EVALUATION OF URBAN CLIMATE ADAPTATION POLICIES IN THE CONTEXT OF SOCIAL VULNERABILITY: THE CASE OF İZMİR

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ABSTRACT

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Climate change has been on the global agenda since the 1970s and is now defined as a crisis whose effects are increasingly felt across the globe. Global climate action is shaped around mitigation and adaptation strategies. Unlike mitigation action in which similar efforts are taken at all scales to limit GHG emissions, adaptation action aims to build capacity to be able to cope with the adverse impacts of climate change and requires different approaches and technics varying from one place, one sector/institution, one community or one sphere of life to another. This requires making a classification of adaptation strategies. Besides environmental and institutional dimensions, this study is mainly going to focus on the social dimension of climate change adaptation policies of climate

adaptation by explaining it with the notions of social vulnerability and climate justice at the urban scale. The main purpose is to evaluate climate adaptation policies and actions and to state whether these policies and actions address social vulnerability. In this context, this thesis will involve the assessment of climate change adaptation policies of İzmir Metropolitan Municipality with regard to social vulnerability and climate justice.

Keywords: climate adaptation, social vulnerability, climate justice

öz

KENTSEL İKLİM UYUM POLİTİKALARININ SOSYAL KIRILGANLIK BAĞLAMINDA DEĞERLENDİRİLMESİ: İZMİR ÖRNEĞİ

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İklim değişikliği, 1970'li yıllardan beri küresel gündemde yer almakta ve artık tüm dünyada etkileri giderek artan bir kriz olarak tanımlanmaktadır. İklim değişikliğiyle küresel mücadele azaltım ve uyum stratejileri etrafında şekillenmektedir. Azaltım, sera gazı emisyonlarının sınırlanması yönünde, her ölçekte benzer çabaların gösterildiği eylemleri ifade ederken, uyum stratejileri iklim değişikliğinin olumsuz etkileriyle baş edebilmek için kapasite geliştirmeyi amaçlamaktadır ve etki etmesi planlanan bölgenin, sektörün/kurumun ya da topluluğun özelliklerine göre değişen farklı yaklaşım ve teknikleri gerektirmektedir. Bu çeşitlilik ise uyum stratejilerinin sınıflandırılmasını önemli kılmaktadır. Bu çalışma, kentsel iklim uyum politikalarının çevresel ve kurumsal boyutlarının

yanı sıra, özellikle sosyal boyutuna odaklanacaktır. İklim uyumunun sosyal boyutu sosyal kırılganlık ve iklim adaleti kavramlarıyla açıklanacaktır. Çalışmanın temel amacı iklim uyum politikalarını ve eylemlerini değerlendirmek ve bu politikaların sosyal kırılganlığı ele alıp almadığını belirlemektir. Durum incelemesi olarak İzmir Büyükşehir Belediyesi'nin iklim uyum politikaları toplumsal kırılganlık ve iklim adaleti bağlamında değerlendirecektir.

Anahtar Kelimeler: iklim uyumu, sosyal kırılganlık, iklim adaleti

To My Family

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AfDB	African Development Bank
CBA	Community-based adaptation
CCS	Climate Change Strategy 2010-2023
CoM	Covenant of Mayors
COP	Conferences of Parties
EbA	Ecosystem-based adaptation
EBRD	European Bank for Reconstruction and Development
EEA	European Environmental Agency
EGIAD	Aegean Young Business People Association
EIB	European Investment Bank
ESIAD	Aegean Industrialists and Business People Association
EU	European Union
GCAP	Green City Action Plan
GCoM	The Global Covenant of Mayors for Climate & Energy
GDP	Gross Domestic Product
GHGs	Greenhouse gas emissions

ICLEI	International Council for Local Environmental Initiatives
IPCC	International Panel of Climate Change
İzmir SKGA	Izmir Sustainable Urban Development Network
JRC	The European Commission's Joint Research Centre
MA	Mayors Adapt
MDBs	Multilateral development banks
MEUCC	Ministry of Environment, Urbanization and Climate Change
NCCAP	National Climate Change Action Plan
NCCAS	National Climate Change Adaptation Strategy and Action Plan
SDGs	Sustainable Development Goals
SDSN TÜRKİYE	Sustainable Development Solutions Network Türkiye
SECAP	Sustainable Energy Climate Action Plan
TMMOB	Union of Chambers of Turkish Engineers and Architects
TSMS	Turkish State Meteorological Service
TTB	Turkish Medical Association

UCLG	United Cities and Local Governments
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
VLRs	Voluntary Local Reviews
WBG	The World Bank Group

CHAPTER 1

INTRODUCTION

Climate change has been on the global agenda since the 1970s and is now defined as a crisis whose effects are increasingly felt across the globe. Global climate action, which turned into an official movement with the establishment of the International Panel of Climate Change (IPCC) in 1988, continues with the annual meetings of the Conferences of Parties (COP) today. Climate action is shaped around mitigation and adaptation strategies. While mitigation refers to reducing greenhouse gas emissions (GHGs) through transitioning to low-carbon and/or renewable energy sources, improving energy efficiency, and promoting nature-based solutions, adaptation refers to taking necessary measures to be prepared for the impacts of climate change and increasing the adaptive capacity through infrastructural improvements, legal and institutional regulations and elimination of social vulnerabilities. Unlike the mitigation action in which similar efforts are taken at all scales with the aim of limiting GHGs emissions, adaptation is fundamentally context-dependent and heavily depends on place-based knowledge (IPCC, 2018). In other words, adaptation to climate change requires locally-based differentiated efforts according to environmental and social vulnerabilities. Strategies differ from one place to another, from one sector/institution to another, from one community to another, or from one sphere of life to another.

In the context of this study, three dimension of urban climate adaptation is identified; environmental, institutional, and social.

Environmental dimension includes infrastructure-based interventions to increase adaptive capacity and nature-based solution to protect natural ecosystems. Institutional dimension of climate adaptation refers to actions which are taken by local/national governments and global organizations through setting priorities and taking initiatives to combat climate change. Social dimension, which is the main focus of this study, covers climate adaptation policies aimed at eliminating social vulnerabilities and ensuring climate justice. Vulnerability to climate change is commonly explained through three components: exposure, sensitivity, and adaptive capacity (Hackfort & Burchardt, 2018; Parry et al., 2007). Social vulnerability to climate change, on the other hand, covers social parameters such as poverty, gender, exclusion from social and political relations, etc. which make communities more fragile to the adverse impacts of climate change. Moreover, this concept is usually linked with the notion of climate justice which refers to creating a way of life in which these communities will not be identified as vulnerable. In this respect, achieving adaptation to climate change depends on the extent to which effective strategies are developed to eliminate social vulnerability rather than being limited to environmental interventions and institutional regulations.

Urban climate adaptation and sustainable development approaches have similar purposes in terms of both the scope and diversity of actions. While urban climate adaptation is about developing environmental, institutional, and social strategies to combat climate change, sustainable development is about promoting environmental protection, economic development, and social equity. It can be said that actions under both concepts are complementary to each other. Local adaptation planning, therefore, can be characterized through both climate action plans and sustainable development plans.

Mainstreaming method and dedicated method are two approaches used by local governments to develop local adaptation actions.

Local climate adaptation planning is also shaped by the extent of participation of local governments in transnational climate networks. It is commonly stated that these networks have an important role in facilitating knowledge sharing among local stakeholders and promoting collaborative action. While some of them provide methodologies and technical assistance for local governments in climate action planning, some of them provide guidance to access the financial resources they need for climate action. The most known ones with high numbers of members are ICLEI (International Council for Local Environmental Initiatives); C40; the EU Covenant of Mayors (CoM) and the Compact of Mayors (both constituting the Global Covenant of Mayors for Climate and Energy). However, these networks are criticized because of being limited to information sharing, not having accountability mechanisms and not providing equal opportunities for all members. More importantly, these networks, in the context of climate adaptation, do not directly address social vulnerabilities, mostly reduce climate adaptation to environmental and institutional actions. One of the reason is that climate finance institutions -such as multilateral development banks (MDBs) do not prioritize adaptation actions, especially those addressing social and political issues, when compared to mitigation actions. MDBs provide funds for actions that can be measured and evaluated with the use of certain tools (Bazbauers, 2021). When the shares of adaptation and mitigation funds provided by 8 MDBs in 2019 are compared, the total share of adaptation finance is $15,599 million, while the mitigation finance is $47,706 million in 2019 (Gugliotta, 2021). In this sense, there is a two-layered situation against the social dimension of climate adaptation. First, efforts to develop adaptation actions are not supported as much as mitigation

actions. Climate action focuses more on reducing emissions rather than building the capacity to cope with the effects of the climate crisis. Secondly, infrastructure-oriented and technology-oriented adaptation actions are supported. These strategies are heavily involved in action plans. On the other hand, actions aimed at eliminating social vulnerabilities and ensuring climate justice are generally not on the agenda. Concepts such as poverty and gender are not mentioned in climate action plans. In brief, the social dimension of climate adaptation is usually neglected by transnational networks and financial institutions, the main actors of climate action, which results in climate action plans -drawn up by local governments- that exclude the groups most likely to be exposed to the most devastating effects of climate change.

1.1. Scope and Aim of the Study

This study focuses on the social dimension of urban climate adaptation policies which are being set in local climate action plans. Unlike many studies on the environmental and institutional dimensions of climate action, there is not enough research on its social dimension. This study aims to contribute to the literature on the social dimension of climate adaptation by explaining it with the notions of social vulnerability and climate justice. In this regard, the city of İzmir is selected as the field of research because it has two climate action plans prepared by the İzmir Metropolitan Municipality and urban governance networks on sustainability activities by the coordination of the Municipality.

The research question is formulated as *Which climate adaptation policies in combatting climate change do address the social vulnerability, and to what extent do these policies contribute the*

climate justice? In order to answer these questions, five main objectives are identified:

- To explore urban climate adaptation policies in detail according to spheres they impact
- To understand the relationship between climate adaptation and sustainable development and to what extent they are complimentary to each other
- To explore local adaptation planning and its finance mechanisms
- To evaluate national climate action plans of Türkiye with regard to social dimension of climate adaptation
- To evaluate climate adaptation policies and actions of İzmir Metropolitan Municipality and to state whether these policies and actions address social vulnerability

It is expected that this research will contribute to the literature on the analysis of climate adaptation strategies of local governments in Turkey. In particular, it is expected to propose urban policies on climate adaptation planning which considers social vulnerabilities precisely.

1.2. Methodology of the Study

This study was comprised as qualitative research with the focus of case study research. Academic publications, scientific reports, online sources, hard-copy brochures and booklets, maps, photos, and in-depth interviews are the sources of data which was collected to hold this research. Throughout the study, the following steps were adhered to:

By using databases such as Google Scholar, METU Library, and JSTOR, recent academic publications on climate change adaptation were investigated in detail. Scientific reports on global climate action

that published by international organizations such as IPCC, United Nations, etc. were examined.

To understand the status of Türkiye in climate adaptation planning national climate action documents were examined. Subsequently, local climate action documents of İzmir, prepared by İzmir Metropolitan Municipality, were investigated with regard to the social dimension of climate adaptation. Statistics from Turkish Statistical Institute and other international credible institutions and news about the latest climatic situation were also reviewed.

Finally, four interviews were conducted with people who participated in the preparation of climate action plans of İzmir to gather information about the process, scope, and methodologies of developing climate action plans. The first interview was held with Dr. Çağlar Tükel who is an engineer in the Directorate of Climate Change and Clean Energy of İzmir Metropolitan Municipality and the responsible official for climate action plans. The second interview was conducted with Ferdi Akarsu who is a sustainability expert in İzmir Metropolitan Municipality and the supervisor of the Green City Action Plan of İzmir. The third interview was realized with Rahile Yeni who is a member of the TMMOB Chamber of Environmental Engineers İzmir Branch. The last interview was conducted with Emine Bilgen Eymirli who is the head of the Green Growth Policies Unit of İzmir Development Agency. Before the meetings, interviewees were informed about the purpose of the study, the flow of the meeting, and their right to withdraw. They have contributed to this study of their own will.

1.3. Structure of the Study

This study is composed of seven chapters. The first is the introduction chapter which consists of the background information

on the topic, the scope and aim, methodology and structure of the research.

The second chapter, *Urban Climate Adaptation*, presents a detailed literature review on urban climate adaptation. Historical background of the climate adaptation and key concepts are defined. Climate adaptation strategies are categorized in three subgroups – environmental, institutional, social.

The third chapter, *Climate Adaptation vs. Sustainable Development,* explains the relation between the concepts of climate adaptation and sustainable development and the extent to which two concepts complement each other.

The fourth chapter, *Local Climate Adaptation Action*, focuses on adaptation planning process at the local level. It discusses the role of transnational governance networks and financial institutions in climate adaptation planning.

The fifth chapter, *National Climate Adaptation Policies in Türkiye*, explains the current climatic situation of Türkiye and evaluates the national documents on climate action with regard to social dimension of climate adaptation.

The sixth chapter, *Evaluation of Urban Climate Adaptation Policies: The Case of İzmir,* examines climate adaptation strategies -included in the Strategic Plan, Sustainable Energy and Climate Action Plan, and Green City Action Plan prepared by İzmir Metropolitan Municipality- whether they address social vulnerabilities or not.

The conclusion chapter summarizes the issues discussed throughout the study. Main findings of the research are explained and recommendations for future studies are made.

CHAPTER 2

URBAN CLIMATE ADAPTATION

2.1. Historical Background of the Climate Adaptation and Key Concepts

Climate change issue has been on the global agenda since the World Climate Conference held in 1979. Then, in 1987 Brundtland Report which for the first time stated the concept of sustainable development was published. It consists of three main parts: common concerns, common challenges, and common endeavors. It is followed by the Toronto Conference in 1988 which eventuated in the establishment of the International Panel of Climate Change (IPCC). However, the huge success at that period was the Rio Summit in 1992 which led to the declaration of Agenda 21 as a local sustainability initiative (Maslin, 2020; Gupta, 2014) and the establishment of United Nations Framework Convention on Climate Change (UNFCCC) that manage the negotiations to reduce emissions of greenhouse gases (Maslin, 2020). In 1997 Kyoto Protocol, the first international agreement on climate change, was adopted for the parties to set their individual targets on reducing GHGs emissions and entered into force in 2005. These top-down international policy initiatives, including the UNFCCC and the Kyoto Protocol, have mostly focused on the mitigation of climate change (Preston et al., 2011) rather than adaptation to it.

The twenty-first of the COP meetings -the supreme decision-making body of the UNFCCC and the first of which was held in Berlin in 1995-

resulted in the Paris Agreement in 2015. The agreement shapes the current climate change policies of the signatory countries. Unlike the mitigation goal determined in the Paris Agreement -to keep the increase in the global temperature below 2°C- the adaptation process includes varied and altering goals and risk context. Therefore, there is no universal measure or any specific time to be able to say that climate adaptation is achieved (Morgan et al., 2019). Nevertheless, the Paris Agreement creates, for the first time, a global goal on adaptation with the intention to improve capacity, reduce climate vulnerability, and increase climate resilience, as well as acknowledge scientific knowledge flow on adaptation from developed countries to developing ones (Delbeke et al., 2019).

Due to the realization that climate change is already having impacts on ecosystems and human safety, there has been a sharp increase in adaptation research, planning, and practice as well as analyses of how households, communities, sectors, and society as a whole can react to changing circumstances and new risks (Aguiar et al., 2018; Fazey et al., 2018; Lesnikowski et al., 2015; Ford et al., 2011; Biesbroek et al., 2010). Moreover, because adaptation is inherently context-depended and highly relies on place-based knowledge, involvement of local stakeholders is crucial to conduct research effectively (IPCC, 2018), and interdisciplinary approaches are needed to produce knowledge collaboratively with various representation (Williams et al., 2020; Norström et al., 2020; Brasseur & Van Der Pluijm, 2013).

Klein et al. (2017) categorizes developments in adaptation studies into four stages. In the first stage in 1990s, adaptation research focused on the possible impacts of climate change. In 2000s adaptation studies began to take shape around concepts such as adaptive capacity, vulnerability, and resilience. Researchers sought to an answer to the question of what successful adaptation means.

The third phase adaptation research concentrated on governance network at global, national, and local scales including private sector and finance institutions whh were emerged as new actors in adaptation planning in early 2010s. Following the 2015 Paris Agreement and the IPCC's Fifth Assessment Report, the fourth phase adaptation studies have become more comprehensive, focusing on implementation and lessons learned from implementation failures in addition to the issues addressed by previous studies. It should be clarified that these stages are of course valid for the cities that have taken the lead role in climate adaptation from the very beginning. Any city in the world that does not yet have an adaptation plan and is contemplating how to prepare an effective plan cannot be expected to focus on phase four implementation studies or lessons learned from mistakes.

In the literature, generally, adaptation is categorized in three different forms: first, targeted adaptation approaches which target actions to particular threats related to climate change; second, resilience approaches which concentrate on improving systems' resilience; third, social vulnerability approaches which address underlying social concerns (Eakin et al., 2009; Biagini et al., 2014). However, to date, the literature on adaptation typology has leaned on theoretical approaches rather than empirical evaluations. The discussion of methodology and procedures for vulnerability evaluations and governance-related policy concerns predominates in the literature on climate adaptation in comparison to the implementation of adaptation efforts (Biagini et al., 2014).

2.1.1. Local Adaptation Actions

It has been argued that local institutions are best positioned to deal with unpredictable and changing conditions, match external interventions with the requirements of complicated socio-ecological

systems, and address the difficulties faced by many facets of society (Fischer, 2021; Agrawal, Perrin, Chhatre, Benson, & Kononen, 2012; Amaru & Chhetri, 2013; McNamara, Clissold, & Westoby, 2020; Moser & Pike,2015). Many local governments around the world have developed their own plans and strategies (Kern & Alber, 2009) to combat climate change within the framework of their power and authority. While some integrate adaptation strategies into existing plans and programs, others prefer to develop stand-alone adaptation and resilience plans.

2.1.2. Adaptive Capacity

Capacity building refers to enhancing knowledge, critical thinking, and practical skills through training (Mataya et al., 2020; Boyd et al., 2014). The IPCC defines adaptive capacity as the 'ability of a system to evolve in order to accommodate climate changes or to expand the range of variability with which it can cope' (2007, Section 6.6.4).

According to Susskind and Kim, adaptive capacity is a continual effort that is made to monitor shifting circumstances, develop preliminary or provisional actions, and implement numerous rounds of institutional adjustments. While climate change is undoubtedly an ecological phenomenon, adaptation will necessitate an equivalent, if not greater, focus on economic, demographic, social, and cultural factors. (Susskind & Kim, 2022; Adger et al., 2005; O'Brien & Leichenko, 2000). Therefore, the adaptive capacity substantially refers to the individuals' and/or groups' scope of action in response to crisis. Aside from equal access to knowledge, wealth, infrastructure, technology and institutions, key criteria include broad political participation in democratic processes and population social and political integration. (Hackfort & Burchardt, 2018; Adger et al. 2009; Klein and Huq 2003).

In addition to natural capital that refers to an anthropocentric framework -based on the idea that certain features of nature, in particular forms and functions- support human well-being (Bateman &Mace, 2020), Major and Juhola (2021) define adaptive capacity through three types of capital: learning capital; financial capital; and social capital (See Table 1). They suggest a classification of adaptive capacity determinants but also highlight their interconnectedness. Even though climate change is known as an environmental problem, a city's adaptive capacity depends on the improvements in all these interconnected areas.

Table 1. Determinants of adaptive capacity (Source: Major and Juhola, 2021)

Type of capital	Related issues
Learning capital	Technology Information Skilled human resources
Financial capital	Economic resources
Social capital	Institutional structure Equity and distribution of resources Cultural factors

There are limits and barriers to adaptive capacity. *"Limits are the obstacles that tend to be absolute and which constitute thresholds beyond which existing activities or land uses cannot be maintained* (Aguiar et al., 2018; Parry et al., 2007). Most of the limits to

adaptation are socially constructed. This means that they are the result of social processes that expose communities to hazards by climate change, limit their capacity to adapt or curb adaptation reactions (Barnett et al., 2015). *Barriers, on the other hand, are obstacles that can be overcome with concerted effort, creative management, prioritization and shifts in resources and institutions"* (Aguiar et al., 2018; Moser and Ekstrom, 2010). Since adaptation is a multi-dimensional process, barriers to adaptation are quite various (See Table 2).

Apart from the list in the Table 2, one of the most critical barriers to adaptation is *"deeply held values and beliefs that influence how people interpret and think about climate change and how to approach it"* (Aguiar et al., 2018; Fuhr et al., 2018; Moser and Ekstrom, 2010) as well as governments at any scale. For instance, path dependency is one of the root drivers of barriers to adaptation (Barnett et al., 2015; Eckstom & Moser, 2014; Garrelts & Lange 2011; Inderberg, 2011; Burch, 2010). Even though the status quo appears to be becoming more and more maladaptive, path dependency displays as resistance to change. It also can be described as resistance to implementing novel ideas or enhancing defective or insufficient practices. Nonetheless, it is not impossible that path change occurs (Barnett et al., 2015; Garrelts & Lange, 2011), but if it takes a long time to begin or advances more slowly than climate change, path dependency is perhaps the best description for a fundamental reason why limits to adaptation exist (Barnett et al., 2015). Given that many obstacles and reasons of limits to adaptation are socially constructed, controlling climate change may require societal transformations. The social mechanisms that prevent or restrict adaptation or the common perceptions of what is at danger might only be altered by radical changes (Barnett et al., 2015; Klein et al., 2014; Rickards, 2013; Park et al., 2012).

