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Subway Expansion, the Only Way to Treat Air Pollution in Tehran

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Abstract

The expansion of cities and the increasing uncontrolled migration and industry growth has resulted in increased car use and dependence in urban environments in order to displace its inhabitants. Follow this topic, many of the problems caused by air pollution and traffic congestion in urban areas grew that sound pollution is the most important one. Air pollution and noise impact on people's lives as children and adult has led officials to think about solutions for this problem. The most important measure is development and proper management of public transport and the best means of public transport is urban rail transit or subway. Subway is the most efficient urban mass transit system and one of the most important benefits of this system is that the path is separated from other urban routes. In addition, if really "to discuss the construction and operation of the subway as a process, look, it can be an indicator of progress in the development of the nation. Fully accepted the experts' view, through transportation effectively and constructively in the development of the subway, people can get a clear picture to provide goals and visions. In this study, the effect of air pollution in Tehran is discussed on the launch of the subway.

Keywords: Subway Expansion, Air Pollution

Introduction

The expansion of cities and the increasing uncontrolled migration and industry growth has led to increased car use and dependence of urban environments in order to displace its inhabitants. Follow this topic, many problems caused by air pollution and traffic congestion in urban areas grew that sound is the most important one. Reduced air quality is because of emission of pollutants containing a variety of gases, droplets and particles emerge. Since the contamination of non-natural chemical compounds from natural decomposition of human origin is not and more time is needed to completely eliminate their effects, it always leaves direct impacts on the health of citizens. The entry of unwanted sounds in the environment of life can cause physical and psychological harm and disorder for people.

Air pollution and noise impact on people's lives as children and adult has led officials to think about solutions for this problem. The most important measure in this way is ddevelopment and proper management of public transport and the best means of public transport is urban rail transit or subway. Subway is the most efficient urban mass transit systems and one of the most important benefits of it is that the path is separated from other urban routes. The subway passengers face no traffic and in fact, subway burden is not on the city's streets and takes to the basement. Due to the high volume of passengers

transported by the subway, subway is the basic system of urban transport in big cities and other transportation systems such as buses and taxis use to supplement the subway. Over the years, momentum subway lines have been gained in cities around the world. These days in many cities of the world with citizens, commuters are started by any means and finally, at least they use one track from the subway.
Subway has been developed in the best areas of public service in the field of urban transport and is considered as a symbol of development and any operation that is performed for the construction and operation of an indicator of the development. In addition, if really "to discuss the construction and operation of the subway as a process, look, it can be an indicator of progress in the development of the nation. Fully accepted the experts' view effectively and constructively transportation in the development of the subway can get a clear picture to provide goals and visions. In this study, the effect of air pollution in Tehran as a result of the launch of the subway is discussed.

1. pollution in urban environments

Different types of pollution can be air pollution, noise, water, soil, waste and visual pollution. Air and noise pollution in urban environments, including the pressure on residents, can be taken into account in the planning and design of urban environment and urban management to minimize their effects. When natural compounds upset and reduce emission of pollutants in the air by the lead air quality, air pollution is occurred. This pollution has harmful effects for humans, animals, plants, buildings and facilities.
The main causes of air pollution include: industrial activities, the burning of garbage and etc, domestic fuel supplies, vehicles and the nuclear tests and nuclear power plants [7] in urban areas and residential areas in three major categories including industries and factories and motor vehicles.
Noise pollution also includes unwanted noises the long-term adverse consequences for human health and adverse psychological and social concerns, such as, lesions in the nervous system involved in human hearing.
Large cities and subwaypolitan urban transportation system are the most important causes of noise pollution. These factors can be used for vehicles such as cars, buses, trucks, motorcycles to this problem to increase the number of cars. On the one hand, urban noise pollution in the city is in a direct relationship and this means that some users due to excessive noise cannot be located in the subwaypolitan area, such as: Airports, heavy industry and so on. Two types of infections seen in studied vehicle traffic in cities could be key factors in the creation of pollutants and many problems for citizens. [1]

