

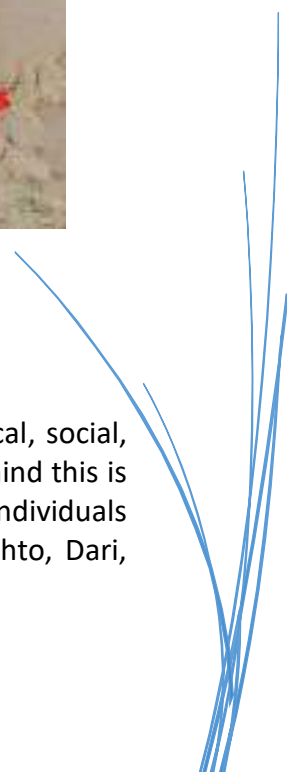
WEEKLY ANALYSIS

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INVESTIGATING THE IMMINENT CRISIS OF WATER SHORTAGE IN KABUL CITY AND ITS SOLUTIONS



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Center for Strategic and Regional Studies (CSRS)



INVESTIGATING THE IMMINENT CRISIS OF WATER SHORTAGE IN KABUL CITY AND ITS SOLUTIONS

INTRODUCTION

Undoubtedly, the crisis of water shortage in today's era has taken the role of a major global problem and has affected most of the nations in some way. As the United Nations has warned about the impending water crisis in the world in the 2022 report, about 26% of the world's population reported lack of access to clean drinking water and about 46% of other people reported lack of access to managed and safe sanitation services. On the other hand, the World Bank has warned that with current practices, the world will face a 40% shortfall between the projected demand and available water supply by 2030. Also, the International Union for Conservation of Nature (IUCN) has announced a 50% increase in the frequency of sea heat waves during the last ten years.

Based on the report of the United Nations Children's Fund (UNICEF) in 2022, many people in Afghanistan do not have access to clean water. About 8 out of 10 people are facing this problem and about 93% of children do not have access to enough water. On the other hand, it is said that about 30-35% of the flowing water in Afghanistan is used for cultivation, agriculture and drinking water, and another 65-70% of the water in this country flows outside the borders.

Kabul, as the most populated city in Afghanistan, has been on the precipice of a serious crisis of drinking water shortage. And according to Shafiullah Zahedi, the head of the water supply department in the Islamic Emirate government, this department only supplies water to 20-25% of the capital's citizens intermittently or intermittently. While the rest of the citizens of Kabul get their drinking water either in various arbitrarily healthy and unhealthy ways from wells. The rest supply their needs through dozens of mineral water production companies that have dug deep or semi-deep wells inside the city by tankers available in every alley and back alley of Kabul city who supply thousands of liters of water at the price of at least one Afghani per liter. According to this introduction, in this article, the hydrological situation of Kabul city, the water levels and the capacity of resources in Kabul city, the main factors of water shortage in Kabul city, the policy of the Islamic Emirate regarding the prevention of water crisis in the city of Kabul and its preventive measures should be investigated.

HYDROGEOLOGICAL POSITION OF KABUL CITY

Kabul city, the capital of Afghanistan, with an area of 1023 square kilometers, is located in Kabul province on the eastern side of the country, is about 1791 meters above sea level, and is located in a narrow valley between the Hindu Kush Mountains and the sea of Kabul. In the eastern part of the old area of the city, there is Bala Hesar Kabul, Mount Shir Darwaza and the cemetery of Shahada Salehin and then Bala Hesar Castle. The other sides of this city are surrounded by Khairkhane North, Khwaja Ravash, Chihl Seton, Qargha, Khwaja Razzak and Shir Darwazah mountains, as well as the "Television Mountain" sky mountains and Aliabad hills, including Maranja and Bibi Mehro hills, are located in the middle of the city. In fact, the location of Kabul city looks like a bowl between the mountains. But due to the lack of a regular



urban plan, unfortunately, the majority of these mountains and hills are covered by residential houses, which cannot be considered as an obstacle to the feeding of Kabul's waters.