Table 2. Barriers to adaptation (Source: Aguiar et al., 2018 & Olazabal et al., 2019)

Barriers to Adaptation	• Lack of human resources • Lack of leadership • Lack of financial resources • Insufficient or poor communication • Uncertainties about future climatic conditions • Unclear responsibilities • The time frames • The extended time periods • Lack of political commitments • Lack of data • Lack of knowledge/information • Lack of tools to generate knowledge • Limited capacity of research communities • Conflicting legislation • Poor decision-making culture • Lack of knowledge exchange • Lack of scientific knowledge in the vulnerability • Institutional constraints (such as rigidity) • Limited stakeholder engagement • Limited participation • Lack of public support, • Divergent risk perceptions and cultural attachments

2.1.3. Incremental Adaptation

In the Fifth Assessment Report of IPCC climate adaptation is designated as incremental adaptation and transformational adaptation.

Incremental adaptation refers to *"marginal changes in infrastructure, institutions, and practices"* (Pelling et al., 2015) but, at the same time, intends to maintain *''the essence and integrity of the existing technological, institutional, governance, and value systems"* (IPCC's Fifth Assessment Report, 2014). These adjustments are usually small-scale and minor changes to the current systems (Fedele et al., 2019; Kates et al., 2012; Adger and Jordan, 2009). That incremental adjustments impede major systemic disturbances (Pelling et al., 2015) is considered as an advantage by status quo supporters. Yet it is criticized by advocates of change for being insufficient to defy institutions that endorse "the historical and structural conditions" (Fook, 2015; Djoudi, Gautier, Locatelli, & Zida, 2014; Pelling, 2011), thereby inducing vulnerability to climate change to persist (Fook, 2015; O'Brien, 2011).

2.1.4. Transformational Adaptation

Transformational adaptation points to change the fundamental characteristics of systems to cope with current and imminent effects of climate change (IPCC's Fifth Assessment Report, 2014). As part of a reorientation of the development pathway towards social justice and sustainable development, transformational adaptation enables the addressing of deeply ingrained causes of risk and vulnerability (Pelling et al., 2015). It aims to make social, cultural, environmental, and power relations into more equitable, sustainable, and resilient by eliminating the primary causes of climate change (Fedele et al., 2019; Future Earth, 2015; Kates et al., 2012).

Cities and urbanizing areas in which over half of the world's population lives (IPCC Report, 2022) are exposed to adverse impacts of climate change. Although climate change is a worldwide issue, local government officials are the level of government closest to the effects and the communities facing the brunt of the environmental change, hence the risk is likely most immediate at the local level (Birchall & Bonnett, 2021; Forino, von Meding, Brewer, & van Niekerk, 2017). Thus, it is crucial that local governments build adaptive capacity with an understanding of both the tangible and intangible components of the various systems involved, such as each organization's attitudes, perspectives, and methods (Susskind & Kim, 2022; Kaplan, 2000) or people's assets, perceptions, values, and behaviors.

When compared to incremental adaptation efforts or coping strategies, transformative adaptation efforts face significantly more barriers (Fedele et al., 2019; Chung Tiam Fook, 2017; Rickards and Howden, 2012; Kates et al., 2012). For instance, due to the potentially high investments in human and financial inputs and the prolonged time it takes for the benefits to appear, transformative adaptation may not have as much societal or political support (Fedele et al., 2019; Kuntz and Gomes, 2012; Adger et al., 2005). In other words, due to a lack of familiarity with transformative adaptation, restrictive funding structures for such strategies, or constrained mandates of the institutions planning these interventions, *"there is a tendency to adapt through incremental adaptation or business-as-usual strategies that do not challenge the status quo of the current system"* (Fedele et al., 2019; Abson et al., 2017; Thornton and Comberti, 2017; Gibson et al., 2016).

2.2. Environmental/Institutional/Social Dimension of Climate Adaptation

It is frequently emphasized that climate change is a global crisis, and its effects are not only seen within any geographical or political borders. In addition, these effects are not felt only in one sector, in one community, or in one "sphere" of life. Therefore, strategies and policies which are developed to adapt to climate change are multi-layered and interrelated but, at the same time, differs from one place to another, from one sector/institution to another, from one community to another, or from one sphere to another. In the context of this study, three dimension of urban climate adaptation is identified; environmental, institutional, and social. However, it should be noted that there is not always a clear distinction among sub-categories of these dimensions due to the cross-cutting essence of adaptation policies. A policy or an action generated in the decision-making body of an authorized institution may fall under both environmental and social dimensions. Nevertheless, it is important to classify the actions according to which areas of life they aim to improve, in terms of increasing their applicability.

2.2.1. Environmental Dimension

Early environmental adaptation actions were mostly related to protecting natural ecosystems and building resilient infrastructure to cope with extreme events resulting from climate change. They were planned to enhance various attributes of natural systems including biodiversity, specific ecosystem processes -such as nutrient and hydrological cycles- particular ecosystem services, -e.g., "water production, carbon sequestration, coastal protection"- or specific geographic areas -e.g., parks, wildlife refuges, cities (Stein et al., 2013). These actions are called as "grey infrastructure" -also known

as hard approaches- covering engineering methods that can endure climatic extremes and fluctuations (namely "levees, technical shading, irrigation systems") (Zölch et al., 2018; EEA, 2012). However, as the intensity and frequency of climate change related events are rapidly increasing, infrastructure-based adaptation actions seem to be insufficient to develop a comprehensive measure to combat climate change. The need for integrated solutions operating "at the intersection of social, cultural, digital, and nature-based innovation" (European Commission, 2017; also see Eggermont et al., 2015) is being voiced by scientists and policymakers (Gulsrud et al., 2018). Hence, the concept of ecosystem-based adaptation (EbA) is being promoted as a holistic approach.

Ecosystem-based Adaptation

Ecosystem-based adaptation is defined as "the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change" (CBD, 2009). Unlike the traditional infrastructure approach which is often costly (Scarano, 2017) and focus on environmental regulations, EbA encourages "no regrets" interventions and provides numerous economic, social, and environmental benefits in addition to those related to climate adaptation (Geneletti & Zardo, 2016; Jones et al., 2012). Put differently, rather than centering natural systems, EbA interventions are designed "to assist humans to adapt to climate change by safeguarding and enhancing those ecosystems and ecosystem services supporting human well-being, to make the human population more resilient to a changing climate" (Alves et al., 2018).

Urban Green Infrastructure

Urban green infrastructure actions emerged as a product of EbA approach. It refers to the "infrastructure of green spaces, water and built systems, e.g., forests, wetlands, parks, green roofs and walls that together can contribute to ecosystem resilience and human benefits through ecosystem services" (Derkzen et. al., 2017; Demuzere et al., 2014). In other words, when urban green infrastructure is planned and managed effectively, it provides both direct benefits -such as "ecological connectivity and habitat conservation"- and indirect benefits -including enhanced air and water quality, improved human health and welfare, and social cohesion- to urban societies. (Gulsrud et al., 2018).

2.2.2. Institutional Dimension

Climate change actions are taken through the implementation of decisions and policies made at the global, national, or local scale. While mitigation policies have historically arisen from more centralized decision-making procedures, adaptation policies have generally stemmed from autonomous and bottom-up processes (Lesnikowski et al., 2021; Biesbroek and Lesnikowski 2018).

Institutional adaptation can be defined as the action taken to modify urban governance in response to new (experienced or anticipated) climatic circumstances in order to mitigate negative effects on people (such as safety, equity, and wellbeing), infrastructure, and ecosystems (Patterson, 2021; Sunley et al., 2017; Aylett, 2015; Hughes and Sarzynski, 2015; IPCC, 2014).

Institutional dimension of climate adaptation can be explained through two concepts. The first is urban climate governance which facilitate to approach the issue from a wide perspective because it portrays various actor types (from the economy, research institutions, civil society, etc.) and hybrid provision for partnership

and cooperation that self-organize to participate in the purposive steering of society (Hölscher 2019; Jessop 1997; Rhodes 1997; Kooiman, 1993).

The second represents internal adaptation actions which are taken by local governments through setting priorities and taking initiatives to combat climate change. Rules and laws can be regulated in line with climate adaptation. There are also many other alternatives to develop and implement adaptation strategies such as climate change action plans, sustainable energy action plans, strategic plans, climate adaptation plans; short-term and long-term projects; workshops and seminars, etc.

Urban Climate Governance

Local governments play a central and crucial role in planning and implementation of these actions (Anguelovski et al., 2014) because of having place-based knowledge and experiences. However, adaptation processes also include "actors from local communities, businesses, research institutes, regional and national governments, amongst others, generate knowledge, experiment with innovations and self-organize service provisions" (Hölscher, 2019; Burch et al. 2018; Hughes et al. 2017; Bulkeley 2010) which is "known as urban climate governance" (Hölscher, 2019; van der Heijden et al. 2019; Castán Broto 2017; Bulkeley, 2010).

Urban climate governance usually transcends national boundaries and involves interactions between international and trans-local actors. This can be clearly observed through the expansion of transnational municipal networks for climate action (Kern & Bulkeley, 2009; Lee, 2015**)** that gives opportunity to cities to take more responsibility, citing the lack of action by nation states, as well as the opportunity to act together (Wolfram et al., 2019; Barber, 2014).

The ability of local governance stakeholders to respond to climate change is determined by their adaptive capacity based on the different forms of capital they have access to (Williams et al., 2020; Serrat, 2017; Lemos et al., 2013; Adger et al., 2011; Scoones, 1998;). As political, social, financial, human and environment capital represent five spans of capital to constitute a comprehensive baseline for governance (Williams et al., 2020; Williams et al., 2018; Carmona et al., 2017; Ojwang et al., 2017; Ostrom, 2011; Gupta et al., 2010; Olsen et al., 2009; Goodwin, 2003). A capital can be viewed as a capability, resource, property, or other valuable that local governance relies on in order to respond to, adapt to, and adjust to climate change depends (Williams et al., 2020; Goodwin, 2003; Scoones, 1998). Lack of access to these capitals is the main cause of limitations in local governance's ability to adapt to climate change. (Williams et al., 2020; Esteve et al., 2018).

Institutional Adaptation

Aside from joining transnational/international climate governance networks, effective adaptation requires that local governments prioritize climate adaptation issues in their internal agenda. The institutionalized arrangements that make up the policy or governance framework for climate adaptation include factors like organizational structures, guidelines, and knowledge that are also a part of a larger social and political context (Kristianssen & Granberg, 2021).

It is commonly emphasized that municipalities have the potential to implement more resilient and sustainable development paths, but currently, they face several barriers (e.g., knowledge and understanding barriers; regulatory barriers; capacity constraints) that make it difficult for them to successfully pursue climate change action (Pasquini & Shearing, 2014).

Kristianssen and Granberg (2021) identifies three major organizational barriers to local climate adaptation. The first barrier is the lack of attention on adaptation policies in favor of mitigation policies. Secondly, different (may be conflicting) perspectives on the structures, tactics, and policies required to advance climate adaptation in municipalities are another issue. The lack of suitable learning forums is the third issue. According to this study, to overcome these problems, the municipalities require improved sectoral coordination, increased learning, and a clearer political prioritization of climate adaptation involving the allocation of more resources. They also need a thorough assessment of the suitability of the current municipal structure for adaptation to the impacts of climate change both now and in the future.

2.2.3. Social Dimension

It is a common conception that adaptation actions are taken at two specific levels: adjustments in the physical environment; and adjustments in the decision environment that is rules, policy objectives, etc. (Werners et al., 2015; Howden et al. 2007). However, adaptation to climate change is a very broad and multi-layered process that cannot be achieved through environmental interventions or institutional arrangements alone. It is a process starting with the acceptance that climate conditions are changing mostly in a negative direction for living beings. Moreover, it is also a social process that social life is changing, especially for those communities being already disadvantaged. In the context of this study, the social dimension of climate adaptation is analyzed through the notion of social vulnerability, climate justice and community-based adaptation.

Social Vulnerability to Climate Change

Extreme events caused by climate change are occurring around the world. But the adverse impacts are "*distributed unevenly as a result of both geographical and social characteristics*" (Dodman & Mitlin, 2013). Not all countries are affected at the same level due to varying adaptive capacity, likewise not all individuals or communities are exposed to adverse impacts of the climate change in the same way. Vulnerable populations are already feeling the effects of climate change in the form of extreme events that are occurring more frequently and with greater intensity (Williams et al., 2022).

According to common definitions, vulnerability refers to the extent to which a system is sensitive to and unable to cope with, negative effects of climate change, especially climate variability and extremes. *"Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity"* (Aguiar et al., 2018; Parry et al., 2007).

Exposure (such as closeness to the coast), sensitivity (e.g., being dependent on climate-sensitive economic resources) and adaptive capacity (scope of action in response to crises) are widely regarded as the components of vulnerability (Hackfort & Burchardt, 2018; Parry et al. 2007). However, in addition to the structural factors, relational dimension of vulnerability is also needed to be examined (Pelling et al., 2015; Tschakert et al.,2013). Vulnerability is *"the result of intricate relations between the impacts of climate change, globalization process, and socioeconomic structures as well as state politics and social change"* (Hackfort & Burchardt, 2018; Eakin 2005; Leichenko & O´Brien 2008; Lemos et al. 2007). Because power and knowledge are at the center of adaptation which is a contentious, debated, and power-laden process (Nightingale 2009), vulnerability and adaptation to climate change cannot be considered separate

from power relations, that is, both concepts must be partially recognized as political phenomena. (Hackfort & Burchardt, 2018). Therefore, it is important to define who is vulnerable to climate change because of which dynamics, socioeconomic structures or relations. In the context of this study, social vulnerability to climate change is explained through two concepts. The first one is poverty, and the second is gender.

According to simulations by University of Middlesex, UK, in South Asia 55 million people will be massively affected by flooding resulting from climate change, if there is no change in their present levels of CO_2 emissions and atmospheric warming (Streatfield & Karar, 2008). The coastal areas of Bangladesh and India -in which there are slum settlements mostly- are considered as the most vulnerable regions in South Asia to extreme weather events. For example, "although Bangladesh has among the highest population densities in the world (at 1,415 persons per km^2), the population density in slums is roughly 200 times greater" and these settlements "tend to be located in low lying land areas that are flood prone" (Rashid, Gani, & Sarker, 2013), which makes the huge number of urban poor who live in slums at most risk from flooding. Likewise, the urban poor in India, one of the largest countries, is expected to be affected by multiple extreme events like flooding, sea levels rise, droughts and health hazards.

Another study made by K. R. Hope Sr. (2009) indicates that as one of the main economic activities in Africa, agricultural production is expected to decline more in coming years due to extreme weather events related with climate change, which results in malnutrition of the urban poor and income loss of the rural poor. Moreover, the urban poor living in slum settlements, the places that facilitate the outbreak and spread of the disease, will be the most vulnerable to health hazards from climate change.

The majority of disaster-related injuries and fatalities in cities occur among low-income groups (Hughes, 2013; United Nations Habitat 2011; Moser and Satterthwaite 2008) who live in poverty. Income and assets are commonly considered as the most consistent indicators to characterize vulnerable and disadvantaged groups (Hughes, 2013). However, defining poverty through income and consumption patterns merely might not be sufficient because it is multidimensional in nature. While the monetary approaches which use income, consumption and assets as indicators (Leichenko & Silva, 2014), the basic need approach which *"includes a measurement of access to such necessities as food, shelter, education, health services, clean water, sanitation facilities, employment opportunities and opportunities for community participation"* (Minogue, 2008) highlights the concept of social exclusion to define poverty.

Bill Reimer's conceptualization of social exclusion with four types of social relations -market, bureaucratic, associative and communal- is a very comprehensive study to understand poverty. While market relations are based on the access to tradeable goods and services, bureaucratic relations are based on status positions and formal roles rather than personalized relations. Shared interests and group objectives determine associative relations; common features such as birth location and ethnicity form communal relations. According to him, "exclusion may occur with respect to any or all of these types of relationships" (Reimer, 2004), which makes the person vulnerable to poverty.

Hardoy and Pandiella, in their research on vulnerability to climate change in Latin American cities, argue that neighborhoods where the poor lives are most at risk from extreme events caused by climate change. It is not only because they live in locations lacking infrastructure and most exposed to hazards, but also because of "*the*

lack of representative community organizations and the lack of support from government agencies" (Hardoy & Pandiella, 2009). Hence, it is critical to highlight that vulnerability to climate change is political (Fernandes-Jesus et al., 2020; Dietz, 2018) which arise depending on not only income and assets but also political voice, representation instruments and relations that people have with other components of society.

Diana Mitlin, in her study, *Understanding Chronic Poverty in Urban Areas* (2005), analyzes individuals and groups who are vulnerable to chronic poverty –which refers to being poor for a very long time. According to her findings, old people, children –especially female children-, women and migrants who face social discrimination, informal and unprotected workers, people having poor connection in terms of social relations and the sick, incapacitated and disabled are those who vulnerable to chronic poverty more than others in the societies (Mitlin, 2005). As climate-related hazards are increasingly occuring, the vulnerability of these groups is deepeing. In other words, people who are vulnerable to chronic poverty are also vulnerable to the impacts of climate change. It is highly possible that vulnerable groups will continue to be vulnerable if they are unable to participate in and have an impact on decisions relating to climate change that directly affect them ((Fernandes-Jesus et al., 2020; Eriksen & Lind, 2009; Robinson & Shine, 2018).

As gender is described as a critical social cleavage that generates differentiated challenges and burdens, intersecting with other social markers like age, income, caste, assets, ethnicity, and power (Patnaik, 2021; Carr & Thompson, 2014; Ali et al., 2014; Munang et al., 2013; Nellemann et al., 2011; Kakota et al., 2011), it is one of the most important distinguishing features in the analysis of those most affected by climate change. Women are subjected to special environmental dangers as a result of the social and economic

institutions that assign them different responsibilities in society. These systems also place restrictions on how well women can mitigate or adapt to these risks (Patnaik, 2021; Eastin, 2018; Goh, 2012; Terry, 2009).

A study conducted in Colombia showed that men and women experience climate migration and displacement differently. Women whose homes and property were damaged by heavy rain migrate to urban centers for a new life. However, they face security risks, inability to access the labor market access, or lack of language skills related to the dominant language. Furthermore, during times of drought, men leave to find work in metropolitan or more prosperous areas, unlike women who stay to care for the property and deal with problems like food insecurity and water scarcity (Reckien et al., 2017; Tovar-Restrepo & Irazábal, 2014). On the other hand, in Chiapas, reconstruction and resettlement plans were implemented, where residents were coerced into moving against their will to newly built settlements. But they faced worse conditions than before. Especially, women who took care of the home have suffered from malfunctioning water systems. Women who used housework as a source of income could not perform their jobs and lost financial freedom (Hackfort & Burchardt, 2018). Displacement or relocation plans, which typically lack planning for access to community resources and childcare facilities, sometimes overlook the diverse needs and roles of men and women (Reckien et al., 2017).

Another example is that due to the time spent in indoor places without proper air circulation or air conditioning, such as when performing reproductive labor like cooking in informal settlements, women may typically face more heat exposure than male residents (Jabeen,2014; Reckien et al., 2017).

Participation in the decision-making process is also an area in which women face exclusion. In national parliaments and ministries around

the world, there are few numbers of women in top political positions (Hackfort & Burchardt, 2018). Even within the UNFCCC, gender parity and women's representation on boards and bodies are incredibly unequal when it comes to the requirement for taking process-related equality into account and including relevant stakeholders (Reckien et al., 2017). Research on women's participation in community-focused development programs and resource management committees has shown that there are barriers to meaningful and active participation (Patnaik, 2021; Evans et al., 2017; Das, 2014 Agarwal, 2001, 2009; Opare, 2005; Prokopy, 2004; Cornwall, 2003; Kongolo & Bamgose, 2002). Women are often symbolic participants. It is masked under the rhetoric of full participation that decisions are driven by gender interests (Patnaik, 2021; Ngigi et al., 2017; Evans et al, 2017; Prokopy, 2004; Cornwall, 2003).

Although technical and infrastructure-based solutions that were developed through state policies have mitigated part of the risks, these actions did not alleviate social vulnerabilities or improve the capacities to adapt. While the lack of economic perspectives has increased the workload and risks to poverty, gender and body-based inequalities, and class disparities in accessing resources have perpetuated unequal exposures, restrictions and vulnerabilities. They called this type of adaptation politics as "decontextualized" because it is *based on top-down, technocratic, and sectoral "adjustment approach" to adaptation and it also ovelooks* the needs and realities of those who are affected most. (Hackfort & Burchardt, 2018; Bassett and Fogelman 2013).

Climate Justice

The phrase "climate justice" is derived from the phrase "environmental justice" (Alves & Mariano, 2018; Schlosberg, 2012) which is a broader concept and has its roots in the civil rights battles

that took place between the 1950s and 1980s (Alves et al., 2018; Legarda and Buendia). As climate change discussions have become more intense at the UN COPs and many NGOs focusing on climate have emerged, environmental justice has been replaced by the concept of climate justice (Alves & Mariano, 2018).

Many concepts of justice express a special concern for the most disadvantaged and socially vulnerable parties (Grasso, 2010). In the context of climate change, climate justice recognizes the socio-economic equity aspect of those are most at risk but least responsible. It refers to ensuring the rights of the most vulnerable people by sharing the burdens and benefits of climate change and its effects in an equitable and fair manner across various societal groups (Fernandes-Jesus et al., 2020; Almassi, 2017; Patterson et al., 2018; Robinson & Shine, 2018). In the literature climate justice is conceptualized through five pillars: distributive justice, procedural justice, recognition approach, capability approach and intergenerational approach.

Distributive justice addresses the equal and fair distribution of "welfare, goods, freedoms, and opportunities" (Coggins et al., 2021) across society. This concept of justice places a strong emphasis on acknowledging and resolving the disparities in environmental costs and benefits experienced by different groups and communities. The welfare of those in society who are the least advantaged is typically the focus of efforts to achieve distributive justice (Fiack et al., 2021).

Procedural justice refers to the fair, transparent, and accountable decision-making procedures about the effects of and responses to climate change (Newell et al., 2021). Participation in environmental decision-making processes (Hughes & Hoffman, 2020; Boone, 2008; Ikeme, 2003; McCauley & Heffron, 2018) and "fairness in procedure or process" (Hughes & Hoffman, 2020; Walker, 2012) are the central concerns of procedural justice (Hughes & Hoffman, 2020).

