

The Impact of Climate Change on Environmental Security



Adeeb Ahmed Al-Shatry
Aden University, Yemen – adeebo3@hotmail.com

Mohamed Awad Barsheed
Hadhrumout University, Yemen – aosama308@gmail.com

Received date: 30/04/2023

Accepted date: 02/05/2023

Publication date 01/06/2023

Abstract:

This research talks about the impact of climate change in Yemen on environmental security, as Yemen and Hadramout suffer from the impact of this change significantly in recent years. And the change of the vital and natural systems of the land and affected the environmental stability and led to drought and the lack of drinking and irrigation water. Hadramout has been exposed in recent years to a number of storms and hurricanes as an inevitable result of the climate change taking place in the region. This change is evident.

Key words: climate change, environmental security, vital Resources, natural systems, water shortage.

Résumé :

Cette recherche parle de l'impact du changement climatique au Yémen sur la sécurité environnementale, car le Yémen et l'Hadramaout souffrent considérablement de l'impact de ce changement ces dernières années. Et le changement des systèmes vitaux et naturels de la terre a affecté la stabilité de l'environnement et a conduit à la sécheresse et au manque d'eau potable et d'irrigation. L'Hadramaout a été exposée ces dernières années à un certain nombre de tempêtes et d'ouragans, conséquence inévitable du changement climatique qui sévit dans la région. Ce changement est évident.

Mots clés : changement climatique, sécurité environnementale, ressources vitales, systèmes naturels, pénurie d'eau.

Adeeb Ahmed Al-Shatry

Aden University, Yemen – adeebo3@hotmail.com



Introduction

There is no doubt that climate change contributes greatly to environmental deterioration, and ultimately leads to the destabilization of national and international security. Climate changes began since ancient times, when the earth went through waves of heat, cold, and ice ages, and it lasted for thousands of years. This climate change also contributed to weakening the role of states and affecting peoples through its impact on the environment in various fields such as water, housing, health, human habits, agriculture, agricultural production, trade, industry, roads, transportation, energy and tourism. The climate directly affected the national security of countries.

Yemen is between latitudes 12.19 north of the equator, which causes the solar radiation to become more concentrated, and the region is under the influence of the Tropical Atmospheric Depression (ITCZ). The main sources of moisture causing rain in Yemen include the Indian Ocean (Arabian Sea and Gulf of Aden) and the Red Sea (Faisal Shamshir, website, 20/2/2023).

Climate and its influences: -

First: The impact of climate on human life and health:

Despite the world's progress in technical means that work for human comfort, these technological means have not been able to fully control climatic conditions, and by looking at many studies and excavations in the distant geological ages, we find that climate change is one of the most common topics that have been researched in recent years. Dr. Abdul Hakim Muhammad Yusuf Abdullah points out that the sciences of geology, plants, animals and humans, in addition to meteorological phenomena, astronomy and other related sciences, have provided us with convincing evidence of climate change) Youssef, p. 15(

The increase in the level of temperature on the surface of the earth began to worsen since the beginning of the twenty-first century. the temperature increased by nearly one degree Celsius, and this led to the melting of ice and a change in the duration of precipitation, which helped the sea level to rise and the emergence of climatic extremism clearly visible, especially in the presence of drought in places of the earth surface and the increase in rainfall and floods in other places, and other things that directly contributed to the increase in migrations due to desertification or floods that swept away homes, soil and farms in light of the scarcity of treatments and protection for those who were affected.

Harsh climatic conditions that are very cold or very hot and humid still affect human comfort and environment. Despite the presence of heaters and air conditioners, they do not go beyond his personal residence and place of work, and they cannot be enjoyed outside buildings and in public places naturally, except to a small extent. Poor environmental conditions affect tourism and agriculture. The decline in the ability of workers in these two sectors, which affects their health and thus leads to the undermining of human capital.

Many recent studies have presented many solutions for human adaptation and testing the conditions that work to create a suitable climate for human comfort. Among these



studies is what was done by (Ter Jung) in 1966 AD, who divided the earth into (11) vital climatic regions on the basis of the difference in humidity and the annual average. According to this study, the region where the average monthly temperature is 68 degrees Fahrenheit, the monthly relative humidity does not exceed 70%. (Abdul Hakim, p.4)

Climate change affects human health. The absence of drains or incorrect irrigation schemes after the rains fell in several places caused the spread of diseases and epidemics such as dengue fever, malaria, and others, in addition to the pollution of living places and the air, as industrialized countries release about 15% of environmental pollutants (Faisal, abid. p.3) and thus reflected negatively on the quality of the available food, and this will lead, according to researchers at the World Health Organization, to an increase in death rates to (250,000 people) annually between 2023 AD to 2050 AD, due to climate change, which also leads to an increase in suicide rates due to high temperatures and low nutritional value of foods, which causes heart and respiratory system diseases.

