



Analysis of the Arab League's Environment and Climate Change Policies Based on Global
Governance Understanding

Küresel Yönetişim Anlayışı Temelinde

Arap Ligi'nin Çevre ve İklim Değişikliği Politikalarının Analizi

BASMA MOHAMED EL SAYED ATTIA

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Governance Understanding

BASMA MOHAMED EL SAYED ATTIA

Master's thesis

Department of International Relations

Supervisor: Doç. Dr. Erhan AKDEMİR

Eskişehir

Anadolu University

Graduate School of Social Sciences

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This thesis titled "**Küresel Yönetişim Anlayışı Temelinde Arap Ligi'nin Çevre ve İklim Değişikliği Politikalarının Analizi**" which has been prepared and submitted by **Basma Mohamed El Sayed ATTIA** in partial fulfillment of the requirements in "**Anadolu University Directive on Graduate Education and Examination**" for the Master of Arts in **Department of International Relations International Relations** has been examined and approved on 09/10/2023.

Committee Members

Signature

Member (Supervisor) : Assoc. Prof.Dr. Erhan AKDEMİR

.....

Member : Dr. Lecturer Volkan ŞEYŞANE

.....

Member : Dr. Lecturer Duygu ÖZTÜRK

.....

09/10/2023

Date

Prof Dr.Saime ÖNCE

Anadolu University

Institute of Graduate Programs

Director

ABSTRACT

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BASMA MOHAMED EL SAYED ATTIA

Department of International Relations

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Supervisor: Doç. Dr. Erhan AKDEMİR

The Arab region is characterized as a dry and barren area. The Arab region is considered one of the regions that is most vulnerable to climatic changes. Undoubtedly, climate change will lead to social and economic deterioration as well. Therefore, the League of Arab States (LAS) has begun plans to reform environmental and climate changes through its commitment to global governance policies, such as the League of Arab States' adherence to the Paris Agreement of 2015 and the thirteenth item of the United Nations on sustainable development. Above all, the environment and climate change have placed at the top of the 2030 sustainable development agenda of Arab countries. The LAS has cooperated with regional and nongovernmental environmental organizations and institutions to find solutions to mitigate or adapt to climate change. It is important to note that the thesis will focus on understanding the measures taken by the League of Arab States to confront environmental and climatic changes in the Arab area. This thesis will focus on the measures taken by the LAS to confront environmental and climatic changes in the region. It will attempt to understand and recognize the relationship between global governance and climate change. In addition, it will analyze and clarify the impact of environmental and climate changes on Arab states.

Keywords: Arab League, Environment and Climate Change, Global Governance, Sustainable Development, Adaptation

ÖZET

Küresel Yönetişim Anlayışı Temelinde

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BASMA MOHAMED EL SAYED ATTIA

Uluslararası İlişkiler Anabilim Dalı

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Danışman: Doç. Dr. Erhan AKDEMİR

Arap bölgesi, kuru ve verimsiz bir alan olarak nitelendirilmektedir. Arap bölgesi, iklim değişikliklerine en savunmasız bölgelerden biri olarak kabul edilmektedir. Şüphesiz, iklim değişikliği sosyal ve ekonomik bozulmaya da yol açacaktır. Bu nedenle, Arap Ligi (AL), küresel yönetim politikalarına olan bağlılığıyla çevresel ve iklim değişikliklerini reform etmek için planlar başlatmıştır. Bu politikalar arasında, Arap Devletleri Ligi'nin 2015 Paris Anlaşması'na ve Birleşmiş Milletler'in sürdürülebilir kalkınma konusundaki 13. maddesine bağlılığı yer almaktadır. Özellikle, çevre ve iklim değişikliği, Arap ülkelerinin 2030 sürdürülebilir kalkınma gündeminin başına yerleştirilmiştir. Arap Ligi, iklim değişikliğini hafifletmek veya uyum sağlamak için çözüm bulmak amacıyla bölgesel ve sivil toplum çevre kuruluşları ve kurumlarıyla işbirliği yapmıştır. Bu tez, Arap Devletleri Ligi'nin Arap bölgesindeki çevresel ve iklim değişiklikleriyle başa çıkmak için aldığı önlemlere odaklanacaktır. Ayrıca, küresel yönetim ile iklim değişikliği arasındaki ilişkiyi anlamaya ve tanımaya çalışacak ve çevresel ve iklim değişikliklerinin Arap ülkeleri üzerindeki etkisini analiz edecek ve açıklayacaktır.

Anahtar Kelimeler: Arap Ligi, Çevre ve İklim Değişikliği, Küresel Yönetişim, Sürdürülebilir Kalkınma, Adaptasyon

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I would like to dedicate some of these lines to express my gratitude to all those who have surrounded me with help and support during this journey, I especially thank the Doç. Dr. Erhan AKDEMİR for his supervision, guidance, follow-up and specialization of part of his precious time for me and I am grateful that I am one of his students, I want to express my appreciation to all faculty members and administrators, because they made me feel proud to be a student at this university and a great scientific edifice.

From the bottom of my heart I am grateful to everyone who supported me even with one word, I am grateful to the kind people who did not put barriers in front of others to prevent them from reaching their goals.

STATEMENT OF COMPLIANCE WITH ETHICAL PRINCIPLES AND RULES

09/10/2023

I hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with “scientific plagiarism detection program” used by Anadolu University, and that “it does not have any plagiarism” whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

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(BASMA MOHAMED EL SAYED ATTIA)

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INTRODUCTION

At the political level, the League of Arab State (LAS) is the main Arab body involved in managing governance of climatic changing in the Arab world (Al-Sarihi & Luomi, 2019, p. 4). For some time now, the Arab region has been facing significant geopolitical and economic changes; however, changes in the climate and environment may pose an additional threat to Arab countries, and their impact is increasing gradually. Therefore, the League of Arab States intervened to reach a solution using both official and unofficial global governance mechanisms.

The LAS consists of 22 countries; 12 of these countries are in Asia, and the other 10 are in Africa. The Arab League was established in 1945, and the headquarters is based in Cairo (Hammoura & Ülger, 2018, pp. 37-38). The Arab League took the initial concrete steps regarding climate changing in 2007 when the LAS entrusted that to the Council of Arab Ministers, which was established in 1986 along with is in charge of handling the environmental file. The Council of Arab Ministers Responsible for the Environment (CAMRE) has formed the basis for handling climate change difficulties throughout the Arab nations and regional frameworks (Abdel Gelil, 2005, p. 10).

Despite this, the first steps related to climate change began at the end of the 20th century with the declaration of the UN Framework Convention on Climate Change (UNFCCC) at the UN Conference on Environment and Development “Earth Summit” in 1992, the agreement aimed at reducing atmospheric greenhouse emissions, then the Protocol Kyoto in 1997, it entered into force in 2005 (AFED, 2009, pp. 130-131). At that time, 18 Arab countries joined the convention, and 12 Arab countries joined the protocol (Abdel Gelil, p. 5). According to this and for the LAS to be in line with global governance, it adopted the Sustainable Development Goals (SDGs) in 2015 (AFED, 2017, p. 12).

Climate issues cannot be resolved individually but rather with coordination and cooperation. The administration of the climate crisis is even seen as the greatest challenge of global governance, according to some (Dikmen, 2020, pp. 60-61). Moreover, it is predicted that with the end of this century, the temperature in Arab countries will rise from 2°C to 5.5°C, and the rain will decline by 20%. This will result in a longer summer than winter (AFED, 2008, p. 129). In this regard, the LAS has taken several measures to address this change in temperature, desertification, and other hazards.

For example, at the global level, the LAS joined the Paris Agreement in 2015, except for Syria. At the regional level, the LAS cooperates with the United Nations Economic and Social Commission for Western Asia (ESCWA) in the field of climate and development (Al-Sarihi & Luomi, p. 7). In addition, cooperation exists between the LAS and nongovernmental organizations, such as the Arab Forum for Environment and Development (AFED) and the Arab Network for Environment and Development (ANED) (AFED, p. 33).

The thesis will aim to provide a comprehensive view of the measures taken by the LAS in the face of environmental and climate change, explain the importance of global governance and its role in reforming climate change, show how the LAS benefits from global governance in its climate program, and shed light on the solutions offered to confront climate change in the Arab region, such as adaptation, mitigation, and sustainable development. The issue of environment and climate change is currently considered an important topic on the international scene, so the theories of international relations try to explain this issue scientifically and practically based on interpreting the role of governance mechanisms and policies of international cooperation. The importance of the study is due to the presentation of the most important steps adopted by the LAS to address the dangers. Climate change causes these dangers, such as drought, desertification, water shortage, and other environmental problems, through the pillars of global governance.

The study contains several questions that will be answered within the context of the research. The answers to the questions will be based on the policies adopted by the Arab League to face changes in the environment and climate and rely on the foundations of global governance, so questions can be asked as follows:

1. What are the global governance efforts for climate change?
2. What is the impact of environmental and climatic changes in Arab countries?
3. What are the LAS's measures to address climate change based on global governance in the region, whether these measures are successful or not?

The study will rely on qualitative methods. Qualitative research is one of the types of scientific research that depends on the study of human behavior rooted in social issues (Jackson, Drummond, & Camara, 2007, p. 23). The content analysis and the case study methods will apply the qualitative method in the study. Currently, qualitative content analysis is one of the most important qualitative methods available for data analysis and interpretation. In addition to representing a systematic and objective way to describe and measure phenomena (Elo, Kääriäinen, & et al, 2014, p. 1). content analysis will study data on climate change in the Arab region. The case study method enables the researcher to scrutinize the data in a particular context. In most cases, it selects a small geographical area or a limited number of individuals as subjects of the study (Zainal, 2007, p. 1). The case study is applied by the Arab League and its policy in the global governance of climate change.

The time frame for the study will be determined in the period from 2007 to 2021. The actual start of taking measures related to climate change was in 2007 when the Arab Ministerial Council responsible for climate change announced its first policy paper, the Arab Ministerial Declaration on climate change. Coordination with the LAS and UN activities is carried out by the Panel on Climate Change led by the Regional Office for West Asia and UN Environment Program (UNEP). Another important station was in 2015 when the LAS signed the Paris Agreement in 2016. In 2016, the LAS emphasized that environmental and climate issues are at the top of the 2030 Agenda for Sustainable Development.

Additionally, the member states of the LAS 2016 established the Council of Arab Ministers for Meteorology and Climate Affairs. Moreover, in 2018, the relevant ministers of the League of Arab States approved the Arab Strategy for Disaster Risk Reduction 2030.

The thesis consists of three chapters. The first chapter discusses global governance, its emergence, definitions, and characteristics on the one hand, and the other hand discusses climate change and the causes of rising temperatures and the global governance policies taken to address climate change from international treaties and agreements and other measures. In the second chapter, the thesis discusses the Arab League, the environmental issues in the area, the difficulties posed by climate change, and the LAS' responses to those issues. The last section of the thesis explores the governance of climate change that the LAS adopted from international cooperation and development projects.

CHAPTER 1: GLOBAL GOVERNANCE AND CLIMATE CHANGE POLITICS

1.1 Global Governance Characteristics

1.1.1 The Rise of Global Governance

The concept of governance has become more prevalent now. In fact, the term is of Greek origin, *kubernân*, which refers to the control of a ship or cart. Plato considered governance to be the guidance of human attitude. Governance terms began to be used in Northern Europe, specifically France, in the seventeenth century. In addition, it has been linked to civil society. From the European conquests of the fifteenth century until the eighteenth century, the world was divided between colonial areas and areas of international affairs. During the twentieth century, significant transformations unfolded, including the establishment of the United Nations. Member nations actively championed democratic governance and the reinforcement of international organizations governed by human agency for the sake of regulating the movement of the market and money in furtherance of the work of the United Nations Development Program to narrow the divide within the world's rich and poor (Murphy C. N., 2000, pp. 789-790).

The 1980s and 1990s were the pivotal decades that initiated the era of global governance. Global governance has its roots in the frustration and anger of international relations students who saw the realist and institutionalist liberal theories that predominated the discipline in the 1970s and 1980s fail. All of that is done in an effort to explain the growing influence of non-state actors as well as the effects of technology and globalization (Weiss, 2000, p. 796). Global governance institutions have been established to tackle the implementation of the neoliberal development paradigm, which prioritizes market mechanisms over state intervention. This model emphasizes export-led growth and advocates for the unrestricted flow of capital as a key driver of economic development, which is an essential change in the policies after the Second World War (Thomas, 2001, p. 171).

In addition, Rosenau and Czempiel made a distinction between government and governance, explaining that the former refers to legal government processes and that the latter refers to the state's capacity to monopolize violence on a larger scale than the former. Institutions both official and informal are necessary for governance (Peciak, 2017, p. 118).

Since the 1990s, global governance has been focused on as a new and powerful research agenda. According to the global governance agenda, the state no longer plays an essential and pivotal role but has certainly played a strategic role. The strength of global governance lies in transcending the state's global governance and focusing on how governmental and nongovernmental parties' positions and influence are shifting. In addition, the introduction of governance to the strength of the institutional nature of political power and for this focus has been on the groups involved in governance, such as nongovernmental organizations, transnational companies, and intergovernmental organizations. Hence, the focus is on the type of actors involved and not on governance processes and practices (Sending & Neumann, 2006, pp. 651-653).

James N. Rosenau emphasized that global governance in the current century shall not be characterized by a certain system form where changes will occur in the position of power and governance mechanisms, whether in every continent or country. This is evident in the changes that took place in the social and economic systems on the international scene and the emergence of problems that accelerated the rapid transformation of the system, such as environmental pollution, AIDS, monetary crises, and drug trafficking, which imposes a new form of intensive transnational cooperation. Above all, this confirmed that governance in the twenty-first century will be concerned with evolving dynamic mechanisms rather than routine government procedures (Rosenau, 1995, pp. 18-20).

The rapid onset of globalization has presented a formidable obstacle to effectively managing local challenges. Global issues that threaten international security and stability have spread, especially at the beginning of this century. We have faced racial conflicts, witnessed a rise in terrorism, and experienced the exacerbation of threats alongside the spread of infectious diseases. Furthermore, a fresh wave of global challenges has emerged, encompassing climate change, threats to energy security, food scarcity, water scarcity, as well as the rise in rates of international migration. All of these factors have contributed to the elevation of the international standing of global governance (EU, 2019, p. 20).

1.1.2 The most highlighted terms and definitions related to global governance

Before delving into the concept of global governance, it is necessary to provide a detailed definition of the term "governance" in a general context. Undoubtedly, the concept of governance has gained significant importance worldwide, as the criteria for interpreting 'governance' have evolved since the concept of the Peace of Westphalia and beyond. In this context, the establishment of legal frameworks has become a crucial factor. Regarding the old standard, rules were considered binding for sovereign states as long as they willingly agreed to them. However, the new standard has expanded to encompass not only the creators of legal rules but also a range of accompanying procedural standards. These standards include inclusivity, transparency, and accountability (Dingwerth K. , 2008, pp. 6-7)

Although there is no unified definition of governance, the first use of the term of the now-accepted concept of governance is due to the World Bank report dated 1989 entitled (Sub-Saharan Africa: From crisis to sustainable growth, a study of a long-term perspective). The World Bank defines governance as the process by which power is used to manage a country's financial and social assets are managed through power for development. Government's capacity to create, conceive, and carry out policies and duties (World Bank., 1994, p. xiv).

In parallel with the increasing focus on governance, a fifth element or objective was added to the United Nations Development Program's agenda. This agenda includes eradicating poverty, creating employment and sustainable livelihoods, protecting and renewing the environment, and advancing women's empowerment. Therefore, governance is perceived as the control over financial and political authority, as well as the administrative handling of national affairs at all levels. This is not limited to the political sector alone but also encompasses the economic and social realms. Additionally, it includes entities beyond authorities, such as the business sector and organizations representing civil society (UNDP, 1997, pp. 6-7).

For the Global Governance Committee comes a definition of governance is the outcome of several decisions made by people and institutions in both the public and private sectors. Competing or different goals can be accepted through a constant procedure that involves both official bodies of law with the authority to enforce compliance and informal agreements that people and institutions have made or as they see fit in their interest (Commission on Global Governance., 1995, p. 2).

Governance, according to the working group of the “International Institute of Administrative Sciences”, is referred to as a manner in which multiple elements of authority and power are exercised in society and thus affect the implementation of regulations and choices pertaining to society at large, the economy, and social progress that includes the relationship between individuals within the state, the organization of state agencies and the state’s relationship with other states (Sangita, 2002, p. 329). The methods used to manage the joint affairs of national governments, international organizations, businesses, institutions, and civil society are referred to as global governance. Sometimes it exceeds the state’s ability to manage it. On the other hand, governance includes norms and values in addition to lists and regulations, so global governance is not limited to nation-states and the international system only but extends to other issues and actors (Dodds, 2016, p. 98).

James Rosenau and Ernst-Otto Czempiel define global governance as something vague as well as amorphous in general, as it is the group of organizations that controls how things happen globally from the family to the international organization. Global governance aims to distinguish between it and the organized legislative authority that leads states. Global governance is thus defined as anything less stable in general, anything that is changing and more adaptable; hence, it is characterized by continually evolving. This is why the term includes three principal criteria. First, increasing attention should be given to urgent issues around the world, such as the financial crisis, migration, environmental degradation, and other issues. Second, there is the importance of the role of nongovernmental entities as actors. Third, the significance of good governance criteria is represented in human rights, freedom of the market, democracy, rules of law, transparency, and accountability (Wang & Rosenau, 2009, pp. 5-6)

1.1.3 Global Governance Features

We can extract some important characteristics that distinguish global governance from previous definitions. Global governance is fragmented, and the idea of fragmentation has become the most crucial topic that differentiates global governance. The structures of global governance are diverse and detailed. The concept of fragmentation is linked to earlier discussions in the 1970s about institutional coherence. Fragmentation has focused on the extent of interconnectedness and interaction between institutions, setting them apart. Additionally, some believe that fragmentation signifies the expansion of international law, which now encompasses areas that were not previously regulated, such as global trade, and environmental protection, alongside human rights (Biermann, Pattberg, Van Asselt, & Zelli, 2009, pp. 16-17).

In parallel to this, there are differing perspectives on the fragmentation of global governance through international law mechanisms. Some view it as an acceptable manifestation of multilateralism, wherein specialized mechanisms handle various aspects of global governance. However, others caution against the dangers of division and the associated legal and administrative complexities (Vihma & Pankakoski, 2017, p. 1). The fragmentation in global governance is directly reflected in transboundary issues through the participation of a wide range of stakeholders with diverse interests and objectives. Alongside this, the dynamics within various governance forums have contributed to the formation of a diverse set of active entities. These entities encompass institutions, actors, norms, or discourses that employ different capabilities for global-level governance. As a result, this has led to fragmented governance (Kempchen, 2018, pp. 9-10).

Therefore, it can evaluate the degree of fragmentation in global governance through several criteria, namely, the integration between institutions, the degree of overlap among decision-making systems, the type of representative actors, and the presence of standard contradictions, so it is necessary to differentiate between three genres of fragmentation: synergistic fragmentation, cooperative fragmentation, and conceptual fragmentation (Biermann, Pattberg, Van Asselt, & Zelli, pp. 19-20).

According to experts in international relations, global governance is characterized by complexity as its second attribute. Today's problems are complex and pass through complex areas in which time horizons vary across and within issue areas. There is an interaction between the variables of problems in nonlinear ways and perhaps in unexpected ways (Haas, & Western, 2020, p. 56). As a result, complexity sheds light on the reasons behind the governance gap and the mismatch between what actors expect from policies and what happens (Kreienkamp & Pegram, 2020, p. 5).

In today's context, the global governance landscape is witnessing a growing presence of diverse entities, along with the proliferation of relationships between intergovernmental and transnational institutions. This is further coupled with the increased flow of information and technology, alongside international governmental treaties and the reliance on financial and commercial borrowing. All these interconnected networks across areas of power showcase significant diversity in norms and interests. As a result, complexity is not merely an outcome or a characteristic of global governance; rather, it is more accurately perceived as a challenge to it (Zelli, Gerrits, & Möller, 2020, pp. 1-2).

