitation in the main arteries and inside the block was decided to be 2-hour and 4-hour, respectively. The number of cars parked for the existing situation was 714 vehicles, whereas for the improved conditions this number was 541 vehicles. Hence, about 30% (211/714) reduction was estimated to be due to parking duration limitation strategy decided for the pilot study area.

Demand Reduction

The decided strategies in the pilot study area were *parking pricing* and *parking duration limitation*. The reduction due to parking pricing strategy was estimated to be 13%. In addition, a 30% reduction of the on-street parking demand was calculated to be due to decided parking duration limitations. Hence, the reduced demand as a result of applied *parking pricing* and *parking duration limitation* strategies was calculated by Equation 1 as:

$$\begin{aligned}
 D_R &= N_T * (1 - S_1) * (1 - S_2) \\
 D_R &= 193 * (1 - 0.13) * (1 - 0.30) \\
 D_R &= 118 \text{ vehicles}
 \end{aligned}
 \tag{1}$$

Where:

- D_R : Demand reduction due to applied strategies, vehs
- N_T : Peak hourly parking demand, vehs
- S_1 : Fraction reduction due to the parking pricing strategy
- S_2 : Fraction reduction due to the parking duration limitation strategy

Demand-Supply Comparison

We were able to accommodate all legally and illegally parked vehicles and accessive spaces are used for hanidcaped people (25%), when parking pricing and parking duration limitation strategies were applied. On the other hand, the maximum accumulation at the parking lot including accommodation of all on-street cars parking longer than restricted time is estimated to be 66% of the capacity of the parking lot.

Environmental Benefits

Approximately 13% of parked vehicles were considered not to be used for trips to the study area. The lesser the number of vehicles used, the lesser the fuel consumption will be. The lesser the fuel consumption is, the lesser the environment will be polluted. Furthermore, when the parking spaces are reduced those spaces can be changed to sidewalks or to green spaces. Thus, the surrounding environment becomes more friendly and relaxing for the people. Last but not least, as the number of vehicles in the traffic is reduced the number of congested roads is decreased. Less congested roads mean less travel times and thus a better public transport service.

Social Benefits

Social benefits are very important in the medium and long run. The reduction of parking spaces and thus the number of used personal vehicles will lead to more compacted areas with different land use. A more relaxing and safer environment for children and elderly people is also very common in these applications. The walking and biking mode is very much encouraged in these well-mixed areas. People find more time to socialize with each other, when the number of green spaces is created for their relaxation.

Financial Benefits

Financial benefits are very important for the operation and maintenance of the facilities. The financial benefits can be used to improve the services and modernize the system. The financial benefits are also used to widen the parking management application area. Furthermore, indirect financial benefits come from the reduction of vehicles usage in the traffic. If the car usage is reduced fuel consumption is reduced, too. As a result the household expenditures will decrease, thus increasing the economy of the country.

The hourly parking charges for 2-hour and 4-hour were decided to be 100ALL and 60ALL, respectively. Notice that, on-street facilities with 4-hour parking duration limitations were found in less congested streets. Thus, a lower parking charge for 4-hour parking duration limitation was decided to encourage drivers to use less congested streets. The total 11-hour earnings were approximately computed to be 142,780ALL/Day. The yearly income is estimated to be 340.000 Euro. This amount is estimated to cover all management costs and for modernization of the system.

CONCLUSIONS AND RECOMMENDATIONS

- A small number of long-term parking durations significantly decreased the efficiency of the on-street parking facilities. Obviously, if the long-term parkers could be mobbed to off-street parking lots, the turnover for the on-street parking would have been increased significantly.
- On-street parking spaces were more valuable and important than off-street ones.
- Improving the efficiency of on-street facilities rather than increasing the number of off-street facilities (by building new garages and parking lots) is a more effective solution of insufficiency parking problems that the pilot area and all metropolitan area of Tirana is facing nowadays.
- On-street parking demand reduction due to applied parking pricing and parking duration limitation strategies was calculated to be 39%.

- More research is needed to test the hypothesis that most parkers would rather switch to transit than spill over on to unpriced parking spaces.
- More research is needed on how reduced parking supply affects business sales and the local economy.

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