The WHO general strategy draft on health and the environment and climate change indicates that known avoidable environmental risks cause at least 13 million deaths annually (A report from the Director, 2019, p 2)

This is due - according to the draft - to the phenomenon of urbanization, according to which more than half of the world's population now lives in cities, and their percentage is expected to rise to 70% by 2050 AD, and the increase in people's movements and circulation of goods and services. Health is rarely a fundamental issue in decisions that affect people. This trend, in addition to the lack of green spaces, poor planning of urban spaces, and other things increased pollution, noise, and high temperatures

It is noted that most countries of the world pay simple attention to the health care of citizens and they pay less attention to the prevention of diseases, and this helps to spread diseases, which in turn increases the burden on citizens. So, it requires the development of integrated mechanisms to take care of human health affairs in light of the accelerating pace of climate change and the increase in electronic waste.

Therefore, the World Health Organization (The World Health Organization, p. 13) set a number of goals to achieve sustainable development related to health and the environment such as ensuring that everyone enjoys healthy lifestyles and well-being at all ages, while taking urgent measures to address climate change and its effects. (ABID.P13)

Participants in the research prepared by Hadeel Al-Mowafaq discussed a number of threats in which conflict affects human health and the environment through the widespread and indiscriminate use of explosive materials, which leave hazardous waste and air pollutants that leave extremely harmful effects on environmental systems, such as the use of explosive weapons, mines and cluster bombs in populated cities which negatively affects humans and the environment in which they live. (Hadeel Al-Murafaq, 2022)

Circumstances and changes affect human life. The hurricanes that hit the coast of the Yemeni governorate of Hadhramout, such as Hurricane Chapala in the early hours of



Tuesday 3/11/2015, left massive destruction in the coastal areas that it passed through, despite the proactive steps taken by the Main Emergency Committee. In the country. (Faisal Shamshir, abid, p1)

Other hurricanes also struck Yemeni sites, including the island of Socotra, such as Hurricane Mig, which caused the death of "6" people in addition to the lost citizens and dozens of the injured, and caused massive destruction of houses of citizens and swept away a lot of fishermen's equipment and boats, as well as farmers and their livestock (Barsheed,2017)

These losses are added to the losses of Hurricane Chapala, which swept the coast of Hadhramout and led to destruction of roads and bridges, cutting communications, and isolating the city of Mukalla from the rest of the cities of the world for a period of 15 days, in addition to death of (5) people.

The damage to environmental security is not limited to this, reports and studies showed that Hadramout Valley is exposed from time to time to climatic effects due to its location at latitude 15-16.4 degrees and longitude 47.5-50.3 degrees, such as the catastrophic floods that Hadramout and Al-Mahra were exposed to on 23/ 20/2008, which claimed the lives of 180 people, and resulted in the destruction of 2,350 houses, and its total losses amounted - as stated by government sources - to about 2.53 billion dollars. (Barsheed.abid, p250)

The contradiction of the World Health Organization appears clearly in its draft when it talks about treatments for the effects of climate. It refers in its specific goal within the sixth goal to achieve a reduction of 40 to 50% in the population of low- and middle-income countries (World Health Organization, abid, p.23) and then includes among its objectives the eradication of poverty in all its forms (Abid, 23) Creating an advanced health system and doubling the amount of funding to deal with climate change in order to protect the health of people living in low- and middle-income countries (Abid, p23).

This contradiction among those in charge of the organization's work clearly reveals to us that what is evident from the breach of environmental security that occurs to nature may be caused by someone, and perhaps granting the patent for some medicines in the time of Corona and then discovering that they did not contribute to recovery, confirms what we say.

Second: Climate Impact on Agriculture and Desertification:

Each agricultural type needs a suitable environment for its growth, as climatic changes such as low and high temperatures (cold temperatures) affect agricultural products. High temperatures may lead to the destruction and burning of some agricultural species that need a medium temperature and my cause high rate of torrential rains in the valleys and their paths may lead to the destruction of agricultural lands and the damage to agricultural production, which in turn will destabilize food security. The World Bank Group expects Yemen to be exposed to a wave of rain due to its geographical location, which causes a rise



in temperature in it during the coming years to bad climatic conditions, (Fouad Al-Harazi, 2014) On the other hand and due to the high temperatures, accelerating the process of transferring water from the ground will double the drought, which will undoubtedly lead to many changes in human life, such as changing economic, industrial and tourism activities, raising living standards, changing food patterns and agricultural practices.