The World Health Organization (WHO), a unique and formally autonomous multinational agency that addresses many facets of global health, serves as the greatest illustration of the complexity of global governance and the overlap together with the interdependence of institutions. However, global health governance is formed in cooperation with the World Health Organization, the World Bank, and plenty of intergovernmental institutions, both the community and business fields (Sangiovanni & Westerwinter, 2021, p. 6).

Therefore, due to the lack of central authority in global governance and its similarity with public administration, global governance experts presented the distinction of institutional complexity through diversity and pluralism (Kim, 2020, p. 915). Global governance is often characterized as a multicenter arrangement, where "multicenter" signifies the existence of multiple formal autonomous decision-making centers. Alternatively, it can denote a coherent system of relationships. The specific nature of this characterization may vary in different empirical cases (Ostrom, Tiebout, & Warren, 1961, p. 831).

The term “multilevel governance” was first introduced by Gary Mark in 1992 to clarify the developments for the European Union's structural strategy after the reform of 1988. This required the central government to work with local governments to develop plans for implementing the fund (Schakel, 2020, pp. 1-2). Consequently, contact between the various political levels is necessary for a successful and legitimate government. Decision-making in international fora frequently requires the acknowledgment of legitimacy at the transnational level as well. Then, these decisions are implemented at a national level. Therefore, global governance does not go in parallel with other levels of governance where governance is formed through the interaction of different levels and organizations, where not every level or organization can work from one side because the loss of any party makes the process disconnected (Zürn, 2012, p. 88).

Neoliberal advocate Keohane claimed that the diversity of actors is a defining characteristic of truly global governance because he claimed that this type of governance is made up of a networked group, that is, specifically focused on the issues and actors in global governance. In addition, he explained that global governance consists not only of the governments of the national states but also of transnational corporations and nongovernmental organizations. He also added that governance by nonstate actors is specific and cannot infringe on the independence of nation-states, but if there are unjustified conflicts in the behaviors of those entities, it will not lead to cooperation among the behaviors of the governments of the national states (Yamamoto, 2008, p. 127).

1.2 The role of global governance policies for environmental and climate change issues

1.2.1 Definitions of climate change

There is no country or continent now that is immune from the effects of climate, so scientific studies and research and countries have given great importance to this problem, which has become the central issue of humanity now; therefore, we must join hands to save the planet from the potential risks that increase daily if solutions are slowed down. We must first distinguish between the two to understand climate change and its causes.

The weather in most regions consists of rain, cloud cover, wind, hail, snow, thunderstorms, and, of course, sunlight. Weather is defined as how the atmosphere works over a short period or what we perceive varies by day or week. There will likely be changes in the weather between every moment, for example, per minute or hour, until the season (NASA, 2005). While climate is what can be predicted to happen at any given time of the year based on statistics that have been formed over many years, that is why climate statistics focus on averages; thus, the analysis must include the occurrence of extreme events that are part of the normal for any part of the world field (Burroughs, 2007, p. 2).

For the environment, the Oxford Advanced Dictionary for Learners defines the term environment as conditions that affect the behavior of a person or something/or the physical conditions in which a person or something exists. Thus, the environment includes all visible and microscopic physical objects that affect the existence of living organisms positively or negatively, and no living organism exists in isolation from this field (Nwankwoala, 2015, p. 225). Ecosystems, their component elements, and all-natural and material resources are included in the definition of the environment, along with social, economic, aesthetic, and cultural factors that have an impact on the environment or are impacted by changes in that area (Larsson, 2009, p. 156).

The idea of global environmental issues seems intuitive today; however, it has reached this stage of real realities only after a long stage. Environmental historian Donald Worchester 1977 identified the beginning of what he called the “ecological era”, which was with the experimental explosion of the atomic bomb in New Mexico in July 1945. Through this moment, mankind was able to cause serious long-term damage to the planet. Therefore, a permanent place for environmental issues is needed on the government’s agenda, and it is no longer possible to allow nature enthusiasts and university specialists to pay attention only to these issues (Evans, 2012, p. 26).

Given that its impacts will not be contained within a single spatial scale but rather are international, climate change has emerged as the greatest concern currently confronting humanity. In particular, at the end of the eighteenth century, when machines were used that undoubtedly used fossil fuels, which led to an increase in carbon dioxide and other greenhouse gases in the atmosphere, it is acknowledged that these climate changes started at the beginning of the so-called industrial revolution. Because of this, the majority of research affirms that human activity and industrialization have contributed to the most recent climate change. According to experts with the Intergovernmental Panel on Climate Change, human activity will speed up these changes in the twenty-first century (Krupocin & Krupocin, 2020, pp. 2-3).

Climate change can be distinguished according to the Intergovernmental Panel on Climate Change, which explains that it occurs through changes in the average or variability of its characteristics, which can last for a long-term period of time, possibly extending to decades. Unstable natural events or individual activity negatively affect the climate over time (IPCC, 2008, p. 30). There is no denying that the definitions of climate change as used by the IPCC and the United Nations Framework Convention on Climate Change (UNFCCC) differ. According to the UNFCCC, climate change is defined as a change in the climate that is caused by human activity and changes the composition of the earth's atmosphere (UNFCCC, 1992, p. 7).

1.2.2 Rising temperature and its influence on climate change

Both natural and man-made greenhouse gases (GHGs) are "greenhouse gases" that are present in the atmosphere and absorb infrared radiation and re-emit it to the ground in order to maintain the planet's atmosphere's temperature and keep it warm. GHGs include hydrofluorocarbons (HFCs), perfluorinated compounds (PFCs), carbon dioxide (CO₂), methane (CH₄), and others, and the majority of them have been produced from natural sources and have been present in the atmosphere for a very long period (Brander, 2012, p. 1).

The atmosphere consists of 99% oxygen and nitrogen, which are relatively transparent, but their influence is weak for infrared radiation, sunlight, and the energy needed by the earth to pass through. On the other hand, only 1% of the atmosphere's composition is made up of greenhouse gases. If these gases were absent, the average surface temperature of the globe would reach -18 degrees Celsius. The temperature difference is 33 degrees Celsius, which results in a cooler atmosphere and makes the Earth uninhabitable (WMO, n.d.).

Global warming and rising temperatures are now due to greenhouse gases, which have affected the climate and the environment. Thus, and according to scientific sources, human activities are to blame for raising the percentage of greenhouse gases, as the combustion of fossil fuels represented by household use, power plants, and factories accounts for the production of about ninety-five percent of nitric oxides (NO_x) (Tan Z. , 2014, p. 9).

As a result of human activity and fuel-burning reactions in factories and homes, four greenhouse gases are produced, namely, carbon dioxide (CO₂), which is produced in atmospheric air due to the excessive growth of coal and oil burners. Moreover, the eradication of forests and trees contributes to increasing the proportion of this gas and can also generate atmospheric CO₂ through the manufacture of cement by heating calcium carbonate and generating lime. In 2020, carbon dioxide in the atmosphere reached 149% of the preindustrial level field (WHO, 2021, p. 7). Therefore, carbon dioxide constitutes the largest proportion of GHGs in the atmospheric air; consequently, it is necessary to decrease CO₂ emissions through international solidarity.

A second GHG is methane (CH₄), which is produced by agricultural and livestock activities, and what is produced from natural waste such as organic fertilizers, and the mismanagement of disposal of these wastes is considered a cause of emissions, its percentage is low in the atmosphere compared to CO₂, but it is 21 times more effective per unit in 2005 increased by 148% to what it was before the Industrial Revolution (Mohajan, 2012). Nitrous oxide (N₂O), which is produced by fertilizer use and agricultural practices and is the third gas released, is remarkably similar to CH₄ in its expelled state. Fluorinated gases are the fourth most abundant greenhouse gas and consist of hydrofluorocarbons, perfluorocarbons, and sulfur hexafluorides and are generated from purely industrial processes. However, they are emitted into the atmosphere to lower degrees than the previously mentioned gas, but they have great potential for generating global warming (UN, 2022).

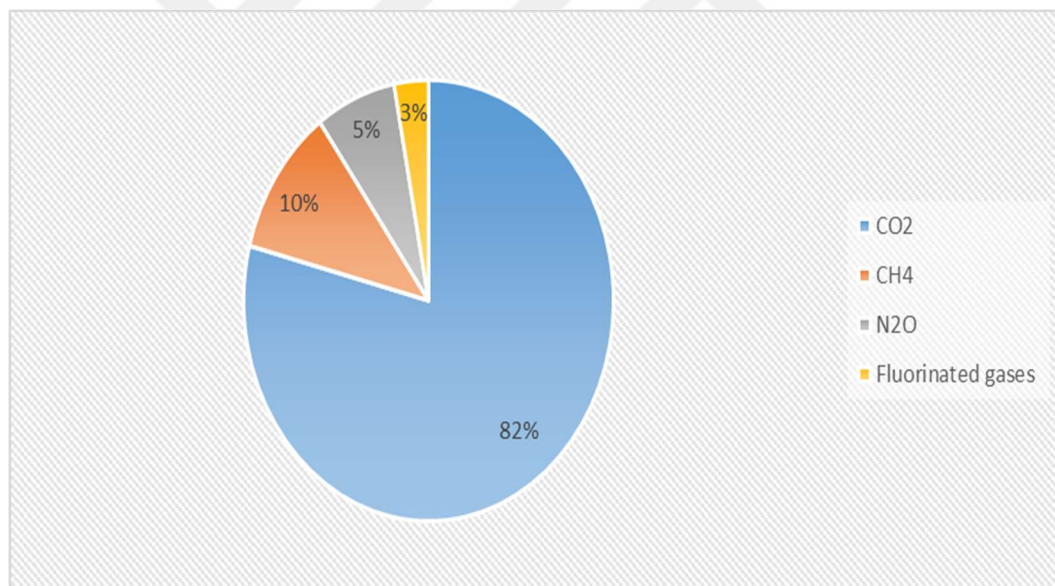


Figure 1: *Share of Greenhouse Gases in the Atmospheric*

Source: (EPA, 2016).

Increased human activity since the start of the Industrial Revolution in the last quarter of the 18th century has contributed to global warming, which has led to the emergence of climatic changes and a variation in temperature due to increased GHG emissions, as shown in the following figure. In 1990, there was a priority as a real beginning to study the annual rate of greenhouse gases. After more than 200 years of the Industrial Revolution, the ratio reached a maximum of 1. During that year, the atmosphere's concentration of greenhouse gases was 100%. In contrast, at an increasing pace from 1990 to 2021, the rate of greenhouse gases reached 1.5, an increase of 50% in just 30 years (Lindsey, 2022).

ANNUAL GREENHOUSE GAS INDEX

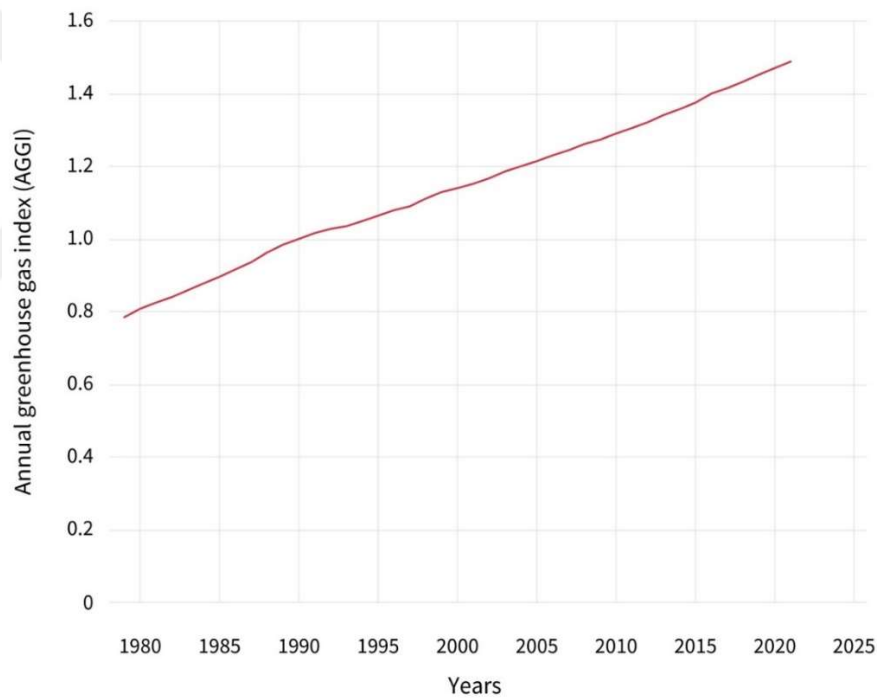


Figure 2: *Climate Change: Annual Greenhouse Gas Index*

Source: (Lindsey).

1.2.3 Formal mechanisms for the global governance of climate change

1.2.3.1 International agreements

United Nations Framework Convention on Climate Change

International efforts to establish a legally binding framework to specifically address climate change and greenhouse gas emissions have been ongoing since the mid-1980s. For instance, there was a global consensus that the 1987 Montreal Protocol on compounds that deplete the ozone layer and the 1985 Vienna Convention on the ozone layer, nevertheless, these steps do not constitute a sufficient legal framework (OECD, 1997, pp. 5-6). Therefore, in 1990, at the II International Conference for Climate, there was a consensus on the establishment of an international commission to negotiate climate change to reach a framework agreement under the umbrella of the United Nations through its General Assembly, and in the ministerial declaration of the conference, it was made clear that climate change is an international problem of a different nature of its kind (Jackson P. , 2007).

The UN Framework Convention on Climate Change was enacted as an explicit legal measure to face environmental and climatic change in 1992 at the Earth Summit held in Rio de Janeiro, Brazil. The convention has a universal membership, the number of its members today has reached 197 parties, and it entered into force on March 21, 1994. The UNFCCC aims to maintain stable atmospheric greenhouse gas concentrations and guard against significant catastrophic climate change. It is crucial to attain this objective within an ample timeframe, enabling ecosystems to adapt to climate change without jeopardizing food production and economic progress (Bassewitz, 2014, p. 103).

The UNFCCC functions as the primary avenue for global climate governance, constituting the ethical, political, and legal bedrock of global climate governance. This is achieved through various mechanisms that oversee states' commitments, regulate their policies, and manage their international obligations, such as the principles of equity and common but differentiated responsibilities. It mandates that participating countries bear climate action costs according to their respective capabilities. As such, climate governance has facilitated policies coordinating sectors, actors, and civil society entities to successfully implement the Convention's objectives (Ji, Sha, Ji, Yue, & et al, 2015, pp. 16-17).

The conclusion of the agreement had many obstacles, such as the economic burdens that the industrialized countries will bear to make a change by reducing emissions and the fear of the oil countries cutting off the source of their economy from fossil fuels; also, the divergence of views of developed and developing countries, where the first sees it as environmental scientific problems, while the second sees poverty will stand in the way of its implementation of the agreement. For many, the convention was a disappointment (Bodansky, 1993, p. 454).

Kyoto Protocol (PK)

The UNFCCC proved insufficient and did not achieve the desired progress. Consequently, during the first Conference of the Parties (COP) in 1995, held in Berlin, participating countries expressed the need for stronger and updated commitments. As a result, the Kyoto Protocol was adopted in Kyoto, Japan, on December 11, 1997, to address these concern (UNFCCC, p. 11). However, due to the complicated ratification process, the protocol came into effect on February 16, 2005. Presently, the Protocol boasts 192 participating parties. In short, the essential condition for the protocol to take effect was the ratification by a minimum of 55 parties to the convention, including a developed nation responsible for at least 55 percent of the total carbon dioxide emissions in 1990 (Manne, Stanford University, Richels, & EPRI, 1998, p. 2).

The objective of the Kyoto Protocol is to operationalize the UNFCCC by requiring developed countries and economies to reduce their GHG emissions. It exclusively applies to developed nations and imposes a greater responsibility on them, following the principle of shared responsibility while considering each country's capacity to shoulder the burden. Furthermore, the protocol grants states flexibility in implementing their obligations, but it does not allow them to unilaterally determine the form and specifics of their responsibilities, unlike the initial framework agreement (Ruppel, 2013, p. 51).

Legally, according to Article Three of the Protocol, 37 high-income countries are required to minimize GHG emissions by 5% from 1990 levels during the first commitment term from 2008 to 2012, while Other commitment terms spanned from January 2013, until the end of 2020. The most notable element of the Kyoto Protocol was that it provided a flexible market mechanism based on three ways to achieve its goals: the "International Emissions Trading", "Implementation of Joint" and "Clean Development Mechanism" (Leggett, 2020, pp. 4-5).

In the case of Kyoto, global climate governance manifests through the embedded goals within the Protocol and the methods and policies of its implementation, characterized by fragmentation and a multiplicity of decision-making centers based on shared interests. The Protocol encompasses diverse groups such as the European Union, African negotiators, Arab countries, the Environmental Integrity Group, least developed countries, and small island developing states, all these countries have entered into bilateral and multilateral agreements to address climate change according to their interests. Furthermore, after Kyoto, in the realm of global climate governance and international relations, national entities are no longer the sole dominant actors. Non-governmental entities have become significant players in climate change governance, establishing their own alliances and initiatives across borders. For instance, the Global Covenant of Mayors for Climate and Energy is an example of this shift (Stranadko, 2022, pp. 641-643).

Paris Agreement

At the 21st session of the conference of the parties in Paris, the participants of the UNFCCC unanimously supported a momentous agreement aimed at combatting climate change. This agreement seeks to expedite and enhance the endeavors and investments required for a sustainable future with low carbon emissions. The Paris Agreement marked a significant milestone as it united all nations under a shared objective to exert exceptional efforts in combating climate change and adapting to its impacts. Concurrently, it aimed to bolster assistance for developing countries in their climate change endeavors. As a legally binding international agreement, the Paris Agreement was ratified on December 12, 2015, by 196 parties and officially took effect on November 4, 2016, just 30 days later. The agreement

required the participation of at least 55 parties, representing at least 55% of the world's total greenhouse gas emissions at that time (UNFCCC, 2016).

The main objective of the Paris Agreement was to ensure that the universal temperature increase during this century remains significantly below two degrees Celsius compared to preindustrial levels. Additionally, it aimed to continue endeavors aimed at limiting the temperature rise to 1.5 degrees Celsius. The objective of the Paris Agreement is to develop an action plan every five years at the national level to review the contributions of all countries in reducing greenhouse gas emissions, and each new contribution should include progress compared to the previous one. The Agreement also requires states to increase their endeavors in mitigating, adapting to, cooperating on, and promoting transparency regarding greenhouse gas emissions reductions. The prime goal set by the Agreement is a financial mobilization of up to 100 billion US dollars (Leggett, p. 6).

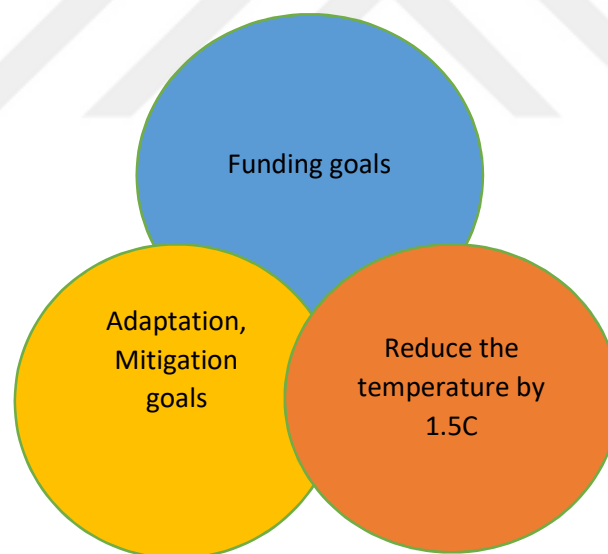


Figure 3: *Targets of Paris Agreement*

Source: (Moosmann, Urrutia, Simons, James, & Schneider, 2019, p. 19).

The agreement highlights the requirement to ensure an annual commitment of 100 billion dollars starting from 2020, aimed at financing projects that facilitate countries in adapting to climate change effects, such as sea level rise, drought, and desertification, as well as reducing greenhouse gas emissions. Furthermore, this funding should progressively increase to enable certain developing nations to transition into donors and assist the most impoverished countries. The agreement provides for strengthening comprehensive cooperation in the field of developing and transferring climate-safe and reducing emissions through several efforts to support the building of technical capacities of the developing world and transparency about the information received in the financing (Ellis & Moarif, 2016, p. 34).

