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### **Shiraz with a taste of Paris: Developing a comprehensive bicycle sharing architecture**

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#### **Abstract**

People in developing countries, including Iran, mostly use personal cars for their daily trips, which due to the ensuing traffic congestion results in high levels of environmental emission (including greenhouse gases) and pollutions. Engineers and planners have continuously tried to find solutions for traffic congestion in big cities. An example of a successful solution has been the policies toward encouraging people to choose active transportation over the use of private vehicles for their daily trips. To achieve this goal, however, government should provide the infrastructure and facilities needed for active modes of transportation, such as biking and walking. Biking is a very good mode choice for short city trips, because it not only requires physical activity, which is good for personal health, but is also good for protecting the environment and reducing traffic congestion. Moreover, users can enjoy nice views of their neighborhoods, while having the opportunity to socialize with other people, something that is crucial for the social cohesion in an urbanized environment. In this article, the architecture for a bicycle sharing program is developed and proposed for the city of Shiraz. Adopting such a framework

would be giant step towards establishing a sustainable and integrated transportation system in Shiraz, or similarly in other Iranian cities. This bike sharing paln can remain sustainability in different aspects,such as: energy saving, air pollutions. This system can also help governments to save more money and create new opportunities for future plans.

**Keywords:** bicycle sharing, active transportation, sustainable transportation, traffic congestion

## **Introduction:**

In developing countries, people mostly use personal transportation for their daily trips. Most of the time, using cars cause traffic congestion, resulting in emitting Greenhouse Gases (GHG) and pollution. In order to find a solution for traffic congestions in big cities, planners and engineers have concluded that encouraging people to use public or active transportations is the best solution to the above problem. To do so, therefore, government should provide the facilities that are needed for public or active transportation. Both of these transportation modes help reduce the hazardous effects of personal transportation. Active Transportation includes biking and walking. Biking is a good choice for city trips, because trip makers can enjoy nice views of their cities and also exercise and breathe the fresh air. In this article, a bicycle sharing architecture is developed and recommended for the city of Shiraz and its different aspects are explained.

Biking and bike sharing has numerous benefits including: progress in mobility by completing existing public transport systems, reducing emission levels of GHG gasses, and also encouraging people to have physical exercise during their trips. Moreover, it provides accessibility to public transportation.

Due to its noticeable success, Vélib bike system of Paris is studied and used as a model. This bike system was launched on 15th of July 2007 and encompassed around 14,500 bicycles in 1,230 bicycle stations, located across Paris and in some surrounding municipalities. In 2014, Vélib was the world's 12th-largest bike sharing program by the number of bicycles in circulation. In comparison with other bike sharing systems around the world, Vélib has the highest market penetration with 1 bike per 97 inhabitants. Nowadays, most of daily trips in Paris are made by bicycles [1, 2, 3].

## **Proposed architecture for bike sharing system, Case study in City of Shiraz**