The former Yemeni Minister of Water and Environment, Abd al-Rahman al-Aryani, confirms that climate changes have affected agriculture in the Republic of Yemen due to the depletion of aquifers in Saada Governorate (the stronghold of the Houthi movement), which led to the recruitment of unemployed young farmers in their movement.

Former World Bank Group President Jim Yong Kim indicates that the areas north of latitude 25 north, such as Algeria, the Palestinian Territories, Iraq, Tunisia, Egypt, Libya, Lebanon, Syria, Morocco and Iran, will become drier in addition to parts of the Middle East and North Africa (Middle East and North Africa). (Abid, 2014).

Other human factors also affected the Yemeni environment such as the increased demand for firewood led to the removal of 86,000 trees to supply 722 bakeries in Sana'a alone, which is equivalent to 213 square kilometers of forest areas amounting to 3.3% in Yemen (Hadeel Al-Murafaq, abid).

In addition to the damage caused to farms as a result of the ongoing war in Yemen since 2015, which forced about 4 million people to flee their homes, most of them farmers, and this was reflected in environmental security (Hadeel Al-Murafaq, abid).

A large number of fishermen have been affected, and they have been removed from their fishing areas which became military forbidden zones,

The impact of climate on the environment of Hadhramout:

Because of the change in the vital and natural systems of the earth, the climatic conditions changed in the winter of 2007. The temperature of Moscow rose by 2.5 degrees Celsius, while during the past hundred years it was 15 degrees Celsius below zero, and the reason for climate change, according to the opinion of many scientists, is due to:

- 1-The change in the amount of energy generated inside the sun and the fluctuation of radiation emanating from it.
- 2- The composition of the Earth's atmosphere has changed.
- 3- Volcanic eruptions.
- 4- The effects resulting from the earth's path around the sun in its orbit and the resulting seasonal variations in the thermal radiation budget.

This deterioration of Yemeni agricultural lands makes them close to desertification, in addition to about 4,555,240 hectares that have been affected by desertification, according to statistics provided by the Public Authority for Environmental Protection in Yemen. (Ahmed, (ESCWA), Damascus, 4/8/2014)



Cropped areas are declining in Yemen due to various climatic changes from 1.6 million hectares in the year 2010 until it reached its lowest level in (2018), then it returned to rise in 2020 and stabilized at about 1.2 million hectares (The situation report, ESCWA RECARE, 2019). According to the Central Statistical Organization in Yemen, the agricultural sector is considered one of the most important sectors for maintaining the environmental balance providing a large part of the population's food needs, especially in rural areas, and improving their financial income. Climate changes greatly affected the national environmental security of Yemen. the percentage of grain production (such as wheat and maize of both types, Levantine and fine grain) decreased to 0.88 during the period 2015-2022, in addition to fluctuating amounts of precipitation, as well as the reluctance of a large number of farmers to produce it due to high fuel prices and low production (Report, Abid).

The civil war that the Republic of Yemen since 2015 has greatly contributed to the fragility of procedures aimed at confronting climate change, and if initiatives appear here and there to limit the damages of climate change on the ground, they remain modest due to the weakness of the capabilities of the agencies entrusted with that task.

Some local and foreign organizations in Yemen have taken an interest in disbursing financial aid to some Yemeni citizens in some cities or cutting down trees in other remote villages. They ignored the negative aspects of climate changes that are expected to occur in the country with almost negligible attempts due to the weakness of the infrastructure that was affected by the war or stopping the salaries of employees and workers, as well as the lack of maintenance of machines and engines in the concerned sectors such as health, agriculture, and water. In addition to the lack of interdependence between external and local donors to maintain environmental security, and here the fragility of Yemen's national environmental security appears after eight years of civil war, which contributed greatly to the deterioration of the country economy.

Indiscriminate dredging and overfishing of fisheries by some local and foreign fishing companies have contributed greatly to the damage to the marine environment.

Environmental stability appears in countries whenever water resources increase and climate patterns diversify, and the presence of high-quality agricultural soil and other things that if absent on the ground, the environmental authorities must move to find them, and they are the result of several factors, most notably climate change over which man has no power. Others are humane due to human misuse, such as: failure to properly dispose of chemical waste. Yemeni society, it is expected that societal tensions resulting from environmental problems will increase with the exacerbation of the climate crisis. For example, the liquidity resulting from climate change and the occurrence of new waves of displacement caused many people to move from their rural areas to more urban areas, where natural resources are already under pressure (Muhammad Al-Hamiri, Yemenpolicy.org/ar).