Five years after the agreement, the climate budget did not reach the preplanned financial budget of 100 billion USD. In 2020, it reached 83.3 billion USD. This means that the level of climate finance in developed countries remained below the target by 16.7 billion USD (OECD, 2022, p. 5). Initially, in 2009, developed nations pledged to mobilize an annual sum of 100 billion US dollars by 2020; considering that the developed countries are the starting point and the cornerstone of the agreement, this deadline has been extended until 2025 to seek a new global climate finance target by 2025 and to encourage developing nations to contribute to tackling the climate problem; nonetheless, it is expected that this goal may never be achieved until 2023 (Achampong, 2022).

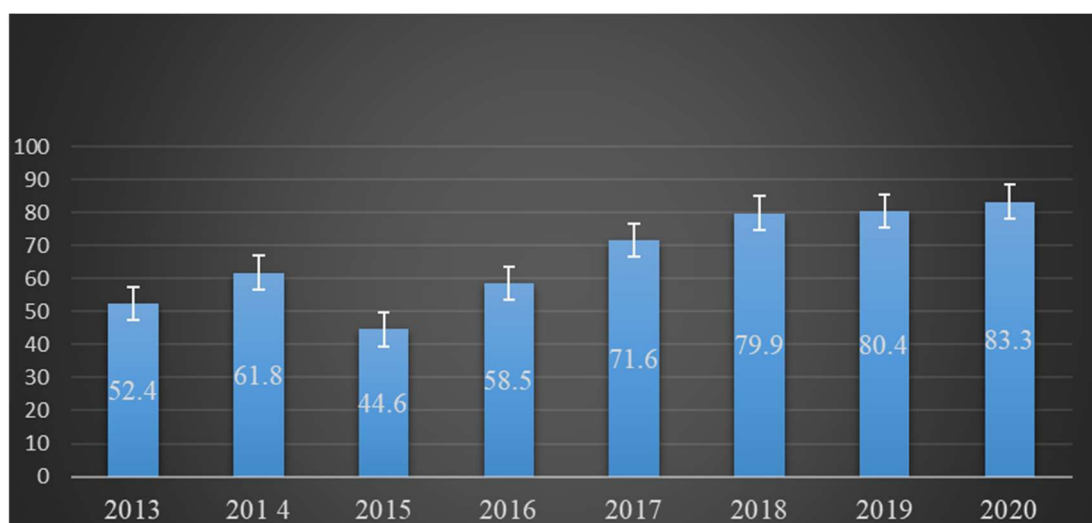


Figure 4: *Provision and Mobilization of Climate-Related Financing in 2013-2020 (\$B)*

The Paris Environmental Agreement constitutes a prominent example of the significant role of global governance. It has effectively harnessed the collective endeavors of nations and non-governmental organizations within the framework of a comprehensive climate action plan. By establishing various alliances and fostering diverse partnerships, this agreement has successfully institutionalized the involvement of non-governmental entities. In the context of global governance to address climate change within the Paris Agreement, the private sector and civil society have been given a prominent role in efforts to mitigate carbon emissions. The Marrakech Partnership for Global Climate Action is considered a model that illustrates the role of non-state actors through online platforms. The action program within the agreement includes 70 initiatives aimed at engaging the efforts of ten thousand active entities in 180 countries (Jernnäs, 2021, pp. 14-15).

1.2.3.2 International conferences under the UN

The UN climate conference attended by ministers from 189 countries was held in Poznan, Poland for two weeks, from December 1 to 12, 2008. This conference was a roadmap for the Copenhagen conference. The Polish city was planned to host some environmental workers from NGOs, youth, and up to 11,000 visitors. The purpose of the conference was to search for a new agreement to replace the Kyoto Agreement, which will expire in 2012, to discuss ways to strengthen joint international cooperation in combating environmental and climatic changes, try to commit essential countries to use digital and technological targets to lessen GHG emissions in 2020 (Kevin, 2008).

One of the most principal achievements of the Poznan conference was the fund that was set up for adaptability, which, despite its small budget, reached 80 million, but it was a step to protect developing countries from harmful economic and climate damage. The conference also stressed the need to reduce deforestation and the need for technology transfer to accelerate progress in developing society (Ingram & Irwin, 2009, p. 15). However, the Poznan conference was a significant step toward the climate. Unfortunately, at that time, the developed countries, headed by the European Union and its affiliated countries, were not ready to reduce emissions; moreover, most of the ideas for technology transfer and financing were advanced proposals from developing countries such as the G77+ China (Santarius, Arens, Eichhorst, & et al, 2009, p. 3).

On December 2009, the Copenhagen conference took place in Denmark. The conference was thought to be the biggest meeting in the annals of world diplomacy because it was attended by 119 presidents and monarchs from various nations. The number of participants in the conference was huge, with a total of 37,000 participants present, including government delegates, members of civil society, and members of the press. Over the course of two weeks, an astonishing 1,000 official and unofficial meetings were convened as part of this event (Dimitrov R. , 2010, pp. 795- 796). During the Copenhagen conference, 25 nations, including all of the world's main economic powers, approved the Copenhagen Accord, a long-term commitment that is simply a political one and not legally binding. The accord called for systems of "pledge and review" for mitigating commitments or activities by both advanced and growing countries, restricting climate change to no more than 2 Celsius degrees and committing new financial resources (Bodansky, 2010, pp. 1-2).

The pledges made in Copenhagen to commit developed nations-parties to the convention are listed in Annex I-to the individual or joint implementation of economy-wide quantitative emission targets for 2020, which will be submitted to the UNFCCC by January 31, 2010, were intended to quickly save and add resources as well as to serve as a financial start for the period 2010–2012 that will be close to \$30 billion. The Copenhagen Green Climate Fund was founded as an operational body of the financial mechanism agreement since the pledges included the creation of a high-level team to evaluate the contribution of prospective revenue streams, including alternative sources of financing (UNFCCC, 2010).

The Danes had high hopes that the conference would be a catalyst in resolving the climate crisis before it started, but the outcomes were disappointing by the time it was over. The opinions were divided into two teams, one that supports the Kyoto Agreement on the need to oblige wealthy nations to cut their emissions and pay for the costs of the Kimberley Plan's second promise phase, and another team that supports the UNFCCC. Many have concluded that it is necessary to combine the views of the two groups to create a new treaty (Newson, 2010).

The Cancun conference, held in Mexico in the period on November 29, 2012, brought together collaboration between the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention and the Ad Hoc Working Group on Additional Obligations of Annex I Parties under the KP (Streck , Meijer, Conwa, & et al, 2011, pp. 166-167). There were about 12,000 attendees at the Cancun conference, including nearly 5,200 officials from governments, 5,400 employees of UN departments and organizations, a variety of governmental and nongovernmental groups, and 1,270 others. Unlike last year's conference in Copenhagen, there were no big expectations for the Cancun gathering. The two-track negotiation procedure in Cancun was intended to improve ongoing collaboration within the convention and the protocol (IISD, 2010, p. 1).

Table 1: *Outcome of the Cancun Agreement*

Adaptation action	Planning, prioritization, and implementation of adapting measures, comprising initiatives, programs, and activities mentioned in local and sub-regional plans and strategies for adaptation.
Mitigation actions	Provide pledges from developed as well as developing nations, to carry out emission reduction measures, and report on steps taken to reduce transparently.
Finance actions	The Green Climate Fund was established as an operational institution of the financing system to provide cash in both the immediate and future to enable developing nations to engage in proactive measures.
Technology actions	Innovation in technology and transmission to underdeveloped nations are necessary for achieving mitigation and adaptation strategies

Table1: *(Continued)*

Capacity building actions	Supporting capacity building to support nations that develop in meeting the challenge of climate change, establishing effective institutions with the purpose.
emissions reduction actions	Protecting forests, which are a major carbon reservoir because their removal negatively affects developing countries.

Source: (UNFCCC., 2011).

The Durban Conference, which took place in 2011, served as a crucial platform for observing the implementation of global policies in the context of climate change and gaining insight into the roles played by various stakeholders. The conference attracted around 12,500 participants, including authorized representatives from 194 countries, corporate delegates, and industry stakeholders. Approximately 6,000 participants represented non-governmental organizations, while 1,200 individuals were from major media outlets (Banerjee, 2012, p. 1768). The countries participating in the conference also agreed on a legally binding process known as the Durban platform, which contains a set of decisions such as continuing work on the Kyoto agreement on a second commitment period starting on January 1, 2013, working faster from 2012 to prepare a proposal for the plan until 2015 as well as the creation of a global international agreement that will enter into force from 2020, the platform adopted action plans for mitigation of dismissive impacts and coordination on adaptation mechanisms and the Green Climate Fund (Hazuchova, 2012, p. 2).

In 2019, the Climate Summit held in New York aimed to reaffirm the discussions covered in previous climate conferences. United Nations Secretary-General Antonio Guterres called for an acceleration of actions under the Paris Agreement to achieve global emissions reaching net zero by 2050 (UN, 2019). All of these conferences and meetings held under the United Nations were based on the principles of global governance, which encompassed both official and non-official entities, as presented by the participating parties.

The United Nations has the capacity to function as a coordinating center for such global governance. It can provide in-depth and forward-looking analysis, assess the impact of economic, social, and environmental trends on progress towards Sustainable Development Goals, offer guidance, and facilitate collaboration among all stakeholders (Wu, 2015).

1.2.3.3 Policies of international cooperation and coordination

As mentioned earlier, the crucial role of global governance is evident in international agreements and conferences focused on climate change, which involve comprehensive climate action agendas. Consequently, further international coordination and partnerships are proposed to endorse the principles of global environmental governance for addressing climate change. These principles, which countries rely upon, aim to reduce the gap and resolve disputes over responsibility between advanced and developing nations in the face of climate fluctuations. This is achieved through the economic capacities of countries, including coordinated strategies for adaptation and mitigation .

Adaptation action

Adaptation has consistently held a pivotal role within the United Nations Framework Convention on Climate Change (UNFCCC), established in 1992 in response to the global call to address climate and environmental changes. The primary objectives of this convention were to stabilize greenhouse gas concentrations and prevent human interference with the climate system (Pettengell, 2010). The term adaptation refers to the reaction to climate change that is already occurring or is expected to occur, and its impact adaptation limits the effects of rapid adjustments on ecological, social, and economic systems and increases their adaptability through shifting methods, behaviors, and constructions to mitigate possible damage or seize opportunities arising from climate change (McCarthy, Canzian, & et al, 2001, p. 879).

Mapping the governance of climate change adaptation entails identifying and illustrating the fundamental activities associated with adjusting to the effects of climate change. In this process, it defines governance as a dynamic interplay involving policies, actions, stakeholders, and expertise, and visually depicts their interactions (Probst & Hohmann, 2019, p. 5).

Adapting to climate change indeed represents a multifaceted challenge that spans across different dimensions, including time, geography, and subject matter. Moreover, it carries significant ethical implications, particularly concerning justice and equality. In this context, complexity refers to the depth and breadth with which a policy issue is approached and discussed, as well as the intricacy involved in its analysis and resolution. It is this complexity that is one of the fundamental qualities of global governance. It can be argued that international cooperation on adaptation issues, based on global environmental governance, is characterized by fragmentation. International actors must overcome institutional fragmentation that varies in degree and nature depending on institutional links and normative conflicts. The implementation of adaptation measures relies on the cooperative fragmentation of governance to secure funding resources (Maria, Therese, & Ece, 2020, pp. 205-206). For this, there are three types of adaptation as follows:

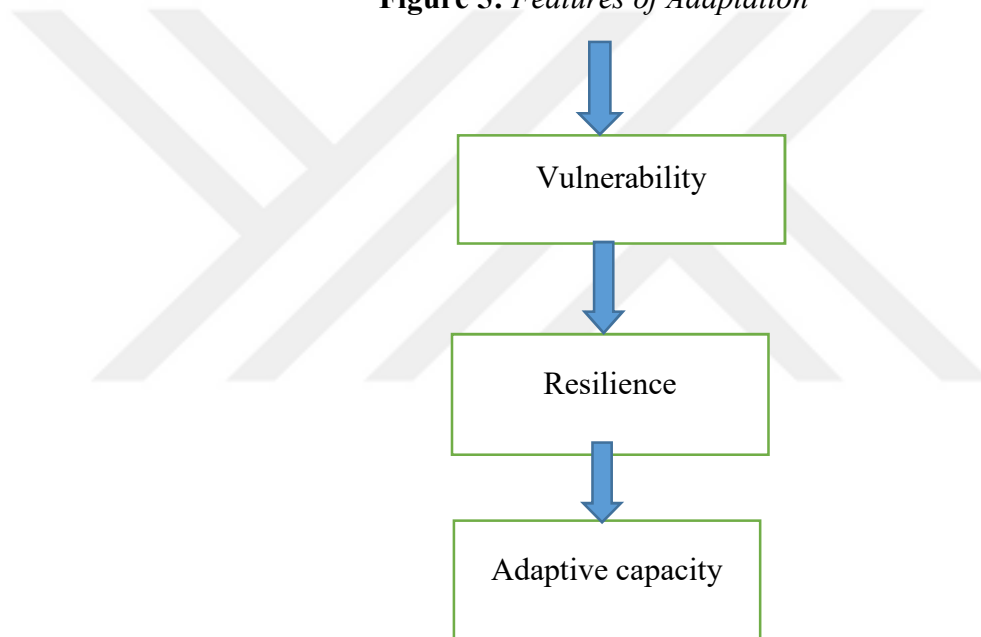
Table 2: *The forms of adaptation*

Type	Objective
Anticipatory adaptation	Is the term used to describe adaptation that takes place before the effects of climate change are seen.
Autonomous adaptation	Is not carried out through conscious reactions to climatic stimuli, but rather by environmental changes in natural systems, shifts in markets, or well-being modifications in social structures. Additionally known as spontaneous adaptation
Planned adaptation	arises as a result of an intentional political decision prompted by the recognition that circumstances have shifted or will shift, and proactive measures are necessary to uphold, attain, or reinstate the wanted circumstances.

Source: (Parry, Canziani, Palutikof, Linden, & Hanson, 2007, p. 869).

Adaptation is characterized by three principal features: vulnerability, which refers to the susceptibility and incapacity of a system to withstand the reverse impacts of climate change, encompassing both gradual shifts and extreme events (Parry, Canziani, Palutikof, Linden, & Hanson, p. 838); secondly, resilience refers to the ability of a community or ecological system to withstand shocks while preserving its essential components and operational patterns; and adaptive capacity, representing a society's capability to adjust itself in response to climate change in order to mitigate unfavorable consequences.

Figure 5: *Features of Adaptation*



Effective forms of adaptation necessitate collaboration between both public and private organizations to design climate change prevention measures. Furthermore, administrations are unable to fully outsource adaptation to business or social dynamics. Adaptation decisions made through such institutions are quite fragmented and completely independent at both the household and individual levels (Boer, 2006, p. 8).

Nonetheless, ensuring the successful execution of diverse adaptation programs, policies, strategies, and actionable initiatives necessitates a conducive enabling framework. This encompasses legal structures and establishments capable of facilitating the seamless integration of adaptation concerns into development schemes. Consequently, a demand arises for adaptable institutional and political mechanisms, public consciousness and discourse, effective communication pertaining to adaptation measures, dissemination of relevant tools and methodologies, enhancement of capacities, and the implementation of suitable monitoring and evaluation mechanisms (Srinivasan, 2006, p. 77). The inclusion of adaptation in climate policies and planning processes by over 170 countries and numerous cities (Pörtner, Roberts, Tignor, & et al, 2022, p. 20).

Local actors are essential to making a real effect on climate change adaptation. Meanwhile, donors, international organizations, and national governments play an important role in channeling resources and technical support. However, effective adaptation occurs through the dynamism of local governance, civil society participation, and locally led economic development with the support of NGOs and private sector enterprises. Therefore, in the table below, we can examine the adaptation plans put forth by various regions around the world to correct the course caused by climate change.

Table 3: *Adaptation procedures for regions of the world*

Regions	Procedures
Europe	At all levels of government, adaptation strategies have been formed in such areas as catastrophe risk reduction, preservation of the environment, sea and water policy, and spatial planning.
Africa	Although progress is sluggish, the majority of nation-states are creating adaptive governance systems to lessen vulnerabilities through disaster risk mitigation, changes to technological infrastructure, ecosystem-based methods, essential public health interventions, with diversity of sustenance.

Table 3: *(continued)*

Regions	Procedures
Asia	The integration of climate adaptation strategies in the country's development plan facilitates adaptability.
Australasia	Preparing for sea level rise.
North America	Governments are planning adaptation for long-term energy investments.
Central and South America	Adaptation measures are implemented to protect agriculture.

Source: (IPCC, 2014, pp. 51-54).

In terms of funding adaptation efforts, the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol have provided diverse funding mechanisms through initiatives like the Global Environment Facility (GEF) and the Conference of the Parties (COP). As a result, in 2001, governments formed an aid fund with a focus on the least developed countries, also known as least developed countries and small island developing states (Klein, 2008).

Mitigation actions

Mitigation, as an international response to climate change, encompasses human-driven efforts to establish systems that aim to minimize or eliminate greenhouse gas emissions promptly, providing ecological systems with a suitable timeframe for natural adaptation to climate change. Various mitigation options are pursued, including the adoption of clean, climate-friendly, and sustainable technologies such as wind and solar energy, as well as measures to curb deforestation (UNFCCC, 2009, pp. 1-3).

At the global level, emissions of greenhouse gases witnessed a persistent increase throughout all industries and subindustries but accelerated in the transportation and manufacturing sectors in 2019, where emissions reached 34% globally, equal to "20 gigatons of carbon dioxide equivalent", and in the next figure, we see the percentage of GHG emissions in key sectors (Shukla, Skea, & et al, 2022, p. 65).

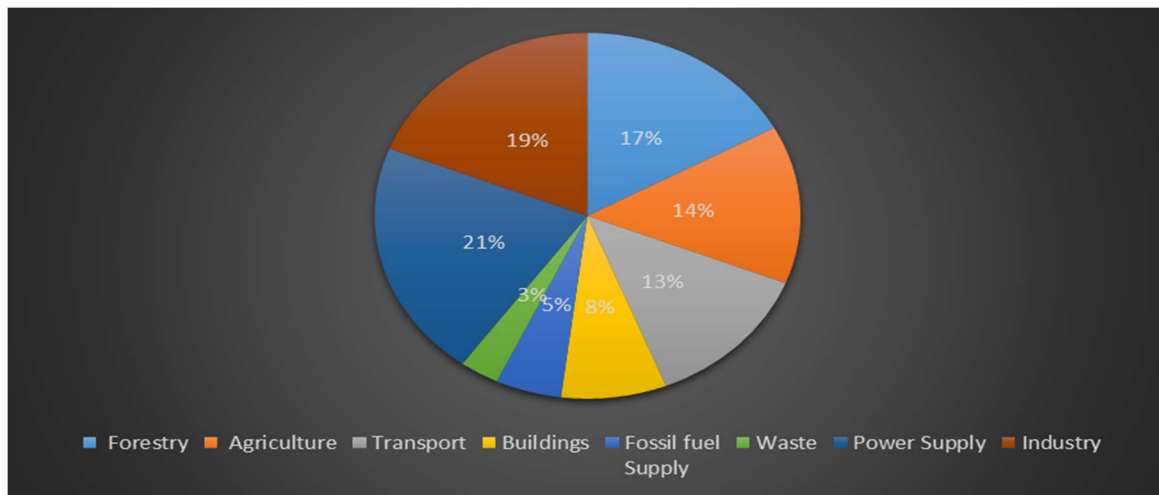


Figure 6: *Percentage of GHG Emissions in Key Sectors*

Source: (UNFCCC, 2009, p. 3).