The hot season in this city lasted for 3.9 months from the 25th of May to the 21th of September, with an average daily temperature above 28.3 degrees Celsius, and the hottest month of the year in Kabul is June, where the average temperature is 33.8 degrees Celsius and the lowest is 19.4 Celsius is said. The cold season lasts for 3 months from 13 January to 15 Pisces with an average daily temperature of less than 11.6 degrees Celsius. The coldest month of the year in Kabul is the month of March, with an average temperature of less than -3.8 degrees Celsius. It goes without saying that the winter of 2022 was said to be the coldest year in the past several years, with the lowest temperature recorded at nearly -15 degrees Celsius.

Based on the report of the Ministry of Energy and Water, during the winter seasons of 2010 to 2016 compared to 1960-1983, there was an increase in temperature between 1.7 and 2.2 degrees Celsius. And in spring, this increase was reported between 0.3 and 0.9 degrees Celsius. Therefore, the average annual temperature is expected to increase by 1.8°C, 3.5°C, and 4.8°C, respectively, in the coming decades of 2020, 2050, and 2080 AD.

The amount of rainfall in Kabul city is 312 mm per year and 26 mm per month. The driest weather is in the month of June, when an average of 1 mm of rain occurs, and the wettest is in the month of Aries, when an average of 71.9 mm of rain occurs. The snowy period of the year in Kabul city has snowfall for 3 months from 17th of January to 18th of March, and December is the month with the most snow in Kabul with an average snowfall of 2.9 inches.

According to the report of the Danish Committee for Assistance to Afghan Refugees (DACAAR), the average annual rainfall of Kabul during the years 1957-1977 AD was 330 mm. And according to the report of the Ministry of Agriculture, Irrigation and Livestock, the average annual rainfall of Kabul city during the years 2006-2016 AD was reported to be 327.6 mm. However, it can be seen that the amount of rainfall in Kabul city has also been decreasing.

It should not be left unsaid that the Kabul River divides the markets of this city from the heart of the past. However, due to the climate changes from the 21st century onwards, this sea is dry and waterless except in the winter and spring seasons due to snow and rain in the rest of the seasons. Another lake is Kabul Qargha, which is located 9 kilometers northwest of the city and is a pleasant place for the people of the region and the city to use, but unfortunately, its water has decreased in recent years due to the drought. There is even a concern that it will completely dry up in the near future. There was another lake in the eastern part of the city called Heshmat Khan Lake, which is also dry and waterless today.

AQUIFERS AND RESOURCE CAPACITY IN KABUL CITY

As the 94TH most populous city in the world, Kabul city is the fifth city in terms of population growth in the world with about 5 million people. This city has many water sources in terms of location and depth. Therefore, in terms of location, the city of Kabul has three important water levels, the details of which are as follows:

The first floor: it is the upper floor of Kabul from Paghman to Bagh Bala; Dar al-Aman and Darya Maidan. The area of this water layer is about 160 square kilometers. In the past, this



aquifer had good water, but for several years now, due to drought and climate changes, the water in these areas has decreased and there was no water up to about 80-90 meters.

The second layer: the water layer in the north of Kabul city, which includes the areas of Khairkhane, district four, eleven and fifteen, and the area of this water layer is estimated to be about 110 km, and in the recent years, these areas of Kabul are also suffering from a serious lack of water.

The third layer: The other water layer of Kabul city includes Bagrami and Logar areas, which are located on the way of Logar Sea, and it is said to be the largest water layer of the city, whose area is estimated to be around 165 km. This water layer also has more water capacity, but due to the fact that it is an agricultural area, its water is not of good quality due to its alkalinity.

