





Effects of Climate Change on Mogadishu And Applicable Policy Priorities

İklim Değişikliğinin Mogadişu' ya Etkileri ve Uygulanabilecek Politika Öncelikleri¹

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Öz

İklim değişikliği, günümüzde küresel toplumun karşı karşıya olduğu en önemli sorunlardan biridir ve farklı coğrafyaları farklı şekillerde etkilemektedir. Çalışmada, iklim değişikliğinin Somali'ye ve özellikle Mogadişu üzerine etkileri incelenmiştir. İklim değişikliği Mogadişu'yu sıcaklık artışı, tarımsal ürünlerde verim azalması, su sıkıntıları, kuraklık ve çölleşmeye ilişkin ciddi boyutlara ulaşan sorunlar özelinde etkilemektedir. Tarımsal üretkenlikte düşüş, iklim değişikliğinin Mogadişu üzerindeki ana etkisi olarak karşımıza çıkmaktadır. Hem başkent olması hem de kırsaldan yoğun göç alması nedeniyle Mogadişu, ülkenin nüfusu en yoğun kentidir. Kırsalda geçim imkânı bulamayan nüfus için kente göç bir zorunluluk olarak ortaya çıkmaktadır. Oysaki kentin altyapısı bu kadar nüfusu kaldıracak durumda değildir. İklim değişikliği sonucu yaşanma potansiyeli olan sayısız riski ortadan kaldırmak için, stratejiler geliştirmek amacıyla küresel, bölgesel ve ulusal düzeylerde devam eden birçok girişim bulunmaktadır. Söz konusu girişimlerde yer almak, farklı ülke deneyimlerinden faydalanarak politika seçenekleri belirlemek, Mogadişu için gereklidir. Kentleşme politika ve pratiklerinin, ekonomik ve toplumsal alt yapının yetersiz düzeylerde olması, iklim değişikliği nedeni ile ortaya çıkacak muhtemel sorunların, Mogadişu'da ağır sonuçlara yol açma potansiyeli bulunmaktadır. Mogadişu başkent olması ve kırsaldan yoğun göç alması nedeni ile kentsel dirençliliğin sağlanmasına yönelik, yeni bir planlama yaklaşımı geliştirilmesi önem kazanmaktadır. Bu kapsamda hazırlanan çalışma iki bölümden oluşmaktadır. İlk olarak iklim değişikliğinin Mogadişu üzerine olası etkileri tespit edilmiştir. İkinci bölümde ise, Mogadişu'nun kentsel dirençlilik kazanmasına ve iklim değişikliği ile mücadele edebilmesine ilişkin politik tercihlerin neler olabileceği tartışılmıştır. Sonuç olarak iklim değişikliği ile mücadelede Mogadişu özelinde, kentin altyapısının hazırlıklı olması, arazi kullanım planlamasının iklim değişikliğine göre yeniden revize edilerek kentsel dirençlilik kazandırılması, afet durumlarında erken uyarı ve müdahale sistemlerinin devreye alınması, kırdan kente göçün önlenmesine ilişkin yerel kalkınma projelerinin uygulanması, yönetimin etkinleştirilmesi, geri dönüşüm süreçlerinin yaygınlaştırılması ve yenilenebilir enerji kaynaklarına enerji arzında daha fazla yer verilmesi, uygulanması gereken politika öncelikleri olarak tespit edilmiştir.

Anahtar Kelimeler: Dirençli kent, İklim Değişikliği, Mogadişu, Somali.

ABSTRACT

Climate change is one of the most important problems that the global society face today and it affects different geographies in different ways. In this study, the possible effects of climate changes on Somalia and especially on Mogadishu were examined. Climate change is affecting Mogadishu in terms of temperature increase, decrease in yield in agricultural products, water shortages, drought and desertification related problems reaching serious dimensions. Climate change effects on Mogadishu are the primary focus of this study. The decline in agricultural productivity seems to be the main effect of climate change on Mogadishu. Mogadishu is the most densely populated city of the country due to both being the capital and receiving intense immigration from the countryside. Migration to the city emerges as a necessity for the population who cannot find a livelihood in the countryside. However, the infrastructure of the city is not in a position to

¹This article was presented as an oral presentation at the 3rd International Disaster And Resilience Congress on 5-7 October 2021.