Procedural justice principally focuses on the representation and involvement of most affected individuals and communities in processes to set priorities and make decisions (Fiack et al., 2021; Elster, 1992; Marcuse et al., 2009; Miller, 1992; Schlosberg, 2004; Young, 1994). Explicit organizational and decision-making procedures that guarantee the engagement of affected groups in the planning process are key to achieving procedural justice (Fiack et al., 2021; Schlosberg, 2013). In other words, the goal of procedural justice is to conceptualize, dissect, and suggest remedies for the structural injustices that subject some people to institutionalized forms of dominance and oppression (Holland, 2017; Fraser 1997, Young 1990).

Recognition justice addresses issues of status and acceptance since all people should be treated equally as members of a social, moral, and political community (Coggins et al., 2021; Schlosberg, 2007). Particularly, it focuses on the recognition of diversity meaning relating to "subaltern, indigenous and other marginalized groups who face cultural, social and political marginalization and discrimination" (Newell et al., 2021; Fraser, 2000). Furthermore, recognition approach aims to generate more inclusive, collaborative and democratic forms of government in order to effectively engage and identify pluralist demands, challenges, and solutions to justice (Hughes & Hoffmann, 2020; Nussbaum, 2003; Sen, 1980).

The capability approach's defining feature is its emphasis on what people are truly capable of doing and being; that is on their capabilities (Robeyns, 2005). According to Sen and Nussbaum, capability approach considers that wellbeing must be evaluated in terms of the freedoms and opportunities. This approach questions whether people have "*a normal length of life, good physical health, 'bodily integrity' (the ability to freely move and relocate, as well as being safe from assault or violence), the ability to engage socially*

with others, as well as being able to 'love', 'imagine', 'think', 'play', 'laugh', and 'reason'" (Coggins, 2021). While it is argued that the capabilities approach enables a more comprehensive and holistic approach to justice by linking distributional elements to cultural and institutional aspects that are necessary for people to "function", it is also commonly stated that rather than offering a unique perspective in and of itself, the capacities approach offers a metric for distributive justice (Coggins, 2021; Schlosberg, 2007).

Intergenerational justice holds the current generation of polluters and decision-makers accountable for their inaction and the risks and dangers it places on future generations (Newell et al., 2021). Children are especially at danger because they are developmentally most vulnerable to many negative effects of climate change, some of which endure their entire lifespan (Sanson & Burke, 2020). Hence, because climate change is stated as a kind of "structural violence," there has been an increase in research on children and the issue of climate change as well as on their lack of participation in climate change discussions and governance (Newell et al., 2021; Sanson & Burke, 2020).

Besides accepting the definitions of climate justice above, in the context of this study climate justice refers to the elimination of all disadvantages of vulnerable people. Climate justice is not helping those who are in need in the moment of an emergency or not supporting the most vulnerable to survive in the changing conditions of climate, but an act of creating a way of life in which they will not be identified as vulnerable. This could be possible with climate adaptation actions with a focus on eliminating social vulnerabilities as much as environmental vulnerabilities. In this regard, the community-based adaptation approach is important, which is explained in detail in the following section.

Community-based Adaptation

Early climate change adaptation efforts were operated by external entities -national or international- with little direct involvement from the local community in the planning and decision-making stages. Predominantly, "command and control" methods were adopted which resulted in techno-centric, engineered, and infrastructure-based solutions (Haque et al., 2022; McNamara & Buggy, 2016). However, techno-centric measures can only be partially effective if they do not also address social, economic and political factors that are the underlying drivers of vulnerability, which may differ among local conditions (Ayers & Forsyth, 2009). In the literature it is highlighted that there is a need to move away from top-down, technologically driven approaches to community-based interventions focusing scales where the impacts of climate change will be felt most keenly (McNamara & Buggy, 2016). Consequently, the concept of community-based adaptation emerged to develop strategies grounded on indigenous knowledge addressing vulnerabilities and targeting each communities' own needs in combatting the impacts of changing climate.

Community-based adaptation (CBA) is defined as *"the generation and implementation of locally driven adaptation strategies, operating on a learning-by-doing, bottom-up, empowerment paradigm that cuts across sectors and technological, social, and institutional processes"* in the IPCC Fifth Assessment Report (2014). It aims to develop adaptation strategies "based on communities' priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change" (Kirkby et al., 2017; Reid et al., 2009).

According to McNamara and Buggy (2016), there are many enablers of CBA including managerial processes, institutional support, collective action, education, awareness raising, technology, scientific

information, etc. However, three themes in the literature are key to understand the development of CBA: participatory approaches; adaptation as a social process; and multi-scaler adaptation.

Participatory approaches involve many different types of community engagement, such as efficient public outreach and education about important topics, public forums where community members can express their concerns, and several more chances for communication between the public and policy makers (Rudge, 2021). Thus, local people take an active role in conceptualizing change as well as developing their own resilience and ability for adaptation (McNamara & Buggy, 2016; Bele et al., 2013; Heltberg et al., 2009; Gidley et al., 2009; Ebi, 2009; Ebi & Semenza, 2008). However, these approaches are criticized because, in practice, instead of allowing individuals to create development agendas based on their own goals, powerful institutional actors have provided citizens with a pre-set menu of development options (Kirkby et al., 2017; Gaventa & Cornwall, 2001), and external actors inadequately "impose technical and complex decision-making processes upon local civil society (Kirkby et al., 2017; Leach et al., 2005) although it is often claimed that CBA is 'about the community making choices, not having them imposed from outside' (Kirkby et al., 2017; Jones & Rahman, 2007, p. 28)

In order to understand current adaptation processes and increase adaptive capacity at the community level, it is important to consider social capital, cohesion, networks, and collective action (McNamara & Buggy, 2016; Stott & Huq, 2014; Campos et al., 2014; Prior & Eriksen, 2013; Sovacool et al., 2012; Ebi, 2009; Ebi & Semenza, 2008; Allen, 2006; Adger, 2003; Pelling 2002; Kelly & Adger, 2000). Each community's unique social context plays a crucial role in determining which adaptation tactics are supported, pertinent, successful, and viable in the short and long-term (McNamara &

Buggy, 2016). From this perspective, communities are framed as "unified and homogenous units" without taking into account their "complexity, diversity and power dynamics". (Agrawal and Gibson 1999; Mosse 2005; Mansuri and Rao 2013; Buggy and McNamara 2016; Titz, Cannon, and Krüger 2018; Westoby, Clissold, and McNamara 2021; Kamal & Bray, 2021). However, literature shows that exclusions exist based on factors like age, gender, socio-economic status within the communities and individuals have their own "boundaries and contrasting (or even competing) agendas" (Dodman & Mitlin, 2013). As a result, it is not sufficient to develop successful adaptation strategies touching all segments of the communities without considering the internal power dynamics among the members.

The third key enabler of CBA is multi-scaler nature of adaptation actions. Although CBA recognizes climate change adaptation as essentially a local issue, it is undeniable that there is a "need for extra-local support and resources" (Dodman & Mitlin, 2013). Small-scale CBA "projects" might only result in a few "islands of success" (Huq & Faulkner, 2013) that are not sufficient to address the needs of the large populations of climatically vulnerable people (Kirkby et al., 2017; Schipper et al., 2014; Pelling, 2011; UNDP-UNEP, 2011). Therefore, it is increasingly called that interventions should be performed at a range of different scales varying from the highly formal and global to the spontaneous and local (Dodman & Mitlin, 2013; Adger, 2001). Multi-scalar adaptation ensures effective knowledge flows and feedback channels (McNamara & Buggy, 2016; Stott & Huq, 2014; Riedlinger & Berkes, 2001; Berkes & Jolly, 2001; Barnett, 2001) among all levels of government as well as multiple stakeholders such as non-government and non-for-profit organisations, community leaders, private sector and civil society organization (McNamara & Buggy, 2016; Drolet 2012).

2.3. Discussion

Adaptation is a process of creating new ways to live in new sets of conditions. Therefore, achieving successful outcomes from this process depends on policies and actions being applicable in all areas and layers of life in an inclusive way.

Grounding on David Harvey's notion of activity spheres, Pelling et al. (2015) describes seven adaptation activity spaces which are interrelated without dominating each other: individuals' space, environmental space, livelihoods space, technology space, institutional space, discourse space, and behavior space (See Figure 1). Individuals is an activity space where essential changes occur and reshape individuals' values, perception, rationale, and emotional intelligence. Environment encompasses ecological, physical, and chemical systems and acknowledges how they have coevolved with social and technology systems to form an integrated whole. Livelihoods space covers the experiences and entitlements which form households' asset profiles. Institutions are action spaces in which social behavior is regulated and power asymmetries are reproduced and controlled. It also covers shadow networks and informal entities. Technology as an action space covers physical interventions such as engineered infrastructure, and organizational innovations. Discourse, moving beyond individual cognition, behavior, or procedures, sets boundaries to material intervention through conceptual models. Behavior represents everyday activities which reproduce adaptive capacity.

Classifying each policy and strategy based on certain criteria such as target group, impact area, etc. is critical for the success of the climate adaptation process. More importantly, the multi-layered relationship between these classified policies and actions cannot be overlooked. Hence, effective adaptation strategies are planned as complementary to each other. However, most importantly,

regardless of what dimension of adaptation these policies and actions are involved in, when the primary objective is to adapt and strengthen the capacities of the most affected by changing conditions, it may be possible to achieve climate adaptation.

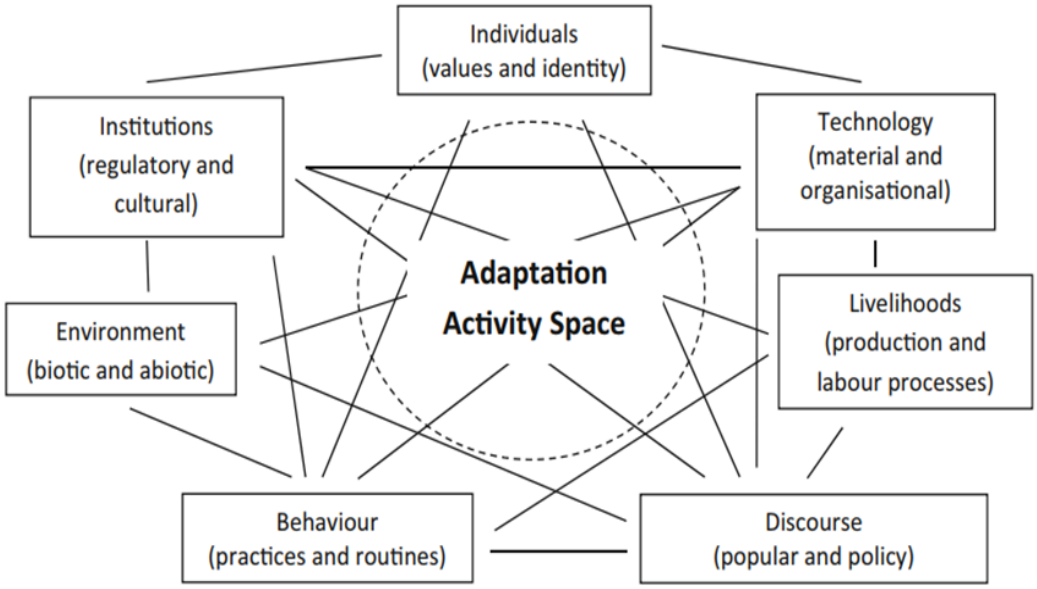

Figure 1. Adaptation activity spaces (Source: Pelling et al., 2015)

When the development of climate adaptation approaches is examined historically, it is clearly seen that the main emphasis is on technical/engineering-based strategies to cope with the adverse impacts of climate change. Likewise, incremental adaptation approaches aim to make some arrangements in certain areas rather than radical transformations and changes. On the other hand, as the inadequacy of incremental adjustments has become undeniable, transformational adaptation is unveiled as a more comprehensive approach aiming for profound changes. Adaptation actions should not be limited to environmental or institutional changes rather they should consider all spheres of life including social, economic, and cultural factors as well as the vulnerability of individuals and communities to climate change through the notion of social justice.

This shift towards social concerns can be observed within the dimensions of adaptation also.

In the environmental dimension of climate adaptation, strategies have been infrastructure-based and limited to the goal of protecting natural ecosystems at the early stages. However, it was figured that this strategy was insufficient for an effective struggle against climate change. In addition to environmental regulations, the development of new human-based adaptation strategies has gained importance. There has been an increase in studies on how people will adapt to the new environmental conditions that have emerged with climate change. In other words, the aim of making people and communities more resilient was taken into consideration in the arrangements made. For example, urban green infrastructure is not just about creating or protecting green spaces in the city. It is an approach developed to meet the needs of the people, such as clean air, recreation area, and public space. In this context, this approach is notable because it regards several concerns covered by the social dimension of adaptation. On the other hand, it is necessary to question whether the policies that serve this understanding are implemented effectively. Are the green spaces created under the urban green infrastructure concept accessible to every citizen? For example, due to their residency in neighborhoods with less access to urban green infrastructure and limited ability to fund, maintain, and develop private green space, households in socioeconomically disadvantaged groups are disproportionately affected by heat (Reckien et al., 2017). Therefore, it is not enough to shape adaptation policies to meet people's needs. It is necessary to prioritize policies that will ensure the resilience of the disadvantaged groups who will suffer the most in a possible disaster.

CHAPTER 3

CLIMATE ADAPTATION VS. SUSTAINABLE DEVELOPMENT

3.1. The Concept of Sustainability

The concept of sustainable development is defined firstly in the Brundtland Report in 1987 as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). In 2015, the United Nations member states agreed on 17 Sustainable Development Goals (SDGs) and 169 targets to be achieved by 2030 as "a comprehensive global plan of action for 'people, planet and prosperity'" (Nerini et al., 2019). In addition to SDGs, climate adaptation planning is another commitment made by governments. It is crucial to plan and implement synergistic action between SDG target achievement and climate adaptation for the successful fulfilment of these two commitments (Fuldauer et al., 2022).

Human-centric sustainability approach based on neoclassical capital theory focuses on the capital value of natural resources but ignores their value in terms of the natural goods and services. In other words, "man-made capital is more important than natural capital" (Hajian & Kashani, 2021). This approach is considered as weak sustainability index. On the other hand, strong sustainability approaches are grounded on biophysical principles and address specific functions that the environment provide for people (Hediger,

Table 3. Sustainable Development Goals (Source: https://sdgs.un.org/goals)

Goal 1: No Poverty	End poverty in all its forms everywhere
Goal 2: Zero Hunger	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3: Good Health and Well-being	Ensure healthy lives and promote well-being for all at all ages
Goal 4: Quality Education	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5: Gender Equality	Achieve gender equality and empower all women and girls
Goal 6: Clean Water and Sanitation	Ensure availability and sustainable management of water and sanitation for all
Goal 7: Affordable and Clean Energy	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8: Decent Work and Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9: Industry, Innovation and Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10: Reduced Inequalities	Reduce inequality within and among countries
Goal 11: Sustainable Cities and Communities	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12: Responsible Consumption and Production	Ensure sustainable consumption and production patterns
Goal 13: Climate Action	Take urgent action to combat climate change and its impacts
Goal 14: Life Below Water	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15: Life on Land	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16: Peace, Justice and Strong Institutions	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17: Partnership for the Goals	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

2006; Nourry, 2008). These approaches focus on natural and human capital instead of man-made capital and aim to control resource consumption through the cutting-edge technologies and the preservation of natural resources for future generations (Pearce and Atkinson, 1993; Neumayer, 2003; Roberts, 2004; Barr, 2008 as citied in Davies, 2013; Hajian & Kashani, 2021).

Early studies identify three main dimensions of sustainable development: environmental, social, and economic (Hajian & Kashani, 2021; Goodland and Daly, 1996). Environmental dimension is concerned with the preservation of the earth's living organisms. Economic dimension is linked to long-term sustainability of both renewable and nonrenewable resources in order to integrate them into the production system and generate long-term economic revenue (Goodland, 1995; Sutton, 2004; Kori and Gondo, 2012; Hajian & Kashani, 2021). Social dimension is mostly concerned with equity and justice. However, this three-pillar identification becomes insufficient as the concept of sustainability gradually expands to many diverse areas. The need for a systematic and comprehensive classification is often voiced to guide governments in preparing and implementing their sustainability policies. Thus, scholars have focused on defining sustainability from a more holistic perspective.

Waas et al. (2011) identifies four main sustainability principles: the normativity principle; the equity principle; the integration principle; and the dynamism principle. According to the normativity principle, sustainable development is a socially constructed concept which is based on values and attitudes varying from time to time and from one culture to another. In other words, it depends on temporary views on the kind of world desired to live in and to leave as a legacy for future generations. The equity principle, considered as the core principle of sustainable development, covers intergenerational equity which refers to "*the right of future generations to meet their*

needs and aspiration"; intragenerational equity as "*the right of every human being of the present generations for a decent quality of life";* geographical equity representing "*the spirit of 'shared but differentiated responsibility' in tackling sustainability issues";* procedural equity addressing the *"democratic and participatory governance systems, involving concerned stakeholders in decision-making";* and interspecies equity referring to *"the survival of other species on an equal basis to human survival".* The integration principle attributes a holistic characteristic to the sustainable development concept. According to this principle, the efforts - classified in social, economic, institutional, and environmental dimensions- made to achieve sustainability should be applied together and mutually beneficial. Finally, the dynamism principle states sustainability as an "ongoing evolutionary process". Because there is a perpetual flow of change in society and the environment, sustainability is "*a continuous search for a delicate equilibrium in a dynamic setting" (Waas et al., 2011)*.

When the Agenda 2030 was adopted by the UN with 17 SDGs and 169 targets, five critical pillars were also identified, known as the five pillars or 5 Ps. These areas are people, planet, prosperity, peace, and partnership. The Agenda 2030 frames an action plan for people, planet, and prosperity. It aims to promote peace and freedom across the globe and will be put into action by a collaborative partnership among all countries and stakeholders (Tremblay et al., 2020; United Nations, 2015).

According to Tremblay et al. (2020), it is necessary to take an integrated approach to implement sustainable development and the 2030 Agenda, and this cannot be done without figuring out how the SDGs and their associated targets interact. In other words, various system components should be characterized and, at the same time, the system should be understood as a whole in order to apply system

thinking and systemic sustainability analysis. -The system approach defines sustainability as "the maximization of goals across environmental, economic and social systems (Tremblay et al., 2020; Barbier & Burgess, 2017) while systemic sustainability analysis refers to the integration of the various dimensions of sustainability, the interactions and trade-offs between the goals and targets, as well as the methods for achieving them (Tremblay et al., 2020).- The research made by Trembly et al. offers a broad classification of the goals and their targets through the five Ps. It shows that a goal or target does not have to be associated with just one pillar. Correspondingly, not each pillar includes the same number of SDGs. While eleven SDGs are linked to the people pillar, eight SDGs are to planet pillar. The prosperity pillar includes seven SDGs, and peace and partnership pillars are each associated with two SDGs (See Table 4).

The Sustainable Development Analytical Grid (SDAG) is another sustainability assessment tool presented by Villeneuve et al. (2017) built on six dimensions: the ethical dimension, the social dimension, the ecological dimension, the economic dimension, the governance dimension, and the cultural dimension (See Table 5).

Sachs et al. (2019) propose six categories, called Transformations, to systematize SDG interventions in response to the need for an exhaustive strategy to achieve SDGs (See Table 6). It is aimed to mobilize different subsets of the private sector and civil society to solve certain problems and provide healthy communication through each category. The first category calls for interventions aiming quality education (SDG 4), gender equality (SDG 5) and reduced inequalities (SDG 10) such as supporting early childhood education, developing up-to-date curriculum, expanding social safety nets, and promoting economic growth.

Table 4. Pillars of SDGs (Source: Trembly et al., 2020)

SDG	Pillar (%)
SDG 1	People (48.4); prosperity (27.1)
SDG 2	People (40.4); planet (26); prosperity (20.8)
SDG 3	People (65.1)
SDG 4	People (54.5)
SDG 5	People (52.4)
SDG 6	Planet (39.6); people (30.6)
SDG 7	Planet (41.3); prosperity (26.4)
SDG 8	Prosperity (44.6); people (30.9)
SDG 9	Prosperity (48.9)
SDG 10	People (33.1); prosperity (26.8); partnership (19.6); peace (17.9)
SDG 11	People (40.4); planet (24.5)
SDG 12	Planet (51)
SDG 13	Planet (43.5); people (25.4)
SDG 14	Planet (57.7)
SDG 15	Planet (61.6)
SDG 16	Peace (43.5); people (25.3)
SDG 17	Partnership (52.9); prosperity (27)

Table 5. Dimensions of sustainability actions (Source: Villeneuve et al., 2017)

Dimension	Addressed issues
The Ethical Dimension	• Equity • Justice • Harmony • Solidarity
The Social Dimension	• Social needs • Peace and security • Well-being • Social Cohesion
The Ecological Dimension	• Quality environment • Availability of resources in the long run
The Economic Dimension	• Material needs
The Governance Dimension	• Democracy • Participation • Decision making processes • Integration
The Cultural Dimension	• Affirmation of cultural traits • Preservation • Enhancement

Table 6. Transformation areas of Sustainable Development (Source: Sach et al., 2019)

Category	Addressed areas
Transformation 1	Education Gender equality Reducing inequalities
Transformation 2	Health Well-being
Transformation 3	Energy De-carbonization Reducing pollution
Transformation 4	Food security Conservation of ecosystems
Transformation 5	Sustainable cities Resilient communities
Transformation 6	Digital revolution Accessible technology

The second area of transformation includes interventions on health and well-being. In addition to primary healthcare, control and treatment of diseases and environmental health, these interventions also include *"changes to social norms and behaviors promoting healthy lifestyles through better hygiene"*. Decarbonizing energy

systems, ensuring access to cutting-edge energy services, and mitigating industrial pollution of the air, water, and soil are addressed in the third category of transformation. The fourth category covers interventions on food systems. The aim is to improve resilient agricultural systems and fisheries; to conserve soils, forests, coastal and marine areas, etc.; to ensure food security through healthier diets. Transformation 5 addresses sustainable cities through access to water supply, appropriate sewage, sustainable waste management; inclusive urban planning, sustainable infrastructure, public transport systems; safe and healthy settlements, sufficient green areas; and resilience against extreme events and climate change. The sixth Transformation covers interventions on digital technologies such as cost-effective, widely accessible mobile broadband network; and policies that support privacy protection and digital inclusion. Moreover, it calls for digitalizing of public services like healthcare and education as well as online finance and payments. It is also important to strengthen public institutions so that they can shape and manage digital advancements towards sustainable development.