According to the report of the Ministry of Energy and Water, wells have been dug to different depths in the city of Kabul, the deepest of which reaches 1000 meters in different areas of the city which was excavated during the time of the Russians invasion and was also excavated by the Japanese to a depth of 730 meters. According to the research of the Russians and Japanese; the city of Kabul has two blue floors, one of which is the "New Gen" blue floor and the other is the "Fourth Contemporary" floor. Among them, only the fourth contemporary floor can be recharged, which is recharged or fed through snow and rain. Therefore, in the year 2021 solar year, about 44 million cubic meters of water have been fed in three aquifers in the city of Kabul. While the annual consumption of Kabul city was estimated at 115 million cubic meters on average this year. However, by extracting 176 million cubic meters of water in 2021 solar year, three times the water fed from these three water layers has been extracted.

It should not be left unsaid that the level of underground water, which is generally concentrated and used collectively, decreases every year. According to the given statistics and figures, the level of underground water in the country from 1972 to 2006 has been reported to be at least one meter and at most 10 meters, on average 5 meters below. While according to Pajhwok's report, the National Water Affairs Regulatory Authority announced that the underground water level had dropped by 12 meters in 2021. The report added that the water level has dropped by 25 meters in Khairkhane, 20 meters in Karte Naw, and 40 cm in Bagrami. It has also been reported by this department that in the year 2021 AD, the underground water level of Kabul city has witnessed a significant decrease of 12 meters in less than a year. But according to the latest report that we received from the Directorate of Analysis of Underground Water Resources It indicates that on average, in 2021 AD, the water level in Kabul city dropped by one meter, in 2019, by 3 meters, in 2021 AD, by 5 meters, and in 2021 AD, by three meters According to these figures, from 2020 to 2022 AD, the average water level in Kabul city has decreased by 9 meters, and the highest level has been found in Barchi Plain and Khairkhane areas of Kabul.

Therefore, according to the latest figures, it is expected that the underground water level of Kabul will drop by about 60 meters or more by 2050 AD. While the National Environmental Protection Agency of Afghanistan (NEPA) had warned in 2018 that about 70% of the underground water in Kabul city is unusable due to contamination with harmful chemicals and bacteria.

On the other hand, Kabul city will have a capacity of 319,176 cubic meters of water in a year if the average rainfall is 312 mm per year. But considering that on the one hand, the mountains



and hills inside the city have been converted into residential areas or official places, and on the other hand, all the roads and alleys have been paved with bitumen or concrete instead of carpet which prevent the absorption of water into the ground, has caused a very small amount of rainwater to be absorbed into the ground. Whenever the responsible departments want, it is possible to manage 50% of the annual rains of Kabul city that falls on roofs and flat roofs, which is done by using the stored rainwater as nutrient water or in green areas.

Also, 20 to 25% of the citizens of Kabul city are provided with drinking water on a regular basis by the Department of Drinking Water, which the citizens of Kabul have continuously complained about and in order to meet their water needs, they buy water from mineral water tankers from mineral water trading companies.

FACTORS OF WATER SHORTAGE IN KABUL CITY

Drought and climate change: Drought and climate change are the main causes of water shortage in the world and especially in Afghanistan. In the past, the location of Kabul city was one of the richest areas in terms of snow and rain. As mentioned above, due to the rise in the temperature of the earth's surface, on the one hand, the amount of snow and rain has decreased to a great extent, and on the other hand, the level of underground water has decreased sufficiently.

Excessive population growth: The excessive growth of the population in the city of Kabul is also one of the main factors of the lack of water in this city. As in 2000 AD, the population of Kabul city is reported to be about 2.4 million people while now the total population of Kabul city is estimated to be more than 5 million people. However, according to the extracted water in 2020 AD, each person in Kabul has used about 35 cubic meters of underground water annually, while the total water supplied in this year was 44 million cubic meters of water. Therefore, from the figures given, it seems that the city of Kabul has a capacity of nearly two million people. Now, if the population growth in Kabul city reaches 7 million in the year 2030 AD, the annual water consumption of Kabul city will increase to more than 245 million cubic meters.

Absence of urban plan: Unfortunately, the city of Kabul has not had any regular urban plan. Anyone, anywhere, has built buildings to whatever extent they want, without paying any attention to green areas and water absorption. He has built his own house or high house with the desired water well. While it is said that the urban plan during the time of the former president of Afghanistan, Daud Khan, was like this 40% of the land should be repaired and 60% of it should be used as a green area or a water absorption location. On the other hand, it can be seen that the mountains in and around the city of Kabul have turned into residential areas, and construction and buying and selling are always going on in these areas, which are geohydrologically important areas of underground water feeding in the city.