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support such a large population. At the global, regional, and national levels, developing strategies to deal with the numerous potential threats posed by climate change is a major and growing activity. It is necessary for Mogadishu to take part in these initiatives and to determine policy options by benefiting from different country experiences. Inadequate levels of urbanization policies and practices, economic and social infrastructure, and possible problems that may arise due to changes in climate that have the potential to lead to more severe consequences. Mogadishu is the most populated city in Somalia due to both being the capital city and receiving intense immigration from the countryside. For this reason, it is important to develop a new planning approach to ensure urban resilience. Two main elements make up the study that was prepared in this direction. First, the impact that climate change may have on Mogadishu will be examined. In the second part, the political options regarding Mogadishu's gaining urban resilience and combating climate change will be discussed. As a result, in the fight against climate change the infrastructure of the city should be prepared, the land use planning should be revised according to climate change and gain urban resilience, the implementation of early warning and intervention systems in case of disasters, the implementation of local development projects to prevent migration from rural to urban areas, the activation of governance, recycling and the dissemination of renewable energy processes and giving more importance to renewable energy sources in energy supply have been identified as policy priorities that should be implemented in Mogadishu.

Keywords: Resilient city, Climate Change, Mogadishu, Somalia.

INTRODUCTION:

Long-term variations in the weather and temperature are referred to as climate change. Like changes in the sun, the causes of these changes could be natural. However, since the 18th century, human-induced activities of burning of fossil fuels like coal, oil, and gas have been the significant determinant of climate variation and change (IPCC, 2007).

The leading human and environmental crisis of the 21st century has been described as climate change (Toulmin, 2009). The problem of global warming (climate change) is considered as one of the greatest challenges facing the world's population, especially the people of Africa (Collier, Conway, & Venables, 2008). Although Africa hasn't made much contribution to global greenhouse gas emissions, it has been severely affected by the undesirable effects of climate change (Nkomo, Nyong, & Kulindwa, 2006). This makes the continent more fragile due to the lack of financial, technological and qualified workforce.

Increased extreme weather, altering rainfall patterns, rising sea levels, and rising temperatures pose a threat to Africa's food and water security, socioeconomic development, human health, and safety (Blunden & Arndt, 2020). Climate change has direct and indirect consequences in any country in the world. These effects appear in all areas of human life (Singh & Singh, 2012).

In Africa, the climate change effects are becoming more and more destructive, affecting the most vulnerable populations and causing food insecurity, population displacement, and stress on freshwater resources (Serdeczny et al., 2017).

One of the biggest problems facing the world today is climate change, which refers to climatic changes that occur over time as a result of natural changes or human-induced activities. Climate change has negative effects in many areas such as the agricultural sector, water resources, forests, biodiversity, air pollution, health and coastal management. Climate change is also considered a complex problem, as the problem itself and its solution are related to a range of policy areas and sectors. In addition, it is clear that many sectors and fields such as energy, transportation, industry, agriculture, forestry and health are closely linked to the fight against climate change.

Another factor causing climate change caused by human activities is the change in land use. Human-induced changes in land use such as deforestation, desertification and urbanization also cause changes in climate patterns (Justin, 2010).

Climate change also causes effects that slow down economic development, damage infrastructures, and threaten water and food security (Bryan, Deressa, Gbetibouo, & Ringler, 2009). Economic theories that aim to meet unlimited needs with scarce resources raise the problem of further

reduction of these resources (Güvenek, 2015, 217). Poor and low-income communities are more severely affected by climate change due to their limited resources, ability to resist its effects and access to emergency assistance (Hussaini et al., 2021). For this reason, various adaptations of climate change and reduction measures of greenhouse gas should be established as part of adaptation, mitigation, and risk management of climate change.

The main purpose of the study is to determine the effects of climate change on Mogadishu. The qualitative data in the literature about Africa, Somalia and Mogadishu were examined and in this context, the possible problems that have been experienced as a result of climate change in Mogadishu and the policy priorities that should be implemented for combating these problems were determined. The study conducted in this direction is divided into two major parts. In the first part, the impact that climate change could have on Mogadishu was determined. In the second part, the political choices regarding Mogadishu's gaining urban resilience and combating climate change are discussed.