It is clear that the highest emissions come from the energy and industrial sectors, and the mitigation plan adopted to improve those sectors requires relying on fossil fuels, specifically coal, to renewable energy sources and heat “hydropower, the solar, wind, geothermal and bioenergy” (OECD, 2008, p. 15). In the transport sector, planning to use vehicles consumes less fuel and relies on biofuels. In the industrial sector, it is necessary to switch to the use of more efficient electrical equipment, recycle resources, and use them to lower emissions of CO₂. Within the building sector is created utilizing smart meters that offer monitoring and oversight, and passive as well as active solar designs are used for cooling and heating purposes, while buildings incorporate smart meters that offer monitoring and oversight mechanisms. Industry must switch to more efficient electrical equipment and recycle and use resources to reduce CO₂ emissions (Metz, Davidson, Bosch, Dave, & Meyer, 2007, p. 20).

In the field of agriculture, enhanced crops and grazing practices promote carbon sequestration, in addition to the creation of rice growing methods, livestock management and manure using methane, and the use of nitrogen fertilization technology to reduce nitrous emission. In the forest sector, management of forests and harvested wood products are applied, and their removal reduces the land use/land management strategies for greenhouse gas reduction under the PK emphasized activities consisting of planting trees, reforestation, along the production of bioenergy crops, that would lead to good results (Onoja, DibuaI, & Enete, 2011, p. 476). The mitigation efforts planned in the field of agriculture and land by replacing bioenergy to stabilize the climate depend on technical and economic positions and societal preferences, along with the prospect for fresh information and innovations throughout the long term (Havlík, Valin, & et al, 2015, p. 13).

In the Paris Agreement, participating parties recognized that economic diversification is necessary to complete mitigation and that sectors such as fuel and transport are crucial for mitigating. Furthermore, some parties have indicated that they will link their nationally determined contributions to their commitments to transitioning towards a carbon-free or sustainable economy. These contributions are expected to contribute to the reduction of their 2030 carbon emissions, aiming for a reduction ranging from 2.5% to 3.2%. This reduction corresponds to a percentage of emissions needed to align with global mitigation pathways aimed at limiting global warming to 1.5 degrees Celsius above preindustrial levels (Secretariat, 2021).

The structural underpinnings of the market for carbon emissions and the idea for carbon cost were established by the Kyoto Mechanism with the overall framework. Several states and regions have adopted carbon trading programs; certain are required, while others are optional. The European Carbon Trading System is the largest emissions trading program currently in place (Fawzy, Osman, Doran, & Rooney, 2020). The “mitigation potential” is dependent on market and economic factors. The majority of upward and downward analyses show that there is a financial incentive for reducing carbon emissions. The “mitigation potential of the market” reflects what (consumers with private enterprises) might anticipate given the anticipated market circumstances, including the laws and regulations that are already in effect. The “potential of economic mitigation” considers community expenses and

advantages as well as societal discounting rates that represent (the viewpoint of society, society discounting levels are less than are utilized by individual investment) (Pachauri, Reisinger, & The Core Writing Team, 2007, p. 58).

It's clear that mitigation and adaptation measures are interconnected. Therefore, we can create a comparison between the two aspects, as shown in the table below:

Table 4: *Distinguish between Adaptation and Mitigation*

Case	Adaptation	Mitigation
Aim	Climate change adjustment	Reducing the effects of climate change
place scope	Local	Global
Time scope	Long time	Short time
sector procedures	power, forest, structure, farming, and transportation...etc.	Water, urbanized, agricultural, maritime, and healthcare.... etc.

Source: (Tan G. , 2013, p. 20).

1.2.4 Informal mechanisms for the global governance of climate change

In the context of the global transition from government-led environmental governance to community-based environmental governance, non-state actors play a significant role in addressing environmental challenges. This community-based management aims to enhance the effectiveness of behavior towards climate issues and improve policy efficiency through diverse engagement of stakeholders, including emerging groups, within the framework of global governance and global civil society. These non-state actors impact local, national, regional, and global levels (Loubadi, 2021, p. 54). There are some examples of informal mechanisms of global climate governance:

The various partnerships and alliances between governments, companies, civil society organizations, and other stakeholders collaborate cooperatively on climate-related issues. For example, the Global Compact Network and the Business Coalition bring together companies committed to sustainable practices and emission reduction goals. In addition to this, there are multi-stakeholder initiatives that encompass government, corporate, non-governmental organizations, and other active entities working together on specific projects or goals related to the climate. Examples of this include the Carbon Pricing Leadership Coalition and the Tropical Forest Alliance, both of which aim to address carbon emissions and deforestation, respectively. Business circles are increasingly adopting the idea of sustainable growth in the global markets. Furthermore, over 1,000 global companies have urged governments to establish carbon pricing (Dikmen, p. 72).

There is a remarkable role for non-governmental entities in global climate governance through their voluntary determination of emission reduction goals. Many countries and subnational parties voluntarily establish voluntary targets for emission reduction that surpass their obligations under formal agreements. These targets can inspire others to do more and contribute to creating a positive impetus for more ambitious actions. While these commitments are not legally binding, they demonstrate a commitment to addressing climate change. For example, the progressive system of Nationally Determined Contributions (Michaelowa, Michaelowa, & Bagchi, 2016, p. 14).

Non-formal collaboration mechanisms ensure the sharing of information, experiences, and best practices among various stakeholders. Platforms like the Climate Action Network provide a space for civil society organizations to cooperate and advocate for climate action. Countries and organizations collaborate on technology transfer and knowledge sharing to expedite the adoption of clean technologies and sustainable practices. Initiatives such as technology mechanism within the framework of the United Nations contribute to facilitating this cooperation. Local governments and subnational entities often engage in informal climate governance by setting their own emission reduction goals (Dikmen, p. 71).

The global governance activities of non-state actors encompass influencing the agenda, proposing solutions, providing information and expertise, affecting decision-makers and policies, raising awareness, implementing actions, assessing policy and measure impacts, representing public opinion, and advocating for marginalized voices. Additionally, environmental non-governmental organizations rely on their intellectual and social resources, which are primarily built upon membership and affiliation. Non-state actors play a significant role in shaping the structure of climate governance, utilizing various forms such as private, hybrid, networked, and community-based approaches (Nasiritousi, Hjerpe, & Ola Linne'r, 2016, pp. 113-114).

While the private sector's engagement in global climate governance brings significant opportunities, it also raises challenges such as balancing profit motives with environmental goals, ensuring equitable distribution of benefits. Effective collaboration between governments, civil society, and the private sector is essential to harness the full potential of private sector contributions to mitigating climate change and achieving global sustainability objectives. Many private companies are taking proactive measures to reduce their carbon footprint by adopting cleaner technologies, implementing energy-efficient practices, and transitioning to renewable energy sources. These efforts contribute to global emissions reduction goals. Many companies are integrating sustainability and climate-related considerations into their business strategies as part of their Corporate Social Responsibility initiatives. They engage in responsible sourcing, and circular economy practices, and support community-based climate projects (Andrade & Oliveira, 2014, p. 376).

CHAPTER 2: THE ARAB LEAGUE AND THE EFFORTS OF CLIMATE CHANGE IN THE ARAB REGION

2.1 The League of Arab States

2.1.1 Historical Background

For over 70 years, the League of Arab States has served as a model similar to many regional and international organizations established during the first half of the twentieth century, with the purpose of safeguarding the interests of its member states. In light of the global wars that affected the international community at that time, these organizations turned towards organizing their interests and avoiding the ongoing conflicts among them. It is indeed quite intriguing to observe that the initial concept for the establishment of the Arab League did not emerge from within the Arab context. Instead, it was suggested by the British Foreign Secretary, Anthony Eden, in 1941. This was during his speech to the British House of Commons, which emphasized the importance of an Arab entity uniting the Arabs under its umbrella. Moreover, the British government will not oppose unity but support the idea (Al-Mughni, 2016, pp. 2-3).

The concept found widespread support among Arab liberal nationalists on November 24, 1943, less than two years after his initial statement. He reiterated his proposal and affirmed that his government would support any official step towards Arab unity, further strengthening the economic, cultural, and political relations among those Arab nations (Khadduri, 1946, p. 93). On September 25, 1944, Egypt called upon the seven independent nations to convene a meeting in Alexandria. This meeting was the official event that witnessed the birth of the Arab League. The preparatory committee concluded with the approval of representatives from Syria, Lebanon, Jordan, Iraq, Egypt, and Yemen on Egypt's proposal to name the entity, *The League of Arab States*, instead of "Union" or "Alliance." Additionally, the main roadmap, known as the Alexandria Protocol, was issued (Khalil, 1962). The LAS is an international governmental organization that includes members from Arab countries in the Middle East and North Africa region. It was established in Cairo on March 22, 1945. Currently, the League gathers 22 Arab nations (EuropeanUnion, 2021).



Figure 7: *Map of Arab Countries*

Source: (BBC, 2017).

2.1.2 League of Arab States Charter

The LAS came into existence with the signing of its Charter on March 22, 1945; thus the unified Arab entity known as the LAS was born. It consists of 20 articles that outline the objectives and guiding principles that must be met by the LAS and its affiliates. The member states' relationship with one another and how to improve ties between them are made clear in the Charter. Furthermore, the Charter stipulates that any amendments to its provisions require the approval of a two-thirds majority of member states. These are the key aspects highlighted in the Charter.

In terms of the organizational structure of the League of Arab States, Article III emphasizes the establishment of a council that convenes representatives from participating countries. Notably, each country holds an equal vote in the council, regardless of the number of its representatives present; As per Articles 10 and 11 of the LAS, Cairo serves as the 'permanent headquarters of the organization. Additionally, the Council of the Arab States has the authority to select an alternative location for its meetings. The Council convenes biannually, specifically in March and September, with the provision for emergency sessions upon the request of two member countries (Akihiko, 1945).

In accordance with Article 12, the League of Arab States maintains a permanent general secretariat comprising a secretary-general, assistant secretaries, and an adequate number of officials. The secretary-general is appointed by a two-thirds majority vote of the council. Subsequently, the secretary-general, with the council's approval, selects the assistant secretaries and senior officials. Articles 13 and 14 delineate the responsibilities of the secretary-general and the diplomatic immunity granted to council members. The role of the secretary-general includes the preparation of the budget, which is subsequently presented to the council for the allocation of each country's share of expenses (Brown, 2014, p. 5).

Article 2 of the League of Arab States Charter outlines the framework for inter-Arab relations and the coordination of strategies to promote cooperation. It emphasizes the league's objective of enhancing relationships and fostering cooperation among Arab nations, all while respecting the independence and sovereignty of each member state. The article also emphasizes how critical it is to take into account the particularities of each state's economics, finances, transportation, nationality, culture, social affairs, and health (Akihiko, 1945). According to Articles 5 and 6, the use of force to settle disputes between members is strictly prohibited. Instead, if any countries within the league seek resolution of a dispute, the league can intervene and make a decision that effectively resolves the issue without compromising the sovereignty, independence, and territorial integrity of the involved states. In the event of an attack by one state on a member state or when a member state feels threatened, it can request an emergency meeting from the league. The decision regarding the attack is made unanimously, and the opinions of the aggressor countries are not taken into consideration (Hammoura & Ülger, p. 40)

Article 9 of the Charter emphasizes that the member states aim to negotiate and enter into agreements with each other to enhance their relations within the framework of the charter. While the League accepts these agreements, they are not binding on other member states. Furthermore, according to Article 17, member states that participate in these treaties are required to provide copies of the treaties to the General Secretariat of the League, whether they are agreements between League states or agreements with other countries (Akihiko, 1945).

The necessity of respecting the internal order of the league countries, on the other hand, is one of the fundamental principles emphasized by the charter. This is supported by Article 8 of the charter, which states that each member state of the league must respect the system of government existing in other countries. The member nations also promise not to take any steps to alter that arrangement (Al-Mughni, p. 9).

It is important to note that Article 1 of the Charter specifies that membership in the League of Arab States is granted to independent states. However, the implementation of decisions within the league operates under different mechanisms. According to Article 7, unanimous decisions are to be implemented by all member states, while decisions taken by the council based on a majority vote are implemented by those who accept them. In both cases, the decisions of the council are applied within each member state in accordance with its own laws (Little, 1956, p. 140). In accordance with Article 16, decisions on people, the budget, the cessation of meetings, and the formulation of the council's, committees, and secretariat's rules of procedure can all only be made by a majority.

The Charter was drafted in Cairo in Arabic, and a single copy was deposited in the General Secretariat. Exact copies were printed for each member country of the league. The Charter will come into effect fifteen days after the secretary-general receives the ratification documents. It also contains a special annex regarding the admission of Palestine as a full member of the League of Arab States, represented by the Palestine Liberation Organization (Lindsay, Master, & Sergie, 2014).

2.1.3 Organizational Structures of the LAS

Like the majority of international organizations, the league is made up of several administrative groups that carry out its plans and objectives. It includes essential committees such as the League Council and the General Secretariat and can be listed as follows:

Security Council of the League

The League of Arab States' council is in charge of encouraging collaboration with other international organizations in addition to its responsibility in selecting the secretary general. It is also charged with the responsibility of mediating or arbitrating any conflicts that might develop between Arab nations. The council also creates the rules of procedure for the permanent committees, the general secretariat of the League, and the council itself. The council meets regularly twice a year, specifically in March and September, and can summon emergency sessions if needed (Brown, p. 6).

General Secretariat

The General Secretariat is responsible for implementing the executive tasks and administrative responsibilities of the Arab League Council, serving as a permanent administrative body for the League. The General Secretariat consists of the Secretary-General and assistant secretaries at the rank of commissioned ministers. The Secretary-General holds the highest position within the General Secretariat. The Secretary-General is elected by the members with a two-thirds majority for a renewable term of five years. It is worth mentioning that the Secretary-General does not speak on behalf of any individual country alone and does not receive directives from them. (General Secretariat & the secretariat of the league Council., 2009, p. 43).

2.2 The effects of climate change in the Arab region

The Arab territory spans over 13 million square kilometers in Africa and Asia and is characterized by diverse climatic zones and natural ecosystems. A predominant feature of the Arab region is its arid or semi-arid climate, and the Great Desert represents most of North Africa, as it extends from Mauritania and Morocco to large areas of Libya and Egypt until it reaches eastern Sudan. This barren landscape has among the worst conditions worldwide, where The typical yearly rainfall is just over twenty-five millimeters, as well the temperature exceeds 50 degrees Celsius in summer and reaches the freezing level in winter. The peninsula of Arabia has a high-temperature subtropical environment with a maximum of 100 millimeters of annual precipitation. The summertime median temperature is between 40 and 50 degrees Celsius, while the wintertime ranges from 5 to 15 degrees Celsius. Although the climate is very arid in the region, it also contains a temperate climate in some Arab places (RICCAR, 2017, p. 9).

The Arab world predominantly functions as a consumer society rather than a manufacturing center. However, it is significantly susceptible to the adverse effects of climate change, similar to other nations worldwide. This necessitates a comprehensive understanding of the impact of these climatic changes across various sectors, which in turn influence the economic, political, social, and security aspects of life within the region. Indeed, the region prominently features five countries among the ten most vulnerable to the extreme effects of climate change. Additionally, it grapples with all four of the major water challenges currently afflicting the world. The region has recently borne the brunt of climatic upheavals, experiencing floods, droughts, hurricanes, and intense heat waves. Regrettably, there is a prevailing expectation that these shifts will intensify further in the years ahead (ESCWA, 2017, p. 9).

It is expected that the Arab region will witness an increase in surface temperatures, with projections ranging from 2 degrees Celsius to 5.5 degrees Celsius by the end of the twenty-first century. This increase in temperatures will be accompanied by an expected decrease in rainfall rates ranging from 0 to 20%. These anticipated changes could potentially shorten the duration of the winter season relatively (Medany, 2008, p. 128).

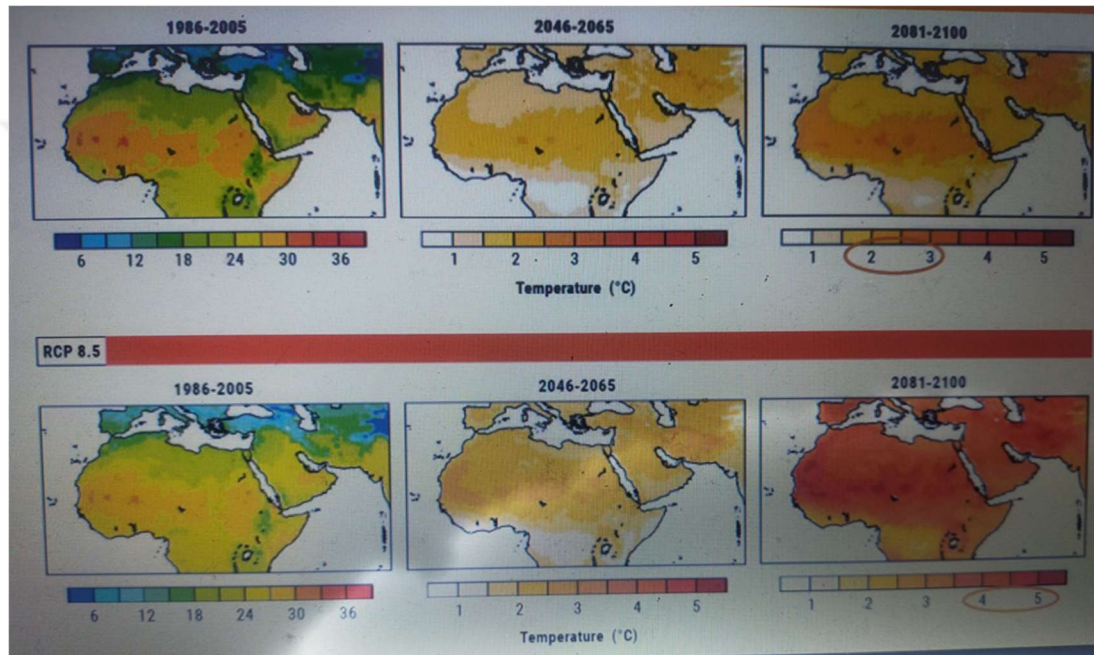


Figure 8: *Expected Temperatures in the Arab World by the Year 2100*

Source: (Majdalani, 2020).

The projections indicate that temperatures in the Arab region could rise by as much as five degrees Celsius by the end of the century, as shown in Figure 8, which represents the most extreme scenario. By mid-century, temperatures could increase by around two to three degrees Celsius. The areas that will experience the highest average temperatures are situated in the Great Desert (Sahara) (ESCWA, pp. 6-7).

2.2.1 The economic implications of climate change in the Arab region

The economic effects of climate change in the Arab region are diverse and can have significant implications for various sectors and aspects of the economy. Some of the key economic effects include:

Agricultural productivity:

Indeed, the agricultural sector in the Arab world, which includes countries in the Middle East and North Africa, is facing significant impacts due to climate change. This region is already among the most water-stressed areas globally, and climate change further exacerbates this challenge by increasing the frequency and severity of droughts. The scarcity of water for irrigation emerges as a critical consequence of climate change, significantly impacting agriculture in the Arab zone. Seventy-five percent of the cultivated areas in the Arab region rely on rainfall. By the middle of this century, a decrease in rainfall by 10 to 30 percent is expected. This will have a considerable impact on agricultural productivity and crop availability. Rain-fed agriculture might decrease to 50 percent by that time (Al-muhassaneh, 2016).

Due to the climate and environmental impacts on natural resources, Arab countries face the world's largest food deficit, which jeopardizes food security. The situation worsens due to the increase in the population of the Arab region. The Arab region heavily relies on imports to meet its food needs, recording the highest import dependency among all regions. Between 2005 and 2014, the gap between food production and consumption increased to 7.3%. In addition, climate change affects the distribution and spread of pests and diseases, which can have negative effects on crops and livestock due to rising temperatures and shifting rainfall patterns. This can lead to challenges in agricultural production and food security. Given this, the region's economy will be significantly affected. The agricultural sector is a vital component of the economies of many Arab countries, as it provides employment opportunities and generates revenue. With agriculture being impacted by climate change, it is expected that production and food supplies will become more challenging. This could lead to an increase in food prices in parallel with these changes (UNDP, 2018, p. 26).