2. The introduction of air pollutants from transport systems in cities

As noted, Motor vehicle traffic is a major source of air pollution and noise. In fact, the main source of air pollution is caused by diesel vehicles using fossil fuel consumption and up. This is the result of increased human dependence on car-oriented suburbs and sprawl in recent decades due to the development of cities. Followed by increasing the distance between home and work and number of trips within the city, especially with the use of private vehicles increased in this context, large garage built around urban areas have led to the use of private vehicles has been Biester.
The problems emerged in the role of vehicle should be ignored. The most obvious negative effects can have economic costs, environmental damage, impact on agriculture, ecology and pollution affecting the health and welfare of the people mentioned [2].
The main urban air pollutants can be grouped as follows:
Carbon monoxide (CO): gas, colorless and odorless, mostly due to incomplete combustion of fossil fuels is produced. Motor vehicles account for the largest share in the production of pollutants.
Ozone (3 O): One of the most challenging contaminants is basically a source not be released into the environment. It is produced by reactions between atmospheric pollutants and for this reason, it is called secondary pollutant. Primary pollutants are involved in forming ozone, through cars and other industrial pollutants, including nitrogen oxides and total hydrocarbons.

Particulate matter (PM): any substance other than pure water as a liquid or solid in the atmosphere under normal conditions or under a microscope in size but larger than molecular dimensions exist, is called particulate matter. A full description of particulates in the atmosphere is needed to be determined in the following:

(A) Concentration (b) Size (c) Chemical substances (D) phase (liquid or solid).

This 5.2-micron particles are divided to less than or equal to two and less than or equal to 10 microns.

Nitrogen oxides (NOx): produced by generators, power plants and motor vehicles. These pollutants cause bronchitis and other pulmonary diseases.

3. Air Quality Index and the role of transportation in air pollution in Tehran

Air quality affects the quality of life and human breathing. As the daily weather changes, air quality varies. Management and monitoring of air quality and monitoring data on air quality in big cities becomes the Air Quality Index, and required information to the general public. The air quality index is a key tool in understanding air quality and its relation to human health.

In general, the air quality index (AQI) is an indicator to predict daily air quality. The people are aware of the Air Quality Index (clean or contaminated) and its relationship with health levels. In other words, the effect of polluted air on human health shows and appreciates it easier for the public information.

Pollution from the transportation sector due to uncontrolled urbanization and rapid industrial pollution is important. Pollution from transport and vehicles is in the form of exhaust gases, particulates, noise and so on. Today, air pollution is one of the most important and most fundamental environmental problems in subwaypolis in the world that has arisen from human activities and progress. 8 Subwaypolis as presented in polluted cities Andkh first and foremost is Tehran.

In recent years, numerous studies are conducted on pollution percent of contaminants, methods of air pollution control and environmental management practices etc. In all cases, the transport sector has been the leading sources of pollution, so that studies show that more than 80 percent of Tehran's air pollution comes from mobile sources or vehicles. A survey conducted in order to achieve statistical analysis and certain vehicles are classified in groupings. If the transport system is divided into subgroups for light vehicles, motorcycles, buses and other diesel vehicles single company (including buses, mini kiss, trucks and light trucks) segmented, the share of each group in the total emissions caused by air transport system in the city of Tehran will be as diagram (1):