Indiscriminate development of settlements: On the other hand, for any reason, commercial companies built settlements inside the city, or around the city, especially in the water absorption and feeding areas of Kabul city this position causes the natural absorption of water to be blocked and Kabul city faces a water shortage.

The existence of water companies in the city: The existence of dozens of companies producing soft drinks and mineral water inside the city of Kabul and the transfer of these soft drinks to



other provinces causes the water of Kabul to be distributed to other provinces and the people of the city face a shortage of water.

Indiscriminate use of citizens: Indiscriminate use by Kabul citizens due to ignorance or lack of information is one of the main causes of water shortage in Kabul city. Because sometimes a bunch of clothes is washed in several buckets of water. Also, mansions and alleys are cleaned with water pressure, which is wasteful use of water and indifference to citizen's responsibilities.

Mismanagement of government departments: Another factor responsible for the lack of water in Kabul is mismanagement by the administrations, because these administrations have not been able to have an accurate statistics of how and who are the water consumers in Kabul. And so far, they have not been able to take serious and important practical measures regarding water management in Kabul city. While in (2020 AD) during the administration of former President Ashraf Ghani, plans for transferring water from outside to inside Kabul city as well as underground water management in Kabul city were published by the Ministry of Energy and Water.

However, after several have passed since its publication, the Islamic Emirate of Afghanistan has been in charge of affairs for the last 2 years, so far no practical action has been taken in this regard.

THE POLICY OF THE ISLAMIC EMIRATE TO PREVENT THE WATER SHORTAGE CRISIS IN KABUL CITY

According to the general directorate of water resources in the Ministry of Energy and Water, this ministry has taken measures to manage water in Kabul city. According to this ministry, the work on the plan and design of the transfer of Panjshir sea water to Kabul city is going on, but they do not say anything about the actual start of the work. On the other hand, it is possible to mention the prevention of the drilling of arbitrary wells; According to this ministry, no one has the right to dig a well in this area without the permission and notification of the officials of the Islamic Emirate. However, the exact figures of deep and semi-deep wells in Kabul city have not been accurately known until now, but in the past years, some media have reported the number of wells in Kabul city to be around 40,000 wells, and the government assessment network monitors only 176 wells in this city. Among these, only 30 wells are connected to the computer and technical system for evaluating water changes.

On the other hand, this ministry is trying to identify and calculate more sources of water consumption in Kabul city, which include companies, water saunas, bathrooms, car washes, mosques and residential buildings. It is necessary to drill feeding wells for these companies so that these companies can use these recharged waters again. Also, this department is trying to manage the surface water of Kabul city and irrigate the green areas in Kabul city from these waters. These plans are on the table of the Ministry of Energy and Water, while the head of public water resources in the Ministry of Energy and Water of Afghanistan complains about the lack of experts and professional staff in this field, as well as the lack of sufficient budget in this ministry.

Also, the issue of transferring water from the Panjshir Sea and other outer areas of Kabul to the inner city is a topic that has been whispered about for years, but there is no news of its practical status.



PREVENTIVE SOLUTIONS

In view of the above, we present the following possible technical and political-social solutions to the dear readers of this issue:

