

BICYCLE PLANNING AND PROGRAM DEVELOPMENT IN THE CITY OF NOVI SAD¹

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Abstract

Like most European cities, the City of Novi Sad has recently experienced rapid growth, which resulted in a much greater motorization rate. Thus, in order to prevent the negative consequences of greater urbanization, it is necessary to meet the growing transportation demand by encouraging reliance on alternative modes of transport, such as cycling. The paper presents the current state of bicycle traffic in the City of Novi Sad with attention to urban planning documentation and cycling infrastructure.

Keywords - transport planning; cycling infrastructure; bike sharing; bicycle network

INTRODUCTION

In the last two decades, several individual transportation management measures have been introduced in Serbian cities. In their attempt to mitigate transport system deficiencies, city authorities have introduced specific measures—such as charging and restricting parking, reconstructing or building a section of a new traffic artery—without considering their impact on modal shift and other auxiliary effects.

Novi Sad (a city of 280 000 inhabitants, occupying a 129.4 km² area) is one of the important cities of the Danube region. Due to its favourable

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geographic position and good transport links, it has become a dominant socioeconomic centre of Vojvodina—a unique macro-regional and administrative part of the Republic of Serbia. It is the second largest city in Serbia, and a home to significant scientific, research and development, and professional organizations, as well as numerous medical, cultural, and educational institutions.

A set of social and economic changes led to a 30% increase in the total number of trips from 1976 to 2009, which follows the increase in the city population. Back in 1976, the total number of daily trips conducted on the Novi Sad territory was approximately 500,000, compared to 745,000 in 2009. Over the same period, a change in the modal split also occurred, marked by a significant increase in the number of trips made by PC (19% to 26%), accompanied by a corresponding decrease in PT use. PT use declined from 28% to 22% in the same period. The share of trips made on foot remained at the 48% level, whereas the percentage of bicycle trips has been on the decline for many years. In 1960s, bicycle trips accounted for almost 10% of all trips, declining to 5% in the 1970s, and to only 2.5% in 2009. In addition, 19% of this total pertains to the use of bicycle for everyday trips, such as travelling to workplace, school and university, with private visits, recreation, etc., comprising the remaining 81% [1].

By 2009, cycling infrastructure in Novi Sad related only to cycling paths, which were formed mainly along the primary street network. Interconnection of suburbs by the cycling network was scarce. Bearing in mind that climate and topographic conditions for using bicycles on the territory of Vojvodina are almost ideal and that there is a significant heritage in relation to bicycles use, it can be stated that bicycle traffic in the year of 2009 is negligible.

INCLUDING CYCLING IN AN INTEGRATED URBAN TRANSPORT POLICY

According to the traffic study NOSTRAM [1], the measures for the advancement of cycling traffic in Novi Sad were divided into four groups:

1. Construction and regulatory measures.
2. Bicycle parking lots.
3. Interconnection of bicycle trips and public transport.
4. Promotional and educational measures.

Construction measures mean recovery, reconstruction and modernisation of the existing and building of the new bicycle paths in accordance with the proposed network.

According to the data from 2009, the total length of bicycle paths in Novi Sad is 65.6 km. By the traffic development plan for the year of 2029, the

predicted total length of bicycle paths will be 207 km. In Figures 1 and 2, there are the existing, planned and proposed networks of bicycle paths.