3.2. Urban Climate Adaptation and Sustainable Development Goals

Urban climate adaptation and sustainable development are two different concepts in the literature as well as the fields of implementation. However, they have similar targets in terms of both the scope and diversity of their actions. Urban climate adaptation is not merely about environmental or institutional interventions, rather it is about all spheres of city life. Likewise, the concept of sustainable development combines economic, environmental, and social interests. Hence, it may be beneficial for the success of both

concepts to consider whether they are complementary to each other and to what extent.

Urban planning was criticized, approximately forty-five years ago, because it focused on building the physical environment primarily and failed to resolve conflicts between economic, political, and sociocultural interests in the urban space, and failed to adapt to ongoing changes in society. Instead, urban planning shaped by interdisciplinary approaches was proposed. However, especially in the Global South, these recommendations had little effect on planning science in the last four decades. SDGs offer an opportunity for multi-dimensional urban planning as well as climate adaptation and are accepted as a response to the need for new paradigm. (Sanchez Rodriguez et al., 2018).

The SDGs can aid in raising awareness of the broader social, cultural, economic, political, institutional, and normative adaption factors that may result in the development of multifaceted operational approaches on the ground (Sanchez Rodriguez et al., 2018). Correspondingly, achieving long-term sustainability in communities requires adaptation to changing conditions of climate which is also a matter of fairness (Major & Juhola, 2021); that is climate justice.

Sustainable transformation of cities addresses more actions than those aiming to decrease industrial emissions in the city (Kitheka et al., 2021). In the governance dimension, a broad spectrum of complementary technological, institutional, and organizational techniques and policies must be adopted and adjusted in order to make the "greenpath" transition (Kitheka et al., 2021; Hou et al., 2009; Schilling & Logan, 2008). In this regard, the sustainability framework provides a basis for collaboration and commitment across a wide range of sectors and stakeholders to devise required solutions to climate change (Fiack et al., 2021; Agyeman & Evans, 2004; Eriksen et al., 2011; Mazmanian & Kraft, 2009). However, because

it is a complex coupled of human and natural systems so it necessitates *"continuous collaborative effort, continuous collective learning and adaptive management and openness to change"* (Kitheka et al., 2021; McGinley & Finegan, 2003).

Sustainability also depends on the purposes for which available resources are used: whether resources are used to for a profitable city economy (refers to economic dimension); whether it is aimed to enhance well- being of households through health care, proper settlements, livable environments socio-cultural amenities (refers to social dimension); whether adverse environmental impacts are minimized while green areas are protected (refers to ecological dimension) (Kitheka et al., 2021; Giménez et al. 2013).

Fuldauer et al. (2022) distinguish three elements of risk: hazard, exposure, and vulnerability in order to tailor adaptation to SDGs. Firstly, the hazard-based options concentrating adaptation efforts on regions that are more likely to encounter frequent hazards may protect sectors against threats. second, adaptation actions may be designed according to the level of the sector's exposure (land, labor, physical capital). For instance, since agricultural workers who work outside are exposed to extreme heat, working hours can be rescheduled to minimize exposure to labor. Thirdly, decision-makers may adjust adaptation in accordance with which sectors or populations are more vulnerable to hazard exposure -such as the poor having no access to various resources.

Scholars draw a precise link between climate adaptation and sustainability and highlight that linking actions with sustainable development priorities reinforces local adaptation planning (Birchall & Bonnet, 2021; Di Giulio et al., 2018). As correlations and synergies between climate policy and sustainable development become apparent at the local level, it becomes achievable to inspire cities to adopt the social and technological innovations that facilitate

adaptation to new challenges (Kern & Alber, 2009). When this linkage is analyzed through an adaptation-based perspective, it can be said that the concept of 'sustainable climate adaptation' is at the forefront. Sustainable climate adaptation refers *to "collective processes and actions that can enable people to cope better with climate impacts in order to reduce their impacts on well-being and the disruption of key natural resource flows for present and future generations"* (Wamsler & Raggers, 2018; McNeeley et al., 2012; Tompkins and Eakin, 2012). In this sense, it is necessary to consider social justice and environmental integrity together (Wamsler & Raggers, 2018; Eriksen et al., 2011). Moreover, adaptation is a never-ending process of making adjustments to changes which means that it is about the sustainable processes based on equity and justice principles rather than quantifying results at any given time (Barnett et al., 2015; Hurlimann et al. 2014; Stafford-Smith et al., 2011). Therefore, "socially and environmentally sustainable development pathways" are essential for effective adaptation (Barnett et al., 2015; Eriksen et al., 2011). On the other hand, from a sustainability-based perspective, socially and environmentally just climate adaptation actions contribute to achieving sustainable development. Scholars have stated that financial restrictions and political dynamics are likely to lead to conflict between competing environmental, economic, and social interests, resulting in initiatives that fail to support all three sustainability objectives at once (Campbell, 1996; Agyeman et al., 2003; Agyeman, 2005; Saha & Paterson, 2008; Fiack et al., 2021). The environmental justice and sustainability paradigms converged to create the "just sustainabilities" perspective, which adopted the latter's emphasis on environmental quality and economic wellbeing as necessary components of sustainable development but placed a greater emphasis on the former, arguing that addressing social equity issues

is a key element of successful sustainable development (Fiack et al., 2021; Agyeman, 2008, 2005; Agyeman et al., 2003).

CHAPTER 4

LOCAL CLIMATE ADAPTATION ACTION

4.1. Climate Adaptation Planning

Climate adaptation, as sets of actions to combat climate change in all areas of life, takes place "in a complex and fragmented policy context" (Woodruff, 2022; Shi et al. 2016; Fidelman et al., 2013). It is a process, rather than a one-off action, that necessitates adaptive management that considers the evolving effects of climate change, the normative nature of risk tolerance, and the breaking points between them (Mataya et al., 2020; Wise et al., 2014).

The literature on adaptation planning places a strong emphasis on mainstreaming, or the inclusion of adaptation into already-existing plans, policies, and programs, to handle this complexity (Woodruff, 2022; Rauken et al., 2015) as well as developing comprehensive action plans and strategies specifically focusing on climate adaptation.

In the context of climate change mitigation and adaptation, cities are located at the intersection of local action and commitments made at the national and international levels, so they have a critical role in generating and implementing related plans and programs (Reckien et al., 2018; Heidrich et al., 2016). Due to more direct governance structures (Bulkeley and Betsill 2003), local governments and cities are evolving into emergent global climate governors when compared to international and national authorities (Grafakos et al., 2019; Gordon and Acuto 2015). In other words,

cities and local governments have become increasingly assertive in their efforts to position themselves as globally germane actors (Aust, 2019).

In 2002, Local Action 21 - *"an initiative to move Local Agenda 21 from agenda to action"*- underlined the role of the local governments in combatting climate change through the implementation of local sustainable development practices as quickly as possible as key drivers of climate change mitigation and adaptation (Baker et al., 2012; Otto-Zimmermann, 2002; United Nations Conference on Environment and Development, 1993). In this regard, local climate action is shaped around the target sets on mitigation and adaptation. Local governments mostly prefer to act through three alternatives. The first one is the inclusion of mitigation and adaptation strategies into existing plans and programs, which is mainstreaming approach. Secondly, they develop climate action plans containing mitigation and adaptation strategies together. Thirdly, mitigation and adaptation plans are developed separately. According to a comprehensive study evaluating the CCAPs of 885 large and medium-sized cities in Europe, 17% of cities integrated mitigation and adaptation strategies into existing plans. 7% developed separate mitigation and adaptation plans. While 42% have just a mitigation plan, 1% have only an adaptation plan, and 33% do not have any kind of climate action plan (See Table 7) (Grafakos et al., 2020).

There are three phases of climate action planning through mitigation and adaptation strategies. The first one is identifying and understanding stage while the second is envisioning and planning. The third phase includes the implementing and monitoring actions (Grafakos et al., 2020). GHG emission inventories at the local level and predictions for future emissions can be the first step to

identifying the existing situation for mitigation planning (Grafakos et al., 2019; Millard-Ball 2012; Sippel 2011).

Table 7. Type of climate action plans of European cities (Source: Grafakos et al., 2020)

Climate Change Action Planning	The number of cities
Integrated Mitigation and Adaptation Strategies	147 (17%)
Mitigation Plan and Adaptation Plan	62 (7%)
Mitigation Plan	376 (42%)
Adaptation Plan	12 (1%)
No Plan	288 (33%)
Total	885

On the other hand, identifying vulnerability profiles considering factors of exposure, sensitivity, and adaptive capacity and forecasting possible climate impacts in the future is necessary for climate adaptation planning in the first stage. Secondly, specific mitigation and adaptation targets are determined. In this stage, contradictions and trade-offs between different objectives are assessed and prioritized. In addition, it is also crucial to campaign to increase public awareness and collaboration. In the final phase climate actions are implemented which requires *"a clear budget and financial commitment".* Grafakos et al. suggest a common framework for the mitigation and adaptation actions including common budget and common implementation ground as an efficient

way to best allocate financial resources (Grafakos et al., 2019; Duguma et al., 2014). They also argue that in order to ensure proper implementation, integration of climate actions into current plans could be effective (Grafakos et al., 2019; Swart & Raes, 2007). Developing a common framework for mitigation and adaptation and/or integration of them into existing plans may be beneficial through detecting discrepancies or trade-offs between them. However, local governments require more resources, especially more technical expertise, "*to maximize the many co-benefits and synergies of the integrated approach"* (Grafakos et al., 2020). Since many studies show that the main focus is on mitigation when compared to adaptation actions, this kind of an integration may result in a greater imbalance to the detriment of adaptation. In contrast to mitigation which can be summarized as reduction of GHGs emission, adaptation is multi-dimensional, and its dynamics may vary according to each sphere. Separated from mitigation actions, it requires a deeper focus for a successful progress (Grafakos et al., 2019).

According to Lesnikowski et al. (2011) and Lesnikowski et al. (2013) adaptation actions can be categorized in three forms (Biagini et al., 2014). The first is the *recognition activities* which refer to awareness of the situation without taking any action. The second is *groundwork actions* referring to preparatory steps that inform and equip stakeholders for the process but without specifying actual changes in policies, programs or service delivery. The development of policy recommendations, vulnerability assessments, adaptation research, the formation of conceptual tools, and stakeholder networking are a few examples for groundwork actions. The third is adaptation actions classfied in eight groups: *"legislative change, department development (working groups, ministries, departments), public awareness and outreach, surveillance and monitoring, infrastructure*

and technology, program or policy evaluations, financial support for autonomous adaptation, and medical interventions". Through these actions, it is aimed to transform institutions, to alter policies, mandates or physical environment in response to current or anticipated hazards from climate change (Biagini et al., 2014; Lesnikowski et al. 2011).

Litt et al. (2022) point out that city administrations have difficulties establishing their pathways for climate adaptation because of four main gaps. The first gap is the lack of a framework for a coherent and constantly renovated knowledge necessary to plan and implement adaptation actions. Secondly, although the impacts of climate change may be felt in a wider area than municipal borders, there is a lack of inter municipal vision. The third gap refers to the lack of technical expertise resulting from economic constraints. Finally, adaptation -mitigation also- strategies are mostly restricted to specific plans resulting in lack of comprehensive, multi-level and interdisciplinary solutions (Litt et al., 2022).

4.1.1. Mainstreaming Approach

Mainstreaming approach aims to incorporate climate adaptation objectives into the diverse sectoral policies that direct the relevant institutions and departments of the governments (Braunschweiger & Pütz, 2020). According to Wamsler & Pauleit (2016) mainstreaming in the policy area of climate change refers to the integration of climate-related objectives into sectoral policy areas with the aim of altering policy patterns at different administrative levels (Braunschweiger & Pütz, 2020).

According to some local authorities and local actors, in order to prevent maladaptation and conflicts in certain sectors, the

adaptation process must be integrated, interdisciplinary and coordinated (Aguiar et al., 2018). There are many studies indicating that the majority of the adaptation policies and actions that are integrated into existing policies have been implemented successfully (Braunschweiger & Pütz, 2020; Eisenack et al., 2014).

Mainstreaming adaptation actions into existing plans and programs might be favored, but it has limitations in practice (Reckien et al., 2019; Klein et al., 2005). Especially, the strategy's wording (such as "promote adaptability" and "advance resilience") may eventually make it less likely that it will be put into practice (Birchall & Bonnett, 2021; Baynham & Stevens, 2014). Moreover, there is hardly any scholarly agreement on the precise goals of successful mainstreaming or how to measure its efficiency (Braunschweiger & Pütz, 2020; Runhaar et al., 2018). Mainstreaming also may veil the visibility of the adaptation policies and result in attention loss on the topic (Braunschweiger & Pütz, 2020; Runhaar et al., 2018).

4.1.2. Dedicated Approach

Dedicated approach refers to well-defined political mandate and devoted institutions having their own budget (Braunschweiger & Pütz, 2020) to develop and implement adaptation actions.

Studies indicate that dedicated plans perform better than broader scope plans. Dedicated plans are more effective in engaging planning agencies and involving land use policies when compared to broader scope plans. Dedicated plans are also better in terms of speed of implementation (Reckien et al., 2019) because decision-making processes in some sectors may take a very lengthy period due to the traditional institutionalization at upper scales than local level ((Aguiar et al., 2018; Woodhouse and Muller, 2017).

4.2. Climate Adaptation Governance

Like many words which become popular in the literature with neoliberal order, governance also has many 'new' definitions that arise from various governing practices starting from the last two decades of the twentieth century. Because of these different practices, there are many separate governance concepts, and their focuses are changing from politics to economy, public to private, and global to local. Studies on governance are "eclectic in nature", and their theoretical objects are highly heterogeneous (Jessop, 1995). Nevertheless, to give a general definition, governance means the interactions among various actors involved in the decision-making process. As it may refer to a particular 'level' of governance like global governance, urban governance or corporate governance, it also relates to a particular 'field' of governance like environmental governance. Besides these, it may also represent a 'model' like multilevel governance (Turner, 2018).

Partnerships is a particular form of multilevel governance and refers to collaborative arrangements without hierarchies (Fünfgeld, 2015; Leach et al., 2002). It may be established among various actors in public, private, and civil society as well as on different scales like local, national, or global. Therefore, it is an interactive process in which actors establish social bonds in order to expand their management potential through deliberate actions. It makes a room for collaborative social action in which more or less-binded agreements are made and decided to be implemented (Glasbergen, 2011). Partnering can facilitate building capacity by combining resources and exchanging ideas and knowledge (Fünfgeld, 2015; Eakin &Lemos, 2006). Local governments, especially those with limited resources, may have the opportunity to increase their local activities through partnership relations that promote reach for

additional resources (Fünfgeld, 2015; McGuirk et al., 2014; Castan Broto & Bulkeley, 2013). There are long-known examples of partnership between cities; *"town twinning in Europe, sister city movement in the US and brother city movement in the Asian Countries"* (Baycan-Levent et al., 2010). Furthermore, North-South and South-South city partnerships are also common especially with the aim of sharing knowledge and experiences as well as improving commercial relations.

In the context of urban climate action, transnational climate governance networks are becoming increasingly important. These networks include a variety of stakeholders, local policymakers, citizens, private enterprises, and civil society organizations coming together to develop synergistic interactions between environmental and social systems (Egerer et al., 2021).

Transnational organizations and networks, in which nation-states often participate, now have new forms that include cities and many other actors. Cities are independently building their own systems of transnational connections, frequently utilizing the terminology, standards, and procedures of conventional, nation-state-based foreign policy and international law. In that respect, cities are centers and players of global governance and world politics. In other words, cities are both actors and places of action. (Koch, 2021).

In the context of climate change, cities have various motivations to take action including not only a moral responsibility but also political gains and potential for co-benefits (Koch, 2021) or sometimes *an effort to improve global socio-economic status* (Mokhles & Davidson, 2021; Davidson et al., 2019b; Smeds and Acuto, 2018). Cities also decide to participate in climate policy due to the inadequateness and lack of execution of national and international policies as well as the

fact that climate change has a significant impact on urban inhabitants (Koch, 2021).

According to Pietrapertosa et al. (2021), these city networks provide knowledge sharing mechanisms among cities and facilitate accessing suitable funding resources. They also disseminate good practices among member cities and provide consultancy on technical issues (Mokhles & Davidson, 2021; Davidson et al., 2019a; Lee and Jung, 2018). Moreover, they contribute to create informal city-city relationship relying on trust relations (Pietrapertosa et al., 2021; Haupt et al., 2021). With the guidance of governance networks and leading partners from various sectors (Grafakos et al., 2020; Zimmerman & Faris, 2011; Carter, 2011), local governments are increasingly developing and implementing climate change action plans at their scale (Grafakos et al., 2020; Reckien et al., 2014, 2018).

There is an increasing number of transnational climate networks. The most known ones with high numbers of members are ICLEI (International Council for Local Environmental Initiatives); C40; the EU Covenant of Mayors (CoM) and the Compact of Mayors (both constituting the Global Covenant of Mayors for Climate and Energy).

4.2.1. ICLEI- Local Governments for Sustainability

ICLEI (International Council for Local Environmental Initiatives) is a transnational network established in 1990 with the motto of 'Local Governments for Sustainability'. It has 2500+ members consisting of local and regional governments from more than 125 countries. ICLEI designs local action around five goals to achieve sustainable urban development: *"low emission, nature-based, equitable, resilient, and circular development"* (ICLEI, 2022) (See Figure 2).

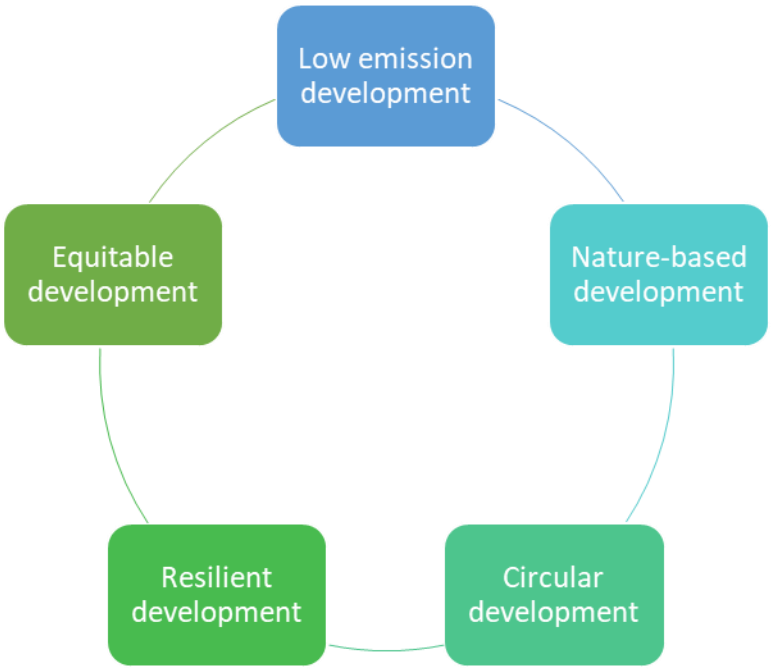

Figure 2. ICLEI's pathways for sustainable urban development (Source: About Us, 2022)

ICLEI supports cities, regions, and towns of all sizes to prepare for and tackle issues including growing urbanization, climate change, ecological degradation, inequity with the aim of integrating sustainability into urban development and creating systemic change in urbanized areas. It aims to design solutions to the local challenges through investing in knowledge and capacity building (ICLEI, 2022).

Every city, town, or territory that so desires can become a member of ICLEI. This has aided in establishing ICLEI's current broad membership base (Aust, 2019). So far, many local governments in North America, Latin America, Europe, and Asia have developed climate action plans -including mitigation and adaptation strategies- in cooperation with ICLEI by adopting its framework for climate change management (Stone et al., 2012).

Papin (2020) lists five defining feature of ICLEI as a transnational municipal network. Firstly, ICLEI is an inclusive network and open to a diverse range of members and partners including also non-state

actors -directly or indirectly- to address climate concerns in accordance with the UNFCCC framework. Second, ICLEI describes itself as a facilitator network. According to its own standards, it seeks to coordinate the appropriate actors to address urban issues. Instead of positioning itself as an authority on every issue it takes on due to its limited internal resources, it makes an effort to collaborate with expert actors to collect data in order to produce unique instruments. Third, since limited funding resources cause competition, the collaboration opportunity that ICLEI provides might facilitate attracting funding. Fourth, ICLEI is able to explore fresh information through interactions with partners from many sectors, which could affect how it manages its projects. Finally, according to ICLEI, the partnership is the new normal for accomplishing integrated, effective climate action, and collaborations increase its effectiveness and influence (interviews with ICLEI staff member and partner representative, November and December 2017; Papin, 2020).