1. Climate Change Effects on Somalia

Somalia is the easternmost country in Africa, where the equator crosses the south. Somalia has an area of 637,540 km² and lies at the tip of a region called the Great Horn of Africa. Somalia borders Kenya, Ethiopia, and Djibouti and has the longest coastline in Africa at 3,025 km, stretching from the Gulf of Aden in the north to the Indian Ocean in the east and south. According to the United Nations' statistical data, the population of Somalia in 2020 is estimated to be 15,893,222 people (UN, 2022). The terrain of Somalia generally consists of arid and semi-arid climatic conditions, plains, plateaus and highlands.

Somalia is currently suffering from the consequences of climate change and severe weather conditions such as prolonged droughts, flash floods, erratic rains, unusual monsoon seasons, strong winds, cyclones, sandstorms and dust storms (NAPA, 2013). Somalia has experienced many extreme weather events. Over the past 25 years, there have been recurrent droughts in the southern and central regions of the country (Essa, 2017).

Somalia's recurring climate events, particularly drought, clearly demonstrate the country's growing vulnerability to climate change and variation. With the country still suffering the effects of the 2016-2017 drought, there is a long-term internal displacement associated with prolonged drought. Sudden river floods along the Shabelle and Juba rivers, especially in Beled-Weyne and Jalalaqsi districts of Hiran, Jowhar and Balcad districts of Central Shabelle, and Berdale district and in many other places are already vulnerable due to drought and conflict. Also many other people are already vulnerable to this situation and those are negatively affected and displaced from their homeland (UN OCHA, 2019).

The three main production sectors in the country are livestock, charcoal production and agricultural products. While livestock (especially livestock and some products) ranks first, coal production has the second largest share in exports. 59% of the population lives as nomadic and semi-nomadic and practices agro-pastoralism. Farmers make up 17% of this rate. Climate change has exacerbated the problems associated with rapid population growth, current poverty, and heavy dependence on agriculture and the environment (Tadesse, 2010). Least developed countries such as Somalia have much more limited capacity to deal with the problems caused by climate change. This situation makes Somalia more vulnerable to climate change (Beier & Stephansson, 2012). The livelihoods of the Somali people depend heavily on agriculture and livestock, making the country extremely vulnerable to the effects of climate change both currently and in the future. The country's vulnerability is exacerbated worse because of its coastline location, poverty, and conflict. The

magnitude and frequency of climate changes that Somalia is currently experiencing will likely increase. Environmental problems that have been experienced in Somalia include desertification, soil erosion, overgrazing, and deforestation (NAPA, 2006).

The agricultural sector in Somalia remains to be the basis of the Somali economy, representing over 75% of GDP and 93% of all export revenue (WB & FAO, 2018). However, the development of a thriving agricultural sector is constrained by numerous factors, including political, economic, and environmental factors. Indeed, the most critical issue is related to the environment, particularly climate change, as shown by the Centre for Global Development, which lists Somalia as one of the most climate change-vulnerable nations in the world (Warsame et al., 2021).

In addition to affecting the availability of water, food, and health services, climate change is increasing the frequency and intensity of extreme weather, which has a number of negative effects on economies, education, political stability, and other ecological systems. These impacts include the spread of disease, disruption of economies, and severe storms, floods, droughts, heat waves, cold waves, and fires. Due to the decreased land and crop failure, droughts reduce crop yield (Warsame et al., 2021).

Long-lasting droughts, unpredictable rainfall patterns, and interrupted monsoon seasons are widespread in Somalia. According to the UN's Emergency Relief Coordination Office, yearly rainfall in Somalia has recently decreased, causing repeated droughts that have been more severe and frequent over the past three decades (NAPA, 2022). The country's food production has decreased at the same period, particularly in central and southern Somalia. Additionally, during this time, environmental deterioration, deforestation, desertification, and escalating soil drought have decreased the country's susceptibility to catastrophic weather patterns (Oberg et al., 2021).

