PUBLIC TRANSPORTATION IN KABUL CITY, HISTORY, AND CURRENT STATUS

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1. INTRODUCTION

The capital city Kabul is located in the eastern part of Afghanistan. It is not only the largest city in Afghanistan by population, but also one of the world`s fastest growing cities. Rapid urbanization has also led to Kabul being the fifth fastest growing city in the world. Estimates taken in 2018-19 show that the population of Kabul is 4.86 million, The municipality area expanded to 1022.7 km^2 because of the toppling of the Taliban in 2001, and hopes of increased security and economic possibilities have enticed many Afghans to move here, such as people displaced due to ongoing civil war in the countryside, refugees returned from Pakistan and Iran, and hordes of laborers simply looking for a better life. Before 2006, the Kabul metropolitan area master plan covered only 22 zones. After 2006, President Hamid Karzai first established a master plan for the Kabul New City (KNC), covering four zones in total. The Kabul metropolitan area master plan creates 26 zones which seek to spread the population and expand the capital northward through a broad urban developed initiative (Fig.1).

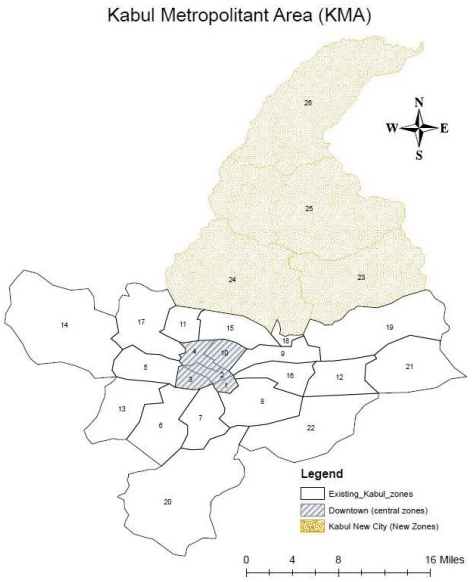

Fig. 1: Kabul City 22+4 zones boundary

Recently many countries have invested in the development of the Kabul Urban transportation system with buses, minibuses, and taxis being the main modes of intercity transportation. A considerable number of bicycles, motorcycles, human-pulled and animal-pulled vehicles, and rickshaws also operate on public roads. In the past, Kabul had a trolleybus system which was established in 1929 and facilitated transport of passengers. Unfortunately, it was demolished in civil war.

The road transport sector in particular is suffering from very poor road conditions in terms of the travelling performance and traffic safety, as even main roads which were prioritized for improvement are often unpaved or severely damaged. Even though the World Bank and many collaborators have been implementing projects designed to improve roads, as well as the traffic in Kabul, the overall development of roads and bridges has not been able to keep pace with the ever-increasing traffic volume, further deteriorating the chronic traffic congestion. Under these circumstances, the implementation of a project to effectively deal with traffic bottlenecks in Kabul is urgently required so that the improved road conditions eliminate the traffic congestion to provide a smooth and safe travelling environment for road users.

2. PREVIOUS RESEARCH ON KABUL TRANSPORTATION

Japan International Cooperation Agency (JICA) conducted its first study for the development of the master plan for the Kabul Metropolitan Area in 2008. The city had 3.35 million trips, of which 1.02 million were on foot within the city. Trips by vehicles moving inside the city were 2.12 million. Among the traffic connecting inside to the outside the city, the largest amount was in the direction towards Jalalabad with 100,000 trips, followed by the direction towards Kandahar with 40,000 trips (Fig. 2).

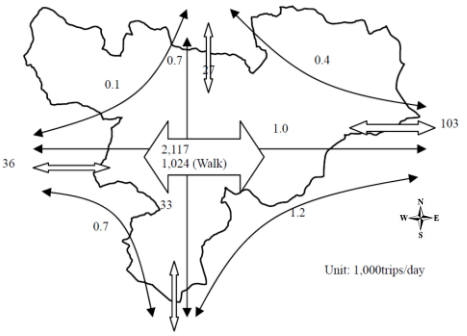

Fig. 2: Daily Trips in Kabul (JICA 2009)

A total of approximately 30,000 trips connected Kabul city and northern regions. A second feasibility study for the development of the Kabul city master plan was conducted by Khatib & Alamin consulting engineers-offshore S.A.L. in 2018. Various surveys such as intersection, vendor, pedestrian, public transit, private transit, etc. were performed by the consulting company to develop a clear picture of the present condition of the city. Each of the surveys was designed to give an idea about the different aspects of the existing conditions of the city.