4.2.2. The EU Covenant of Mayors (CoM) and Mayors Adapt (MA)

Covenant of Mayors was established in Europe in 2008 to connect local energy and climate action with European and global initiatives. Strengthening resilience, tackling energy poverty, and cutting GHG emissions by 55% by 2030 comprise the three pillars of signatories' promises (Covenant of Mayors, 2022) but the main focus is on the last one, the mitigation efforts. Due to the need to address adaptation Mayors Adapt was launched in 2014 by European Commission as a new local initiative (Abarca-Arvalez et al., 2019). Mayors Adapt strives to boost public support for local initiatives, give communities a platform for better engagement and networking, and increase awareness about adaptation and the necessary steps

(Climate Adapt, 2022). Both initiatives are grounded on the same basis, but the CoM focuses on mitigation efforts while the MA operates for the adaptation of cities to the impact of climate change (Abarca-Arvalez et al., 2019). Research made by Abarca-Arvalez et al. (2019) compiles 84 "city profiles" identified as "good practices" in the initiative pool of MA from 258 cities participating in the initiative. These "good practices" are categorized according to operation field as following:

- Agriculture
- Energy Management
- Biodiversity, Environment, Air Management and Forestry
- Disaster Risk Reduction
- Buildings
- Financial/Economic protection
- Water Management
- Urban and Spatial Planning
- Heath
- Transport or Mobility

Adaptation actions labelled as "good practices" by the MA are mostly incremental adjustments rather than transformational. They do not directly address the social dimension of climate adaptation and highlight the issues of climate justice, social vulnerability, poverty, gender, etc.

In 2015, The CoM and the MA united under the Covenant of Mayors for Climate and Energy (CoM- C&E) despite having distinct strategic differences and well-defined aims (Abarca-Arvalez et al., 2019) but mostly it is still known as CoM.

CoM provides an alternative tool for municipalities to plan sustainable energy and climate change operations by following the

EU policies (Scorza & Santopietro, 2021). Municipalities that engage in the network are responsible to develop Sustainable Energy and Climate Action Plan -SECAP (formerly named The Sustainable Energy Action Plan -SEAP) with the commitment to reducing GHGs emissions at least by 40% by 2030, planning and implementing adaptation actions, and providing access to sustainable, affordable and secure energy (Rivas et., 2022). The European Commission's Joint Research Centre (JRC) assesses submitted SECAPs, gives each signatory detailed feedback, identifies the key strengths and weaknesses, and makes suggestions for improvement (Rivas et., 2022). If these commitments are not fulfilled and the plan is not submitted, it results in membership suspension (Gesing, 2018).

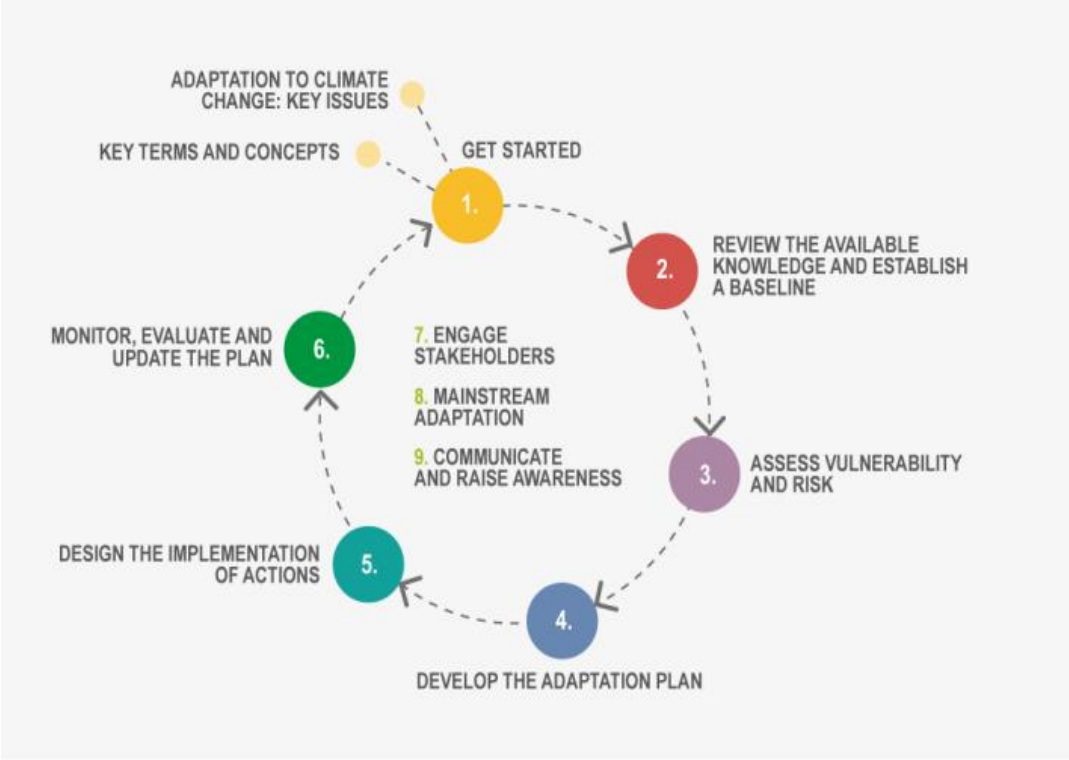

Figure 3. Guideline for local adaptation plan (Giordano, Capriolo, & Mascolo, n.d.)

SECAP is regarded as an urban planning instrument since its methodology (See Figure 3) for developing climate adaptation actions is well-suited for local governments. The concept is built on integrated planning for energy and climate activities, where local stakeholders can take an active part (Santopietro & Scorza, 2021). It ensures that local inhabitants join in the process of generating adaptation actions addressing the local effects of climate change, which results in concrete benefits to citizens (Scorza & Santopietro, 2021; Picketts, Déry, and Curry 2014). In other words, SECAPs are effective tools assisting local authorities to manage the processes of urban and regional transformation with the "green responsibility" perspective. They cover environmental, social, and urban themes while offering a set of standardized tools capable of creating tangible actions (Scorza & Santopietro, 2021).

4.2.3. Compact of Mayors

The Compact of Mayors was founded at the 2014 UN Climate Summit with the aim of contributing to climate action of local governments through recognition and financing opportunities and a "single, consistent metric for city climate impact" (Gesing, 2018; Compact of Mayors, n.d.). It also intended to create a uniform method for data gathering by standardizing the reporting of city climate data since the data can be used to show the overall effect of a city's action, boosting investor and global confidence (Gesing, 2018; Compact of Mayors, 2015).

The Compact of Mayors is not a network for cities only, it also brings existing networks such as ICLEI, C40, UCLG (United Cities and Local Governments), CityNet, and the CoM together (Haupt et al., 2021; Compact of Mayors n.d.). The objective is to create a standardized manner of reporting and monitoring a city's climate action initiatives,

for example through reliable and open data-gathering standards, rather than replacing current networks (Haupt et al., 2021).

4.2.4. Global Covenant of Mayors for Climate & Energy (GCoM)

The Global Covenant of Mayors for Climate & Energy (GCoM) was established in 2016 as a combination of the European Union's Covenant of Mayors and the Compact of Mayors with the aim of *"advancing city-level transition to a low emission and climate-resilient economy and demonstrating the global impact of local action".* Built on the dedication of more than 11,500 cities and local governments, GCoM is the greatest worldwide network for city climate leadership. These cities are from 142 countries and 6 continents and represent more than 1 billion people in total (GCoM, 2022). GCoM focuses on three core initiatives to support local governments in tackling sustainability issues and contribute to global climate action: Data4Cities, Innovate4Cities, and Invest4Cities.

4.2.5. C40

C40, established in 2005, is a network of mayors from approximately 100 world-leading cities working together to undertake the immediate action required to address the climate issue. C40 brings together the most prominent and economically potent mayors of international megacities in order for them to take a clear political position, thus representing a new strategic urbanism phase of transnational urban governance. (Heikkinen et al., 2020; Davidson and Gleeson 2015). It is a network of influential megacities or smaller, so-called "innovator cities," which are known as global leaders in combatting climate change. The objective is to develop

"best practices" and to make local leaders aware of how they might utilize their power to cope with climate change. Additionally, C40 is also a network of networks due to its flexible governance structure (Aust, 2018).

C40 encourages its members towards close relations and partnerships with the private sector. The corporatist mindset that has guided C40's operations emphasizes the importance of collaboration with key players in the corporate world (Aust, 2018).

Studies show that member cities of the C40 and C40 itself largely support incremental and reformistic approaches to climate action rather than transformational strategies. They promote small-scale or modest changes to create sustainable cities instead of radical transformations (Feola, 2015). The reason is that Global North cities focus on preserving the existing situation in society. Furthermore, they do not put issues like poverty on their agenda because it is not relevant to their local climate change context. However, on the other hand, Global South cities highlight the importance of changes to raise the standards of living. In order to achieve sustainability, there is a need to generate mechanisms for reconciliation on sharing responsibilities between the Global South and Global North. It is commonly argued that economic compensation from Global North to the Global South is necessary for successful climate action (Heikkinen et al., 2019; Helm, 2009).

It is criticized that city networks like C40 claim that they provide the opportunity for collective learning and policy formulations because this learning process does not occur in an equal manner for all members. It is not apparent what is especially being learned and what solutions cities suggest, how these vary among cities and the effectiveness of these solutions (Heikkinen et al., 2019).

4.3. Climate Adaptation Finance

In the last ten years, urban climate adaptation studies have offered empirical examples of current strategies, identified governance flaws, and underlined the implications of suggested solutions for justice and equity. Many of these studies showed that funding issues are the main barrier to sustained action. (Keenan et al., 2019; UNEP 2016; Flåm and Skjærseth 2009). Although the historical progress of financing and funding for adaptation has generally followed the discourses of sustainable development (Bouwer and Aerts 2006), there is an increasing focus on adaptation finance (Moser et al. 2017; Runhaar et al. 2018; Keenan et al., 2019) and implementation (Woodruff & Stults 2016) itself (Keenan et al., 2019).

Bilateral financing, multilateral climate funds, multilateral development banks, national and regional climate funds, sovereign risk pools and market-based mechanisms are primary channels of international public funding for combatting climate change through mitigation and adaptation efforts (Browne, 2022; Watson & Schalatek, 2020). Through the UNFCCC and/or the Kyoto Protocol, several adaptation funding channels have been created on a global scale. The Global Environment Facility Trust Fund, the Least Developed Countries Fund, the Special Climate Change Fund, and the Adaptation Fund are commonly known mechanisms that are supplemented by a variety of bilateral and multilateral conventions for adaptation finance (Preston et al., 2011).

The Green Climate Fund which was established under the UNFCCC in 2010 (Tolliver et al., 2019) is the "*largest dedicated climate finance mechanism"*. It has approved adaptation projects worth US$2.822 billion -as of April 2021 (Omukuti et al., 2022; GCF, 2021b). However, according to Omukuti et al., (2022), The GCF's procedures and regulations are not well adapted to providing funding

at the local level for three reasons: Firstly, it does not have a framework to define local scale or local actors. Secondly, it does not have a transparent mechanism on revealing budgets and expenditures at the local level. Finally, it has capacity gaps in engaging local actors into the process.

Multilateral development banks (MDBs), as one of the primary investors in the infrastructure of developing countries, provide funding for projects in areas such as energy, transportation or urban development for a long-term environmental resilience (Gugliotta, 2021). The World Bank Group (WBG), African Development Bank (AfDB), European Bank for Reconstruction and Development (EBRD), Asian Development Bank (ADB), the Inter-American Development Bank, European Investment Bank (EIB) are the most known MDBs.

Comparing the shares of adjustment and mitigation funds provided by MDBs, the significant difference between the two is striking. According to Gugliotta's research (2021), the total share of adaptation finance is $15,599 million, while the mitigation finance is $47,706 million in 2019 (covering 8 MDBs). This gap exists because MDBs prefer financing mostly infrastructure-based actions. Bazbauers (2021) explains this preference with two justifications. First of all, it is argued that both improving resilience to climate change hazards and transition to low carbon systems can be achieved through infrastructural changes. The impacts of technology-based solutions for climate change mitigation and resilience can be measured and evaluated with the use of certain tools. Secondly, MDBs operate according to credit rating evaluations and banking and financial conventions. In comparison to social justice and poverty alleviation initiatives, which are more difficult to measure, infrastructure loans are typically considered lower-risk

investments *in terms of portfolio repayment and project evaluation criteria* (Bazbauers, 2021).

4.3.1. Barriers to Urban Climate Adaptation Finance

Climate adaptation necessitates multisectoral networking, long-term participation, and the sourcing of trustworthy intelligence models so local governments are usually dependent on outside support (Keenan et al., 2019; Carmin et al. 2013). However, there are some obstacles to local climate adaptation actions in accessing appropriate funding resources. First of all, since attempts at adaptation frequently fall behind those of mitigation (Otto et al., 2021; Lee et al. 2020; Heidrich et al. 2013; Guyadeen 2019), that the majority of the global climate financing provided by international multilateral development aid organizations and development banks goes toward mitigating efforts is indicated by various studies (Grafakos et al., 2019). Secondly, because adaptation finance is controlled mostly by multilateral institutions and national governments, local governments receive a very small share -between 10 and 20% (Omukuti et al., 2022; Soanes et al., 2021; Price, 2021; Soanes, 2017)- of global financial resources, apart from "*locally "designed and locally led"* adaptation efforts (Colenbrander et al., 2018; Fenton et al., 2015). Moreover, the majority of investments are made as a result of regularized behavior rather than as an act of adaptation to minimize vulnerability and exposure (Keenan et al., 2019; Wright and Nyberg 2017; Brugmann 2012). In other words, delivery of adaptation finance at the local level is not determined by vulnerability but socio-political factors like national political commitment and the types of financial instruments available (Omukuti et al., 2022; Manuamorn et al., 2020; Manuamorn &

Biesbroek, 2020). Likewise, when compared to less vulnerable local actors, those with greater vulnerability have less access to adaptation finance in a disproportionate (Omukuti et al., 2022; Price, 2021; Barrett, 2014) and contradictious way. Therefore, numerous non-state financing sources have drawn criticism for their ambiguous accountability procedures, potential for elite capture, and inability to offer steady and sustained funding flows over an extended period of time (Keenan et al., 2019; Chu 2018).

Moser et al., (2019) construct a landscape of adaptation finance archetypes to provide a greater knowledge of the financial difficulties and the scant solutions currently being pursued. It outlines recurring patterns of financial difficulties caused by interconnected elements, such as institutional, human, political, or economic issues which reinforce one another and have different effects on local governments' capacity to raise the required funds to achieve adaptation (Moser et al., 2019). (See Figure 4).

4.3.2. Climate Adaptation Finance and Social Vulnerability

Redistributing resources from nations that produced the greenhouse gas emissions that cause global warming to those who are already experiencing or are predicted to face the most severe effects has been seen as one way to promote justice through adaptation finance (Colenbrander et al., 2018). Following to Grasso's definition (2010), justice here refers to putting the most vulnerable first based on the notion of social vulnerability (Grasso, 2010; Kelly and Adger, 2000).

Adaptation actions generally consist of environmental, institutional, and social interventions, yet effective adaptation can be achieved when all policies, regardless of their dimensions, serve to eliminate social vulnerability. In order to reach the most vulnerable it is

necessary to channel adaptation finance to the local level which serve distributional justice. When the local control over funding resources increase, it is likely to enhance the capacity of local governments and civil society and address power disparities that lead to inequality, exclusion, (Colenbrander et al., 2018) and vulnerability.

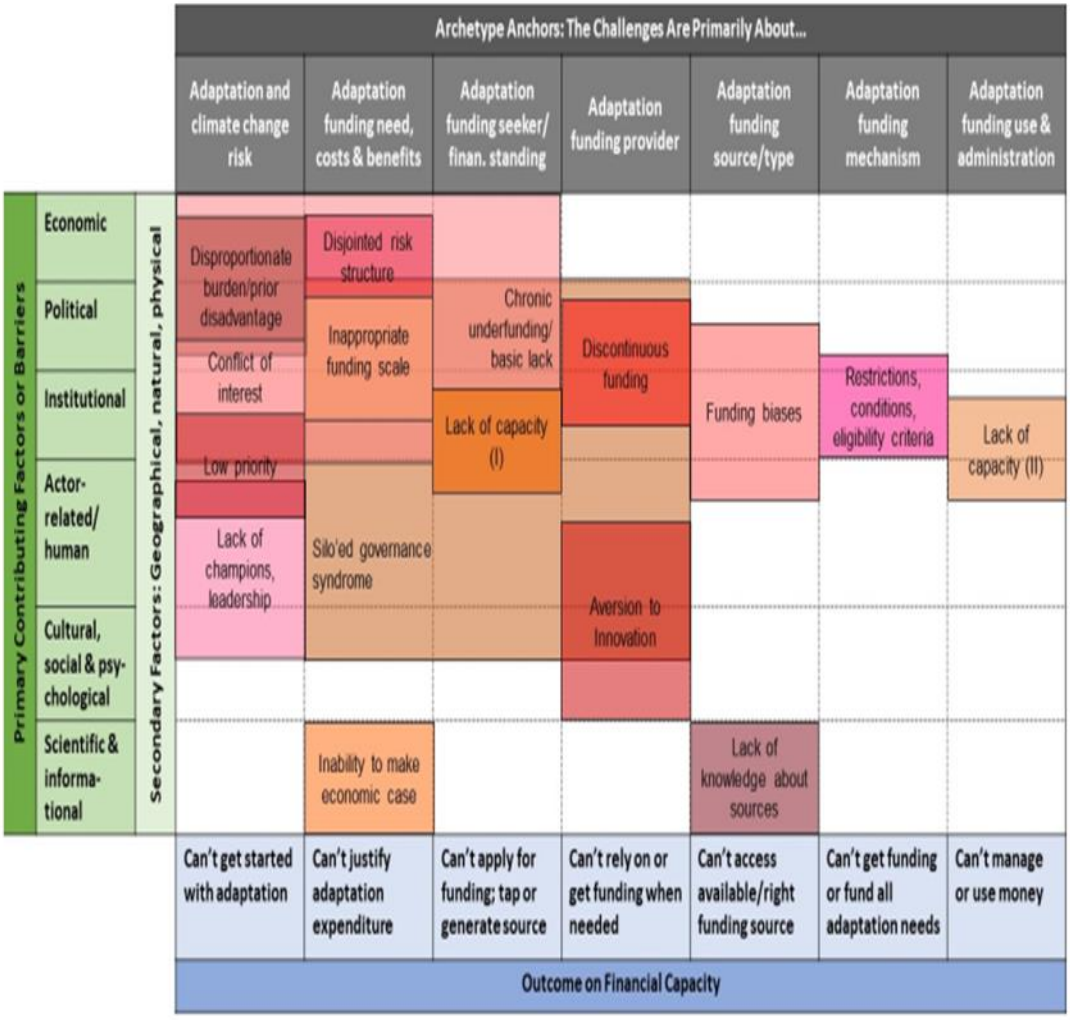

Figure 4. Landscape of adaptation finance archetypes (Source: Moser et al., 2019)

CHAPTER 5

NATIONAL CLIMATE ADAPTATION POLICIES IN TÜRKİYE

This chapter examines the national climate adaptation policies of Türkiye within the context of the social vulnerability concept. The first section focuses on the extreme meteorological events across the country as obvious impacts of climate change. The second section evaluates Türkiye's position to adapt to climate change through national documents and action plans to determine whether the social vulnerability is considered decisive or not.

5.1. Climate Change in Türkiye

Türkiye is one of the countries in which extreme meteorological events related to climate change are experienced more frequently in recent years. According to annual climate reports of Turkish State Meteorological Service (TSMS), 984 extreme meteorological events were experienced in 2020. This number increased to 1024 in 2021. In 2022, it reached the highest number of all time with 1030 (The State of the Türkiye's Climate in 2022, 2023). Figure 5 shows the increasing trend of extreme events in Türkiye over years. Heavy rain and floods, storms, hail and snow are the most frequent extreme events which were reported in 2022 (See Figure 6).

According to ND-GAIN Index[1] Türkiye's country ranking is 48 with a 56.7 score meaning low vulnerability and high readiness. However,

[1] ND-GAIN Index is developed by the University of Notre Dame to summarize a country's vulnerability to climate change and its readiness to expected challenges. While the vulnerability score describes a country's exposure, sensitivity, and adaptive capacity, the readiness score shows

extreme events depending on climate change in recent years have shown that Türkiye is not as ready as supposed for an emergency case. For instance, as one of the countries in the Mediterranean Basin, Türkiye is also experiencing heat waves forest fires and drought (See Figure 7) more often in recent years as a consequence of changing climate. In 2021, 139,503 hectares of land were damaged in 2793 forest fires. Accordingly, the rate of forest areas lost due to fire in 2021 is 61.5% among the forest areas burned in the last 10 years (Yeşil Gazete, 2022).