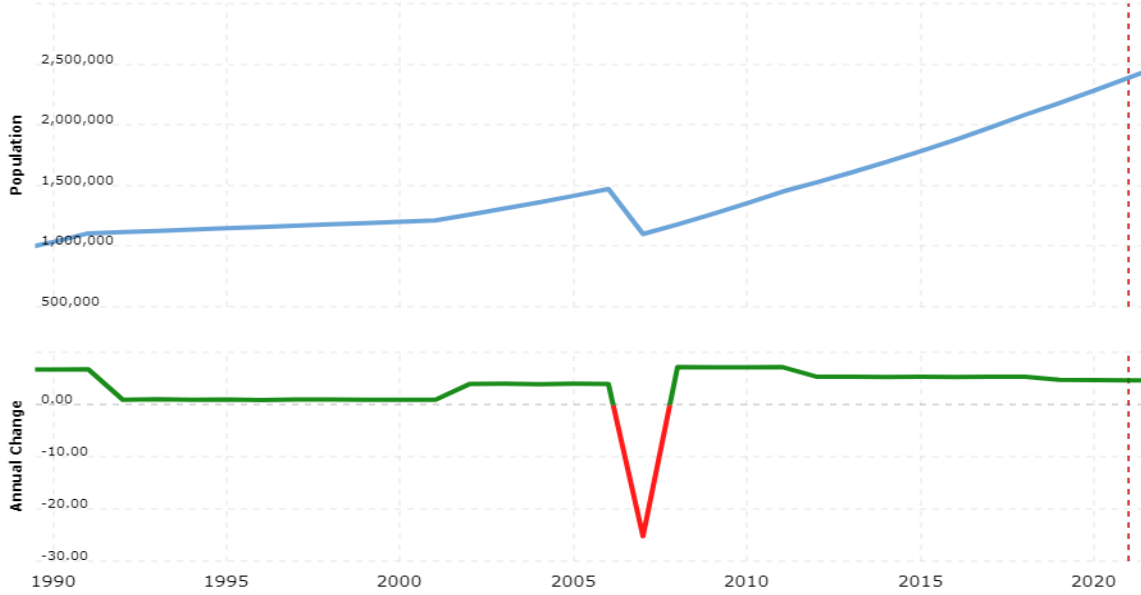
Floods, on the other hand, are another manifestation of climate change that lower crop yields, devastate property, displace households, and occasionally even take the lives of the most vulnerable. During the rainy season, floods frequently happen when heavy rains overflow rivers. Due to the seasonal rains' late onset in 2019, Somalia experienced another drought. When the rains finally came, they did so in torrents, resulting in devastating floods that forced 370,000 people to flee from their homes (DanChurchAid et al., 2020).

In Somalia, climate change has escalated to the level of a national security concern, putting pressure on the country's inadequate judicial and government systems and causing political chaos. Due to violence, land degradation, and environmental change, there is less available arable land. Farmers, herders, and clans who are displaced or marginalized as a result experience conflict and violence for access to land. Insurgent groups are therefore more likely to be successful in gaining new members (Oberg et al., 2021).

2. General Information of Mogadishu

Mogadishu, also known as Xamar, is the largest city in Somalia and the capital of the country. The city of Mogadishu consists of 17 administrative districts and 5 villages under the control of the local government of the Benadir region (SARAH, 2020). Mogadishu has a dry climate, being a city near the equator. It is classified as warm and semi-arid (Koeppen climate classification BSh). The city is located in a large part of the desert area. The city receives only 427 millimeters of precipitation per year, most of which falls during the rainy season. The amount of rainfall varies considerably from year to year, and Somalis suffer from drought all the time.

According to the United Nations - World Population Prospects, "The current population of Mogadishu in 2021 is 2,388,000, an increase of 4.65% from 2020. The population of Mogadishu is growing very rapidly. In addition, Mogadishu has been experiencing an increasing real estate boom for almost the last decade, fueled by Somalis returning from abroad and remittances (which have significantly outpaced foreign direct investment). These factors trigger enormous levels of forced displacement within the city, especially internally displaced persons.



Source: BM (United Nations - World Population Prospects),2022.

Compared to other major cities of the country, Mogadishu has a large population growth. As can be seen in the table below, this change has exceeded 100% compared to other cities (MACROTRENDS, 2021).

Table1.Somalia's most populated cities

City	Population
Mogadishu	2.388.000
Hargeisa	1.033.000
Merca	697.000
Berbera	522.000
Kismayo	491.000

Source: BM (United Nations - World Population Prospects), 2022

The population of Mogadishu finds employment opportunities in almost three sectors. These sectors are agriculture, industry and service sectors. 80% of the population works in agriculture, on average 16% of the population works in the service sector and 2.5% of the population works in the industry sector (STATISTA, Jul 27, 2021).