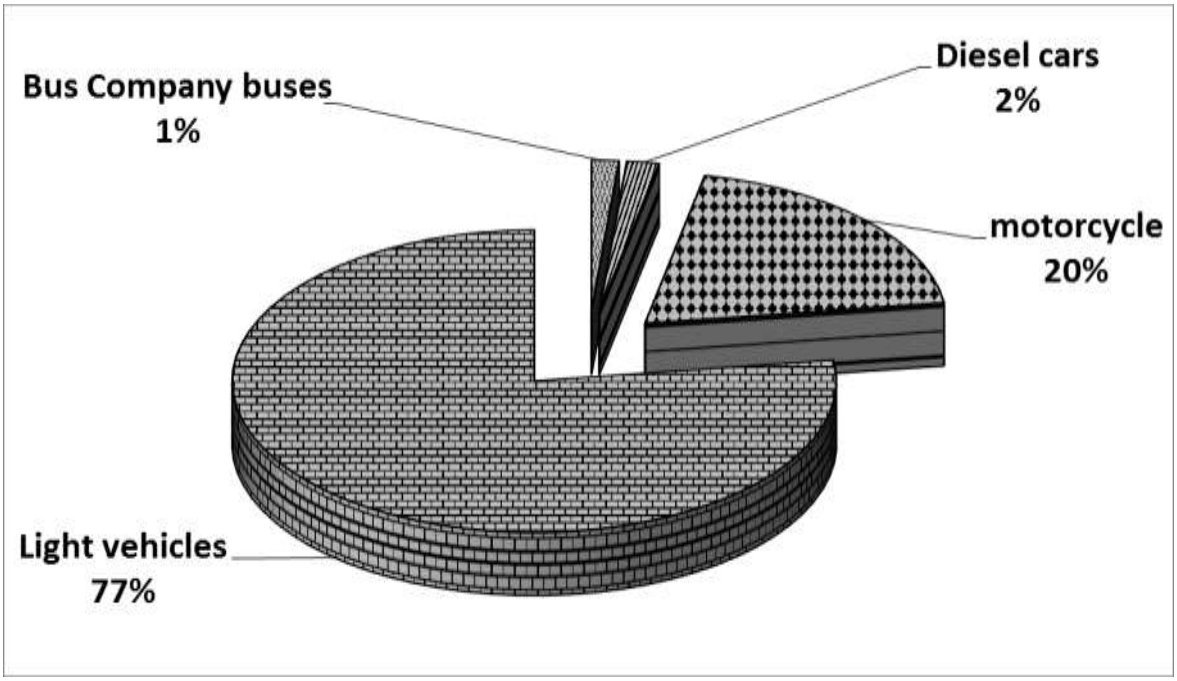


Figure 1 1: diagram of average share of different groups of the transportation system in air pollution in Tehran released (86. 90)

According to figure 1, the largest share of passenger cars more than 77 percent of total emissions comes from mobile sources and one of the main reasons there and can be a considerable number of this part of the transport system other than other groups [4].

4. legislator and urban rail transport

Due to understanding the situation of public transport in the country and the necessity of taking some measures for the future, Legislator had said in Article 30 of the country's economic development plan (2005-2009): Improve urban traffic as well as increase the share of public transport as much as seventy-five percent (75%) of the total urban trips are considered such conditions have been realized in practice.
But according to the following amendment to Article 7 of the law, in Tehran, about 30% of subway, bus and taxi 25%, 20%, is considered.
Subway growth trends show that Tehran subway has much higher growth than the process specified in the Act for the whole country, but in this respect, the legislator has said by the end of 2011: the share of up to 30% for urban rail transportation in Tehran is considered. Tehran subway in 2007 revises the development plan lines to reach the goals mentioned in the law and is planned to be approximately 15,000 billion rials spent on the subway of Tehran that even half of this figure is actually not achieved in previous years. Due to limited resources and the Subway, achieving to a share of 15% at the end of 2011 may be, but achieving a higher share of transport in urban area. The necessity of coordinating bodies and institutions has led to higher demand for the development of Tehran Subway. This five-year program Subway and due to the potential set has led to coordination of the government, parliament, municipalities and obligations in this field.

5. Some of the benefits of quality of Subway

In order to ensure of quality of life and sustainable development of cities and regions around the world, the development of an integrated approach is taken to urban policies in the fields of economics, Social and environmental risks for citizens and businesses seem necessary. Optimal performance and integrated public transport system is the cornerstone of such policies.

This interaction benefits both for the public transport sector and other areas of urban management and brings the following qualitative benefits are mentioned [4].

1-6- speed transport

Due to the use of private path that is dominant in the basement and on the ground in some areas, Subway does not interfere in traffic with the streets and is not faced with limited traffic urban streets, So that it makes trips into the city faster than personal cars and even public transport such as buses, minibuses and taxis.

2-6- reduce daily trip time

Subway, due to central management and integrated use of private path regular attendance and being on time, can be set in station that leads to reduced time spent on day trips to see and in the course of development services decreased between 30 to 45 minutes to be achieved in urban trips of people.

3-6- improving social relations

Population growth and consequently a significant expansion of urban areas and the tendency to use private cars have led to outcomes such as anxiety and psychological stress caused by traffic. This in turn leads to the disruption of social relations between citizens. Tehran rail transportation system (subway) due to the characteristics of mass transit is a facilitator of social relations and personal and public transportation. Subway has not the obstacles created by other transportation infrastructure such as freeways, highways and traffic arteries that are close to residential areas and causes of social isolation and communities closer to each other. Remove the gap between different groups of people as well as other effects are the positive effects of public transport rail.

4-6- comfort

Travel by subway is useful because of being away from city traffic and avoidance of noise and air pollution as well as subway cars caused ventilation system that part of his time passengers spend in clean environments. Mental peace and happiness of the citizens are increased and they can gain mental and physical preparedness and this system can provide them conditions to live and work better and consequently can increase labor productivity.