It is expected that the population will experience a threefold increase from the present figure, reaching a total of 676.3 million by 2050. This increase in population exerts additional pressures on agricultural resources and requires proactive measures to ensure that food production meets the growing demands in the region (ESCWA, 2017, pp. 7-9). As a result of this population increase, urban expansion will occur on agricultural lands, leading to the expansion of desertification and drought. Indeed, the utilized agricultural area in the Arab region is approximately 5 percent, which is equivalent to 69.5 million hectares out of the total area of the region, which is 1,406 million hectares (Al-Fawwaz & Ahmed, 2016, p. 257). In 2007, the average agricultural land area per person in the Arab world was approximately 0.23 hectares, slightly lower compared to the global average of 0.24 hectares per person worldwide. Climate change contributes to heatwaves, storms, and floods that lead to the destruction of crops and infrastructure. This results in significant economic losses for farmers and the agricultural sector, as well as losses in fishing and the livestock industry. All of these challenges are exacerbated by the inefficiency of technological advancements and the lack of crop diversity (AFED, p. 64).

Table 5: *Some Arab nations impacted by climatic changes in the agricultural field*

Arab nations	Climate, and environmental changes
Sudan	Reduced rainfall and increased evaporation will reduce the percentage of Agriculture to 50%.
Iraq	The percentage of Agriculture has been reduced to 32% due to the influence of climate on the amount of water in the Tigris and Euphrates rivers.
Algeria	The production capacity of agriculture decreased to 26% due to droughts and floods.
Egypt	Due to the shortage of accessible water materials, the farming of a large number of crops will decrease, and rising sea levels will expose the Delta region to disasters.

Table 5: (Continued)

Arab nations	Climate, and environmental changes
Morocco	The agricultural productivity of land decreases by 30% beneath the coastline communities' higher sea levels.
Yemen	The share of agricultural production is reduced to 17% due to growing desertification.
The Arabian Gulf province	the increase in sea levels, the spread of salinity, and therefore harms both the tourism sector and oil.

Source: (Ali, 2010).

Water sector:

Climate change causes economic damage to both freshwater and saltwater sectors in the Arab region due to rising sea levels, in addition to the scarcity of water resources. The Arab region is home to many shallow coastal areas that are vulnerable to the threat of rising sea levels. Most of the region's coastlines are close to, below, or at sea level; therefore, any slight change in sea level has catastrophic effects. five percent of the lands in Egypt, Qatar, the United Arab Emirates, Kuwait, and Tunisia are located at an elevation of less than one meter above sea level. This puts them at risk of coastal destruction, infrastructure damage, and significant economic losses due to their vulnerability to sea-level rise and associated climate change impacts. In fact, if the sea level rises by 1, 3, and 5 meters, Egypt could potentially lose more than 12, 25, and 35 percent of its fertile agricultural lands respectively land (Al-Mebayedh, 2013, p. 3).

The increase in the occurrence of floods is one of the consequences of rising sea levels resulting from climate change in the Arab world. This phenomenon can lead to economic losses, including disruptions in traffic, damage to infrastructure, and threats to the livelihoods and lives of local populations. With the rising sea levels, saltwater can infiltrate inland waters, causing contamination of freshwater sources and agricultural lands. Indeed, these consequences can have serious implications for food safety in the region and access to clean drinking water (El Raey, 2010, pp. 18-19).

The increasing sea levels in the Arab region represent a danger to marine ecosystems, possibly resulting in the depletion of biodiversity, including the distinctive coral reef systems present in the Red Sea. The rising sea levels impede the penetration of light, a vital factor for the survival of these organisms that function as well-known tourist attractions. The sustainability and economic growth of the region are facing a serious threat due to the significant impact of climate change on sea level rise in the Arab world (El Raey, pp. 19-20).

Despite all the climate changes, all countries in the Arab region are facing a severe water scarcity crisis. Except for countries like Iraq, Syria, and Lebanon, the per capita water consumption in the Arab region reaches 1000 cubic meters per year (Al-Mebayedh, p. 2). This figure falls below the worldwide average per individual water allocation of 7000 cubic meters annually. There is a likelihood that this rate will decline to 460 cubic meters by 2025; In fact, the magnitude of the problem can be measured when realizing that half of the Arab region will fall under the water poverty line, despite the Arab region representing 10.2% of the world's surface, but only possessing 0.5% of the global water supplies (Ali, 2010).

The changing climate worsens the challenge of water scarcity, manifested in decreased rainfall across various Arab regions, ultimately causing reservoirs to deplete. This presents a critical concern, particularly for areas reliant on seasonal precipitation. Moreover, the heightened evaporation resulting from elevated temperatures compounds the issue by causing lakes and rivers to dry up (El-Fade & Bou-Zeid, 2001, pp. 5-6).

As temperatures continue to rise, there is a growing demand for water for domestic use, agriculture, and industry. This adds strain on already scarce water resources. Consequently, by 2050, the southern and eastern parts of the Mediterranean Sea region will experience a decline in groundwater by an estimated 30% to 70%. This will result in a reduction of water-dependent agriculture, highlighting the escalating pressure on limited water supplies (Ali, 2010).

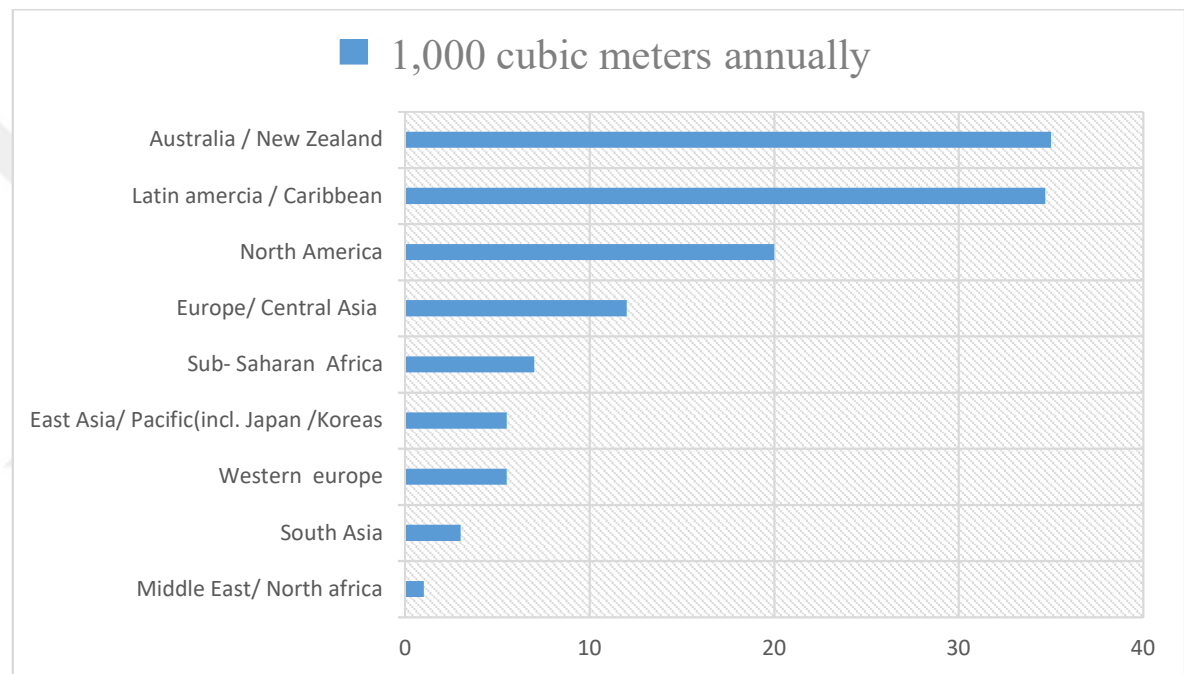


Figure 9: *Regional Distribution of the Yearly Water Consumption Per Person*

Source: (Larson, 2013, p. 15).

Tourism sector:

As of now, the tourism industry contributes approximately \$50 billion per year to the region's gross domestic product (GDP), constituting 3% over the next twenty years. Predictions indicate that tourism revenues will rise to 3.3% of the GDP. Furthermore, the tourism sector offers employment prospects that could potentially encompass up to fifteen percent of the workforce in seven Arab countries. The contribution of tourism revenues in the Arab world can vary across different locations. It can reach as high as 19%, such as in Lebanon, as a percentage of its GDP, or be as low as 0.2%, as is the case in Algeria, Kuwait,

and Qatar. Climate change is leading to the degradation of coral reefs, which are an integral part of the marine ecosystem in the Arab region and attract numerous tourists. This could certainly negatively impact the tourism sector (Verner, 2012, p. 3).

It is anticipated that water scarcity in the Arab region will worsen due to climate change, potentially affecting numerous water-dependent tourism activities such as boat rides and water sports. This could have negative consequences for beaches and coastal infrastructure. Furthermore, due to the increasing rates of desertification, the appeal of desert landscapes in the region might be reduced, leading to a decrease in their attractiveness to tourists. Indeed, coastal cities are facing notable economic repercussions as a consequence of environmental degradation, with implications for their GDP. The subsequent table provides a visual representation of the ensuing losses based on an analytical study encompassing Egypt, Algeria, Tunisia, and Morocco.

Table 6: *Economic losses of climate change for 4 Arab coastal cities from GDP*

Countries	Financial losses	Percentage of losses from GDP
Egypt	232-355 million dollars	It represents from the study area 5.0 to 7.5 % of the total GDP.
Tunisia	38-72 million dollars	Which is equivalent to 1.3 to 2.3 % .
Algeria	22-53 million dollars	Which is equivalent to 3 to 7 %.
Morocco	14-18 million dollars	Which is equivalent to 3.7-4.7%.

Source: (AFED, p. 127).

Emissions and energy sector

The energy industry in the Arab region, a major player in global oil and gas production, is facing substantial repercussions from climate change. The area is currently experiencing higher temperatures, increasingly frequent and severe heat waves, and a rising sea level. These factors collectively have a substantial impact on energy-related infrastructure, encompassing facilities for oil and gas extraction, power generation plants, and electrical transmission networks. The energy consumption in the region is dominated by the oil and gas sectors, accounting for almost 97.5%. Notably, the Arab region holds approximately 58% of the world's oil reserves and about 30% of the global gas reserves. These industries play a significant role, contributing to nearly 40% of the GDP of Arab countries (AFED, p. 15).

The energy industry in the Arab world is significantly impacted by climate change, especially given the rising demand for cooling during hot summer seasons. As a result, there is an increasing need for electricity, which heavily relies on fossil fuels. This contributes to the escalation of greenhouse gas emissions, thereby exacerbating the issue of climate change. Furthermore, when water supplies are scarce due to increased temperatures and unpredictable rainfall, hydroelectric power production is affected. However, thermal power plants require a significant amount of water for cooling. The facilities used in oil and gas production will be susceptible to damage due to rising sea levels. These modifications are likely to have a negative impact on the region's economy (Farajalla).

The Arab region is responsible for less than 5% of the global greenhouse gas emissions. Notably, Algeria, Saudi Arabia, the United Arab Emirates, and Egypt collectively contribute to 74% of emissions within the region. Moreover, the region is witnessing the world's third-highest growth rate in emissions due to fuel combustion (Elasha, 2010, p. 12).

It is essential to accelerate the shift towards a carbon-neutral economy, giving priority to the use of renewable energy sources such as solar and wind energy. While the Arab world possesses a considerable global share of solar energy potential, the utilization of renewable energy remains limited to approximately 7%. Within market economies in the region, only 1 to 2% of energy is derived from solar or wind sources. However, there has been a noteworthy development as the region has successfully installed 7.2 gigawatts of solar and wind energy, marking a significant rise from the mere 0.2 gigawatts recorded in 2008 (Khoday, 2022).

2.2.2 The political and security implications of climate change in the Arab region

Climate change can have significant political effects in the Arab region, influencing domestic and international dynamics in various ways. Below are some potential political and security impacts:

Resource scarcity and competition: Climate change-induced resource scarcity, such as water shortages, can intensify competition among countries and communities. This can lead to diplomatic tensions and conflicts over access to and control of essential resources. Water scarcity is leading to conflicts between communities and countries over access to water resources. this is an increasing issue in the area, where many countries share the water resources (ESCWA, 2021, p. 6).

Migration and Displacement: Climate-induced environmental changes can contribute to population displacement and migration, both within and across borders. This movement of people can strain host countries' resources and infrastructure, potentially leading to social and political challenges. Increased climate-related migration can lead to refugee and internally displaced person pressures in neighboring countries. This can strain relationships between countries, disrupt security, and require humanitarian interventions (Schaar, 2020, pp. 13-14).

Climate-induced environmental changes can contribute to population displacement and migration, both within and across borders. This movement of people can strain host countries' resources and infrastructure, potentially leading to social and political challenges. Climate change can influence diplomatic relations and international cooperation. Countries may collaborate to address common climate-related challenges or may experience tensions due to disagreements over mitigation strategies and responsibilities. Moreover, climate change can influence geopolitical dynamics, especially if access to strategic resources, such as waterways, is affected. Changes in environmental conditions can shift power dynamics among nations and alliances. The climate crises in the Arab world are escalating and evolving gradually, impacting both national and regional levels. This expansion encompasses various dimensions, and the effects cast their shadows on the stability and security in the region (Schaar, p. 17).

Extreme weather events in the Arab region, including rising sea levels and other climate impacts, can lead to humanitarian crises. Governments may face challenges in responding adequately, and the international community may be called upon to provide assistance. Governments' abilities to adapt to climate change and build resilience can impact their legitimacy and citizens' perception of their effectiveness. Effective adaptation measures can enhance political stability. Climate change mitigation and adaptation efforts may require significant financial investments and policy adjustments. Balancing these efforts with other political priorities can be challenging for governments (Wehrey, 2023, pp. 2-3). Addressing the political effects of climate change requires collaborative efforts among Arab countries, regional organizations, and the international community. Proactive policies, such as climate adaptation plans and conflict prevention strategies, can help mitigate potential political disruptions.

2.2.3 Social impacts of climate change in the Arab region

Climate change has significant social repercussions in the Arab region, impacting various aspects of society and people's livelihoods. Some of the key social effects of climate change in the Arab world include: The impacts of climate change on human health in the Arab world include an increase in heat-related illnesses. With rising temperatures, heatwaves become more frequent and intense, raising the risk of heatstroke. Vulnerable individuals, including the elderly, young children, and those with pre-existing heart, vascular, or respiratory diseases, as well as those living in inadequately cooled homes, and outdoor workers exposed to dangerously high temperatures, face particularly serious health conditions (RICCAR, 2017, p. 8).

Climate change also leads to the exacerbation of air pollution in the Arab world, which is a major concern for public health. Rising temperatures and changing weather patterns contribute to increased dust and sandstorms, which can lead to respiratory problems and worsen conditions like asthma. These storms carry fungal germs at high concentrations during the warmer months. Some studies conducted in Arab deserts, including the Riyadh region of Saudi Arabia, have confirmed the presence of over 32 types of these germs. The World Health Organization has indicated that approximately 1.1 billion people are exposed to unhealthy air in urban areas due to the presence of ozone and particulate matter in the atmosphere (AFED, pp. 91-93).

Water scarcity represents another major impact of climate change in the Arab world, resulting in significant health consequences. As water scarcity increases, individuals may be forced to consume contaminated water or lack adequate sanitation facilities, leading to the spread of waterborne diseases such as cholera, malaria, and schistosomiasis. Furthermore, climate change disrupts food availability and quality in the Arab world, significantly impacting human health. Changes in weather patterns and the occurrence of extreme events like floods can result in crop destruction and food shortages, thereby contributing to the worsening problem of malnutrition and hunger in the Arab region (Policy Working Paper, 2022, p. 4).

Vulnerable and marginalized communities often bear the brunt of climate impacts due to limited resources and inadequate infrastructure. Climate change can exacerbate existing social inequalities and widen the gap between different social groups. Climate change can also impact cultural heritage sites and practices that are tied to the environment, such as traditional farming methods, historical buildings, and indigenous knowledge. Climate change-related challenges can strain social cohesion and community resilience, especially in areas with limited resources. Communities may face internal divisions as they compete for dwindling resources.

2.3 The League of Arab State actions to address climate change based on global governance

Indeed, the severity of the risks stemming from climate change in the Arab world has been significantly emphasized. The scope of these changes encompasses a broad spectrum of sectors, ranging from the economy to politics, society, and security. This underscores the need for an efficient and well-coordinated response from both countries and regional entities. The League of Arab States is considered a crucial platform for collaboration and coordination among the region's countries in confronting the challenges of climate change. With its status as an official entity that brings together Arab nations, it has the potential to play a pivotal role. One of the goals of the LAS is to enhance the stability of its members and protect them from common risks, including the challenges of climate change. In collaboration with all member states, the League can adopt systems and policies aimed at mitigating the impacts of climate change and building resilience against it.

Global governance plays a crucial role in helping the LAS confront climate change due to the transnational nature of environmental challenges. Climate change requires coordinated efforts at both regional and international levels. The LAS has benefited from global governance mechanisms in several ways, whether through international initiatives, plans, and strategies or the reports and meetings conducted by its General Secretariat and affiliated ministries regarding climate issues. It can be said that the first step taken by the LAS concerned with the governance of dealing with climate change was in 2007 when the Arab Ministerial Declaration on Climate Change was issued under the supervision of the CAMRE, (Al-Sarihi & Luomi, p. 5). The methods of confrontation have been as follows:

2.3.1 Arab Strategies for Sustainable Development of Global Governance

The relationship between global governance, sustainable development, and climate resilience in the Arab region is significant and interconnected. These concepts are interwoven in efforts to address the challenges posed by climate change and enhance the region's ability to adapt and thrive in the face of its impacts. Global governance has provided the opportunity for the Arab League and its member states to participate in various initiatives related to sustainable development and climate change, both individually and collectively. These initiatives aim to address climate challenges, enhance cooperation, and promote the region's resilience. The Arab world has been making effective progress in achieving the Sustainable Development Goals since the 1992 Rio Summit, which is considered one of the official global governance initiatives to address climate change, as previously mentioned. During this time, 9 Arab countries have become active participants in pursuing the sustainable development goals. In 2002, the LAS announced its program for achieving sustainable development. By 2003, the majority of Arab countries had embraced strategies for sustainable development (Khordagui, 2004).

The Arab initiatives in sustainable development programs in 2002 aimed to combat desertification through global governance mechanisms in regional and non-regional collaboration with the United Nations. Additionally, these initiatives included strategies for managing the protection of coastal areas and preserving biodiversity. The measures undertaken by the LAS included efforts to enhance air quality in numerous cities across the Arab world through effective and sustainable waste and chemical management. Arab initiatives emphasized the importance of increasing afforestation to develop carbon reservoirs and transitioning to clean energy alternatives instead of relying on oil and gas. These initiatives will be implemented by relying on global governance to facilitate support for the capacities of Arab nations in executing environmental agreements, including the provision of financial and technical assistance by the international community (El Mallah, 2002).

The effectiveness of the global governance framework for sustainable development might lie in its emphasis on setting goals and fostering voluntary commitment, rather than relying primarily on legal enforcement and leadership (Shevenell & Bjola, 2014, p. 395). Therefore, since the year 2000, Arab countries have committed to achieving the Millennium Development Goals and have voluntarily prepared and submitted national reports on the progress made in their implementation to international organizations, such as the United Nations Economic and Social Council, which has coordinated with the Arab League on implementation mechanisms. Since that period and until 2013, four Arab reports were submitted to monitor the progress of the Millennium Development Goals in the implementation process. The findings from these reports regarding the measures taken to tackle climate change were inadequate, as the Arab development initiatives did not comprehensively address urgent environmental challenges, such as desertification and drought (ESCWA, 2016, p. 4).

With regard to this, the United Nations and countries around the world collectively took a step in 2015 by adopting a roadmap for sustainable development for 2030. The 2030 Agenda can be considered a continuation of the Rio path and the Millennium Development Plan (ESCWA, p. 1). It can be inferred that this plan has resulted from continuous global governance efforts, which have ensured effective collaboration between governmental and non-governmental entities. Not only governments but also civil society organizations and private companies have become increasingly willing to individually or collectively commit to the goals of sustainable development (Shevenell & Bjola, p. 395).