3. Vulnerability of Mogadishu to Climate Change

Some of the factors that increase Mogadishu's vulnerability to climate variability and change include its heavy dependence on rain-fed agriculture, which is particularly vulnerable to climate variability and change, underdeveloped water resources, poor health care, high population growth rate, low level of economic development, low adaptive capacity, inadequate road infrastructure, weak institutions, and lack of awareness in areas vulnerable to drought.

Agriculture, livestock, water sources, and human health are the sectors most impacted by climate variability and change, according to vulnerability assessments based on information currently available and assessments carried out under NAPA (National Adaptation Program Action) (Nahayo, Nsengiyumva, Mupenzi, Mindje, & Nyesheja, 2019). Smallholders, rain-fed farmers, and ranchers are especially at risk in this situation. The areas of the country most affected by drought are those that are arid, semi-arid, and dry sub-humid.

Due to its geographic location, rapid population growth, overdependence on agriculture and natural resources for a livelihood, extensive poverty, and shortage of resources, Mogadishu is specifically susceptible to climate change effects (human, financial, technical, technological, institutional, and infrastructure). Due to the wide diversity in agricultural ecology, crops, production systems, and livelihood strategies, vulnerability to the impacts of climate change and the ability of populations to adapt differs from region to region. Somalia has a very limited capacity to adjust to the consequences of climate change (Eriksen, Brown, & Kelly, 2005). It has been demonstrated that in order to decrease vulnerability to climate change effects, it is crucial to develop adaptive capacity and skills.

4. Impacts of Climate Change in Mogadishu

The most visible impacts of climate change on Mogadishu include the following: Reduced precipitation, increased temperatures and evaporation in arid regions, frequent droughts causing severe water shortages, altered planting dates for annual crops, increased insect and fungal infestations due to temperature and humidity variability, decreased plantings in forests, decreased harvests, increased risk of food shortages, diminished integrity of ecosystem and resilience, and decline in biodiversity. Those are some of the impacts of climate change.

Extreme climate conditions, including floods, droughts, and strong winds, frequently have an impact on Mogadishu. As a consequence of long-term climate change, several climate-related disasters are predicted to happen more frequently and with greater intensity.

Consequently, climate change in Mogadishu is expected to experience an increase in diseases such as malaria, dengue fever, cholera, dysentery, and respiratory diseases. Thus, it is anticipated that the existing major health problem of malaria in East Africa would get worse due to climate change. Increased rainfall will attract vectors and increase survival rates, while a 1 to 3 °C increase in global average seasonal temperature will allow mosquitoes to spread (Orindi & Murray, 2005).

Floods and droughts are likely to increase as a result of climate change. An increase in seasonal variation is predicted. While more precipitation in the rainy season causes an increased risk of flooding and climate change causes an increased risk of drought in the dry season. Changes in the monsoon can cause an overall increase in precipitation in some areas and a decrease in others. In

addition, increased number and severity of extreme precipitation events could result in more flash floodings (Awuor, Orindi, & Ochieng Adwera, 2008).

Heavy rains in 2018 and 2020 caused flash flooding in the city. Somali cities often have very limited infrastructure development. For example, Mogadishu has poor water drainage systems, although some systems built before 1991 remain. Poor drainage causes flooding and regularly pollutes open sewer water supplies, leading to disease outbreaks especially during the rainy season. City-specific data on air pollution are not available. However, widespread use of coal for cooking is affecting the air quality in the city.

Climate change affects rural agricultural communities, in particular, floods and droughts cause these populations to migrate to urban cities. Agriculture and livestock production are in decline due to floods and droughts.

Climate change does not only affect agriculture, livestock, tourism, livelihoods and economy. It is expected to directly or indirectly affect almost every sector and people from all aspects of life (Thornes, 2002). Besides the direct effects of climate change, there are many other indirect effects of climate change that can seriously affect Mogadishu and its people. Climate-related disasters and their other consequences can be an indirect effect of climate change.

5. Considerations for Building Mogadishu as a Resilient City

Resilience is the ability to anticipate, withstand, absorb, and heal from external stresses and shocks in a timely and efficient manner that preserves integrity and does not exacerbate vulnerability (Smith & Troni, 2004). This includes the ability to withstand threats and adapt when necessary, as well as the ability to evolve to new options in the face of shocks and crises. The population in Somali is quite fragile, especially given the numerous and protracted difficulties that have characterized Somalia over time. However, this varies by gender, age, and income group. The local people are very vulnerable in terms of climate change. However, the people of the city remain steadfast and struggling because they are made up of committed, entrepreneurial, active, supportive, and generous communities. Somalis have had to rely more than any other society on their own resiliency to safeguard their lives and livelihoods due to insufficient support from public and private, formal and informal systems.

