Accelerated Urbanization Creates Many Unsolved Problems in Big Cities

Tamaz Patarkalashvili

Technical University of Georgia, Center Studying Productive Forces and Natural Resources of Georgia. 67, M. Kostava Str.,0160, Tbilisi, Georgia

*Corresponding author: Tamaz Patarkalashvili, Technical University of Georgia, Center Studying Productive Forces and Natural Resources of Georgia. 67, M. Kostava Str.,0160, Tbilisi, Georgia.

Abstract
Big and megacities, especially in the south-east Asia of the world, experience a lot of problems in last decades concerning over-urbanization leading to the deterioration of modern city traffic   and green infrastructure development. They became large heaps of concrete and garbage not leaving enough space for greenery. Migration became one of the main triggers of overpopu-lation. This situation continued until the early stage of capitalism development and increased   little by little. From the second half of the 20th century the process of urbanizations accelerated drastically and as a result increased air and noise pollution. Consequently respiratory, cardio-vascular and lung diseases increased accordingly creating unlivable conditions for city-dwellers. There is not universal approach and decisions for all big cities in solving these problems. Each city must create its own way for future development taking into account its own local specific historical, architectural, urban and infrastructural problems with municipal authorities, urbanists and architects.

Keywords: Urbanization, City, Architect, Traffic, Infrastructure, Park, Greenery.

Introduction

Brief History of Urbanization

According to the World History Encyclopedia definition urbanization is the process by which rural communities grow to form cities, or urban centers [1]. Urbanization began in ancient Mesopotamia in the Uruk Period (4300-3100 BCE). The earliest city to rise in the region of Mesopotamia is considered by modern scholars to be Uruk, around 4500 BCE and that of UR around 3800 BCE, both of which were situated in proximity to the banks of the Euphrates River. To the Sumerians, however, the first city was Eridu which was founded in 5400 BCE but probably was not a ``city`` in the same way that Uruk or UR would be defined [1].

At the center of UR was the great temple which was the location of ceremonial, commercial and social functions. Religious activities, such as festivals, were the main social gatherings of the time and these occasions were often used to distribute surplus food and supplies to the populace of the city. As urbanization continued the need for more raw materials depleted the natural resources of the region and eventually led to a lack of necessary asserts and the abandonment of the city. Urbanization spread from Mesopotamia to Egypt and from there to Greece and little by little to other parts of the world and today became the modern social scourge. The cycle of rise and fall of cities is seen repeatedly in many cultures around the world. Why it happened so frequently in some regions, such as Mesopotamia and not in others, such as Greece is a question still debated by scholars and historians. Some assert it is simply a matter of overpopulation (as in the case of the Maya) while others point to an overuse of the land (as at Ur and other Mesopotamian cities). Neither answer is completely satisfactory and most likely it is a combination of many factors which led to the destruction of so many ancient cities [2].

One of the most important changes in people's life on the planet was urbanization, because it had decisive consequences for the world by many aspects of social, political and economic point of view [3]. The earliest cities have been established in ancient times after development of horticultural and pastoral societies

that made it possible to stay in one place instead of moving around for finding food. But ancient cities had no sanitation facilities and people left their garbage and human waste in the streets, or outside the cities. Such sanitation conditions aroused different kind of diseases and high death rate. Eventually some cities began to develop sanitation procedures, including Rome (a sewer system). Still, the world remained mostly rural until the early stage of industrialization in the nineteenth century.

In 1800 only three percent of world's population lived in urban areas. A century later, in 1900, 14 percent or the world's population lived in urban areas and twelve cities had population over one million. Just a half century later in 1950 the world's urban population doubled to 30 percent and the number of cities over one million grew six times to eighty-three cities. Today more than half of the world's population lives in urban areas and the number of cities over one million became more than four hun-

dred. By 2030 almost two-thirds of the world's population is projected to live in urban areas. The number of megacities with population over 10 million rose from three in 1975 to sixteen in 2000 and expected to reach twenty-seven by 2025 [4].

In large cities of poor nations, homeless children and adults live in the streets as baggers. Most of them lack necessities and conveniences that urban dwellers in industrial nations take for granted [5]. Life in megacity of Bombay in India for example illustrates many problems facing large cities in poor nations. Bombay population exceeds 12.4 million, with another 8 million living in the greater metropolitan area. This total of more than 20 million ranks Bombay metropolitan population as the fourth largest in the world. Bombay can be taken as an example for future of urban civilization on the planet. By its congested, overcrowded and polluted conditions. Bombay has become a difficult place for living [6].