During its regular session held on July 27, 2016, the LAS integrated the Sustainable Development Agenda 2030 into the Arab Sustainable Development Plan 2015 to 2030. Therefore, the Technical Secretariat of the Arab Council of Ministers Responsible for the Environment at the LAS disseminated the Arab Strategic Framework for Sustainable Development to relevant Arab ministries, as well as regional and international organizations such as the United Nations and ESCWA, to gather feedback on the alignment of the Arab development strategy with the United Nations approved Sustainable Development Goals (LAS, 2016, pp. 10-11).

The Arab League has been actively pursuing the attainment of the objectives outlined in Item 13 of the 2030 Sustainable Development Strategy. This particular item emphasizes the necessity of addressing climate change. The LAS has entrusted various influential ministerial bodies with the responsibility of tackling this issue. These entities encompass the Arab Council of Ministers responsible for environmental affairs, the Arab Ministerial Water Council, the Arab Council of Ministers for Housing and Development, and the Arab Council of Ministers responsible for meteorology and climate affairs (General Secretariat, p. 67).

Global governance has indeed assisted the Arab Action Plan for Sustainable Development in combatting climate change by implementing proactive measures to mitigate potential consequences of the climate crisis and preparing for them. This has been achieved by enhancing the capabilities of national and regional institutions to manage disasters and address environmental challenges. The plan equally emphasizes reducing GHG and enhancing collaboration with international initiatives in this domain. Its fundamental objective is to safeguard the well-being and quality of life of Arab citizens through the protection of natural and human resources (Hassan, 2013). Based on that, the axes of the Sustainable Development Plan of the Arab League revolve around the following in relation to climate change in the region:

2.3.1.1 Water Governance in the Arab Region

During the 1990s, access to improved water and sanitation services in the Arab region increased, in alignment with the international community's adoption of the Millennium Development Goals (MDGs). Water and sanitation also gained high priority on the agendas of numerous Arab countries, recognized as crucial for development and human well-being. However, progress remains sluggish in many countries within the region. Between 1990 and 2008, approximately 73 million individuals in the Arab region obtained improved access to drinking water, and around 94 million gained access to improved sanitation facilities. However, by 2010, approximately 18 percent of the Arab population still lacked access to clean water, and about 24 percent lacked access to improved sanitation (UNDP, 2013, p. 49).

The Arab Water Security Strategy 2010-2030 was announced by the Arab Ministerial Water Council of the Arab League in 2010. This strategy comprises a series of vital initiatives aimed at addressing future water-related challenges, with the goal of achieving sustainable development across all Arab countries. The central aim of the Arab Strategic Framework for Sustainable Development, developed over several years, is to tackle the key obstacles that hinder progress towards sustainable development in Arab countries from 2015 to 2025 (UNDP, 2018, p. 32).

Water governance encompasses the range of political, social, economic, and administrative systems that are used to develop and manage water resources and the delivery of water services. The UNDP has emphasized that water governance includes the mechanisms, processes, and institutions that enable all stakeholders, including citizens and interest groups, to express their priorities, exercise legal rights, fulfill obligations, and resolve differences in a collaborative manner (UNDP, p. 72). The principles of global governance are evident in the objective of the Arab Water Security Strategy, which aims to enhance technology exchange and establish a comprehensive water resource management system while considering economic and investment aspects. The water security strategy also aimed to focus on the political dimension by advocating for the rights of Arab countries with their non-Arab neighbors who share water resources, given that approximately two-thirds of the water resources in the Arab region come from outside its borders (General Secretariat, pp. 2-3).

Adapting to climate change represents one of the means of international cooperation within the context of global governance, as previously explained. In this regard, the General Secretariat of the Arab League aimed to capitalize on adaptation opportunities in the water sector through collaboration with the German Agency for International Cooperation. A regional conference focusing on water, energy, and food was organized in 2017, and the strategies of this conference were funded by a German agency. The study resulting from this meeting has been concluded, where an institutional analysis of the interconnections between the water, energy, and food sectors was presented. These linkages extend both at the level of the Arab League and the level of individual countries, such as Jordan and Egypt. This serves

as a model illustrating how cooperation and adaptation to climate challenges are essential for achieving sustainable development goals (GeneralSecretary, 2017, p. 24).

2.3.1.2 Governing global energy in the Arab Region

Global energy governance in the Arab region refers to the coordination, policies, and collaborative efforts undertaken on an international level to address energy-related challenges, opportunities, and sustainability issues in the countries of the Middle East and North Africa (MENA) region. Given the significance of the Arab region's energy resources and their impact on global energy markets, stability, and geopolitics, effective global energy governance in this region is crucial for both regional and global energy security (Fritzsche, Zejli, & Tanzle, 2011, p. 4497). In the context of energy governance, the participation of the General Secretariat of the LAS in the events of the Berlin Dialogue for Sustainable and Renewable Energy Transition in March 2017, as well as the accompanying meetings with the German Agency for International Cooperation, signifies dedicated efforts to enhance the transition towards sustainable and renewable energy sources. This participation aims to strengthen cooperation between Arab countries and Germany in order to promote sustainability in the energy sector (GeneralSecretary, p. 29).

One of the main reasons for climate change is the volume of GHG resulting from the use of fossil fuels, which are utilized in various sectors and activities. The Arab League has proactively undertaken measures to create essential regulations aimed at motivating both the public and private sectors to invest in different types of renewable energy sources (ArabLeague, 2018, p. 19). Global energy governance involves coordinating the responsible management and development of the Arab region's vast energy resources, including oil and natural gas reserves. International cooperation can help ensure sustainable extraction practices and efficient resource utilization. The Arab region's energy resources often intersect with geopolitical interests and conflicts. Global energy governance aims to promote political stability and conflict resolution to safeguard the production, transportation, and distribution of energy resources. Enhancing global energy governance will require addressing multiple interconnected domains, encompassing areas that include issues dealt with, such as economic development policies and foreign aid programs, which shape energy policies and investments (Florini & Sovacool, 2011, p. 58).

Collaborative efforts enable the transfer of advanced energy technologies and innovations to the Arab region. This can help improve energy efficiency, diversify energy sources, and promote sustainable practices. Global energy governance supports investment in energy infrastructure and projects in the Arab region. This includes attracting foreign direct investment and financing for energy development, which contributes to economic growth and energy security (Fritzsche, Zejli, & Tanzle, 2011, p. 4498).

In pursuit of sustainable development in the energy sector and to mitigate the impacts of climate change in the Middle East and North Africa region, the Arab League has shifted its focus from conventional energy sources to embracing renewable energy technologies. As a result, the league launched an Arab Strategic Initiative for the Development of Renewable Energy Applications (2010-2030) during the proceedings of the Third Arab Summit on Economic and Social Development in January 2013. The Arab states have demonstrated strong political consensus and reached an agreement on long-term regional objectives for renewable energy technology. The program sets a target for Arab countries to develop approximately 75 gigawatts of installed renewable energy capacity by 2030 (IRENA, 2014, p. 14).

The Energy Department of the League of Arab States introduced the Arab Renewable Energy Framework to enhance the effectiveness of its program. Member states can adopt this framework as a guiding roadmap, assisting them in developing national action plans that align with the long- and medium-term goals of promoting renewable energy. This strategy will demand significant organizational and political efforts, along with adequate funding and technical support, for its successful execution. Above all, effective regional cooperation at all levels is crucial to avoid role and effort overlap. Therefore, collaboration has been established between the International Renewable Energy Agency (IRENA), the Arab League, and the Regional Center for Renewable Energy and Energy Efficiency (RCREEE) to enhance the achievement of the Arab Renewable Energy Planning (IRENA, pp. 14-15).

2.3.2 Global governance strategies for environmental risk management in the Arab region

As previously explained, the League of Arab States and its member countries are working to address climate change by adopting the Sustainable Development Agenda. This agenda relies on aspects of global governance and good governance in its implementation. These issues are among the most important topics for the League, with its meetings consistently focusing on monitoring the progress of achieving sustainable development. In addition, the LAS has adopted a range of other global initiatives and strategies to address climate and environmental challenges in the region. These initiatives rely on collaboration with international organizations and international partners to exchange knowledge and expertise. Some of these initiatives include:

2.3.2.1 Arab Climate Resilience Initiative (ACRI):

The Arab League has launched the Arab Climate Change Adaptation Initiative (ACRI) in collaboration with the UNDP Regional Bureau for Arab States as a regional effort to assist Arab countries in adapting to the impacts of climate change, and it was issued in 7 thematic research papers in 2010-2012 (Al-Sarihi & Luomi, p. 8). The main objective of the initiative is to provide technical assistance that enhances institutional capacities at both the regional and national levels. It aims to offer technical support in policy formulation and review, with a focus on the importance of efficiency in project preparation and implementation in related fields such as climate adaptation and energy.

The main objective is to ensure the availability of capacities and expertise across various sectors in managing the risks of climate change. This requires enhancing innovation, increasing skills, and providing the necessary resources for development in this field, both at the national and regional levels. Additionally, the initiative aims to develop global networks of information, expertise, and knowledge that assist in its implementation process. Indeed, building resilience, reducing vulnerability, and enhancing adaptive capacities are key objectives of global governance in addressing climate change. These goals are crucial aspects for achieving the sustainability of communities and environments amidst the accelerating climate changes. In coordination with global governance, developing countries can link their climate adaptation strategies with their national development plans. This ensures the

integration of efforts and achieves maximum benefit from investments and efforts directed towards climate change adaptation. This, in turn, enhances the environmental and economic sustainability of nations (Erian, 2018, p. 54).

ACRI has been actively working to pave the way for the implementation of the Paris Agreement on climate change, focusing on increasing knowledge and engaging political decision-makers in the member states of the Arab League, as well as climate negotiators across the region. Serious efforts have been dedicated to finding solutions for reducing carbon emissions through collaboration and partnerships with regional institutions such as the Islamic Development Bank. The initiative has provided small financial grants to the Green Climate Fund (GCF) through four countries: Djibouti, Egypt, Somalia, and Sudan. This step was taken to demonstrate the commitment of these countries and their desire to enhance their capacity to adapt to climate change challenges (UNDP, p. 32).

2.3.2.2 The Arab Strategy to reduce environmental risks and Disasters

On May 24, 2009, the CAMRE issued the Arab Strategy for Disaster Risk Reduction, which was designed with the goal of fostering closer collaboration and coordination among Arab nations in order to tackle disaster risks and minimize their adverse effects. This strategy can be characterized by the following key aspects: Enhancing the capabilities of Arab countries in addressing disaster risks through promoting scientific research and knowledge transfer and sharing expertise among countries. Implementing the strategy by providing institutional support and coordination at the local, regional, and national levels. Encouraging the strategy to promote accountability in risk management, whether at the international or local level. This reflects the concept of global governance and the necessity for comprehensive cooperation. Those implementing the strategy emphasize the use of various sectoral approaches to mitigate the risks facing the region by the year 2020. Additionally, it has been emphasized that this strategy aligns with the international efforts outlined in the Hyogo Framework for Action or the Millennium Development Goals (CAMRE, 2010, p. 4).

The concept of disaster governance is manifested in the United Nations International Strategy for Disaster Reduction (UNISDR), specifically within the framework of the Hyogo Framework for Action (HFA) for Disaster Risk Reduction (DRR). Within this framework, there is a crucial emphasis on *"making disaster risk reduction a national and local priority, supported by a strong institutional foundation for implementation"* (Lassa, 2013). The Hyogo Framework for Action 2005-2015 is an international agreement that was approved by 168 countries. It includes three strategies for reducing disaster risks. These strategies focus on disaster prevention and mitigating their effects by integrating them into policies and sustainable development planning at all levels. These plans and programs are implemented by enhancing the capacity of institutions to address disaster risks through strengthening local mechanisms. Additionally, they include preparedness for emergencies and rapid response programs for rebuilding communities after disasters (UNISDR, 2013, pp. 2-3).

The LAS has developed a procedure for disaster risk reduction in its agenda along with other specialized Arab organizations like the Arab Academy for Science, Technology and Maritime Transport, the Arab Center for the Studies of Dry Areas and Arid Lands, and others, so the league established the Regional Center for Disaster Risk Reduction for training and research in Cairo to enhance the potential of Arab states in this regard (CAMRE, p. 7). In order to align with global advancements, the LAS embraced the revised Sendai Framework for Disaster Risk Reduction 2015-2030 during the third Arab Conference on Disaster Risk Reduction held in Doha in 2017, it was approved at the meeting held in Tunis 2018 (UNISDR, 2018).

The LAS has reaffirmed its intended goals from the 2030 Disaster Reduction Strategy, which encompass strengthening governments for disaster mitigation, enhancing the capacity to address disaster risks through investing in risk reduction, and preparedness, and adopting reconstruction and recovery programs (UNISDR, 2018, p. 5). Overall, the matter that prompted the League to join the Disaster Risk Reduction Strategies was due to the damage suffered by the Arab countries from storms, floods, and earthquakes that have caused losses in lives and the economy. Over the past 35 years, the Arab region has been exposed to 507 disasters, resulting in seventy million people affected and 3 million displaced, and the

number of those killed reached 206,390 (UNISDR, p. 12). As will be explained in the following table about the losses of some Arab countries as a result of natural disasters:

Table 7: *Disaster Risk Damages for some Arab Countries*

Country	Year	Disaster	Dollar damage (M \$)	Relative to GDP
Algeria	1980	Earthquake	5,200	12.3%
Comoros	1983	Storm	23	12.0%
Jordan	1992	Extreme temperature	400	7.4%
Egypt		Earthquake		3.2%
Yemen	1996	Earthquake	1,200	20.7%
Morocco	1999	Drought	900	2.2%
Algeria	2003	Earthquake	5,000	7.4%
Oman	2007	Storm	3,900	9.3%

Source: (UNIDRR, 2021, p. 35).

CHAPTER 3: GLOBAL CLIMATE GOVERNANCE COOPERATION BETWEEN THE LAS AND INTERNATIONAL ACTORS IN THE ARAB REGION

3.1 Multilateral cooperation between the LAS and the United Nations

The core components of global governance, including consensus, rules, and the participation of numerous national governments, necessitate a form of interaction that is legally binding. Multilateralism serves as a means to enable and maintain a global order founded on established rules. The practice of global governance and the principles of multilateralism can be effective on various scales, such as global, regional, subregional, bilateral, and trilateral levels. Multilateralism also fosters innovative approaches to fostering connectivity and cooperation between nations and regions, making it easier to engage with new partners (Prakash, 2019).

The LAS has actively participated in UN-led multilateral initiatives aimed at addressing climate change and its impacts throughout the Arab region. Through this collaboration, the region's capacity to mitigate the effects of climate change will be strengthened, with a priority placed on sustainable development. The Arab League actively engages in global and local efforts to combat climate change by organizing actions through various organizations and establishing a framework for regional projects. Ministries, authorities, and environmental councils in Arab countries, which are relatively new to decision-making processes and lack institutional experience in environmental and climate matters, aspire to play a central role in tackling the region's challenges. They aim to achieve this by actively participating in numerous international agreements related to climate affairs (Abdel Hamid, 2009, p. 55).

The entire Arab region is actively engaged in the UNFCCC as a non-Annex I Party. The Arab League plays a significant role as one of the primary discussion groups within the UNFCCC. The League regularly participates in the COP meetings and convenes pre-COP meetings in Cairo to deliberate on its perspectives, and goals related to climate change, and to formulate strategies. Saudi Arabia takes the lead in representing the member states of the LAS during these conferences (Hashem, Yassin, & Al Leil, 2022, p. 20).

The LAS's position on the UNFCCC has emphasized the necessity for financial and technological support to be provided by industrialized countries to developing nations. This support assists developing countries in transitioning to a low-carbon economy and enhancing their capacity to adapt to the impacts of climate change. This support is a result of the historical responsibility of industrialized countries for GHG. Furthermore, the LAS has called for increased attention to be given to the specific effects of climate change on the Arab region. The region faces distinctive challenges in this regard. Similarly, the Arab Declaration issued during the 2001 World Summit for Sustainable Development emphasized the concept of common but differentiated responsibilities in providing significant financial support to Arab countries through the United Nations and other international organizations. In pursuit of environmental protection, Arab nations have taken coordinated steps to address environmental degradation throughout the area (Olawuyi, 2022, p. 93).

The UNFCCC has been joined by 18 Arab states and will go into effect 90 days after this state deposits its instrument of ratification, acceptance, approval, or accession as in the following table:

Table 8: *Arab States Signatories to the UNFCCC*

Country	Signed	Ratification,		Entry into Force
Bahrain	08. 06. 1992	28. 12. 1994 (R)		28. 03. 1995
Sudan	09. 06. 1992	19. 11. 1993 (R)		21. 03. 1994
Egypt	09. 06. 1992	05. 12. 1994 (R)		05. 03. 1995
Jordan	11. 06. 1992	28. 05. 1993 (R)		21. 03. 1994
Oman	11. 06. 1992	08. 02. 1995 (R)		09. 05. 1995
Mauritania	12. 06. 1992	20. 01. 1994 (R)		20. 04. 1994
Lebanon	12. 06. 1992	15. 12. 1994 (R)		15. 03. 1995
Kuwait	.....	28. 12. 1994 (Ac)		28. 03. 1995
Djibouti	12. 06. 1992	27. 08. 1995 (R)		25. 11. 1995
Yemen	12. 06. 1992	21. 02. 1996 (R)		21. 05. 1996
Algeria	13. 06. 1992	09. 06. 1993 (R)		21. 03. 1994

Table 8: (Continued)

Country	Signed	Ratification,		Entry into Force
Tunisia	13. 06. 1992	15. 07. 1993 (R)		21. 03. 1994
Saudi Arabia	.....	28. 12. 1994 (Ac)		28. 03. 1995
Morocco	13. 06. 1992	28. 12. 1995 (R)		27. 03. 1996
United Arab Emirates	.....	29. 12. 1995 (Ac)		28. 03. 1996
Syrian Arab	.....	04. 01. 1996 (Ac)		03. 04. 1996
Qatar	-----	18. 04.1996 (Ac)		17. 07. 1996
Libya	29. 06. 1992	14. 06. 1999 (R)		12. 09. 1999

Source: (UNFCCC, 2005, pp. 2-6).

The Kyoto Protocol received significant support from the Arab League, as it established binding targets for industrialized countries to reduce GHG. Arab countries recognized the importance of these emissions reductions in preserving the environment and combating climate change. It is worth noting that emissions reductions can have an impact on economic growth and development in developing countries, including those in the Arab region. 12 of the countries of the league have ratified the protocol with Egypt, as shown in chronological order in the following table (Abdel Gelil, p. 5).

Table 9: *List of Arab States that Have Signed the Kyoto Protocol in 2005*

States	Signed	Ratifying	Go into force
Egypt)	15/ 03/ 1999	12- 01- 2005 (R)	12- 04- 2005
Morocco	.....	25- 01- 2002 (Ac)	16- 02- 2005
Djibouti	-----	12- 03- 2002 (Ac)	16- 02- 2005
Jordan	.....	17- 01- 2003 (Ac)	16- 02- 2005
Tunisia	.....	22- 01- 2003 (Ac)	16- 02- 2005
Yemen	.....	15- 09- 2004 (Ac)	16- 02- 2005
Qatar	.....	11- 01- 2005 (Ac)	11- 04- 2005
Oman	.....	19- 01- 2005 (Ac)	19- 04- 2005
United Arab Emirates	-----	26- 01- 2005 (Ac)	26- 04- 2005
Saudi Arabia	.....	31- 01- 2005	01- 01- 2005
Algeria	.....	16- 02- 2005 (Ac)	17- 05- 2005
Kuwait	.....	11- 03- 2005 (Ac)	09- 06- 2005

Source: (UNFCCC, pp. 10-13).

Additionally, the LAS has been a consistent supporter of the Paris Agreement on climate change ever since it was enacted in 2015. The LAS has emphasized the significance of the Paris Agreement in tackling the implications of climate change and has called for its full implementation by all nations. The Arab League has maintained a consistent stance towards developing countries and transitioning towards a low-carbon economy. It has also emphasized the importance of striking a balance between climate action and the support provided, taking into consideration the national circumstances of developing countries. The League highlighted the significance of transitioning to alternative energy sources and increasing energy efficiency by boosting investments in renewable energy sources, such as solar and wind energy (Hashem, Yassin, & Al Leil, p. 21).