5-6- increase social order

Regulatory guidance system of urban railway and the precise timing of the dispatch of trains (With the exception of natural causes delayed) and time also planned to stop trains at any station and the cleanliness of the environment inside the station and trains, has caused a certain order that each of the people tend to use this system to comply with the order. Compliance with this regulation can influence other people's personal affairs also and can ultimately be effective in promoting social order.

6-6-reduce traffic congestion

Construction of underground subway lines in city centers and especially traffic congestion in the streets of Tehran Subwaypolis could reduce traffic and in proportion to their share of the transportation within the city, it can facilitate the movement of public and private vehicles. It can make traffic police and rescue vehicles work easier and faster as well as it can lead to other achievements in the use of subway public transportation [5].

7-6- Safety and facilitation of urban trips

One of the characteristics of the subway is to facilitate travel by public transport. In this regard, the subway is always looking for techniques and new techniques in operation and handling convenient to passengers among the measures mentioned as follows:

- Equip subway ticket vending technology
- Discounts on the purchase of tickets with a credit card
- Taking into account the special conditions for disabled and elderly people
- Installation of elevators and escalators in subway stations
- Match the beginning and end of train wagons identified and respected for women

Traveling by subway can provide safety and security of the people. So, all people prove its growth and development. Train traffic is constantly "under the control and supervision and with any risk, safety monitoring system works and will not be allow to move the train. Subway is also equipped with certainty so that if the train does not close all the doors, the train is not allowed to move. However, all subway passengers are covered by accident insurance since entering until leaving the station. Thus, if a person is injured in a train or subway stations, the subway will pay all costs and accident insurance.

7- The urban rail transport systems (Subway)

Given the significant role of transport systems in emissions, one of the most important approaches to reduce air pollution in cities is use of public transport, especially subway. 155 million daily subway travels are taken in 110 cities around the world. Since 2000 so far, 37 new cities, including Delhi, Dubai, Xing Yang (China), ... are equipped to subway system. Length of subway lines until the end of 2015 China reached to 2,300 km. It makes clear the importance of the subway to us. Tehran Subway construction was started in 1977 and now, it is moving toward its vision with dramatic speed. In Outlook of 2030 and a comprehensive plan of Tehran, Tehran subway will reach 12 lines and 430 km route. Review, analysis and quantification of the impact of the subway in reducing air pollution is very difficult and challenging and on the other hand, it has practical and scientific importance. [6]

8-**Conclusion**

Subway, the underground train and successful method, is a part of the rescue multiple countries tested it and enjoyed it and have used a lot of valuable gifts. Large cities and densely populated cities of the world with the use of underground and surface trains could require the use of private vehicles in urban trips on the side, so that residents of big cities and populated requires the do not feel use of private vehicles in urban trips and thus, larger and more populous cities of Tehran are not disturbed by problem of the traffic. People do not suffer from air pollution and are not affected by the dozens of known and unknown diseases [7].

Subway has developed the following achievements:

1-8- several million passengers use the subway daily at the specified time without encountering traffic

2-8- Using the subway, Tehran air pollution and abandoned urban cleanup is omitted

3-8- The use of a subway in Tehran and large cities can prevent suffering from increased pollution

4-8- With the development of Subway, employment is created for tens of thousands of people (For the development of subway in Tehran, create at least six new subway lines for the East-West and North-South in different areas of the subwaypolis)

5-8- development in different parts of the Subway to all parts of the city cab lead to market equilibrium

6-8-of development of Subway prevents the disease and thousands of deaths per year

7-8- with subway development, road accidents and deaths and injuries caused by accidents and the cost of material and spiritual intensity is reduced

8-8- With the development of subway, rail industry has been revived and with the promotion of knowledge and technology in this field, exporters companies will also develop railway production

9-8- with subway development, concerns and the cost of living of the people will be reduced

10-8- subway services could make balance with the development of health, education and municipal services for children, young adults, and middle aged adults

11-8- with the development of the subway, possibility of visiting friends and relatives will be simpler and people make closer relations and have not the obligation to meet each other and do this with less effort.
Railway transport pollution is very low compared to the amount of air pollution of other transport systems and in cities with high coverage shifts with public transportation, it lead also less air pollution in Tehran as a metropolis. Furthermore, Public transport is return on investment; For example, in America, every dollar that is invested in public transport, it will lead to $ 6 return on investment.

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