The United Nations delegate to Yemen, Hans Grundberg, took into account the effects of environmental factors on the stability of Yemen and the possibility of using environmental issues as a tool for achieving peace (Hadeel Al-Mufaq, Abid). Hadeel added



that if this is achieved, the United Nations and the actors will be able to begin to address the root causes of the ongoing conflict instead of mitigating its effects, and due to the importance of environmental considerations, the international community must be integrated into the efforts of the peace process in Yemen.

The root causes of the ongoing conflict rather than mitigating its effects, and due to the importance of environmental considerations, the international community must be integrated into the efforts of the peace process in Yemen.

Third: Climate Impact on Yemen's Waters:

Yemen is one of the most water-poor countries in the world. The unstable political situation, the indiscriminate depletion of groundwater wells, and the conflicts in it for water have further complicated the situation and its effects are clearly visible in the near future. In 2010, the World Bank published a paper predicting the depletion of groundwater reserves in Yemen between 2030 and 2040 AD due to climatic changes that exacerbated the problem and even contributed to severe food scarcity. (

Nicojavarnia Center, p1). Therefore, the efforts of all local, foreign and governmental institutions must join hands to contribute to averting climate change and work to confront the ghost of famine hovering over Yemen.

Recommendations:

- Attempting to adapt to climate changes, or mitigate their severity, in order to preserve environmental security.
- Adopting an ecosystem-based adaptation approach.
- Establishing a modern center to monitor hurricanes using Doppler Weather Rader technology.
- Submitting a government application to join the Indian Regional Meteorological Center.
- Holding public meetings for climate and meteorological experts.
- Government direction towards clean energy (solar, wind).
- Encourage rain-fed agriculture and provide incentives to farmers.
- Construction of structural and earthen reservoirs in the valleys.
- Eradicating poverty and promoting sustainable agriculture.
- Providing water and sanitation services in a sustainable manner for all.

Refrencies:

1. (Faisal Shamshir, Refereed research, study of the causes of floods and the extent of their damage in Hadramout, Aden University website, 20/2/2023).



2. Youssef, Abdul Hakim Muhammad. (2015). Climate of Hadramout. Journal of the College of Arts and Humanities-Hadramout University. (Issue Zero), p. 15.
3. Abdul Hakim Muhammad, previous reference, p. 4.
4. Faisal Shamshir, previous reference, p. 3.
5. A report from the Director-General, the draft general strategy issued by the World Health Organization on health, the environment and climate change, April 2019, pg. 2.
6. The World Health Organization, previous reference, p. 13.
7. World Health Organization, previous reference, p. 13.
8. Hadeel Al-Murafaq, Yemeni Center for Policies, February 2022 AD.
9. Faisal Shamshir, previous Abid, p.1.
10. Barsheed, Muhammad, Al-Muhammadi, Omar. (2017) Hurricanes and their effects on the coast of Hadramout. Hadramout Journal for Human Sciences. (Fourth volume, first issue), p. 250.
11. Barsheed, ABID, p. 253.
12. Abidp.251.
13. Faisal Shamshir, previous reference, p. 19.
14. World Health Organization, previous reference, p. 23.
15. Abid, p. 23.
16. Abid, p. 23.
17. Fouad Al-Harazi, The Future Impacts of Climate Change Are Reflecting in Yemen, World Bank 2014.
18. ABID, 2014.
19. Hadeel Al-Murafaq, previous reference.
20. Abid
21. Ahmed Salem Malqat and others, a workshop on environmental statistics for the countries of the West Asian region (ESCWA), Damascus, 4/8/2014.
22. The situation reports in Yemen (ESCWA RECARE) entitled Changing the Effects of Changes in Available Water on Crop Productivity 2019.
23. Report on the situation in Yemen, previous reference.
24. (Muhammad Al-Hamiri, Refereed research, Yemen's stability depends on the states recognition of the different identities in the country, 4/3/2023, Yemenpolicy.org/ar, 3/4/2023).
25. Hadeel Al-Mufaq, previous reference.



26. Nicojavarnia Center for Civilians in Conflict (CIUIC), Risking the Future, Climate Change, Environmental Destruction, and Conflict in Yemen, without publishing house, without a year, p. 1.