In this regard, Arab countries have been actively engaged and cooperated with the United Nations, working on submitting their Nationally Determined Contributions (NDCs) under the Paris Agreement. NDCs are a crucial component of the Paris Agreement. NDCs specify the efforts and measures that each country will undertake to reduce greenhouse gas emissions and protect against the harmful effects of climate change. Each country defines its NDCs based on its own circumstances, capabilities, and national priorities. In addition to mitigation, NDCs may also include adaptation measures, highlighting the actions that the country will take (Amponin & Evans, 2016, pp. 1-3).

The stance of Arab countries towards NDCs has been clear, as they have agreed on the necessity for each country to submit national contributions for both climate adaptation and mitigation. Countries listed in Annex I should bear greater responsibility. The League requested its members to submit reports before the COP 26 conference, and 16 countries have provided their updated and specific contributions. These countries are Jordan, the United Arab Emirates, Bahrain, Tunisia, Comoros, Saudi Arabia, Sudan, Somalia, Oman, Palestine, Qatar, Kuwait, Lebanon, Morocco, Mauritania, and Yemen (Hashem, Yassin, & Al Leil, p. 21). In September 2021, several Arab countries submitted their NDCs to the Paris Agreement, such as Tunisia, which promised to cut the production of greenhouse gases by 41% by 2030 compared to the 2010 scenario of business as usual. NDCs focus on renewable energy development, energy efficiency improvement, sustainable transport, and adaptation actions (UNDP, 2020).

Morocco has set a target of cutting the release of GHGs by 42% by 2030 in comparison with. NDCs focus on promoting renewable energy, energy efficiency, sustainable agriculture, and adaptation measures. Morocco plans to allocate at least 15% of its budget to achieve adaptation programs in the most vulnerable sector (UNDP, 2020).

The UAE aims to drastically decrease its emissions by about 23.5% by 2030 from what they are now. The UAE's NDC includes increasing the country's clean energy targets and working to improve its efficiency, an updated version has raised its NDC to 31% (Enerdata, 2022). Egypt's NDC includes a target of reducing its emissions to 15% by 2030 compared to the current time. It aims to achieve this through various measures, such as expanding renewable power, improving energy efficiency, and strengthening waste management practices. The implementation of NDCs in Egypt will strengthen the compatibility of its SDS with the Paris Agreement of 2015 (Fobissie & Shalaby, 2021, p. 16). This was just a mention of some of the NDCs of some Arab countries, but the following table shows the extent to which the Arab countries committed on the date of sending the special reports of each country to the NDCs.

Table 10: Reports of the League of Arab States to the United Nations on NDCs

Country	The date of the first NDC reports	Updated Date for NDC reports
Somalia	22- 04- 2016	31-07- 2021
Yemen	22- 04- 2016	31-0 7- 2021
Morocco	19- 9- 2016	22- 06- 2021
UAE	21- 9- 2016	22- 04- 2021
Algeria	20- 10- 2016	-----
Saudi Arabia	03- 11- 2016	23- 10- 2021
Jordan	04- 11- 2016	12- 10- 2016
Djibouti	11- 11- 2016	-----
Comoros	23- 11- 2016	5- 11- 2021
Bahrain	30- 12- 2016	18- 10- 2021
Tunisia	10- 02- 2017	10- 10- 2021
Mauritania	27- 02- 2017	12- 10- 2017
Qatar	23- 06- 2017	24- 8- 2021
Egypt	29- 06- 2017	-----
Sudan	02- 08- 2017	31- 05- 2021

Table 10: (Continued)

Country	The date of the first NDC reports	Updated Date for NDC reports
Palestine	21- 08- 2017	10- 10- 2021
Kuwait	23- 04- 2018	12- 10- 2021
Syria	30- 11- 2018	-----
Oman	22- 05- 2019	29- 07- 2021
Lebanon	05- 02- 2020	16- 03- 2021
Iraq	15- 10- 2021	-----
Libya	-----	-----

Source: (Hashem, Yassin, & Al Leil, p. 49).

One of the areas of cooperation between the UN and the LAS has been the establishment of the Economic and Social Commission for Western Asia (ESCWA), which was founded by a decision of the United Nations Economic and Social Council. Initially, ESCWA's headquarters were in Beirut in 1973. ESCWA is one of the five regional commissions of the UN, and its membership includes 20 Arab countries (Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Somalia, Syrian Arab Republic, Tunisia, United Arab Emirates, and Yemen) (ESCWA, n.d.).

ESCWA plays a prominent role in promoting regional cooperation on various social and economic issues, including climate change. In order to address climate concerns in the region, it closely collaborates with the LAST and the UN system by enhancing the capabilities of the LAS and its members to address climate change. This includes providing technical assistance, conducting research, organizing training programs, and facilitating knowledge exchange on climate-related issues. It paves the way for dialogue among member states, enhances information sharing, and supports the development of regional frameworks to tackle climate challenges (Al-Sarihi & Luomi, p. 5).

ESCWA assists member states in the LAS in collecting and analyzing climate-related data to guide decision-makers and supports countries in preparing reports on GHG and vulnerability assessments. It also provides additional climate-related data required under international frameworks such as the UNFCCC. ESCWA and the LAS cooperate in advocacy efforts to raise climate awareness in the Arab world and encourage countries to fulfill their commitments under international agreements. They call for increased support and resources dedicated to environmental issues. Based on these efforts, ESCWA established the Arab Center for Climate Change Policies in 2018. The center's role is to provide technical assistance and capacity development offered by ESCWA to Arab countries in the areas of climate change assessment, adaptation, mitigation, and negotiations. This initiative was launched in response to the requests of league members for assistance (UNESCWA, 2018).

ESCWA endeavors to provide technical support to Arab climate negotiators through the Arab Center for Climate Change Policies to facilitate regional cooperation and dialogue among member countries. Conferences, seminars, and technical meetings are organized to exchange knowledge, experiences, and best practices. Among these measures are workshops in which the LAS collaborates with the UNDP and UNESCO. The discussions revolve around addressing negotiation elements within the framework of the UNFCCC and the Paris Agreement as well. The governance structure of the center consists of a technical advisory group and an advisory partnerships group, assisted by the ESCWA-based secretariat, which covers topics such as scientific knowledge to enrich the understanding of climate change impacts, response measures, financing, and technology (UNESCWA).

Furthermore, there is another cooperation on climate change, the environment, and sustainable development between the United Nations and the Arab League through the United Nations Development Program through the Bureau for the Arab States of the UNDP. It is a regional office that operates under the UNDP's global framework. Its primary focus is to support Arab countries in achieving sustainable development, addressing development challenges, and promoting regional cooperation. The UNDP RBAS works closely with governments, civil society organizations, and other regional partners to implement development programs and initiatives. The UNDP RBAS is based in New York. There are 17 regional offices spread across the Arab countries, and 18 are located in the Occupied Palestinian Territories (UNDP, n.d.).

The UNDP RBAS supports Arab countries in global governance by strengthening governance institutions, promoting transparency and accountability, and enhancing the application of legislation. This includes initiatives to improve public administration, promote human rights, intensify access to justice, and combat corruption. The UNDP RBAS promotes inclusive economic growth and sustainable development in the Arab region. It supports countries in formulating and implementing policies and strategies that foster job creation, reduce poverty and inequality, and promote sustainable livelihoods. The UNDP RBAS works on environmental challenges in the Arab region. It supports countries in developing climate change adaptation and mitigation strategies, promoting renewable energy. The UNDP - RBAS office is working to provide disaster relief assistance (Al-Sarihi & Luomi, p. 7).

The UNDP supports climate change adaptation projects in the Arab region, with approximately 42 million people in six countries benefiting from them. In parallel, the UNDP has worked on implementing several projects to develop the capacity to reduce the impact of natural and climate disasters in the Arab region (UNDP, p. 37). For example, UNDP assistance in Iraq has been concentrated on the creation of a National Risk Management Council and the growth of an alert capability for early warning of flood hazards associated with the failure of the Mosul Dam. The project encourages collaboration between national actors and disaster response groups to speed up evacuation and prompt action, which helps raise public consciousness of the risks and encourages residents to take precautions to safeguard exposed cities and their residents. In Lebanon, the UNDP has established a disaster

risk management unit in the Prime Minister's Bureau. It has contributed to the establishment of a national emergency center at the level of sectoral emergency response centers aimed at conducting sectoral and municipality risk evaluations for vital facilities like water and electrical power (UNDP, p. 38).

One of the important collaborative programs of the UNDP is the regional initiative to assess the impact of climate change on water resources and socioeconomic vulnerability in the Arab region (RICCAR). RICCAR is a collaborative effort among the LAS, UNDP, and other regional and international partners. It attempts to evaluate and address how climate change may affect the region of the Arab world's socioeconomic vulnerabilities and access to water reserves. The initiative focuses on understanding the potential risks, developing adaptation strategies, and enhancing resiliency. climate change might influence the availability of water in the Arab part. This includes analyzing hydrological data and climate projections and studying the potential consequences for water availability, quality, and ecosystems (UNESCWA, 2009).

RICCAR evaluates the socioeconomic vulnerabilities associated with climate change impacts on water resources. It assesses how these impacts affect communities, livelihoods, economic sectors, and overall development. It supports the development of policies, strategies, and action plans to address the challenges posed by climate change on water resources and socioeconomic vulnerability. It provides recommendations for policymakers to integrate climate adaptation measures into national and regional development plans. It promotes capacity-building initiatives for managing the detrimental impacts of climate change on waterways (UNESCWA., n.d.).

3.2 Regional and Subregional Cooperation with the LAS

In the Arab area, some regional bodies participate with the Arab League in providing assistance to deal with climate change, and this regional and international cooperation is the design of global governance. Therefore, the Gulf Cooperation Council (GCC), one of the foremost significant regional organizations in the area, is made up of six of the wealthiest Arab nations, it is among the nations that emit carbon dioxide as a result of its reliance on the fossil fuel industry.

Regarding greenhouse gas emissions in the Arabian Gulf region, it ranks first in terms of the quantity of fossil fuels burned for energy generation, transportation, oil-based production, and refining processes. The amount of carbon dioxide emissions reached 3.08%, which is the highest amount ever recorded globally, and Saudi Arabia's share of these emissions was 1.8% in 2020. GCC is an independent regional organization. Despite the fact that its member states are also part of the League of Arab States and share some common goals and interests with other Arab countries, the GCC has autonomy in determining its priorities and areas of interest. Therefore, the level of direct cooperation between the Arab League and the GCC countries may vary in areas such as climate change according to their national and regional needs and priorities (Hereher, 2022, pp. 1-2).

The urgent need to address climate change and its impacts on the region has been recognized by both the GCC and the LAS. In order to reduce GHG, promote renewable energy, and exchange knowledge, there is a commitment to cooperation between the two organizations. The GCC is indeed one of the most influential entities within the LAS in the global energy sector. Initially, GCC countries were not highly interested in climate issues, but they gradually began implementing strategies to reduce GHG emissions. Over time, the governments of the GCC and their populations have come to realize the importance of prioritizing climate change issues on both the social and economic levels (Alharbi & Csala, 2021, pp. 5-6).

GCC has established renewable energy access and mitigation programs for the initial time as a pledge to the people to achieve climate change and environmental sustainability. For this to be implemented, it is necessary to increase the diversification of the economy and look for investments that will bring financial results beyond the conventional energy in the region, also because the majority of the region's countries are expected to be harmed by climate change on their only resource is oil, while solar energy and existing energy will be more useful. The goal pursued by the Gulf countries with regional cooperation such as the Arab League or international cooperation such as their participation in the United Nations FCCC or the Kyoto Agreement is to reduce emissions of CO₂ (Alharbi & Csala, p. 6).

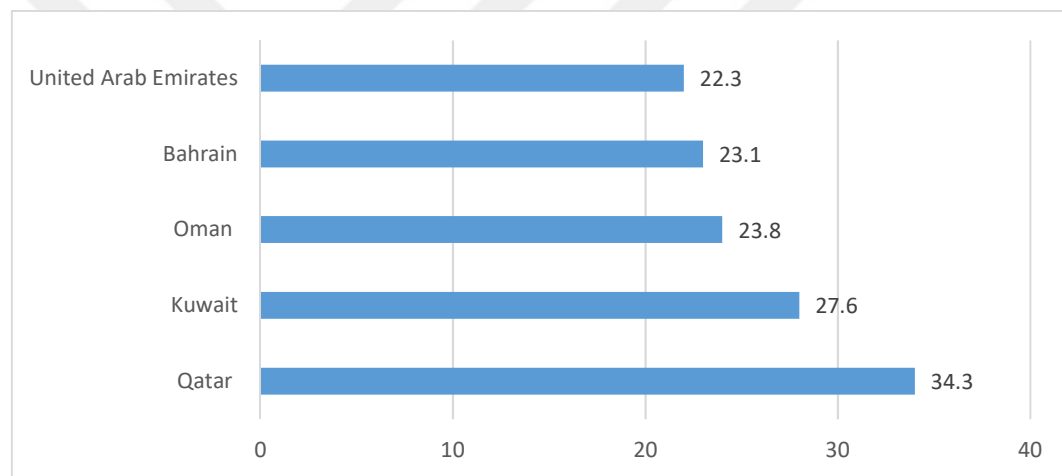


Figure 10: *Per Person Emissions in the Arabian Gulf Space by 2030*

Source: (Whiteaker, 2022).

There has always been a debate in the GCC countries regarding an individual's share of emissions in the Arab world in general or in the Gulf states in particular. Even though the percentage of these emissions is significant, it should not be compared to the share of industrialized countries that consume more energy and have a massive economy. The GCC countries, under the umbrella of the Arab League, plan to reduce their emissions by up to thirty percent of the share of nationally determined contributions by 2030, which is greater than the percentage of European countries planning to reduce emissions and is the stronghold of the industrial revolution in the world (Whiteaker).

The League of Arab States' objectives and methods of operation overlap with those of a few other regional organizations in the area, which include both Arab and non-Arab nations. For instance, in order to safeguard and preserve the marine environment in the Gulf region, the Regional Organization for the Protection of the Marine Environment (ROPME) was founded in 1979. ROPME members include the six Gulf countries. While primarily focused on the Gulf region, ROPME has collaborated with several regional and international foundations, including the League of Arab States, on environmental issues. ROPME with the LAS share a common interest in Concerning climate change and its impacts on the marine environment (UN, n.d.).

Cooperation between ROPME and the LAS on climate change primarily occurs through joint initiatives, meetings, and collaboration on policy development. Both organizations work together to raise awareness, promote sustainable practices, and develop strategies for minimizing harm and adapting. Additionally, in order to bolster its efforts to safeguard the marine environment and combat climate change, ROPME collaborates with additional international groups like the Global Environment Facility, the Intergovernmental Oceanographic Commission, with the UN Environment Program. ROPME has released several special documents for the geographic concern for marine ecosystems, such as a treaty on local collaboration in preventing pollution via oil and other harmful substances in emergencies in 1978 and a protocol on the control of cross-border maritime movements and removal of hazardous materials and other contaminants in 1998. Moreover, a draft procedure on the preservation of biologic variety alongside the setting up of a marine sanctuary was released in 1998 (UNEP, n.d.).

ROPME has indeed produced regional reports, and according to these reports, coral reefs, salt marshes, and seagrass beds in the region have suffered from the effects of climate warming on the marine environment. Fishing communities in the region, which rely on these resources for their food needs, will also be impacted by climate change. The increasing salinity of the seas will be driven by rising sea temperatures, leading to an increase in harmful algal blooms, which, in turn, can hinder desalination plants in the area (CEFAS, n.d.).

Therefore, one of the non-regional collaborations related to the Arab world and developing countries is the Group of 77 (G-77), which is an alliance of developing nations. It was formed in 1964 to enhance their common economic interests and increase their negotiating power on a wide range of global issues, including climate change (Sauvant, 2014). The G-77 and the LAS have closely collaborated in combating climate change and understanding the challenges and vulnerabilities faced by developing countries, including Arab nations, in dealing with the global environmental transformation. These efforts encompass cooperation within the framework of international climate change negotiations, including their participation in the UNFCCC and COP meetings.

The G-77 and the League of Arab States often harmonize their stances across global fora to defend the interests of developing countries, including Arab countries. They emphasize the need to provide funding especially technological assistance from developed countries to assist poor nations in reducing their greenhouse gas emissions, preparing for the negative implications of climate change, and transition to sustainable development paths. Furthermore, the G-77 and the Arab League are collaborating on capacity-building initiatives, knowledge sharing, and the promotion of sustainable practices to address climate change. They work together to raise awareness, build resilience, and strengthen cooperation among member states in the implementation of policies and measures related to climate change. However, there is a difference within the G-77 members in two directions regarding the region, one on how to balance fossil fuels and renewable energy sources, and the other on the topic of nuclear energy as an energy source (Vihma, Mulugetta, & Vinkhuyzen, 2011, pp. 322-323).

One of the subregional collaborations for the governance of the climate is the cooperation of the League of Arab States with the European Union (EU) on some climate issues due to the EU's experience in this field. The EU and the LAS have been working together on climate change, recognizing the global scope of the problem and the necessity for collaborative action. Various initiatives and channels are used to carry out climate change engagement between them. For example, the Barcelona process or the Euro-Mediterranean partnership, which aims to increase political, economic, and social cooperation between the EU members and The Mediterranean location, is a joint effort between the EU and the Arab

countries. The relationship includes conversations and projects pertaining to environmental sustainability and combating climate change. Giving a helping hand, cooperating in the environment, collaborating in the energy and water administration sectors, and assisting in safeguarding and reform the agricultural sector are a few examples (Adamo & Garonna, 2009, pp. 74-75).

The EU and the LAS have partnered and collaborated to design and implement the Mediterranean Strategy for Sustainable Development. This plan aims to address common environmental issues in the Mediterranean, such as climate change. Promoted are sustainable development methods, environmental preservation, and increased climate change resilience. The EU Union and the LAS are engaged in climate diplomacy efforts to promote climate action at the international level. They cooperate in various forums, such as meetings of the COP with the UNFCCC and the Paris Agreement, to promote common goals and positions around dissemination of technology, financing, mitigating as well other requirements. According to the ministers of the League of Arab States and the European Union, who met for the fourth time in a ministerial meeting, the two sides are cooperating on the actualization of the Sustainable Development Strategy 2030 along with various regional issues (EuropeanUnion, 2016).

The LAS are to get financial and technical assistance from the EU to improve their capacity to battle climate change. This assistance might involve funding initiatives to promote sustainable development and climate resilience in Arab nations, as well as programs to improve capacity. The EU continues to conduct partnerships to tackle climate change, which, as an outcome of the security imbalance in the region, both in Europe now and in the Arab region, and the increased demand for fossil fuels, therefore, increases energy consumption, which certainly affects the climate negatively. Therefore, the EU has entered into interactions with the LAS on security stability including the orientation toward taking the necessary measures for climate (EU, 2022). Perhaps the strong relationship of the EU in the region is shown by the continuous support between the Union and the GCC nations of the LAS. The nature of their relationship dates back to the cooperation agreement signed in 1989, which aims at cooperation in economic affairs, climate change, energy, the environment, and research (EU, 2021).

The European Union is working to support the green transformation in the GCC and Iraq, which requires active financial support from the European private sector. The task of setting up a green business forum with participation from all private sector members in Europe and the Gulf should fall to the EU. The objectives of the Middle East in general, and the Arab region in especially, seek to improve regional environmental relations based on collaboration and consistent with the European model (Bianco, 2022, p. 18).

The UAE is one of the most cooperative League of Arab States countries with the European Union on issues related to climate change and energy supply by increasing an emphasis on renewable energy sources and a sustainable post-oil future. There are expectations that the partnership will be raised in areas such as Nationally Determined Contributions, hydrogen financing, and climate, specifically since the 28th Session of the COP will be held in the United Arab Emirates (EU, 2021).

Another aspect of the cooperation conducted by the League of Arab countries is through a partnership with civil society in the Arab world, where several local associations concerned with environmental and climate change have been established in many Arab countries, for instance:

Table 11: *Cooperation of the Arab League with some Civil Society Organizations on Climate Change in the Region*

Country	Civil society organization	Purpose of creation
Algeria	National Society for Environmental Protection and Pollution Control.	Aims to reduce environmental degradation caused by factory waste and was established in 1990 in the state of Annaba.
Kuwait	Environment Protection Society.	Aims to broaden societal understanding of the value of the environment through television programs to increase culture on climate change.