Urban structuring that is resilient can absorb, recover from, and get ready for future shocks (environmental, institutional, social, and economic). Sustainable growth, wellbeing, and equitable development are encouraged in resilient cities.

In the construction of cities that are more resilient to climate change risks it is crucial to incorporate mitigation and adaptation strategies and policies for climate change into urban planning. In addition, land use policies and land use planning that contributes to climate adaptation should have been given importance (Huq, Sokona, & Najam, 2002). However, considering that the policies of combating climate change and adaptation may conflict with each other from time to time, it can be said that the local characteristics of each city will determine the priority of the policies that need to be implemented.

However, to increase resilience, it is important to understand that an enabling environment is required, based on a perception of local vulnerability and resilience, as well as a policy and regulatory framework for the most efficient service delivery. Various techniques, viewed holistically, can be used to strengthen resilience (Orindi & Murray, 2005).

It is possible to summarize the points to be considered in building a resilient city in Mogadishu under the following points.

Developing basic social services – Strengthen vulnerable households and human capital by developing systems that can assess community needs, capture necessary information, and ensure gender equality through gender participation.

Creating predictable safety nets - Establish the necessary support mechanisms to meet the basic needs of the most vulnerable populations without discrimination by providing consistent and sustainable food or cash transfers to the poor and those are seasonally vulnerable.

Strengthening productive sectors – Increase household income by varying sources of income, extending market and informational access, and providing fair and equal access to ecosystem services and natural resources including land, forests, and water.

Adaptive capacity and building resilient livelihoods are key challenges in Somalia, but also critical for survival and addressing severe poverty. Adaptive capacity will become increasingly important, especially in addressing climate change.

6. Climate Change Adaptation Programs

The Somali government maintains adaptation and mitigation action plans to combat the effects of climate change (NAPA, 2013).

The most important implemented projects include:

- Since 2001, the EU has contributed funding for the project (SWALIM) Somali Water and Land Information Management. The World Bank, the UK Department for International Development, and the US Agency for International Development have also contributed to the project's funding. The main objective of the project is to protect Somalia's impoverished population by monitoring and securing water and land resources.
- 2014–2019 Somalia climate resilience of vulnerable ecosystems and communities: This project creates an institutional framework for addressing climate change and increases the adaptive capacity of vulnerable farmers. This project, which is funded by the Global Environment Facility, is managed by the UN Development Program. The goal is to test ecosystem-based support and adaptation strategies.
- Increasing community resilience and decreasing Somali's vulnerability to the climate change impacts (2015–2017) This project teaches farmers and herders how to save water and soil. It is financed by the German Federal Ministry for Economic Cooperation and Development and Kindernothilfe..

7. Recommendations and Policy Priorities

Local governments, ministries and government agencies should identify society's vulnerability to climate change impacts and develop short- and long-term adaptation options that can increase society's resilience to climate change impacts. Major cities like Mogadishu should receive priority while creating the national adaption strategy. Giving the required direction and coordination in areas where cities and other local interests do not yet represent adaptation activities is another crucial point. According with national climate change adaptation policy and in consultation with a wide range of community stakeholders, local governments should develop and carry out climate change

adaptation plans. Action plan policies and current government initiatives should include adaptation targets. Agriculture, trade policy and food security, energy policy, transportation policy, international aid and disaster relief, national security, and technology transfer to other countries under intellectual property agreements should all be taken into account and regulated in this context. To address the already known impacts and threats of climate change, federal, state, local, and private sector institutions should act immediately. They should also ensure that effective risk management is achieved at low cost.

In the study, it is recommended to attach importance to the following policy priorities:

- ❖ Strengthening infrastructure against the effects of climate change
- ❖ Land use planning
- ❖ Building a resilient city in line with mitigation and adaptation actions
- ❖ Activation of early warning and response systems in case of a disaster
- ❖ Preparation of local development projects aimed at preventing migration from the rural to the urban
- ❖ Strengthening corporate governance practices
- ❖ Dissemination of waste management and recycling process
- ❖ Dissemination of renewable energy

Conclusion, Discussion and Suggestions

Climate change is one of the important problems faced today as climatic changes arising over time as a result of natural changes or human activities. Climate change has negative effects in many areas such as agricultural sector, water resources, forests, biodiversity, air pollution, health, coastal management.