Table 1: List of large and megacities of the world (UN 2018 population estimates)

Citizen				Citizen			
N	City	Country	(thousand)	N	City	Country	(thousand)
1	Tokyo	Japan	37,468,000	14	Istanbul	Turkey	14,751,000
2	Delhi	India	28,514,000	15	Kolkata	India	14,681,000
3	Shanghai	China	25,582,000	16	Manila	Philippines	13,482,000
4	Sao-Paulo	Brazil	25,582, 000	17	Lagos	Nigeria	13,463,000
5	Mexico City	Mexico	21,581.000	18	Rio de Janeiro	Brazil	13,293,000
6	Cairo	Egypt	20,076.000	19	Guangzhou	China	12,638,000
7	Mumbai	India	19,980,000	20	Los Angeles	The U.S	12,458,000
8	Beijing	China	19,618.000	21	Moscow	Russia	12,410,000
9	Dhaka	Bangladesh	19,578,000	22	Lahore	Pakistan	11,738,000
10	Osaka	Japan	19,281, 000	23	Paris	France	10,901,000
11	New York	The U.S.	18,819,000	24	Jakarta	Indonesia	10,517,000
12	Karachi	Pakistan	15,400,000	25	Lima	Peru	10,391,000
13	Buenos Aires	Argentina	14, 967.000	26	Bangkok	Thailand	10,156,000

Source: Wikipedia. https://wikipedia.org

If we look at table 1.1.1, we'll see that it's impossible to live in megacities, especially from 10 to 25 and even more population. It's difficult not only to live but to imagine these overcrowded places of settlements with constant traffic jams, air and noise pollution, lack of necessary greenery, big and small parks. The European and North American megacities better cope with these problems than Asian and South American. The most problematic are Asian megacities which along with aforesaid problems have additional problems with sanitation, water supplies and sufficient sewage systems.

Today merely all cities of the world with population over one million have problems with noise and air pollution and traffic jams due to overcrowded with light vehicles streets, lack of greenery because of no free spaces to create parks and other green spaces. The present megacities are the big heaps of steel and concrete. Air and noise pollution have substantial adverse effect on wellbeing of people in megacities world-wide. This pollution can consist of carbon dioxide, sulfur dioxide, ozone, nitrogen dioxide and the fine particulate matter of less than 2.5 in diameter (PM2,5). 92% of the global population who are ex-

posed to higher than recommended concentrations of PM2,5, are resulting in 3 million premature deaths per year. It can cause fatal diseases including strokes, clinic pulmonary disease and lung cancer [7].

Another atmospheric phenomenon is called the urban heat-island effects in megacities often being 5-110C warmer than in the surrounding areas. It is associated with increased incidences of dehydration, heat stroke and cardiovascular and respiratory diseases. These higher temperatures can also lead to the increased use of cooling systems that release hydrofluorocarbons HFCs) and other greenhouse gases into the atmosphere that further exacerbate the heat-island effect. Other challenges that are also associated with urban-built environments include the increased air and noise pollution, lack of greenery, scarcity of open space for creating parks, overcrowded streets with light and other kind of vehicles causing constant jams in the streets, poor sanitation and insufficient groundwater management.

Migration is still remains one of the main courses for increasing urbanization. These densely-populated settlements face new

threats every day due to constant population growth, climate change and the deterioration of urban traffic and green infrastructure development. It is especially evident in Asia's developing countries, where more than twenty per cent of the GDP comes from megacities. Developing urban management and providing water and safe sustainable services are the main challenges of megacities in future.

Results and Analisys

Case study of Tbilisi, Capital of Georgia

Archeologists discovered the evidence of continuous habitation of Tbilisi suburb of Dighomi since the early Bronze Age and stone artifacts dating to the Paleolithic age. During the late Bronze age to early Iron age it was the largest settlement in the Caucasus [8]. According to the legend the present-day territory of Tbilisi was covered by forests as late as 458 A.D. By widely accepted variant of Tbilisi foundation myth of king Vakhtang Gorgasali, the king of Iberia (447/49-502/22 A.D.) went hunting in wood of future territory of Tbilisi and after shutting the pheasant it fell into the hot spring and died from burns. The king was impressed with this fact so much that decided to clean the forests and build a city on this place. The successor of Vakhtang Gor-

gasali king Duchi then moved the capital of Iberia from Mtskheta to Tbilisi (Tbili in Georgian means worm. So, Tbilisi means a, worm-city'') [8]. From the sixth century Tbilisi began to grow at a steady pace due to the region's strategic location along with important trade and travel routes between Europe and Asia.

Since the early centuries till the middle of the 20thcentury the city was developing by chaotic way, without a general plan of development. That's why in the central part of the city many streets are crooked and narrow, with one, two and rarely three-stored buildings, with very narrow sidewalks and little greenery, because there wasn't free space for it [9]. The well-known French novelist Alexander Dumas, who traveled in the Caucasus in the middle of the 19thcentury, among other places visited Tbilisi in 1858 and stayed for some time. In his book, Impressions De Voyage Le Caucase'', he wrote that after rains it wasn't possible for carts and phaetons to move in the streets [10]. Tbilisi was always a victim of the stronger and big nations like Persians, Seljuk, Mongols and others who constantly invaded the country. Especially suffered Tbilisi which several times was destroyed and burnt. The last invasion took place in 1795 by Aga Muhammed Sah who thoroughly destroyed the town.