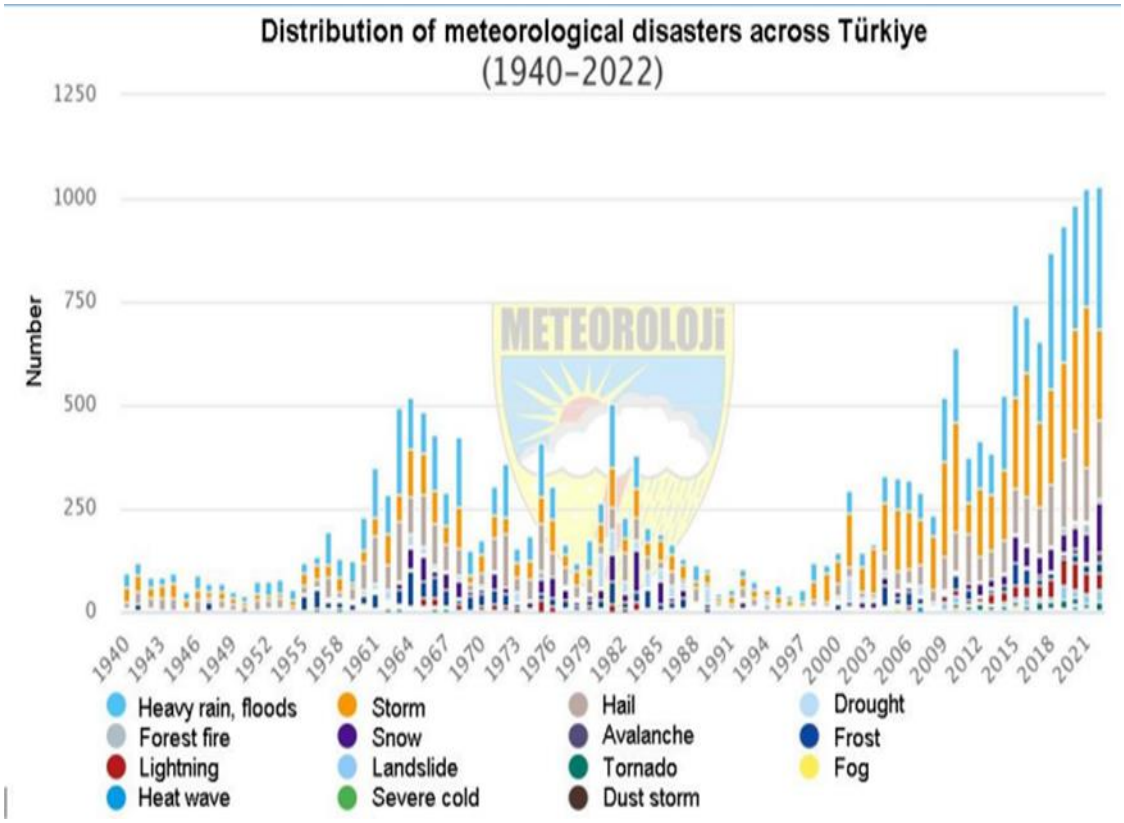

Figure 5. Distribution of extreme meteorological events across Türkiye (Source: The State of the Türkiye's Climate in 2022, 2023)

its ability to mobilize investments for adaptation actions (Source: https://gain.nd.edu/our-work/country-index/rankings/).

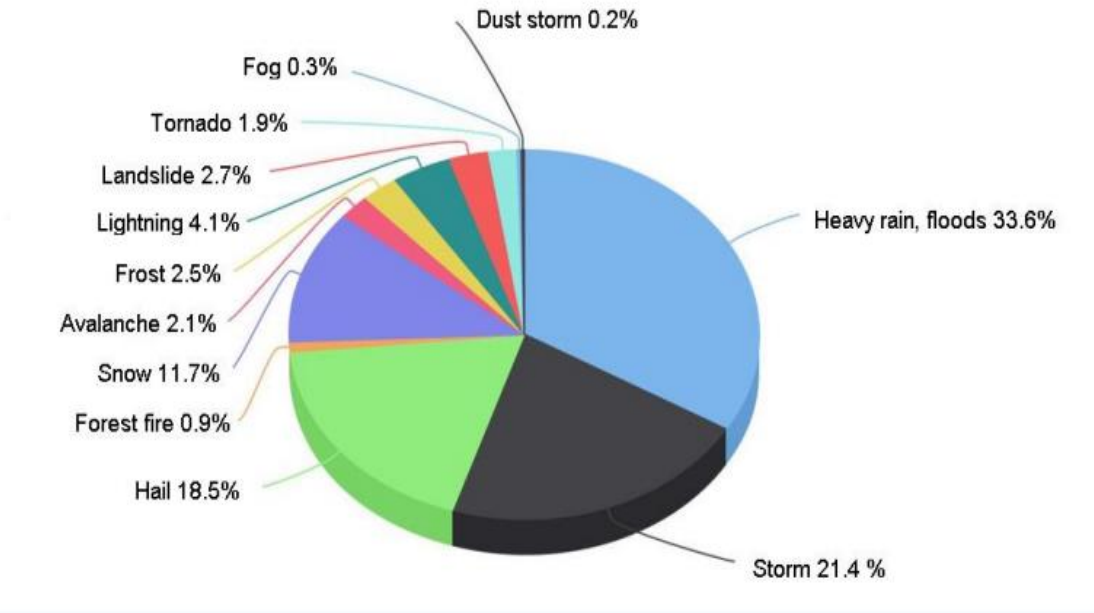

Figure 6. Percentage of extreme meteorological events in 2022 (Source: The State of the Türkiye's Climate in 2022, 2023)

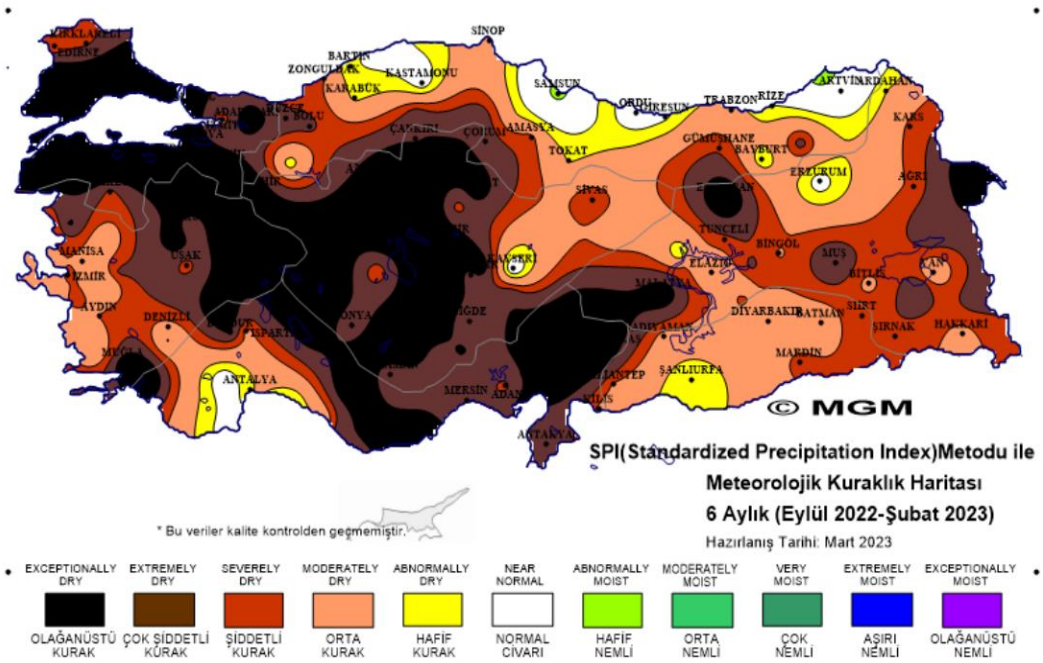

Figure 7. 6 Months Meteorological Drought Map of Türkiye (September, 2022- February, 2023)

The forest fires, which started on July 28, 2021, affected primarily the Mediterranean and Aegean regions, as well as the Marmara, Western Black Sea, and Southeastern Anatolia regions. While 8 people died, more than a thousand people were injured. Thousands of cattle, sheep and goats, poultry, beehives and wild animals perished. In its Evaluation Report of Forest Fires on July-August, 2021, Turkish Medical Association (TTB) criticized the government for not taking precautions despite the estimation of the problems that the climate crisis will bring, and for being unprepared for the reality of forest fires, the number of which increases every year. In addition, the inability to implement the "emergency action plans" of the relevant institutions caused the first response to be inadequate (TTB, 2022).

Figure 8. Forest fire in Manavgat, 2021 (Source: DHA, 2022)

5.2. Climate Change Policy of Türkiye

Türkiye became a party to the United Nations Framework Convention on Climate Change (UNFCCC) in 2004 and to the Kyoto Protocol in 2009, which are the main international agreements on climate change. Integration process to the European Union (EU) has also contribution to shape national climate change policies. Türkiye is also a member of the European Environmental Agency (EEA). The Paris Agreement (2015), which is the recent global agreement with 190 parties, is ratified by the Grand National Assembly of Turkey in 2021.

As many other developing economies do, Turkey also prioritizes economic development, rather than implementing climate change policies to reduce GHGs emissions. Large-scale infrastructure projects –such as the third bridge (Yavuz Sultan Selim Bridge) and the third airport (İstanbul Airport)- were developed with the expense of increasing GHGs emissions and deepening climatic urban vulnerabilities (Balaban, 2019). In that respect, Türkiye still do not have a national climate law. Instead, Türkiye has Climate Change Strategy 2010-2023 (CCS), National Climate Change Action Plan (NCCAP) and National Climate Change Adaptation Strategy and Action Plan (NCCAS) prepared by the Ministry of Environment, Urbanization and Climate Change (MEUCC); and local action plans by metropolitan municipalities and other municipalities. In the following section national documents and action plans will be examined in the context of social vulnerability concept.

5.2.1. Climate Change Strategy 2011-2023 (CCS)

Climate Change Strategy is a national document prepared by the MEUCC for the period between 2011 and 2023 to draw a general framework of Türkiye's situation in the context of climate change, its

position in global climate change negotiations, and strategies in combatting climate change. Within the scope of mitigation strategy, sets of objectives for different sectors have been set to control GHGs emissions. These sectors are listed below:

- Energy
- Transportation
- Industry
- Waste
- Land Use, Agriculture, and Forestry

The Document also includes objectives for technology development, climate finance, training, capacity development and institutional infrastructure. In the context of this study, it is important to examine which objectives are set to adapt climate change and to what extent these objectives address social vulnerability and climate justice. Table 8 summarizes climate adaptation objectives which are set in the Strategy Document.

Since it is a framework document, the objectives shown in Table 8 are quite general, which can be found in every document prepared to combat climate change. Nevertheless, some shortcomings should be noted. Firstly, most of the objectives touch on technical and environmental issues. There is no strategy for the most vulnerable groups to make them resilient to the adverse impacts of climate change or on achieving climate justice in an inclusive way. Secondly, it is understandable that the objectives are not locally specific or differentiated according to any region-based classification because it is a national framework. However, the critical thing here is that there is also no provision to support local action in adaptation to climate change.

Table 8. Climate Adaptation Objectives of the Strategy Document 2011-2023

Short term	• Activities on agricultural drought • Developing and implementing regional flood plans • Capacity development in combatting animal diseases and plant pests • Afforestation • Training and awareness raising activities
Medium term	• Developing early warning systems • Improving water legislation • Integrating climate adaptation concept into the legislation • Preparing hazard and risk maps of floods and landslides • Conducting climate change vulnerability assessments around the country
Long term	• Fostering efficient wastewater usage in urban areas • Promoting architectural and building materials suitable for the local climatic conditions • Developing mechanisms to make risk and disaster management plans more accessible to the public • Developing health policies against contagious diseases and vectors related to climate change • Minimizing the impacts of extreme events resulting from climate change

5.2.2. Türkiye's National Climate Change Action Plan 2011-2023

The National Climate Change Action Plan of Turkey (NCCAP) is prepared by the MEUCC for the period between 2011 and 2023. Similar to the Climate Change Strategy, it sets purposes and objectives for 7 sectors which are listed below:

- Energy
- Building
- Industry
- Transportation
- Waste
- Agriculture and land use and forestry.

To summarize purposes in these sectors, reducing greenhouse gas emissions, increasing the share of clean/renewable energy and developing the capacity of information mechanisms are highlighted points in all sectors to combat climate change. The NCCAP also aims to "identify risks of natural disasters caused by climate change, such as floods, overflows, avalanches, landslides" and strengthen the capacities of local public organizations about responding to these disasters" (NCCAP, 2012). In the context of adaptation to climate change, the NCCAP sets purposes and objectives in various areas. Because these areas are the same as in the National Climate Change Adaptation Strategy and Action Plan (NCCAS), they will be detailed in the following section.

5.2.3. Türkiye's National Climate Change Adaptation Strategy and Action Plan 2011-2023

The National Climate Change Adaptation Strategy and Action Plan is another important document prepared by the MEUCC for the period

between 2011-2023. It defines adaptation strategies for the following areas:

- Water Resources Management
- Agriculture Sector and Food Security
- Ecosystem Services, Biological Diversity and Forestry
- Natural Disaster Risk Management
- Public Health

As it is shown in Table 9, there are, in total, 16 purposes, 39 objectives and 159 actions defined in the NCCAS for adaptation to climate change. When each of them is examined, one objective - *Determining the socio-economic impacts of climate change on the agriculture sector*- in the area of the Agriculture Sector and Food Security has an emphasis on social vulnerability. Accordingly, the conditions of the poor people who are at risk of reaching water, food, shelter, and health services will have to get worse by climate change.

Table 9. Numerical distribution of adaptation strategies by sector

Area	Number of the Purposes	Number of the Objectives	Number of the Actions
Water Resources Management	5	8	38
Agriculture Sector and Food Security	5	13	47
Ecosystem Services, Biological Diversity and Forestry	2	9	39
Natural Disaster Risk Management	2	5	15
Public Health	2	4	20
Total	16	39	159

By saying 'poor people', it refers to local people, farmers, and women in the agriculture sector. It is highlighted that women are more likely affected by climate change than men because studies show that the number of women who lost their lives is higher than the number of men. Women are also primarily vulnerable to the indirect effects of climate change on human health, such as nutrition, vector-borne illnesses, respiratory disorders, and other water-related illnesses (NCCAS, 2012). In this regard, planned actions are summarized below:

- Identifying the poor farmers working in agricultural sector who have been adversely impacted by climate change and taking needed measures
- Providing training and publication services to female farmers to help them advance their knowledge and skills and to teach the technologies and methods that complies with climate change

One of the objectives of this thesis is to evaluate whether climate adaptation policies address the social vulnerability. Although the answer is yes, it is quite narrow because of the following reasons. First of all, poverty analysis is limited to the agricultural sector. Local people, small farmers, and women who work in the agricultural sector are accepted as the most vulnerable group to climate change. There is not any analysis of the urban poor who are already vulnerable to any environmental and economic crisis because they are socially excluded from ‘‘market, bureaucratic, associative and communal’’ relations (Reimer, 2004). Moreover, because they spend a large share of their income on food, especially the urban poor are vulnerable to a rise in food prices (Leichenko & Silva, 2014) resulting from the adverse impacts of climate change on agriculture. Secondly, it has been stated that gender is a determining factor in vulnerability to climate change, however, planned action is, again,

limited to training female farmers on agricultural technologies. In addition to the fact that this action was insufficient to mitigate the negative effects of climate change that women farmers are exposed to, an action for women working in other sectors and women not working in any business line was not included in the NCCAS. Finally, while cooperation with many ministries and related institutions is projected, the Ministry of Family, Labor and Social Services is not included as one of the stakeholders, which indicates that social policy to reduce the effects of climate change on the poor is not put on the agenda.

CHAPTER 6

EVALUATION OF URBAN CLIMATE ADAPTATION POLICIES: THE CASE OF İZMİR

6.1. The City Profile of İzmir

With a total population of 4, 425,789 (Nüfus ve Konut Sayımı, 2022), İzmir is Turkey's third most populated city which is located in western Anatolia, in the Aegean Region. It is a metropolitan municipality with 30 districts in total. In addition to 11 central districts (Balçova, Bayraklı, Bornova, Buca, Çiğli, Gaziemir, Güzelbahçe, Karabağlar, Karşıyaka, Konak and Narlıdere) there are 19 more districts which are called as rural areas (Aliağa, Bayındır, Bergama, Beydağ, Çeşme, Dikili, Foça, Karaburun, Kemalpaşa, Kınık, Kiraz, Menderes, Menemen, Ödemiş, Seferihisar, Selçuk, Tire, Torbalı and Urla).

İzmir is in the Mediterranean climate zone with hot and dry summers and warm and rainy winters. The annual average temperature varies between 16ºC (Bergama) and 17ºC (Bayındır). Considering the extreme values measured in İzmir, the temperature varies between a maximum of 45.1ºC (Torbalı) and a minimum of -13ºC (Ödemiş). The rainfall amount shows the greatest variability among the climate elements in İzmir. Although the annual average amount of precipitation is 700 mm, depending on the changes in the general atmosphere circulation, the total precipitation approaches 1000 mm in some years and decreases to around 300 mm in some years. The effects of the Mediterranean climate are observed in İzmir's

vegetation. There are all kinds of Mediterranean plants. There is scrub flora in places where forests have disappeared due to overgrazing, fire and field clearing for centuries (İzmir Valiliği, 2022).

İzmir, which has an important potential in terms of national and international transportation has many ports, especially the Alsancak Port. Due to its diversity in terms of transportation and logistics infrastructure and economic activities, İzmir has maintained its feature of being an important trade center throughout its history (Akgüngör et al., 2017).

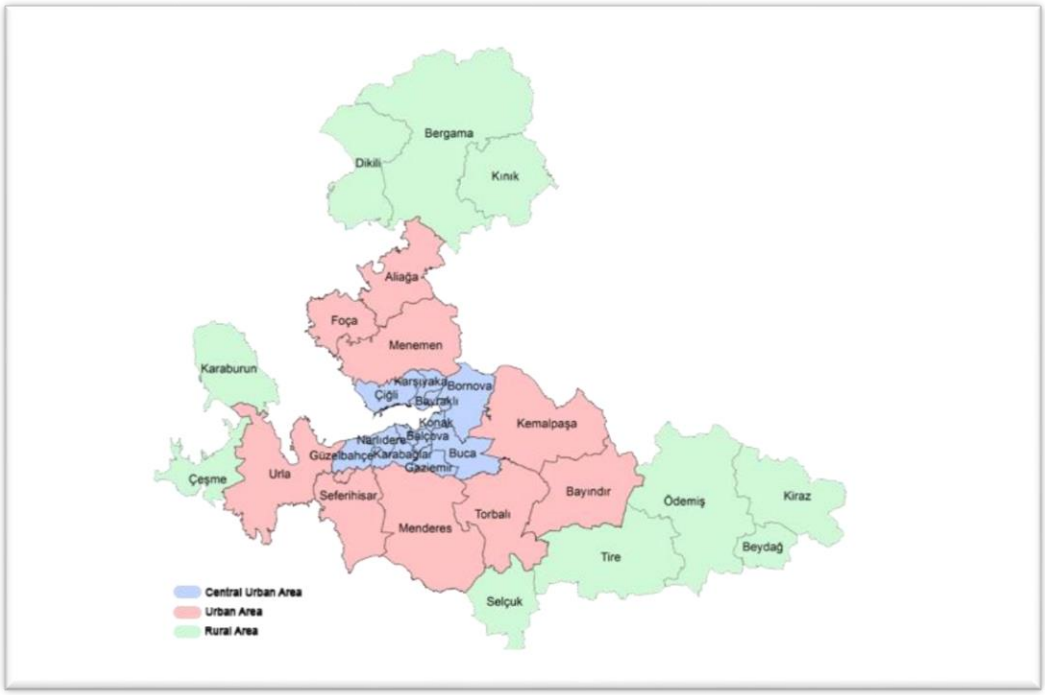

Figure 9. Map of İzmir according to urban and rural areas (Source: GCAP, 2021)

According to the Gross Domestic Product (GDP) calculations at the provincial level at current prices, İzmir ranks third with a share of 462 billion 152 million TL and a share of 6.4% of total GDP in 2021 (İl Bazında Gayrisafi Yurt İçi Hasıla, 2022). According to the sectoral distribution of the workforce in 2021, 58.1% of the employees work

in the service sector, 32.9% in the industry and 9.0% in the agriculture sector (İş Gücü İstatistikleri, 2022). The major industrial sectors of İzmir are "food and beverages, weaving and textiles, beer and tobacco products, petrochemicals, automotive, cement, olive oil, fertilizer, iron-steel, agricultural machinery, ceramics, and raw materials for construction" (GCAP, 2021).

6.2. Climatic Vulnerability of İzmir

As a coastal city in the Mediterranean Basin, İzmir is vulnerable to the impacts of climate change. There are several extreme meteorological events that may become more likely to occur in İzmir as a result of climate change. One of the most significant climate-related risks for İzmir is heat waves. As temperatures rise, the frequency and intensity of heat waves are expected to increase. This can lead to health risks for residents, especially the elderly, children, and those with pre-existing medical conditions. Hotter and drier weather conditions may also increase the risk of wildfires in surrounding areas. Another major risk for İzmir is sea level rise. Particularly, low-lying areas of the city and infrastructure along the coast are vulnerable. Changes in precipitation patterns can also impact Izmir's climate vulnerability. Some climate models predict that the region may experience more frequent and intense rainfall events, which can lead to flooding and landslides. On the other hand, prolonged dry periods can lead to drought conditions, which can impact agricultural production and increase the risk of wildfires. Table 10 summarizes RCP 4.5[2] and RCP 8.5 scenarios for İzmir. Overall, because İzmir is a city that faces and will continue to face

[2] Representative Concentration Pathway (RCP): Scenarios that include time series of emissions and concentrations of the GHGs. RCP 4.5 is an intermediate pathway in which emissions peak around 2040s, then start to decline. RCP 8.5 is the scenario in which emissions continue to rise throughout 21st century (Representative Concentration Pathway, 2020)

significant climate-related risks, it is important for local governments to take initial measures to adapt to these risks.

Table 10. İzmir's Climate Modelling for 2050-2100 (Source: A Framework for Climate-Resilient Cities: A Green Adaptation Guide, 2019)

RCP 4.5- Moderate Scenario	**RCP 8.5- Worst-case Scenario**
• Temperature: While an increase in temperature is expected in the low altitudes, an annual decrease is observed in the high altitudes due to the excessive cooling in the winter months. • Total Precipitation: An increase is observed in general. • Evaporation: While a large increase is expected in the low altitudes, it is seen that there will be a decrease in the high areas. • Average Soil Temperature: While a large increase is expected in low areas, it is modeled that it will be low in high areas. • Average Soil Moisture: While a large increase is expected in low altitudes, it will be a lower increase in high altitudes	• Temperature: While a high increase in average temperature is expected in areas close to the sea and in low altitudes, a decrease is expected in the annual average in areas above 1500 m altitude. • Total Precipitation: A decrease is observed in İzmir in general. • Evaporation: In general, an increase is observed in all regions. • Average Soil Temperature: While the temperature increases in the low altitudes, a slight decrease is observed in the high areas. There is an increase in general. • Average Soil Moisture: It is modeled that there will be a high increase in the low altitudes and a low increase in the high regions.