3. GEOGRAPHICAL VIEW OF KABUL CITY

Kabul is an economical and cultural center, situated around 5,900 feet (1,800 m) above sea level in a narrow valley, between the Hindu Kush Mountains along the Kabul River. Kabul is linked with Ghazni, Kandahar, Herat, and Mazar-e-Sharif cities through a long circular highway that stretches across the country. It is also linked by highways with Pakistan to the East and Southeast and Tajikistan to the north of the country. Kabul has a land area of 4,461.6 square kilometers (km^2) and an estimated population of about 4.86 million people in 2018-19, with a population density of 44,000 people

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per km^2 among around the lowest in Asia. It is located mainly in the flat Kabul Basin and is surrounded and underlain by mountain ranges composed mainly of a variety of metamorphic rocks. Three rivers enter the Kabul city region: Kabul river, Paghman river, and Logar River. The Kabul River enters the Kabul Basin from the south and flows to the north about 21 km to the Kabul, and then flows to east. The Paghman river flows eastwardly from the Paghman mountains and enters the Kabul River in Kabul near the point where The Kabul River begins to flow east. The Logar River, a large tributary of the Kabul River, enters Kabul from south through a steeply cut valley and flows northward for about 28 km. The Logar River enters the Kabul River at the eastern edge of Kabul, about 17 km downstream of the mouth of the Paghman river.

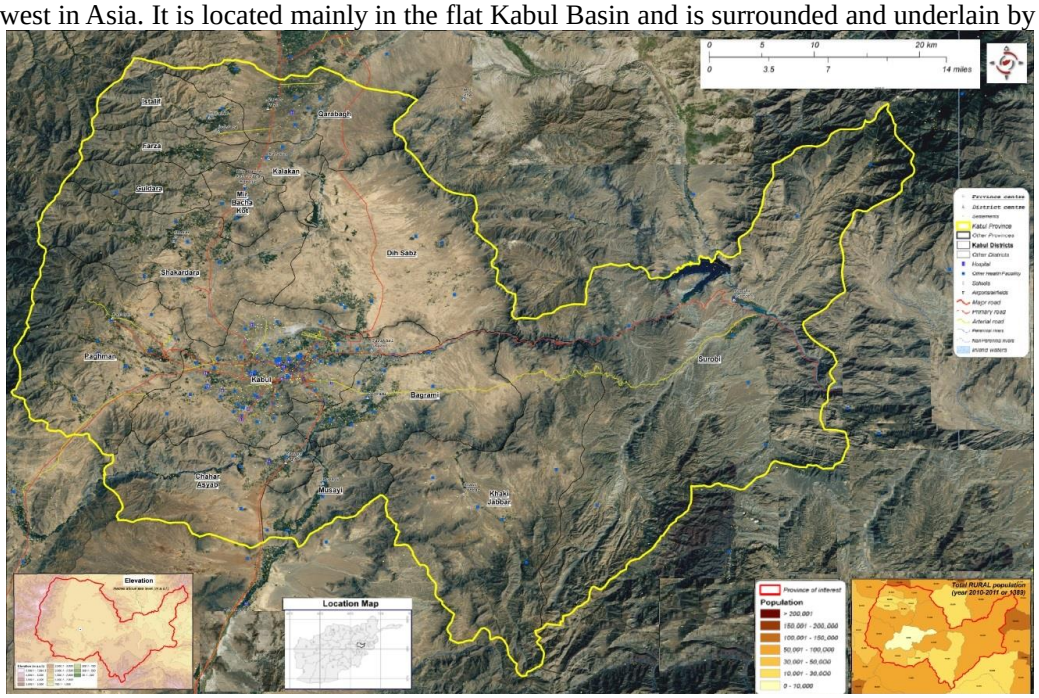


Fig. 3: Geographical location of Kabul city (immap Jan 2011)

4. HISTORY OF PUBLIC TRANSPORTATION IN KABUL

Since the beginning of time, moving people and transporting goods and materials have been a necessary part of our society. Great structures like Pyramids and castles were built thousands of years ago. Timber and large rocks were brought to building sites by the sweat of many workers with aid from animals providing power and logs used as roller. After Horse-drawn, the first trolleybus network in Kabul was built in 1929 by German engineers. In the 1970s, it was modernized by Russian technology, and the system eventually encompassed about five kilometers. The rolling stock consisted of 80 trolleybuses, and Czech Republic provided technical assistance for the establishment of a large depot in the Khushal Khan area. The system had three full routes which in some narrow streets were one way. The trolleybus project of Kabul was completed and utilized to full capacity in 1977, carrying approximately 21 million passengers per year. Trolleybuses were active until 1991, but domestic wars caused it to stop operations. During the hostilities, the rolling stock and the electrical supply system were completely destroyed. In the last three decades, Kabul transportation has been widely enlarged and developed after the establishment of new government in 2001. Several countries, including Japan, India, and national and international companies have invested millions of dollars in Afghanistan transport especially in Kabul, and buses, minibuses, and taxis are especially significant intercity modes of transportation.