Technical solutions

1. Although the problem of lack of water in Kabul city is considered a serious problem for the citizens of Kabul and many parts of the city do not have access to sufficient water, but the green areas, pots, fields and agricultural gardens are watered with drinking and fresh water. Therefore, it seems that various government departments, especially the Ministry of Energy and Water, the Ministry of Agriculture and Livestock, and Kabul Municipality are not coordinated in preventing the water shortage crisis. In this sense, it is necessary for all the different government departments to act unitedly and unitedly in order to prevent the serious crisis of water shortage in the city of Kabul.
2. On the one hand, it is believed that the teachings of saving water and preventing its wastage have not been properly communicated to the general public. Therefore, the ministries of education, education, Hajj and endowments, information and culture are necessary; through classrooms, imams of mosques, media and information networks; to seriously inform the general citizens about the teachings of water saving in order to prevent its impending crisis.
3. On the other hand, the Ministry of Urban Development, in coordination with the municipality and the Ministry of Energy and Water, will not allow settlements or buildings to be built in water absorption and feeding areas or that the green areas should be waived during the construction of the buildings.
4. It is also necessary to consider a suitable solution for the most water-consuming sources in Kabul city, such as bathrooms, water saunas, car washes, etc. For example, we can mention the digging of feeding wells from these sources or the storage of water used from these sources to irrigate green areas, parks, etc.
5. Although the adoption of each program has its own position in relation to saving and preventing water shortage in Kabul city. However, due to the serious need of the people in some areas of Kabul city, such as Dashtbarchi and Khairkhane areas, it is necessary to prioritize water transfer from the seas and dams outside and near Kabul city.
6. For example, the Panjshir River Dam or Sayad Nazar is the first project of the Ministry of Energy and Water, which will have a capacity of 210 million cubic meters of water. If it is transferred to the city of Kabul, first of all, it will solve the drinking water problems of the citizens and most of the water problems of the city of Kabul.

Political-social solutions

1. It is expected that the international community will pay attention to all the basic needs of the people of Afghanistan, especially the crisis of lack or lack of access to safe drinking water, throughout the country and especially in the city of Kabul, which is directly related to the occurrence of human disasters in this country, and take the necessary measures in Link to this problem with the coordination with Islamic Emirat.



2. Because the people of Afghanistan are facing many problems such as poverty, unemployment, health and especially the serious lack of water in many parts of the country. Therefore, it is necessary for the international community to clarify its position regarding the interaction with the current government of Afghanistan, because the continuation of the ambiguous situation in Afghanistan adds to the problems of the people of this country.
3. Considering that the departments related to the subject are facing a serious problem of lack of cadres and specialists. Therefore, it is necessary for the officials to consider a regular and transparent program to identify and invite cadres and experts in this field, in the country and abroad So that the imminent and serious crisis of water shortage in Kabul city and other parts of Afghanistan can be avoided soon.
4. Considering the seriousness of the issue, the government of the Islamic Emirate is responsible for solving the problems of water shortage in the country, especially in the capital, to lay the groundwork for international institutions and organizations in the field of climate change to be present in Afghanistan and provide technical and financial cooperation to solve this problem.
5. It is necessary for the government of the Islamic Emirate to draw the attention of domestic and foreign institutions and investors who are active in improving climate change and invest in this field; to present the problem of water shortage crisis in the capital as a work priority to the volunteers of institutions and companies.
6. In order to attract national support for major national projects such as the construction of dams from one place to another, it is necessary for the government of the Islamic Emirate to prepare the nation for cooperation and to strengthen national unity and prevent deviant thoughts.

CONCLUSION

Although the crisis of water shortage and climate change is a global problem in today's era. But without a doubt, the whole world cannot be examined at the same level. Therefore, the majority of our nation, especially the citizens of Kabul, who live in the most populated city of the country, are facing a serious impending crisis of water shortage. If the current situation continues, until the years 1410 and 1420, a human disaster will be unimaginable due to the lack of water in the city of Kabul. Recently, in order to prevent water crisis in Kabul city, it is necessary to draw your attention to the following options:

Governments also have the responsibility to continuously strive to meet the basic needs of their people, and by understanding the needs, pay serious attention to the relevant departments to prevent the society from suffering a humanitarian disaster, and take practical measures as soon as possible and to facilitate the cooperation of national and international organizations in solving this need.

Saving water and preventing its wastage, as well as protecting the environment, has the dignity of a human mission in our era. Based on this, it is necessary that all sections of the society, both rich and poor, try to use their possible preventive solutions to prevent the occurrence of a serious water shortage crisis.



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