Table11: (Continued)

Country	Civil society organization	Purpose of creation
Egypt	Tree lovers Society.	Aims to protect wildlife.
	The Arab Office for Youth and Environment.	Aims to focus on humans to solve the climate problem.
Jordan	Royal Society for the Protection of Nature.	They aim to protect the environment and address climate change.
	The Jordanian Society for Sustainable Development.	

Source: (Ismail, 2022, pp. 76-79)

Similar to the European community, the Arab states and their League have sought to enrich civil society by establishing several green parties to address environmental changes in the zone. For instance, in Egypt, after the Chornobyl accident, the first private party in this field was established in the Middle East in 1990 then Palestine followed Egypt in 1995 with the establishment of the Palestinian Green Party, which was interested in spreading the increase in green lands, protecting the marine and terrestrial environment, rationalizing the use of water and reducing pollution throughout the Arab region. The first Green Party was founded in Iraq in 2003; as a result, the issues the country was having with dryness and a lack of water (Ismail, p. 65).

In 2008, the Lebanese Green Party was founded to fulfill the Sustainable Development Goals and protect the environment so that the coming generations can survive in a healthy ecological atmosphere by increasing the awareness of the individual so that he can optimize the use of available resources without causing disturbances in the ecosystem. Several green parties have also been established in Tunisia, Algeria, and Sudan to address these climate environmental problems, all of which tended to spread knowledge, transfer technology, and employ the effects of climate change through sustainable development (Ismail, p. 66). All these collaborations, if global governance had not provided them with a base, would not have taken place. It has provided international and regional rules and all institutions of public and private society are encouraged to participate in the face of climate change, which is characterized by fragmentation, multilateralism and multiplicity of decision-making centers.

3.3 Arab League financial cooperation for climate change mobilization

The fundamental element for implementing climate change and environmental reform plans is financing, which the UN has mobilized for \$100 billion, as previously explained. In this regard, the League of Arab States and its members are working on establishing cooperation to provide the necessary funding for development and climate, whether through international support such as the Green Climate Fund (GCF) or specific support for those countries. While the LAS S does not have a dedicated financial mechanism for climate change, its member states have taken various initiatives to mobilize funds and address climate change challenges. Several member states of the League of Arab States have established their funds and facilities to tackle climate change. For example, in the 2013-2017 period, the total average of concessional development financing reached 12.6 billion US dollars from Arab countries and Arab institutions reporting to the OECD. Nevertheless, the funding percentage decreased due to political instability in the region, dropping to 28%. The United Arab Emirates and the Kingdom of Saudi Arabia were among the largest bilateral donors for development assistance in 2017. Both countries are keen on mobilizing investments in sustainable agriculture, preserving natural resources, and renewable energy (OECD, 2017, p. 1).

Member countries of the League engage in bilateral also multilateral partnerships to mobilize climate finance. They collaborate with international organizations, developed countries, and financial institutions to secure funding for climate-related projects. Such partnerships often involve technology transfer, capacity building, and financial support for climate action. At COP 27, Most of the Arab Coordination Group's members, which “it has emerged in 1975 as a strategy for financing development programs and has a role in more than 130 countries around the world and has provided more than 5,000 development loans to support economies”, it has announced a financial contribution to address the climate change crisis by 2030, amounting to 24 billion US dollars. The amount will be used to increase energy stability and improve the durability of the commodities, transport, fluid, and other urban systems. This financial contribution will be a response to the climate action (OPECFUND, 2022).

The group consists of the Kuwait Fund for Arabs, the Arab Financial Fund, the Islamic Development Bank, the Arab Bank for Economics in Africa, the Arab Fund for Economic and Social Development, the Arab Gulf Development Program, and the Abu Dhabi Fund for Development. OPEC Foundation for Global Development, Qatar Fund for Development, Saudi Fund for Development, and economic expansion. This contribution comes from the Arab Coordination Group in conjunction with the Islamic Development Bank's plan to include more climate funding into its actions, which in 2021 amounted to 31%. By 2025, it aims to increase funding to tackle climate change by at least 35%. In addition, there is a pledge by the bank that the procedures for financing the bank’s adaptation and mitigation programs should ensure that they are not less than USD 13 billion. Moreover, the OPEC Fund, one of the group’s affiliates, announced that it will participate as a committed member and that the share of climate finance will increase to forty percent by 2030 in the new financing (OPECFUND).

The annual financial mobilization flows for climate action in the Arab region amount to between 3.6 and 4.9 billion dollars. It is believed that there is a crisis between the funding for climate change that is currently available and the financing that is required to face damages. The percentage of international private sector and investment in renewable energy reached between 1.5 and 2.5 billion, resulting in a final amount between 5.1 and 7.9

billion. While the volume of loans taken out without any facilitation was 8.5 times greater than grants for climate change programs, they were only equal to 3.5 times as much, the least developed countries of the Arab region only received financial assistance totaling 5% or less for climate financing (UNESCWA, p. 6). Unfortunately, the Arab region is classified as the weakest in mobilizing financing and attracting climate investment. According to the announcement of the data of both the UNFCCC and the ESCWA committee, in 2016, the volume of financial mobilization reached \$ 691 billion; further, a share of the Arab bloc was only 31 billion, which is a small figure compared to the size of the changes that the region is experiencing (Al-Sarihi & Luomi, p. 9).

Arab countries have successfully developed the principles of environmental, social, and corporate governance and contributed to the preparation of sustainability reports by supporting sustainable financing through awareness campaigns and educational initiatives. The climate finance utilized by the LAS has been directed towards implementing both mitigation and adaptation measures through the GCF as well as the Adaptation Fund. The LAS established the Arab Climate Fund (ACF) to support climatic change projects. The fund aims to mobilize financial resources from member states, international organizations, and other sources to finance projects in priority sectors such as clean power, water resources management, and agriculture. Additionally, the sources of climate finance in Arab countries come from the Global Environment Facility, the Adaptation Fund, development financial institutions, and international and regional associations examples include the European Union and the World Bank. The majority of the funds were directed to energy and infrastructure, and the percentage of financial mobilization directed to the region in water and sanitation projects was less than 15% (UNEP, 2021, pp. 12-13).

One of the aspects of the work of the LAS is based directly on the global governance of climate change, which appears in the assistance and funding provided to the Arab Planning determination for water availability in the Arab region for the action plan 2010-2013 regarding the upcoming difficulties associated with sustainable development that was taken by the Arab Ministerial Council for water. The number of participants in the initiative is represented by the Regional Initiative for the Assessment of Climate Change Impacts on Water Resources and Socio-Economic Vulnerability in the Arab region. In addition to the

Arab Centre for the Study of Arid, Dry Lands (ASCAD), the Food and Agriculture Organization of the United Nations (FAO), and a few other financing organizations, RICCAR and the ESCWA are also involved. Public, local, and international financing for the 2030 Agenda for Sustainable Development should contribute to the provision of fundamental necessities as well as the promotion of alternative funding sources. The governance of transboundary changing climate finance will help develop integrated water resource management, cooperation, and support efforts (UN, n.d.).

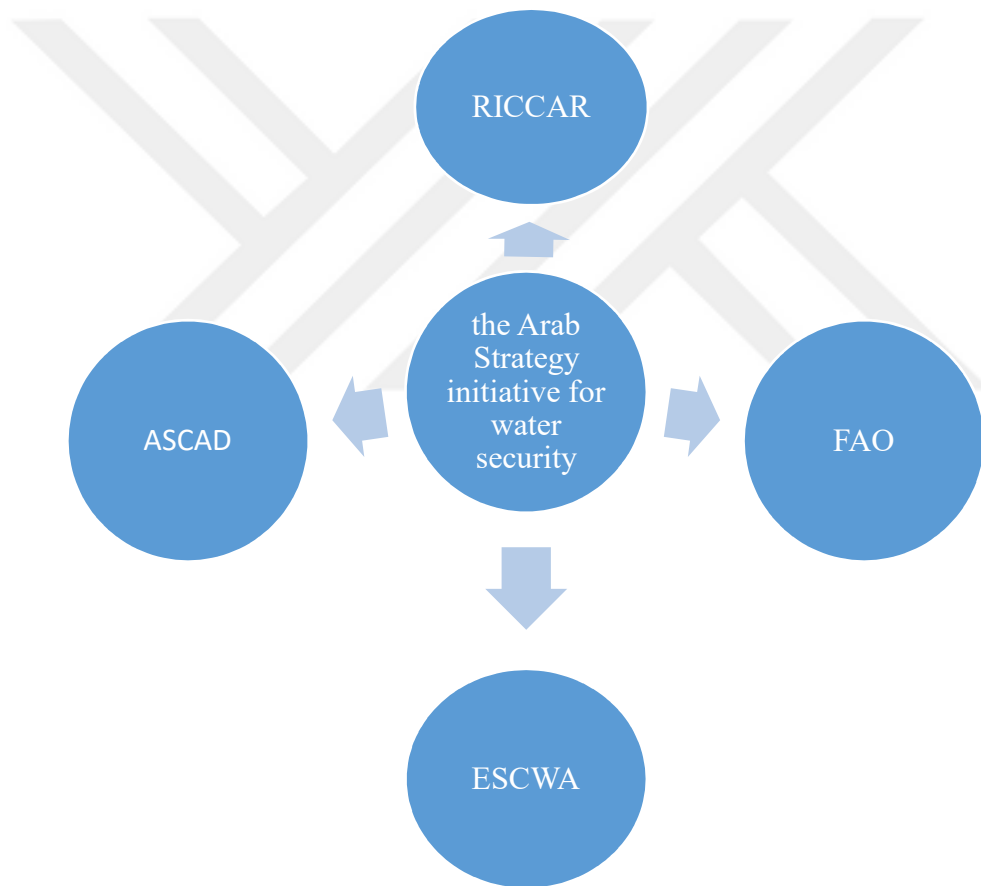


Figure 11: *Global Governance Bodies Participating with the LAS in Financing The Strategic Plan for Water 2030*

Source: (UN, n.d.).

The process of financing development alongside climatic changes in the Arab region is subject to bilateral cooperation, as happens with rich countries in the Arabian Gulf region or through low-income developing Arab countries, as is the case in North Africa, in addition to regional support from financing funds and banks. The following table shows this:

Multilateral regional institutions	Low-income developing countries	Bilateral cooperation of rich countries
• Bank for Economic Development in Africa • Arab Fund for Economic and Social Development • Islamic Development Bank • OPEC Fund for International Development • Arab Monetary Fund	• Morocco • Algeria • Tunisia • Egypt • Jordan	• Saudi Arabia • United Arab Emirates • Qatar • Kuwait • Bahrain • Oman

Figure 12: *Types of Donors for Financing Development and Climate in the Arab Region*

Source: (OECD, 2017, p. 2).

The LAS seeks to increase and attract financial support for the 2022-2023 plan through its awareness of owning renewable energy means that put it on the right path, the region has the highest insolation rates in the world, which will help it to cover the costs of adaptation and mitigation, and it is evident in the solar power plants that are being built in Morocco or other cities in the Arab domain, Like for instance Abu Dhabi in Masdar City, which is the first city in the world free of carbon and waste. The LAS aims to implement these plans by raising financial financing for climate change by supporting the private sector and individual institutional capacities, facilitating procedures in Arab countries, and reducing barriers to obtaining financing to ensure the multiplicity of sources of financing through regional cooperation. The strategy developed for 2022 to 2030 states that international finance is the rudimentary reservation and that local and regional finance are auxiliary tools, and the strategy is divided into short, medium and long-term plans (UNESCWA, pp. 7-8).

There is no denying that the area is seeing the effects of climate change. Although most of the governments in the region are now aware of the significance of achieving a sustainable economy and the need to switch to a green economy to recover from the effects of climate change and follow up on global government programs to work on regional and non-regional cooperation, which requires adequate awareness and an enabling environment, it is still the weakest in attracting financial capabilities due to the lack of awareness in investing in climate change. In light of this achievement, some of the Arab League-affiliated countries, such as Egypt, which established the Sustainability Ambassadors program led by the Ministry of Environment and Planning in Egypt along with the Institute of Governance and Sustainable Development, realized that attracting funding for sustainability programs to address climate change can only be done by raising awareness among civil society, foundations, companies and the media (Beyer & Bayoum, 2022, pp. 19-20).

Table 12: *Some of the Climatic Projects Funded in The Territory of Arab*

Country	Participating institutions	Projects	Source
Tunisia	The Tunisian Ministry of Environment The UNDP	In the city of "Kairouan," the climate Safe Cities development program has been funded, which will take two years to implement, starting in January 2022, with a funding of 41,530 US dollars.	(UNDP, 2023, p. 39).
Iraq	The UNDP. the Iraqi Environmental Protection Agency. the Administration of the Missan governorate.	The" Al-Hawizeh" marshes initiative of Climate Protection for the Safety of People, which takes a three year implementation period and starts from October 2022 with a joint budget of up to 150,000 million US dollars.	(UNDP, p. 29).
Palestine	Japan. Ministry of local Government. UNDP. companies satco and Qudra.	The project to promote access to renewable energy for Climate Security will take two years to implement with a budget of up to 300,000 US dollars and a financial grant of 253,000 US dollars.	(UNDP, p. 23).

Table 12: (Continued)

Country	Participating institutions	Projects	Source
Egypt	The UNDP. The Green Climate Fund. Ministry of Water Resource. Misr el-Kheir foundation. Shore Protection Agency.	The project of building climate security in the rural coast in northern Egypt, which will take more than two and a half years to implement. Its implementation began in April 2021, with a joint budget of 50,000 US dollars and a financial grant of 410,000 US dollars.	(UNDP, p. 26).
Jordan	The UNDP. Ministry of Environment. National Agriculture Research Center. Royal Scientific Society. Others.	A project was launched in northern Jordan to scale up innovation in water management in February 2012, which will take two years to implement at a combined financial cost of up to USD 30,000 and a grant of USD 450,000.	(UNDP, p. 34).
Yemen	The UNDP. local private sector The Agency of Environmental Protection.	In Yemen, a project has been launched to switch from Qat cultivation to coffee in order to achieve climate resilience and Human Security. The project took two years to implement and started in 2020 with a financial grant of up to 262.000 US dollars.	(UNDP, p. 20).

The LAS now realizes the importance of taking all cooperative measures for climate change and realizes that raising awareness and increasing climate investment are ways to face the environmental and climate changes that are taking place. For example, the World Bank allocated 1.5 billion dollars in 2016 to support projects managing the repercussions of the changing in the MENA, among the projects focused on water security, and the Islamic Bank of the region allocated approximately 100 million US dollars for projects related to climate change. However, despite this, the financial support provided to Arab countries is still proceeding slowly; for example, Arab countries have not benefited from the projects provided by the Green Climate Fund by a large percentage, as most GCF projects do not exceed 6 projects in the Arab region out of 102 projects launched by the fund globally (Al-Sarihi & Luomi, p. 9).

The LAS should prepare policies to attract foreign direct investment by correcting the shortcomings of Arab systems by taking advantage of global governance processes in economic, social, and environmental programs and working on cooperation with local companies, whether small or large. The areas that Arab countries should focus on to achieve climate sustainability are investing in innovative green technologies and sectors. In Arab countries, focusing on the private sector and encouraging it to be a strong partner for the implementation of climate related programs will help achieve economic diversification in the fields of industry, agriculture, and infrastructure (Abaza, 2016, pp. 60-61).

CONCLUSION

Based on the data analysis and assumptions mentioned in the thesis, it can be argued that one of these assumptions indicates that global governance mechanisms for combating climate change has provided a significant cooperative foundation for the League of Arab States to understand and guide the current crisis, whose effects are worsening day by day. The data collected in the study shows that this crisis is characterized by the planet's temperature rising by more than 1.5 degrees Celsius and an increase in greenhouse gas levels.

In accordance with the initial assumption ,it can be argued that global governance mechanisms has succeeded in solidifying its presence in the international arena to address international climate problems that surpass the capabilities of individual national governments. This assumption indicates that the issue of climate change has become significantly complex and multifaceted, involving various dimensions, and cannot be resolved by a single central government alone. Instead, global governance in this context relies on diverse and varied entities, including international bodies, non-governmental organizations, institutions, and cross-border partnerships that collaborate beyond national boundaries. This diversity has manifested itself within the framework of United Nations agreements and conferences related to climate change, as well as in other international policies such as adaptation and mitigation, where various parties from different sectors collaborate to address this urgent global issue.

Based on the second assumption in the thesis, it can be said that the impact of climate change in the Arab world region will present unavoidable internal challenges if governance is not effective. This, in turn, may lead to the outbreak of local and regional conflicts. This assumption is elucidated by the gathered data, which illustrates the scale of disasters the region is exposed to, such as floods, earthquakes, and rising temperatures, all of which affect food security, water resources, and the region's ability to meet the needs of its population. According to the data presented in figure 9, it is evident that the region is facing a severe shortage of water resources and is on the verge of becoming a focal point for conflicts over water with its neighbors. This is because two-thirds of the water sources used in the Arab region come from outside the region's regional boundaries.

The data presented in figure 9 also indicates that the region is facing a severe shortage of water resources and is on the verge of becoming a focal point for conflicts over water with its neighbors. This is because two-thirds of the water sources used in the Arab region originate from outside the region's regional boundaries. The unified political entity for the Arab world, the LAS, is compelled to find international and regional solutions for climate change. As the presented data illustrates, these solutions can be achieved collectively through the league or individually through its member states. However, the foremost agenda that the LAS, along with all its members, strives to achieve to address environmental and climate changes is the Sustainable Development Goals, which have been the focus since 2015. The league's sessions and reports consistently emphasize the importance of urging the implementation of sustainability goals.

Regarding the last assumption in the thesis, it can be said that the actions taken by the Arab League were not sufficient, and they did not fully benefit from the global governance systems and mechanisms to achieve genuine cooperation in the field of climate change. This can be attributed to the Arab League's lack of strong initiatives, necessary mechanisms, and effective partnerships needed to implement practical measures in the domain of climate change. Despite the positive steps taken recently, progress has been slow mainly because climate change is not among the top priorities of Arab countries in their national policies. The system of accountability and transparency in global governance is nearly absent in the LAS. This system includes non-transparent governmental systems, which hinder the freedom to exchange vital information about the climate change crisis in the region. Furthermore, despite ongoing international and regional collaborations, Arab awareness of the importance of the climate change catastrophe remains inadequate.

Financing mechanisms remains one of the most significant challenges facing the LAS. Despite the availability of financing programs from global governance organizations at present, the League has not yet succeeded in attracting sufficient investment. The cost of adapting to climate change and the efforts to reduce carbon emissions represent a significant challenge for Arab countries. Therefore, they may require international financing to support their efforts in this regard. Moreover, it should be taken into consideration that the LAS lacks a political system with the same enforcement power as other international organizations. Therefore, it will not be able to compel certain Arab countries, most of whose economies heavily rely on oil and gas, to transition towards more climate-resilient economies. As illustrated in figure 10, the expected emissions percentage in some countries in the region by 2030 underscores the challenges these nations face in achieving climate change mitigation. "The efforts of the LAS require comprehensive Arab support and an understanding of the crisis risks, enabling the League and its members to fully benefit from global governance policies and mechanisms in confronting the climate crisis in the region. Therefore, sustainable development becomes crucial and a vital mechanism within the frameworks of global governance. However, this necessitates Arab reforms in both political and economic domains."

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CURRICULUM VITAE

Name/Surname : Basma Mohamed El Sayed Attia

Foreign languages : Turkish, English & Arabic

EDUCATIONAL BACKGROUND

- (2020–2023), Masters of Arts (MA) in International Relations, *Anadolu University /Graduate School of Social Science*, Türkiye. Overall general Grade: 3.52/4
- (2013–2017), Bachelor's Degree in Political Science(Major) (Minor Economics), *Beni_ suaif University/Faculty of Economic Studies and Political Science*, Egypt. Overall general Grade: B+ 4.54/5 (Very good)