Photo 1: Kabul trolleybus system

A feasibility study has been undertaken by a private sector company, and the project will commence as soon as funding is secured. The final Ministry of Transport project is the construction of transport terminals in Kabul. Four terminals will be built on the outskirts of Kabul, providing improved access to transport services to provinces and a decrease in the current urban traffic load in Kabul.

5. PUBLIC TRANSPORT MODES AND THEIR CHARACTERISTICS

Transport modes facilitate access to healthcare, welfare, and cultural or artistic events. Public transport modes are the means by which passengers and freight achieve mobility. Each mode is characterized by a set of technical, operational, and commercial characteristics. Kabul has also its own public transportation modes such as small vans (seven passengers), mini-buses (around 28 passengers), large buses (around 50 passengers), and public buses which is called Millie bus (National buses) that take commuters on daily routes to many destinations throughout the city. In the previous system, Kabul had 426 bus stops, but today most of them need to be upgraded. Also, as is the case with the bus routes themselves, the locations of bus stops need not necessarily be identical with the old system. Besides the buses, there are Kabul taxicabs in yellow color, which can be spotted just about anywhere in and around the city.


Photo 2: Bus stop mad by JICA

The Kabul Millie-Bus Organization has received a donation of 571 caps bus after the establishment of the new government: 101 caps bus of IZUZU and Coaster from Japan, 379 caps bus of TATA 1313, ASHOK LELAND, mini bus (M709) and Coaster (M613) from India, 45 caps bus of SHAHAB KHUDRO from Iran, 14 caps bus of HINOPAK from Pakistan, and 32 caps bus of Italian from Italy (Table. 1).
Privately operated public transportation, such as private taxies, minibuses, and microbuses, currently in operation are relatively expensive, although the fare is usually negotiable but is always higher at peak hours. The taxi owners prefer their personal benefits compared to the public easiness. Similarly, shared taxies are quite cheaper but are packed with many passengers beyond the standard limit at the peak hours. However, people still use them due to easy access anytime and anywhere.-Recently, private companies (Live star AL Yusuf, Masomi Sadat, Mamozai, Sayed Mustafa Sadat, Wali bus, Noorani bus, Parwaz, New Khurasan, Baz Tawanayee Malolin, Gulstan Panjshir, and Qola Hai Arzo City transportation companies) have started to operate alongside the Millie-Bus in Kabul which is still not enough to meet the demand. These private companies have an agreement with foreign companies for the purposes of importing their vehicles to Kabul, and currently companies provide services for the inhabitants. There is a public transportation service in the Kabul vicinity, but many roads are in disrepair. Drivers are also impeded by the large number of cyclists. More vehicles are seen in the city because people are purchasing cars.

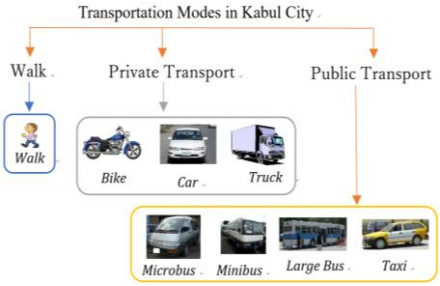


Fig. 4: Transportation Modes in Kabul City

Table. 1: Donated buses by Contributory Country (Source: Ministry of Transport of Afghanistan)

Contributory Country to Kabul	India	Japan	Iran	Italy	Pakistan	Total
	379	101	45	32	14	571

6. ROAD NETWORK AND PUBLIC TRANSPORTATION ROUTES IN KABUL

The term network refers to the framework of routes within a system of locations, identified as nodes. A route is a single link between two nodes that are part of a larger network that can refer to tangible routes such as roads and rails, or less tangible routes such as air and sea corridors.
Kabul's road network has five main routes which connect City Center to Ahmad Shah Baba mena, Poly Charkhi, Mirwais Maidan, Sarai Shamali, and Rishkhur and have more than ten tributary routes which connect each part together (see Fig. 6, 7). In and around Kabul, there is no bypass route to pass south to north or east to west so that drivers can avoid traffic congestion in the central area. Therefore, drivers are forced to inflow to the city center congestions, and this situation has further accelerated the increase of traffic congestion in the city. According to the master plan (1978), more than 1100 km of the roads in Kabul should be asphalted, but only 30 percent of the road network master plan has been fulfilled. This means 350 km of roads in Kabul have been asphalted. Sixty percent (210 km) of these roads have been partly destroyed in the last three decades and need reconstruction. Still 700 km of planned city roads are unpaved The Kabul municipality is the only institution that is responsible for the road maintenance, but the municipality has no sufficient budget to fund this process of road construction and reconstruction. Therefore, the city roads are still in poor condition.