Melting in glaciers causes sea water levels to rise, while rising waters make living conditions quite difficult. Therefore, migration emerges as a necessity in most regions. Heat waves, on the other hand, pose serious problems for agricultural production, especially forest fires. While the loss of species in biodiversity is another problem area, the decrease in species diversity in the biosphere leads to the deterioration of the balance of ecosystems. The increase in extreme weather events has started to give the signals of a more challenging life. As a result, changing climatic conditions cause different effects in different geographies.

Urban areas are the preferred environment for more over half of a world's population, and this number is rising daily. For this reason, urban areas appear as the first geographies that should be addressed in policy priorities to be developed in the fight against climate change. There are two important reasons for this situation: First of all, it is the places where greenhouse gas emissions, which are shown as the most important cause of climate change, occur intensely. The gases released as a result of urbanization and industrialization activities increase the temperature of the planet by causing the greenhouse effect, and as a result, climate changes are experienced. The second reason is the key role of cities in combating climate change. The struggle can be won thanks to the emission reduction policies to be implemented in urban areas. However, extreme weather events that will

occur as a result of their hosting of dense populations have the potential to affect more people. As a result, the key roles of cities in combating climate change are undeniable.

Cities are struggling with climate change with different policy priorities to be implemented. The resilient city emerges as a model put forward within the scope of the struggle of cities against climate change. In this respect, the fact that urban life is affected as little as possible by the effects of climate change emerges as a situation directly related to urban resilience.

The main focus of this study is the effects of climate change on Mogadishu. The decline in agricultural productivity appears to be the main climate change impact on Mogadishu. Mogadishu is the most densely populated city of the country due to both being the capital city and receiving intense immigration from the countryside. Migration to the city emerges as a necessity for the population who cannot find a livelihood opportunity in the countryside. However, the infrastructure of the city is not able to handle such a population.

The development of plans to deal with the numerous possible threats posed by climate change is the subject of numerous current activities at the international, regional, and national levels. It is necessary for Mogadishu to take part in these initiatives and to determine policy options by benefiting from different country experiences. Inadequate levels of urbanization policies and practices, economic and social infrastructure, and possible problems that may arise due to climate change have the potential to lead to more severe consequences. For this reason, it is important to develop a new planning approach to ensure urban resilience.

Mogadishu in general is strongly affected by climate change. It has been observed that Mogadishu is warming faster than the rest of the world. The literature review discovered that Mogadishu is extremely vulnerable to climate change, and that this issue will be exacerbated by the nation's fragile environment, irregular topography, high reliance on agriculture, and low GDP. Climate change has had negative effects on many sectors. A few sectors that are crucial to the nation's GDP are also notably impacted by climate change such as the agriculture and livestock sectors. In order to get prepared for disasters including floods, droughts, landslides, and forest fires that may occur due to climate change, it is crucial to activate mechanisms like early warning systems. Major disasters are expected to cause many dangers affecting human life. In this context, climate change directly affects the country's economy and therefore the livelihood of the people. Climate change is also causing impacts that slow economic development, damage infrastructures and threaten water and food security.

The Somali federal government has developed a (NCCP) and (NAPA) to adapt and mitigate the impacts of climate change. Although policies and action plans have been developed, they have not been effectively implemented due to the fragile state and weak economy of the country.

The effects of climate change are being felt more strongly in poor and low-income communities due to inadequate capacities, resources, and access to emergency response systems. Therefore, it is important to identify various strategies and policies pertained to climate change adaptation and greenhouse gas reduction within the context of risk management and addressing climate change.

In the study, it is recommended to implement national and local climate action plans prepared to combat climate change effects. Solutions should be sought by increasing the capacity of local governments, providing the necessary technological and financial support for infrastructure and services, and strengthening governance mechanisms. Economic resilience and local development should be promoted by creating short-term income generating opportunities, particularly for the poor people in the urban and displaced people, through labour-intensive work.

Compliance with Ethical Standard

Conflict of Interests: There is no conflict of interest between the authors.

Ethics Committee Approval: Ethics committee approval is not required for this study.

Funding Disclosure: No financial support was required in this study.

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