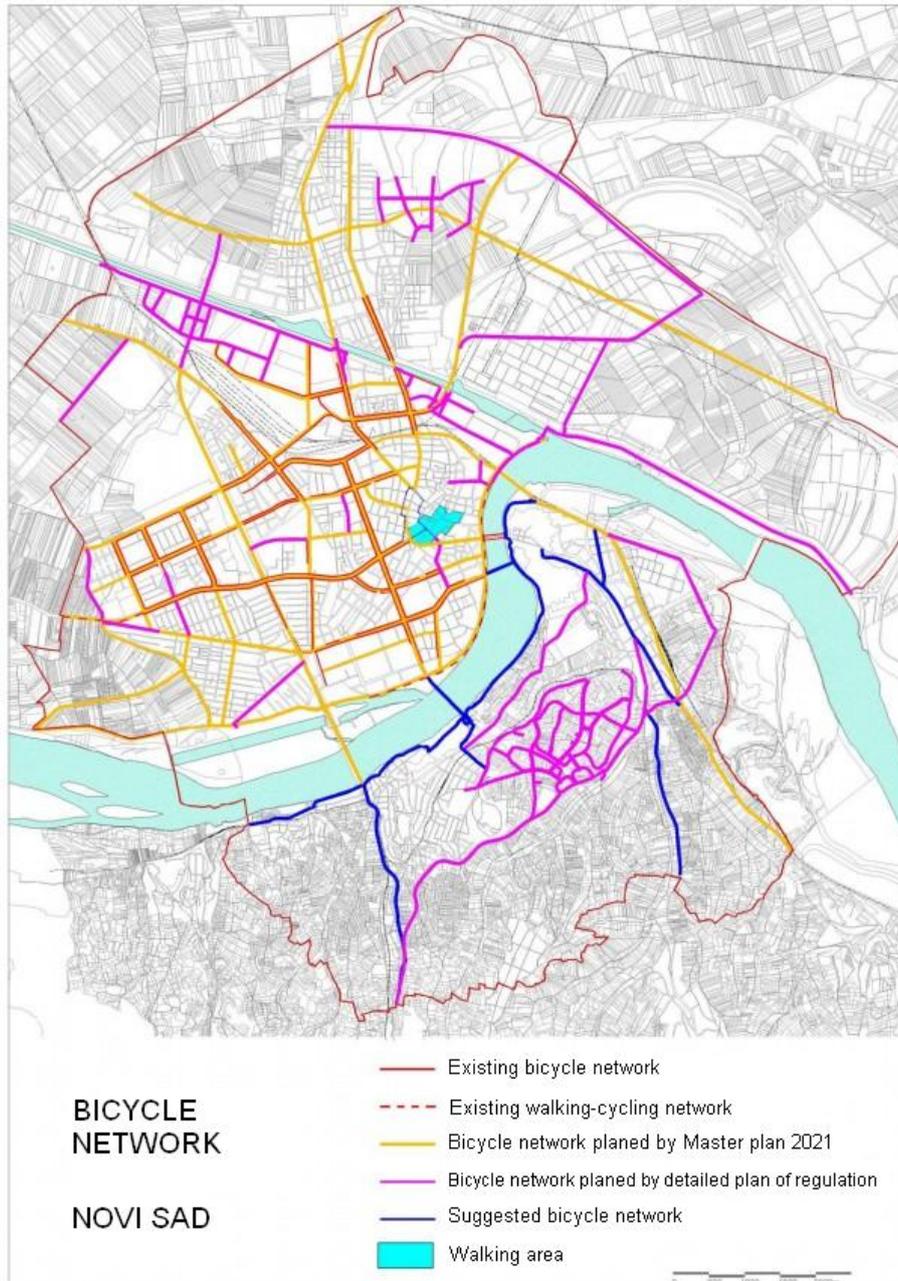


Fig. 1. Existing, planned and suggested bicycle network – City of Novi Sad [1]



Fig. 2. Existing, planned and suggested bicycle network – Novi Sad's municipal area [1]

Apart from construction measures, the plan also predicts the introduction of regulation of the bicycle parking network, which would be controlled and supervised in a way. The proposed bicycle network would be of the capacity 10-50 bicycles with and without video surveillance. The system of public bicycles (bike-sharing) would also be introduced.

It is also predicted that in the following 20-year period the integration of the bicycle with other transport modes will be applied, and a range of promotional activities will be carried out. The aim is the change of attitudes and habits in relation to the choice of a transport mode.