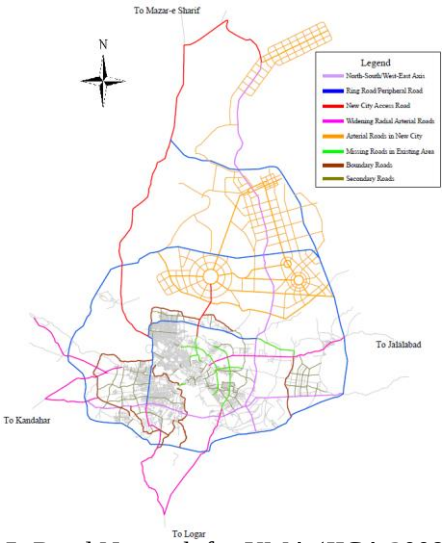


Fig. 5: Road Network for KMA (JICA 2009)

Nowadays, Kabul has only one means of the vehicular transportation and that is road. Roads are the only infrastructure service for the goods and freights transits. Kabul`s transportation infrastructure system includes traffic signals, terminals, roundabouts, intersections, footpaths, roadside drainage, underground passage, and pedestrian bridges with a flyover that has recently been built in various parts of the city.
Kabul city`s road network has five categories of roads and streets, namely Expressway type 2, Expressway type 1, Major Arterials, Minor Arterials, and Collectors that basically formulate the city's road networks. (See Table 2)

Table 2: Road design standard of Afghanistan (Source: Interim Road and Highway Standard, 2005, MoPW)

No	Afghan standard	ROW (m)	ADT (PCU/day)	Design speed* (km/h)	Lanes (n)
1	Expressway type 2	70	Over 30,000	120/100/80	More than 4
2	Expressway type 1	50	30,000-13,000	120/100/80	4
3	Major Arterials	30 (Rural) 21 (Urban)	13,000-5,000	100/80/50	2
4	Minor Arterials	30 (Rural) 18 (Urban)	5,000-	60/50/40	2
5	Collectors	--	--	--	--

*Design speed: Flat/Rolling/Mountainous terrain

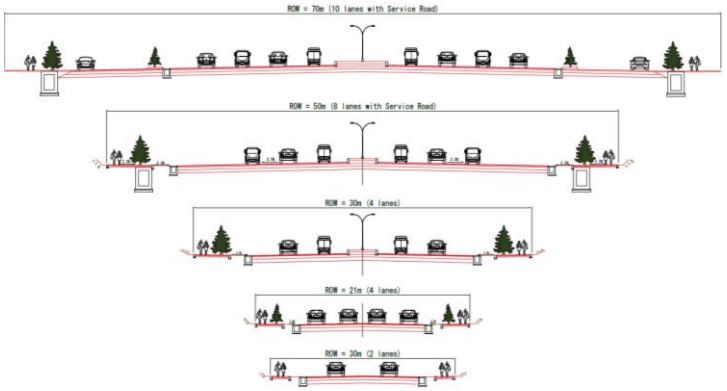
ROW = 70m (10 lanes with service road)	
ROW = 50m (8 lanes with service road)	
ROW = 30m (4 lanes)	
ROW = 21m (4 lanes)	
ROW = 18m (2 lanes)	

Fig. 6 ROW standard in Kabul, Afghanistan

7. CONCLUSION

This is a literature study, whose main data sources are books, journals, literature, records, and reports related to the subject matter being solved. The purpose of this study is to present the past and existing condition of Kabul's public transportation system. Kabul is the fifth fastest growing city in the world and suffering high traffic congestion, contaminated environment due to high private vehicles, and lack of traffic management.

Kabul had very comfortable transportation system created Germany, Russia, and Czech Republic. Unfortunately, much of it has been destroyed during past three decade's civil war.

Due to a lack of national bus authority, the Afghan government cannot provide suitable services. Private companies have started services in the city. The companies do not have a good management and coordination to unlimber convenient services to residents, despite the fact that they increase accidents, congestion, and traffic law violations in the city.

Much research has been conducted for the improvement of Kabul's transportation system, with many countries such as Japan, India, etc., and national and international companies have invested millions of dollars for the improvement the transportation system of Kabul.

In considering the current situation, as well as the economy, security and available resources, some recommendations can be suggested, and the implementation of following suggestions will decrease most of transportation related problems. Suggestions are as follow:

1. Increase public awareness through media to avoid illegal activity and respect traffic laws during driving and passing on the roads and reporting to the police while observing suspicious people and activities.
2. Develop the common infrastructure of the metropolitan area through bridges, highways, flyovers, etc.
3. Increase the bus route network, stations, stops, and terminals to convince and encourage residents to use public transportation.
4. Install digital traffic signals at each intersection to increase the safety and security of the transportation system for motorized and non-motorized users.
4. Promote efficient and digital transportation system management and operation systems.
5. Emphasize the preservation of the developed transportation system.

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