Table 2: Number of Tbilisi citizens in 1803-2021

Year	1803	1825	1864	1876	1897	1902	1926
Number of citizen, (thousand)	11.8	19.7	60.085	104.024	159.590	189.3	294.044
Year	1939	1970	1979	2002	2014	2019	2021
Number-of citizen, (thousand)	519.220	889.020	1.052.734	1.081.679	1.108.717	1.171.100	c.1.5 million

Source: https://en.wikipedia [11].

In 1803 in Tbilisi lived 11.8 thousand citizens (Table 2.1.1). A century later in 1902 the city population increased 16 times to 189.3 thousand. In 1939 it became 519.220 thousand i.e. increased 44 times comparing to 1803. In 1979 it reached up to a million and in 2021 it was about 1.5 million i.e. increased 3 times comparing to 1939 and to 126.262 times comparing to 1803 (9,11). So we can say that the process of urbanization in Tbilisi began in the second half of the 20th century and little by little accelerated in 1970-1980. 1.5 million citizens maybe is not so dangerous amount for a modern city comparing to examples of big and megacities given in table 2.1.1., but taking into account the disposition of the city and further development in future it is getting problematic. The most part of city center is located in the hollow place of the town, along the both sides of the river Mtkvari, surrounded by mountains. Historically the right riverside of the city has always been more developed and densely populated than left one. Taking into account the city's location it will have many problems in infrastructure development in future including city traffic and greenery.

Presently the most part of light transport are of second, third and who knows of which hand, bought in European countries, mostly in Germany. The city authorities don't take the Euro-6, or at least Euro-5 standard on city vehicles that could decrease air and noise pollution in the city. The present levels of air and noise pollution measured by foreign experts exceed all possible standards, especially in the city's central part. The city authorities never publish levels of air and noise pollution though they

are obliged to do it every day, because people must know the most polluted by air and noise places in the city and avoid them. Another problem in the last decades is the boundless housing construction that exceeds the possibilities that city's specific location can allow. Besides, it accelerates the process of urbanization further because the rural population who has financial ability to buy flats in the city increasing the number of the city-dwellers. It adversely effects the village development too leading to shortage of workers in husbandry. This is the problem for our government, urbanists, architects and decision-makers to take such approach to this problem that will not deteriorate life of city-dwellers from one side and husbandry workers shortage from the other. It is clear that half of the country's population cannot live in one city. It isn't normal for country's perspective development.

Conclusions

The main reason of extreme urbanization of Tbilisi was mostly the same as in the other cities of the world. It was mostly the people's migration from villages to towns looking for employment, better education for their children and better health services. Until now neither scientists, nor city authorities found proper ways to solve the problem of urbanization in the world. In the Soviet Union there was very effective, though nondemocratic regulation against urbanization. All young people achieving full age and getting passport was also getting the stamp in it with full information about his birth place (name of the Soviet Republic, town, street, house and flat number). When a person

arrived to other Soviet town or a village on business trip or even on leave for having a rest, he/she should register at local official offices, about their purpose of arriving and the period of staying in that place and he/she couldn't break this regulation. Only marriage could be the reason for changing the address.

That was one of the main reasons why the city population increased mostly in Moscow and Leningrad, because many wanted to live in these cities as they were better supplied with provisions and other goods. Besides they were the cultural centers of the country. Today it is apparently very difficult to introduce this regulation in practice, but it is also clear that something must be done to stop or at least mitigate the process because living in megacities like they are in south-east Asia and some other regions of the world is getting the real hell. The leading role in this process must be taken by such international organizations as UNO, UNESCO, UNDP, UNICEF, UNHRC, UNHCR, together with urbanists, foresters, floriculturists and municipal workers.

References

1. Joshua J. Mark. (2014). Urbanization. World History Encyclopedia. https://www.worldhistory.org/urbanization
2. Urbanization. (n.d.). Encyclopedia Britannica. https://www.britannica.com/topic/urbanization
3. 14.1 A brief history of urbanization. (n.d.). Open Textbook Library. https://open.lib.umn.edu/
4. Urbanization. (n.d.). Our World in Data. https://ourworldindata.org/urbanization
5. Kliniewski, N., & Thomas, A. R. (2011). Cities, change and conflict (4th ed.). Belmont, CA: Wadsworth. https://www.amazon.com
6. Kotkin, J. (2011). A leg up: World's largest cities no longer homes of upward mobility. New Geography. https://www.newgeography.com
7. Jowell, A. (2017). The impact of megacities on health: Preparing for a resilient future. The Lancet Planetary Health, 1(5). https://www.thelancet.com
8. Wikipedia. (n.d.). Urbanization. https://en.wikipedia.org/wiki/Urbanization
9. Anchabadze, I., & Volkova, N. (1990). Old Tbilisi.
10. Dumas, A. (1988). Impressions de voyage: Le Caucase (in Russian).
11. https://en.wikipedia