SITUATION FIVE YEARS AFTER THE PLAN ENACTMENT

From the moment of the creation of Transport model of Novi Sad, further investment in bicycle infrastructure building and maintaining have been noticed. The introduction of new regulatory measures have improved the conditions for bicycle using. In accordance with planning-technical documentation, paths along new boulevards have been built, new bicycle parking lots have been set and new stations of bike-sharing system have been introduced (NS BIKE).



Fig. 3. Intersection – Implemented design elements[2]

However, the existing network is still mainly characterized by incoherence and bad state of bicycle paths (Figure4). In most new bicycle paths it could be noticed that the same area is occupied by parked vehicles (Figure5). Only at some locations there are limiters which disable the parked vehicles to occupy the area meant for bicycle riding by their front end.



Fig. 4.Gaps in the cycle network[2]



Fig. 5.Conflict of cyclists and the parked vehicles[2]

Irregular bicycle riding has also been noticed, both along the areas meant for the pedestrian walking (the city centre), and along city streets intended for one way traffic of vehicles.

Since 2009, in Novi Sad there has been no comprehensive research which would significantly show the changes of the basic characteristics of bicycle trips (volume, time and spatial distribution, travel purpose...).

According to the 2013 data, an automatic counter located at the main city corridor recorded 352,258 cyclists in both riding directions, while in 2014it was 405,849.

Analysing the automatic counter data [3], apart from the increase of the number of cyclists, dependence of bicycle using on average daily temperatures (Figure 6) and periodic weekly oscillation (Figure 7) can also be noticed.

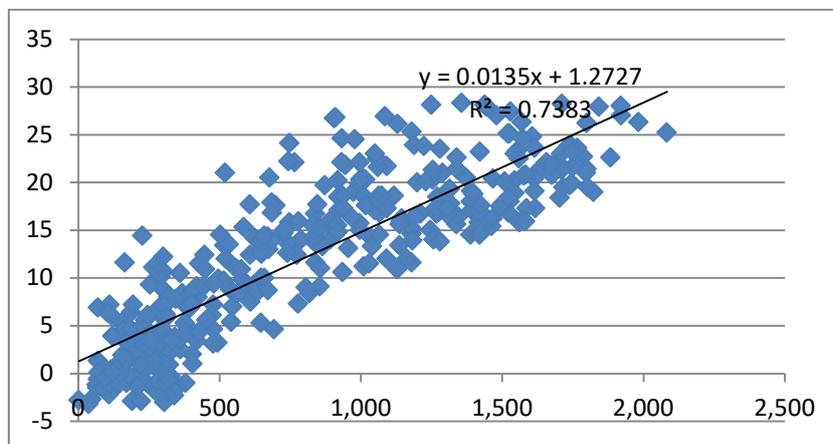


Fig. 6. Correlation between the number of cyclists and mean daily temperature [3]

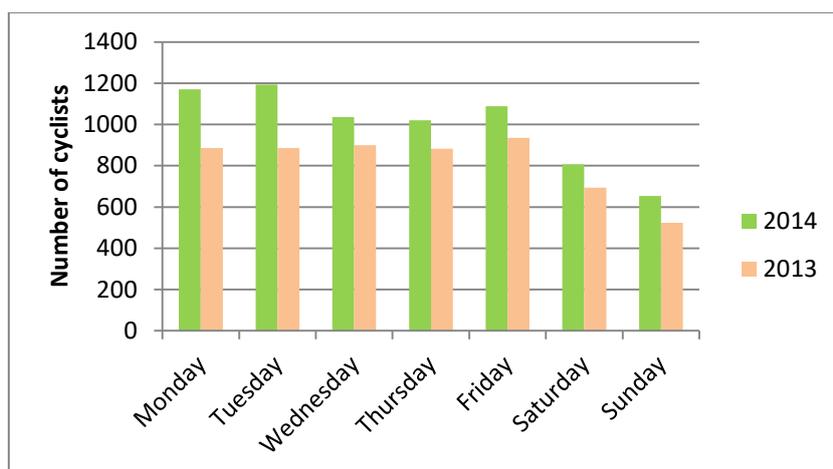


Fig. 7. Weekly travel distribution [2]