(Table 10. cont.)

• Average Wind Speed: While an increase in wind is observed in the high areas, a low increase or decrease is observed in the low areas. • Radiation: While a large increase is expected in the low altitudes, it is seen that there will be a decrease in the high areas.	• Average Wind Speed: In general, it is in a decrease. • Radiation: While the highest increase is seen in the low altitudes, the increase continues as one goes to the high altitudes.

6.3. Climate Action in İzmir

İzmir Metropolitan Municipality formulates its policies to cope with climate change based on two concepts. The first one is climate action which is run through climate change action plans. There are two major climate action plans of the Municipality: Sustainable Energy and Climate Action Plan (SECAP) and Green City Action Plan (GCAP). Both were developed by the Directorate of Climate Change and Clean Energy, which is affiliated to the Climate Change and Zero Waste Department of the Municipality. The interviewee, who is responsible for climate action plans and works as an engineer in the Directorate of Climate Change and Clean Energy, says the following about the climate action plans of Izmir Metropolitan Municipality:

"The municipality is not legally obliged to prepare a climate action plan. This is a completely voluntary commitment. There is no legal binding either. A local government has no obligation to produce a policy text either on greenhouse gas reduction or on climate adaptation. Despite that, we still took the initiative and started these studies. We are trying to do as much as a municipality can do here.

İzmir is already in a region affected by climate change. Summer drought, heat waves, forest fires, floods… We experience these kinds of things. I can say that being aware of these and making the city more resilient is both the vision of the president and the basis of our work" (Interview with the responsible official for climate action plans, 2022).

Table 11. Climate action documents of İzmir Metropolitan Municipality

Sustainable Energy and Climate Action Plan (2021)
Green City Action Plan (2021)
Izmir's Strategy for Living in Harmony with Nature (2021)
A Guide for Urban Climate Adaptation (2019)
A Framework for Resilient Cities to Climate Change: Green Revision Guidebook (2019)
A Brochure on Urban Climate Adaptation for Children (2019)

Izmir's Strategy for Living in Harmony with Nature is another roadmap to combat climate change and is prepared based on SECAP and GCAP. There are also documents on adaptation and resilience particularly: A Guide for Urban Climate Change Adaptation; A Brochure on Urban Climate Change Adaptation for Children; A Framework for Resilient Cities to Climate Change: Green Revision Guidebook (See Table 11).

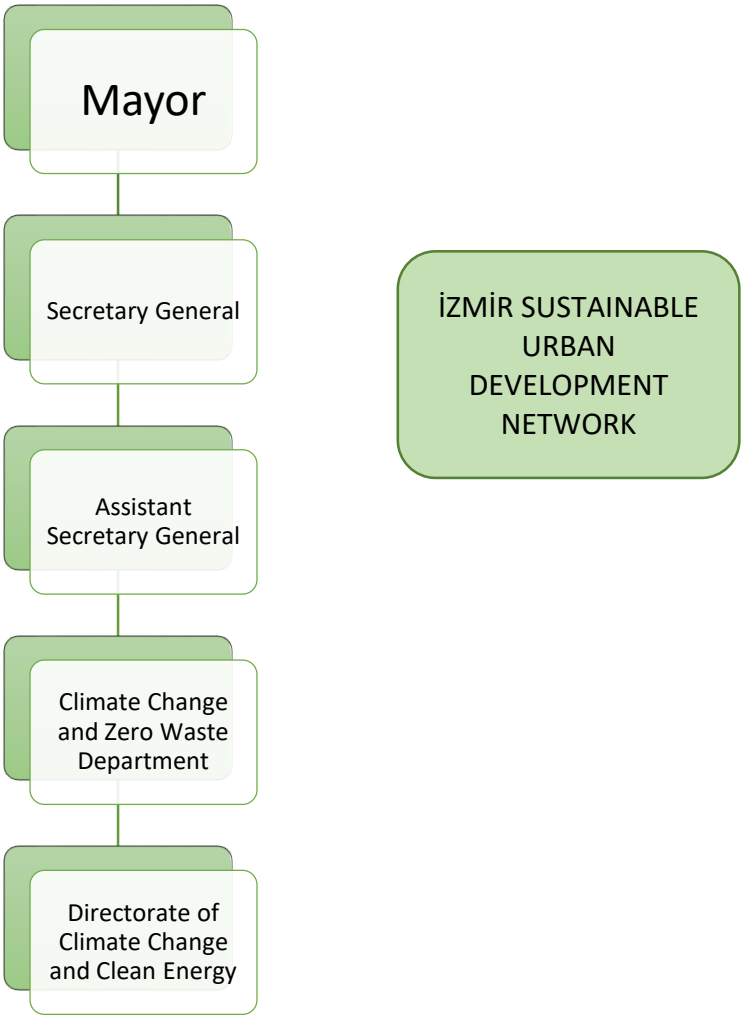

Figure 10. Organizational structure of İzmir Metropolitan Municipality for climate action

Secondly, İzmir Metropolitan Municipality builds its climate action discourse on sustainability. It integrated Sustainable Development Goals into its Strategic Plan of 2020-2024. It is a common understanding that there is not any kind of sharp distinction between actions to achieve urban sustainability and actions to combat climate change. Particularly, sustainability is considered together with urban resilience. In this respect, Izmir Sustainable Urban Development Network (İzmir SKGA) was established to bring city actors together for achieving sustainable development through collaborative action. In other words, it is as an 'urban alliance' with the aim of localization

of Sustainable Development Goals. To summarize, climate action in İzmir is shaped around climate change action plans developed by the Directorate of Climate Change and Clean Energy and sustainability actions by the İzmir Sustainable Urban Development Network (See Figure 10). In the following sections Strategic Plan, SECAP, and GCAP will be analyzed in the context of the social dimension of urban climate adaptation. Also, the activities of İzmir SKGA will be evaluated to what degree they are complimentary with climate adaptation actions.

6.3.1. Strategic Plan (2020-2024)

The Strategic Plan (2020-2024) of Izmir Metropolitan Municipality includes 7 strategic goals and 26 sub-targets (See Table 12). While the targets in black represent SDGs, the green lines represent priorities peculiar to Izmir. This is an example of mainstreaming approach that is the integration of global sustainability goals into a local plan. When we look at the services planned to be provided in each field of activity, there are articles for combating climate change (e.g. providing sustainable and clean energy; developing climate change action plans). There are also articles on improving the conditions of disadvantaged groups (the disabled, the poor, the elderly, women, and children) and on enhancing participation mechanisms (e. g. empowering women; supporting project aiming to enhancing the life quality for the disabled; meeting the needs of the poor) (Stratejik Plan, 2022). However, they are not considered as climate adaptation actions because of the lack of direct relationship that should be constructed between adaptation actions and social vulnerability.

Table 12. Strategic Goals and Targets of Izmir Metropolitan Municipality (Source: Strategic Plan, 2022)

Strategic Goals (2020-2024)	Sub-targets
Infrastructure	• Infrastructure • Sustainable Living Spaces • Green Infrastructure
Quality of Life	• Health and Sports • Accessible and Clean Energy • Public Transportation • Urban Transportation
Economy	• Reducing Poverty • Partnership for the Sustainable Development • Access to Food • Sustainable Economic Growth • Izmir as a World City
Democracy	• Disadvantaged Communities • Peace and Justice • Reducing Inequalities • Right to the City and Sense of Belonging the City • Digital Transformation
Nature	• Climate Action • Recycling • Unity of the Ecosystem • Seas and Coasts • Clean Water
Lifelong Learning	• Lifelong Learning • Institutional Resource Management
Culture and Arts	• Cultural Preservation • Cultural Production • Arts of the World

6.3.2. Climate Change Action Plans of Izmir (SECAP and GCAP)

There are two major climate change action plans developed by İzmir Metropolitan Municipality. The first one is Sustainable Energy and Climate Action Plan (SECAP) and the second one is Green City Action Plan (GCAP). While the SECAP is prepared through a commitment to Covenant of Mayors by using its methodology (See Figure 11), the GCAP, on the other hand, is developed according to methodology of the European Bank for Reconstruction and Development (EBRD) (See Figure 12). In spite of different methodologies, SECAP's sectors and actions are largely the same as GCAP. In other words, a total of 47 actions are defined in GCAP and SECAP also includes 44 of them. There are 3 actions specific to GCAP (Interview with supervisor of GCAP, 2022).

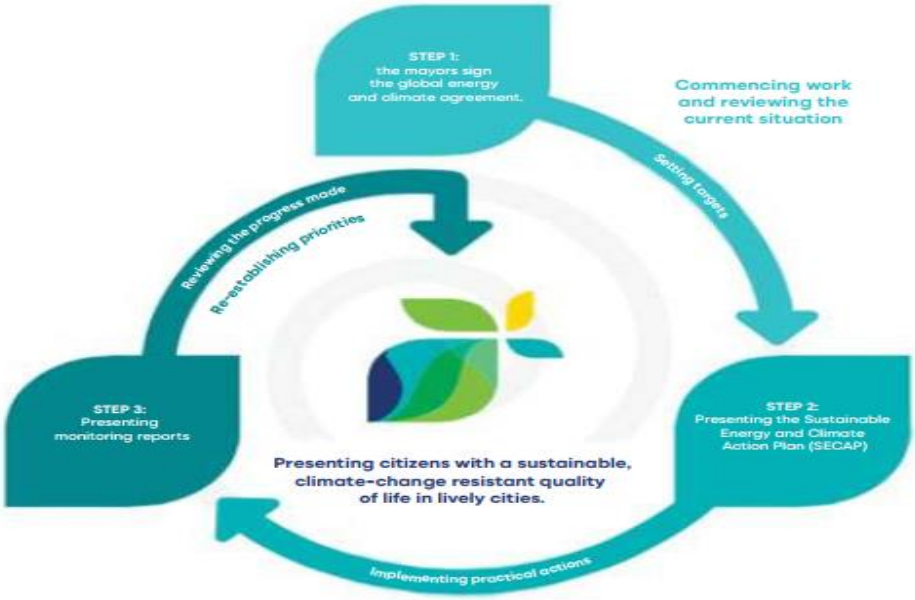

Figure 11. Methodology of Covenant of Mayors for SECAP (Source: İzmir's Strategy for Living in Harmony with Nature, 2021)

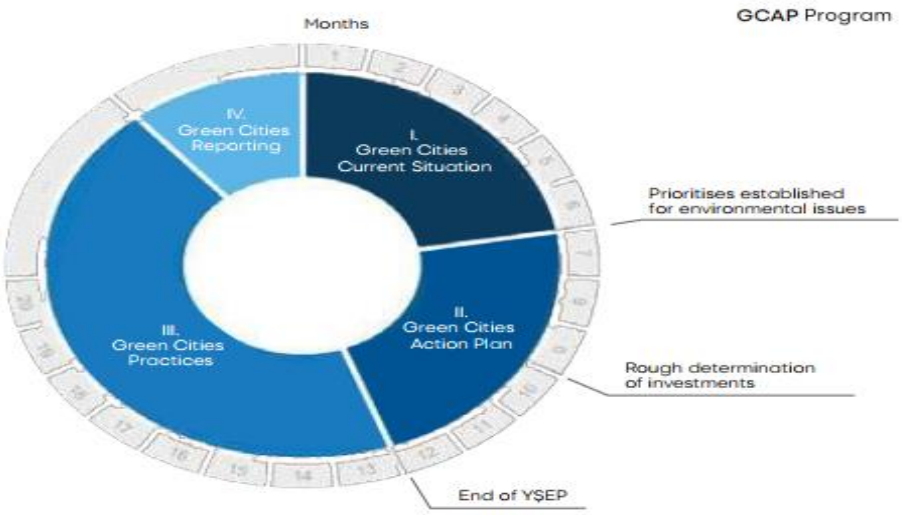

Figure 12. Methodology of EBRD's Green Cities Program (Source: İzmir's Strategy for Living in Harmony with Nature, 2021)

The historical background of the preparation process of two plans is explained by the responsible official below:

''In 2014, when our department was just established, we started by researching European Union projects. We learned that cities have sustainable energy action plans. It was a new concept for us. It was something we didn't know. After doing some research, we thought that we, as a municipality, should make this plan. But of course, this is a political choice. As technical employees, we cannot decide, only the top management could make this decision. We talked to the top management about these plans. At first, of course, they were a little hesitant. Because such projects are seen as the performance of the municipality as well as the performance of the city. SECAP is, actually, the plan of the entire city. It's not just a municipal plan. It is the performance of the city as a whole. There are many actors in the city, not just the municipality. This is a work that can be put

forward with the joint effort of all actors. Anyway, we convinced the management to make this plan. In 2016, a sustainable energy action plan called SEAP was made. In line with the decision taken by the Covenant of Mayors, it is committed to reducing emissions by 20% by 2020.

However, after we prepared the action plan, the European Union updated these commitments. The reduction target is set at 40% by 2030. Also, targets related to climate adaptation were included in the methodology. The name of the plan changed from SEAP (Sustainable Energy Action Plan) to SECAP (Sustainable Energy and Climate Action Plan). In line with the methodology updated by the Covenant of Mayors with the election of the current mayor in 2019, we decided to update the plan with the decision of the council. The preparation process for SECAP has begun.

On the other hand, we had metro projects that we were trying to do: Narlıdere metro and Buca metro. The municipality needed external financing for the Narlıdere metro project. We talked to the EBRD. They said that if we participate in the Green Cities Program, they will give a grant for the preparation of the Green City Action Plan. The money will not be given directly to us, the EBRD-appointed consultancy company will prepare the plan on behalf of the municipality with its own methodology.

As a result, we made the CoM commitment in 2019. We told the EBRD that we would participate in the Green Cities program. These two developed recently but independently of each other'' (Interview with the responsible official for climate action plans, 2022).

Although these were prepared with the initiative of the İzmir Metropolitan Municipality, there are certain actors involved in the preparation process. To start with SECAP, it is funded by the EU and supported by EBRD and as noted above, prepared according to

methodology of the Covenant of Mayors. Furthermore, there are three private consultancy firms: AECOM, Green Engineering and Demir Enerji. Secondly, GCAP is funded by the EBRD and prepared according to its methodology. Again, AECOM and Green Engineering are two firms involved in the process. The supervisor of the GCAP explains this process in detail below:

''The EBRD appointed AECOM as the consulting company. AECOM is the company that technically prepared GCAP. In addition, AECOM experts supported training activities and reporting. Green Engineering conducted the data collection process. We as the Municipality, guided this company in the data collection process. For example, we wrote the formal letters to the relevant institutions to provide the requested data. Because the company, Green Engineering, has no such authority.

In our side, it was necessary to collect data from each unit and company of the municipality and to involve each unit of the municipality in this process. In this sense, perhaps hundreds of people in the Municipality took part by providing data, attending and contributing to the meetings'' (Interview with the supervisor of GCAP, 2022).

Here to make a brief assessment, there are two separate plans made with different methodologies as SECAP and GCAP. The actions in the plans are largely the same. In addition, both were carried out under the consultancy of the same companies. When asked why, the official made the following explanation:

Firstly, the EBRD's Green Cities Program focuses on environmental pressures. It goes through a methodology about environmental pressures and how the city will react to these pressures. It does not require any calculations. It only assesses the current situation in the city. It proposes an action plan on the current situation. The

reference source for the current situation assessment was the outdated SEAP we prepared in 2016. We reported this to the EBRD and asked if both a new SECAP based on current data and a GCAP could be prepared together. The first response we got was: ''We cannot work on SECAP within the Green Cities Program because SECAP requires greenhouse gas emission calculation and risk-vulnerability analysis. It requires a separate area of expertise. In addition, the grant does not cover these studies.'' Then, negotiations continued and extra funding was found by the EBRD for SECAP. With this funding, AECOM expanded the work to include SECAP. As a result, we agreed to prepare both SECAP and GCAP together. No funds were allocated from the municipality. The EBRD handled this situation entirely with EU funds.

To summarize, we conducted SECAP and GCAP at the same period. The workshops were held together. The calculations for SECAP have been completed. A new greenhouse gas inventory was calculated. Risk-vulnerability analyses related to adaptation were done. So there were two overlapping plans. We did SECAP because we needed to present a plan to the Covenant of Mayors by using its own methodology. GCAP was done as part of the Green Cities Programme. Two separate plans emerged, but we carried out the processes of both together. Therefore, many of the actions were similar.

Secondly, we do not know the appointment process of the consultant firm. It is a process run by the Bank itself. The municipality has no intervention. We did not know AECOM company anyway. On the other hand, unlike AECOM, Green Engineering is a Türkiye-based firm that runs the process of data collection. Demir Enerji was the company we recommended to be involved in the process, as it has previous experience in preparing a local climate action plan. All in all, in this process, the boss was the Bank. EBRD oversaw all

processes. Decisions, payments, etc. managed by the Bank itself. Its representatives attended all meetings.

To classify the institutions involved in the preparation of the plans, EBRD is an international financial institution and AECOM is a multinational consulting firm, while Green Engineering and Demir Enerji are consulting firms operating on a national scale. At this point, it is important to examine how and to what extent local actors are involved in the process since the climate action plan is ultimately a local plan. Table 13 shows local institutions that participated in the workshops and meetings for climate action plans organized by the Municipality.

Table 13. Local Institutions that attended workshops and meetings for the preparation of SECAP and GCAP (Source: Interview with the Responsible Official, 2023)

Public Institutions	• Provincial Directorate of Environment, Urbanization and Climate Change • İzmir Development Agency (İZKA) • İzmir Provincial Directorate of Disaster and Emergency (AFAD) • 2nd Regional Directorate of State Hydraulic Works • İzmir Provincial Directorate of Health • İzmir Provincial Directorate of Agriculture and Forestry • 3rd Regional Directorate of Turkish State Railways • 2nd Regional Directorate of Meteorology

(Table 13. cont.)

Chambers	• TMMOB Chamber of Environmental Engineers İzmir Branch • TMMOB Chamber of Civil Engineers İzmir Branch • TMMOB Chamber of Electrical Engineers İzmir Branch • TMMOB Chamber of City Planners İzmir Branch • EBSO- Aegean Region Chamber of Industry • Izmir Chamber of Commerce
Civil Society Organizations	• Doğa Association • Mediterranean Conservation Society • TEMA Foundation İzmir Office • Aegean Forest Foundation • Aegean Environment and Culture Platform (EGECEP) • Landscape Studies Association (PAD) • World Wildlife Fund (WWF) • World Resources Institute Türkiye (WRI) Sustainable Cities
Academy	• Dokuz Eylül University- Environmental Research and Application Center • Dokuz Eylül University- Civil Engineering Department • Dokuz Eylül University- Institute of Marine Sciences and Technology • Dokuz Eylül University- Department of City and Regional Planning • Ege University- Solar Energy Institute • Ege University- Science Technology Application and Research Center • Ege University- Civil Engineering Department

(Table 13. cont.)

	• Ege University- faculty of Agriculture • Ege University- Department of Soil Science and Plant Nutrition • Izmir Democracy University • Izmir Katip Çelebi University • Izmir Bakırçay University • Izmir Institute of Technology • Yaşar University
Companies	• GDZ Electricity Distribution Inc. • İZMİRGAZ Izmir Natural Gas Distribution Inc. • İzmirjeotermal Inc.

Subsequent to workshops and meetings two boards were constituted: Steering Committee and Technical Committee. While the Steering Committee consisted of top-level officials such as assistant general secretaries, heads of departments, etc., The Technical Committee includes experts with technical knowledge from various fields (Interview with the supervisor of the GCAP, 2022). In the interviews, when asked whether the diversity of the participants in the committees was sufficient in terms of both sectoral and professional aspects, the representative of the TMMOB Chamber of Environmental Engineers replied as follows:

Combatting climate crisis is not something that only the relevant Climate Department of the Municipality can do. Now, in addition to such a department, every unit and every employee must take this crisis into account. Both the social and environmental dimensions need to be internalized. One of the most critical shortcomings is the lack of internalization. The climate crisis is no longer the business of one unit, but of all of us. The municipality should have given us more

say in the preparation of the plans. (Interview with the member of TMMOB Chamber of Environmental Engineers İzmir Branch, 2023).

The Head of Green Growth Policies Unit of İZKA, on the other hand answered as follows:

This is the first time a municipality has made such a plan. For the first time, it directs its investments to green development through such a plan. In this sense, it is very important. However, on the other hand, the active participation of the stakeholders in the industry sector, namely key stakeholders, is required for the industry to accept this plan by all actors. Because they do not adopt something they do not believe in, something they do not express an opinion on. I think the industry component was missing. There was no participation from the private sector. Participation of private sector institutions was ensured through umbrella organizations such as the Chamber of Commerce and the Chamber of Industry. In other words, for a city to be a green city, for green transformation to be provided in a city, especially in a place like İzmir where industrial production has a large share, the industry component should be included more. A study for the industrialists, an analysis of the current situation, a problem determination, and suggestions were never made (Interview with the Head of Green Growth Policies Unit of İZKA, 2023).

In the context of this study, the responsible official for the plans was asked whether social policy experts or people working on urban vulnerabilities were included in the committees. He answered as follows:

''The technical committee consists of people with technical expertise. We also invited officials from the Social Projects Department as well. They participated but their contribution was very limited. They attended mostly as listeners. Because,

unfortunately, climate action plans are seen as a subject in which professional groups such as engineers, architects, and city planners have a voice'' (Interview with the responsible official, 2022).

According to the results of the interviews, the participation of local actors in the preparation of the plans has been limited. More precisely, the participation of local actors, who have knowledge and experience in reducing the peculiar environmental, economic, and social vulnerabilities of the city that may deepen due to climate change, was limited while the plans were being prepared. This situation caused the plans to remain as general framework plans developed with international actors, although they were named as local action plans.