Bicycle sharing (BS) is one of Novi Sad's policy measures aimed at achieving sustainable mobility, partly through promotion of cycling, which has been largely neglected as a transport option in the city. Pertinent data from Barcelona, Lyon and Paris suggest that promotion of BS has the potential for reducing car usage. While the percentage of car or motorcycle trips that have been replaced by bicycles in these cities ranges from 2 to 10%, a more significant shift occurred from public transport utilization to BS. In a 2008 survey of "Vélib" users in Paris, 20% respondents stated that they used car less as a result of their participation in the scheme [4]. This

percentage increased to 46% in 2009 [5]. In Paris, trips made by car decreased by 5% in the first 10 months after the implementation of the BS system, and in Lyon, bicycle use reduced the automobile modal share by 7% [6]. A study examining the effectiveness of the OYBike scheme implemented in London showed that 40% of users shifted from motorized modes to cycling [7]. A similar survey of “SmartBike” users in Washington DC, US, indicated that the system drew nearly 16% of individuals who would have used cars otherwise [8]. These surveys suggest that BS systems typically result in a 1–1.5% increase in the cycling modal share [5].

Complete installation of “NS bike” system was funded by the city of Novi Sad. The project was launched on July 11, 2011 within a broader scheme termed “Let’s return Novi Sad back to cyclists”—a joint venture between the City of Novi Sad and Novi Sad Parking Services. The bike-sharing system is planned to comprise of 60 stations located 400 to 500 m apart, with a fleet of around 600 bicycles. The station distribution and capacity were determined based on the location of main activity centres and spatial distribution of trips identified through the research conducted for the purpose of Novi Sad Transport Model (NOSTRAM). Parking Service is in charge of maintaining the system, whereby the income earned through parking fee collection is used for maintaining and operating the “NS bike” system. This principle is integrated into NOSTRAM (Novi Sad Transport Model), which allows the parking tariff income to be invested in alternative transport modes—in this case, the BS system.

The NS Bike system design is based on the premise that, once the project is fully implemented, it will provide Novi Sad with a modern bike-sharing system that allows bicycle usage for individual trips within the city. A survey conducted in May 2013 revealed that only 23.4% of the system users rent a bicycle for one hour only, most likely due to the fact that the NS Bike system still lacks sufficient number of well distributed stations. Majority of the surveyed users (almost 90%) rented a bicycle for 3-hour periods, and made several urban trips during that time. Based on the existing capacities, it was determined that one bicycle was rented 27 to 38 times per month, corresponding to an average of 1.09 rentals per day. It is also interesting that no significant differences in loan volume were noted across the individual days of the week, especially between weekdays and the weekend [9].

CONCLUSION

In cities of Northern and Southern Europe, levels of car ownership dramatically increased following accession to the EU, primarily as a result of growth in income levels [10]. A similar trend of growth in road traffic

volumes and PC usage as a direct consequence of economic growth and increases in motorization is expected in Serbia and other Central and Eastern European (CEE) countries [11, 12]. A major concern related to the transportation sector in CEE countries stems from rapid growth in the demand for transportation over the last decade [11,13]. Nevertheless, the CEE region may be considered to have a “starting advantage” with respect to transport sustainability compared to the established EU member states, because cities historically display large public transport (PT) modal shares relative to PC use [11,13]. Hence, maintaining high levels of PT use and promoting other environmentally friendly modes of transport (EFMT) are important strategies for policy makers.

It can be stated that the current traffic policy of Novi Sad is directed to the development of bicycle traffic, which is the consequence of the new concept of urban traffic development implemented in Transport model NOSTRAM, but it is also the consequence of the active participation of final users, that is, non-governmental organisations. Following the contemporary European and world trends of encouraging bicycle using and application of the modern information technology for that purpose, NGO had a great success in the promotion of the bicycle with all citizenship age groups. The conclusion based on the automatic counter data (the only counter in the city which records cyclists and their moving) is that in the previous six years there have been positive changes and the bicycle is significantly more used in daily commuting.

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