The fact that the plans remain as a general framework in combatting climate change also raises questions about the monitoring process. The representative of the TMMOB Chamber of Environmental Engineers commented on this issue as follows:

The most important issue here is that the targets are determined, and the actions are determined, but they are not implemented. We, as ÇMO, are monitoring whether they are implemented or not. You set the goals and targets, but do you have a budget, leadership, and motivation to take action? Are every target and action implemented? What is the way to go about it? We are looking for answers to these questions (Interview with the member of TMMOB Chamber of Environmental Engineers İzmir Branch, 2023).

When the responsible official of the plans was asked how the monitoring process was progressing, he replied as follows:

There is confusion in the municipality about the monitoring of the plans. The mayor assigned the task of coordinating these works to

the İzenerji Inc[3]. But there is nothing definite. As a unit, we put the monitoring works on hold. There is confusion about what is to be done and by whom. (Interview with the responsible official, 2023).

Sustainable Energy and Climate Action Plan of İzmir (SECAP)

As a member of Covenant of Mayors, Izmir Metropolitan Municipality prepared a local climate action plan by using the methodology of Covenant of Mayors. There are three fundamental commitments:

- to reduce greenhouse gas emissions by 40% by 2030 (base year is 2018)
- to improve climate resilience
- to provide sustainable and affordable energy (Izmir SECAP, 2020).

It is a kind of a dedicated plan but containing mitigation and adaptation actions together in the same document. In the context of this study, adaptation actions will be examined through its related fields and dimensions.

SECAP identifies 10 areas for adaptation actions listed below:

- Water
- Energy
- Environment & Biodiversity
- Health
- Civil Protection & Emergency
- Buildings
- Land Use Planning
- Transport

[3] İzenerji Inc. is a municipally owned corporation.

- Agriculture & Forestry
- Tourism
-

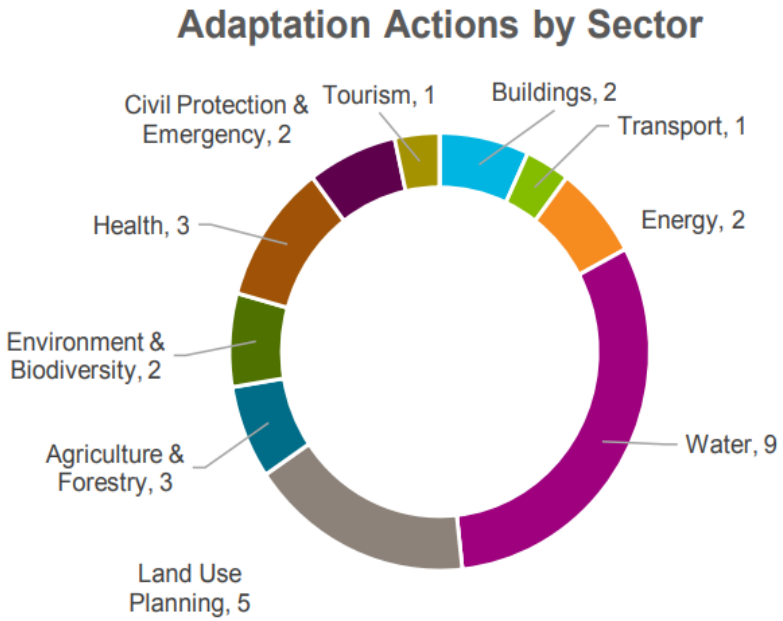

Figure 13. Number of adaptation actions by sector described in SECAP (Source: Izmir SECAP, 2020)

There are 30 adaptation actions in total and allocation of them according to the activity fields is shown in Figure 8. When each activity area is examined in detail, it is seen that almost all of them includes physical and environmental adaptation actions. There is only one action, under the 'Health' headline, targeting vulnerable groups:

<u>SECAP H2:</u> Identifying groups that are vulnerable to health in the face of the effects of climate change and implementing strengthening strategies such as early warning systems.

It is highlighted that when developing policies, practices, and interventions, equity must be given top priority in order to take into account how climate change affects the many socioeconomic sources

of vulnerability such as gender equality (Izmir SECAP, 2020). However, this approach is not featured in any of the actions of sectors other than health. Whereas, as noted in early chapters, effective adaptation requires not only a focus on environmental and sectoral vulnerability but also, even more importantly, centering social vulnerability and justice issues.

Green City Action Plan of İzmir (GCAP)

As a part of Green Cities Program of European Bank for Reconstruction and Development (EBRD), İzmir Metropolitan Municipality developed Green City Action Plan with the technical and financial support of EBRD. GCAP of İzmir includes 47 actions in 9 sectors.

- Buildings
- Land-use
- Transport
- Public Health
- Energy Supply
- Administrative Organizational Structure
- Solid Waste
- Water Cycle Management
- Industries

Upon detailed examination of each action in the sectors above, it was determined that none of them was directly related to the social dimension of climate action in line with the concepts of social vulnerability and climate justice. Most of the adaptation actions represent changes and regulations towards physical infrastructure. The Head of the Green Growth Policies Unit of İZKA commented on the scope of the GCAP as follows:

The scope of the plan is more investment-oriented. Because it is a plan prepared in cooperation with the EBRD, it was made to determine the major investments related to the areas where the EBRD can provide loans to the municipality. That's why I think the scope remained at the scale of infrastructure investment. However, the scope of a green city action plan should have both economic, environmental, and social dimensions. *To summarize, I find this plan beneficial for İzmir, but it is limited in scope to direct only municipal services. The green city action plan is not a plan that includes targets for the green transformation of the whole of İzmir. In that sense, it is limited both in terms of scale and scope* (Interview with the Head of Green Growth Policies Unit of İZKA, 2023*).*

When asked why the actions in the GCAP were limited to infrastructure-based works, the supervisor of the GCAP replied as follows:

"There is an algorithm used by the EBRD and AECOM. This algorithm determines the topics to be included in the plan: land use, energy, waste, water, air quality, etc. For example, we noticed that although İzmir is a gulf city, there is no marine biology among the designated topics. We added marine biology as a separate topic through mutual discussions and negotiations… Generally speaking, the narrative is more about engineering and the environment. Of course, under the heading of health, there is the issue of social vulnerability. But there is no social issue as a head topic. So, it, the GCAP, is not as comprehensive as the 17 SDGs of the United Nations. Of course, for example, an improvement in the green area is also indirectly aimed at reducing urban injustice. In this sense, it has an indirect effect, but not directly" (2022).

The responsible official of the climate action plans also commented as follows:

One of the shortcomings in the action plans is that both create a very general framework. We know the risks related to climate change in İzmir. We predict there will be floods and heat waves. We know there will be a drought. But we think that this will homogeneously affect all of us. Actually, it is not. Some people will be affected much more. For example, when a heat wave hits the city, those without air conditioning in their home will be more affected. It is necessary to identify vulnerabilities and work on a neighborhood scale. It is possible for the plan to be a city-specific local plan only with small-scale, neighborhood-scale plans (Interview with the responsible official, 2023).

6.3.3. İzmir Sustainable Urban Development Network

İzmir Sustainable Urban Development Network (SKGA) was established in 2019 to localize Sustainable Development Goals and implement urban-level sustainability policies. It is an urban alliance including urban actors from the public institutions, industry and business world, professional chambers, civil society organizations, and universities (See Figure 14). Among its partners there are also global initiatives such as United Nations Development Program (UNDP), United Cities and Local Governments (UCLG-MEWA) and Sustainable Development Solutions Network (SDSN Turkey). Currently, the executive committee consists of 13 members from various sectors (See Table 14). There is also an advisory committee with 34 active members (2022) (See Table 15), which has a flexible process to participate in. İzmir SKGA, which has a holistic and inclusive perspective on the city, states that it is open to cooperation with any person and institution having something to say about urban sustainability.

Figure 14. Organizational structure of İzmir SKGA

Table 14. Number of the executive committee members according to sectors

Sector	Number of members
Public	5
Private	2
Non-governmental organizations	3
Academia	1
Young sustainability ambassadors	2
Total	13

Table 15. Number of the advisory committee members according to sectors

Sector	Number of Members
Public	10
Private	5
Non-governmental organizations	7
Academia	5
Young sustainability ambassadors	7
Total	34

District Sustainability Offices

Sustainability offices have been established in 25 district municipalities to localize SDGs in İzmir. In this way, it is envisaged that all projects and activities of district municipalities will be carried out following SDGs. The duties and responsibilities of these offices are defined by SKGA. The first is to strengthen the internal sustainability capacity in the municipality through organizing awareness training and workshops on measurement, evaluation, and reporting for decision-makers and employees based on SDG indicators. The second is to prepare the city's sustainability-themed plans and projects such as sustainability strategic plans, climate action plans, climate adaptation plans, etc. In addition, these offices are also responsible for monitoring whether the sustainability commitments are fulfilled. The third is to run sustainability campaigns throughout the city that is conduct campaign activities to encourage non-governmental organizations, private and public

institutions, universities, professional chambers, and citizens to participate in sustainability operations. The fourth is to develop collaborations for the localization of the SDGs. It is expected to develop collaborations at local, regional, national, and global levels to strengthen the sustainability capacity of the city.

Webinars and Seminars

A series of webinars and seminars on sustainability which aimed to strengthen the capacity of sustainability offices of district municipalities were held. The main issues that focused on were SDGs; sustainable urban planning; green city approaches; Voluntary Local Reviews (VLRs); urban resilience and disaster management; the role of local governments in quality education; and food security.

İzmir Youth Workshop

İzmir Youth Workshop was held with the theme of the culture of partnership in combatting climate crisis. Seminars on international cooperation and global climate initiatives were held. Interactive working groups were generated in the workshop where young people between 15-30 came together. A policy paper as a roadmap to build urban resilience against the hazards and risks resulting from the climate crisis was produced by young participants. They also highlighted the necessity of collaboration between local governments and civic society through developing ideas and guidance for a sustainable city. More importantly, access to the means of collaboration was demanded. The Mayor of Izmir announced this document at the UCLG Culture Summit as a message from young people.

Young Sustainability Ambassadors Program

Young Sustainability Ambassadors is a program designed for fresh graduates. Complying with the EU Green Deal, the aim is to meet the human resources needs of the business world in the field of sustainability. The program is supported by the EU Delegation to Turkey, ESIAD, EU Information Center, and SDSN Turkey. This program, which is 12 weeks in total, is organized as 6 weeks of theoretical training and 6 weeks of internship. Project-based internship opportunities are offered in the private sector and the sustainability offices of local governments. Some of the young people were employed in the institutions where they completed their internships.

The Sustainability Ambassadors Program for Professionals (PROSEP)

The Sustainability Ambassadors Program for Professionals, developed in cooperation with EGIAD, aims to support the business world in formulating sustainability policies in line with the criteria of the European Green Deal. One of the focus areas of this program is the ways to access green funds. It also aims to create sustainability ambassadors of the business world that will lead the sectors. Another aim is to provide theoretical training to businesses on sustainability strategies as well as prepare sustainability analysis reports of these businesses by experts.

Izmir Voluntary Local Review (VLR)

Voluntary Local Review (VLR) is developed as *a "reporting tool to assess, monitor and present local achievements in implementing the SDGs".* It is also a mechanism that guides local priorities and development planning while enhancing and extending the political

and social commitment of many stakeholders to the SDGs (Suri et al., 2021; UN-Habitat and UCLG 2021). As no standardized VLR process exists, there is no institutions enforcing the implementation of VLRs. With each city having its own preferred method, process, and ultimate goal, VLRs can be considered as an innovation by and for the cities to accelerate progress on their local priorities (Suri et al., 2021).

One of the most important activities of İzmir SKGA is to publish Voluntary Local Review Report of İzmir which considered as a significant step towards urban sustainability.

In the preparation of the Izmir VLR, the Sustainable Urban Development Network organized a structure that includes a wide stakeholder network with different professional groups and expertise from public, private sector and NGOs at local, national and international level (İzmir VLR, 2021). The methodology is summarized in six stages: alignment of activities; stakeholder education; evaluation of SDGs; localization of SDGs; research and data collection; presentation (See Table 16).

Table 16. Methodology of the Izmir VLR

Alignment of activities	• Activities of İzmir Metropolitan Municipality • Activities of civil society organizations • Activities of private sector • Activities of district municipalities • Activities of public institutions
Stakeholder education	• Educating stakeholders on SDGs and receiving feedbacks

(Table 16. cont.)

Evaluation of SDGs	• Social • Environmental • Economic
Localization of SDGs	• Localization of global indicators • Determination of local indicators • Linking activities with local objectives
Research and Data Collection	• Data from Turkish Statistical Institute • Data from İzmir Metropolitan Municipality • Reports by civil society organizations • Academic studies
Presentation	• Presentation of İzmir VLR • Receiving feedbacks

6.4. Discussion

Considering the close relationship between the climate adaptation actions and sustainable development goals, İzmir Metropolitan Municipality constructs its local climate action within the framework of this relationship. On the one hand, it has developed climate change action plans by participating in transnational networks and using the methodologies determined by these networks. On the other hand, it has implemented a kind of mainstreaming strategy by including the SDGs in the strategic plan. It also established SKGA, which brings together all city actors to work together with the aim of creating sustainable city. In this sense, Izmir's climate adaptation actions can be evaluated in three different contexts.

First of all, the integration of the sustainable development goals into the Strategic Plan – the mainstreaming approach – is an important step considering the link between climate adaptation and sustainability approaches. However, the lack of a direct target for

social vulnerability and climate justice shows that the social dimension of climate adaptation is ignored. It is not possible to achieve climate adaptation without intensive studies on the social dimension. Therefore, this mainstreaming method implemented by the Izmir Metropolitan Municipality is an important step, but not sufficient to achieve climate adaptation.

Secondly, as mentioned above, İzmir Metropolitan Municipality developed two different climate action plans, SECAP and GCAP, by joining two different transnational networks. Although the methodologies used are different, the actions determined in both plans are largely the same. It is a controversial issue to make two plans that include the same actions in terms of spending time and resources. Moreover, it can be said that these plans are not inclusive enough and are mostly limited to environmental and technical strategies. The fact that both plans were prepared together with multinational actors and companies working on a national scale caused the plans to remain as a strategy document that does not address the city's unique environmental and social vulnerabilities and draws only a general framework. In other words, as mentioned by all interviewees, the limited participation of various local actors who have knowledge and experience in reducing the peculiar environmental, economic, and social vulnerabilities of İzmir resulted in a weak response to climate change in terms of local fragilities.

When the adaptation actions of these plans are examined, there is almost no action that directly emphasizes the social dimension of adaptation, namely social vulnerability, climate justice, gender, etc. One reason for this is the standards set by transnational networks for the preparation of plans. The deficiencies in these standards are seen directly in the plans developed. However, there is an important detail here: İzmir Metropolitan Municipality, while preparing GCAP, as the supervisor of the plan mentioned, had an attempt to add the

field of action on marine biology which is not included among the designated topics. On the other hand, the fact that the Municipality did not have an attempt at an area of action that addresses social vulnerabilities showed that this issue is not among the priorities yet. Secondly, the plans were not actually prepared by the municipality, but by AECOM, a private company partnered by the EBRD. As it is stated above, the municipality provided the coordination between the institutions involved in the process and requested the necessary data from the official institutions by using its legal personality. In a process where the municipality could not intervene in the methodology in the favor of social dimension of local climate adaptation by taking the initiative, it cannot be expected that this intervention will be made by a multinational private company.

Thirdly, it can be said that İzmir Metropolitan Municipality carries out climate action within the scope of sustainability concept. The activities of SKGA, which is an urban alliance, are mostly focused on raising awareness. The target audience of these activities has so far been young people, district municipalities and private companies in the city. Other than that, perhaps the most important is the VLR report for the localization of the SDGs. For each SDG, the current situation of Izmir and what needs to be done have been determined. Considering the link between climate adaptation and sustainability, it is clear that the VLR report is a very important resource for both climate adaptation planning and sustainable development. However, again, there is not any planned activity of SKGA which targets socially vulnerable groups. Even within the scope of sustainable development activities, the issue of social vulnerability remains disregarded.

CHAPTER 7

CONCLUSION

This study has mainly focused on the social dimension of climate adaptation policies with regard to social vulnerability in Türkiye at the national scale and in İzmir at the local scale. It was aimed to define social dimension of climate adaptation and to evaluate policy documents whether they address it or not. Through a review of the literature, scientific reports and policy documents, and in-depth interviews, it has been revealed that the social dimension of climate adaptation was not included in policy documents or action plans on climate adaptation.

7.1. Summary of the Thesis

Subsequent to the introduction chapter, in the second chapter the historical background of urban climate adaptation was explained. Adaptation and mitigation strategies together shape global climate action. Local adaptation policies are often set out through climate action plans. According to the IPCC, adaptation policies are classified as incremental and transformational. Although adaptation policies are examined in three different dimensions -environmental, institutional, and social- the main focus of this study is the social dimension. The social dimension is explained with the concepts of social vulnerability and climate justice. While social vulnerability is defined through poverty and exclusion from social and political

relations, climate justice refers to a way of life in which these vulnerabilities are eliminated.

In the third chapter the relationship between the concepts of climate adaptation and sustainable development was examined. They are different concepts but similar in purpose. A holistic climate adaptation policy, whose social dimension is not ignored, contributes to the overall goal of sustainable development by ensuring climate justice. Likewise, sustainable development goals include strategies to facilitate climate adaptation.

In the fourth chapter local climate adaptation planning was explained. Mainstreaming and dedicated approaches are two methods used by local governments in adaptation planning. Transnational climate networks have an important role in the planning process because municipalities usually follow methodologies provided by these networks. Climate finance institutions also steer the planning process towards the actions they prefer to fund. Therefore, adaptation actions usually fall behind mitigation actions. Likewise, adaptation actions on eliminating social vulnerabilities fall behind infrastructure-based adaptation actions.

The fifth chapter, National Climate Adaptation Policies in Türkiye, evaluated the national documents on climate action with regard to social dimension of climate adaptation. These policy documents mostly consist of technical and environmental objectives. Poverty analysis is limited to the agricultural sector and vulnerable group analysis addresses local people, small farmers, and female farmers. There is not any analysis of the urban poor who are already vulnerable to any environmental and economic crisis because they are socially excluded from ‘‘market, bureaucratic, associative and communal’’ relations (Reimer, 2004).

In the sixth chapter urban climate adaptation policies of İzmir Metropolitan Municipality. The Municipality used the methodology set by CoM while developing SECAP, and EBRD's methodology for GCAP. Although two climate action plans were developed by the Municipality, none of the objectives and actions directly focuses on social vulnerabilities or aims to achieve urban climate justice. There are two main reasons for this: Firstly, the algorithms determined by international partner institutions do not cover eliminating social vulnerabilities as a field of action. Secondly, the Municipality did not attempt to include this field because it is not a priority. Therefore, it can be said that these plans are not sufficient to adapt to climate change and be inclusive as well.

7.2. Findings

When historical background of climate adaptation approaches is reviewed, it is obvious that the focus is primarily on technical/engineering-based strategies to address the negative effects of climate change. The same is true of approaches to incremental adaptation, which focus on minor adjustments rather than major restructuring. On the other hand, transformational adaptation is shown as a more thorough strategy aiming for substantial transformations as the insufficiency of incremental modifications has become obvious. Actions for adaptation should not only focus on institutional or environmental improvements, but also on social, economic, and cultural aspects of life as well as how vulnerable people and communities are to climate change from the perspective of social justice. This shift towards social concerns can be observed within the dimensions of adaptation also.

The success of the climate adaptation process depends on categorizing each policy and strategy based on specific factors such

target group, impact area, etc. More importantly, it is impossible to ignore the complex connection between these classified policies and actions. Effective adaptation strategies, therefore, should be designed to work in concert with one another. Most essential, however, is that when the main goal is to adapt and build the capacities of those most affected by changing conditions, it may be able to achieve climate adaptation regardless of which aspect of adaptation these policies and actions are involved in. Adaptation is a process of creating new ways to live in new sets of conditions with the aim of achieving climate justice. Therefore, achieving successful outcomes from this process depends on policies and actions being applicable in all areas and layers of life in an inclusive way. However, this study has showed that there are two reasons why the social dimension of climate action is being overlooked. First, efforts for developing adaptation actions do not receive as much support as those to produce mitigation actions. Climate action prioritizes cutting emissions over increasing the capacity of societies to deal with the crisis' repercussions. Second, actions for adaptation that focus on technology and infrastructure are encouraged. Action plans heavily rely on these strategies. However, initiatives to address social vulnerabilities and guarantee climate justice are typically not on the agenda. Climate action plans do not address issues like gender or poverty. In short, the main actors in climate action—transnational networks and financial institutions—typically overlook the social aspect of climate adaptation, which leads to local governments' development of climate action plans that omit the populations most likely to experience the most severe effects of climate change.

In the scope of this research, local climate adaptation policies of İzmir Metropolitan Municipality were examined as the case study. The Strategic Plan and the climate action plans, SECAP and GCAP, made by the Izmir Metropolitan Municipality, were evaluated in the

context of social vulnerability. The scope of the plans is more focused on infrastructure investments. They were produced to determine the significant investments related to the areas where the EBRD can grant loans to the Municipality. Due to the fact that both plans were created in collaboration with international actors and firms operating at the national scale, they remained as strategy documents that only provide a broad framework without addressing the city's specific environmental and social vulnerabilities. To put it another way, the lack of involvement of different local actors who are knowledgeable and experienced in decreasing the unique environmental, economic, and social vulnerabilities of İzmir led to a weak response to climate change in terms of local fragilities. When the adaptation actions of these plans are examined, there is almost no action that directly emphasizes the social dimension of adaptation, namely social vulnerability, climate justice, gender, etc.

The reasons why climate action plans of İzmir are not inclusive enough and are limited to infrastructure-based actions can be listed as follows:

- SECAP was developed according to methodology of the CoM and GCAP was developed according to methodology of the EBRD’s Green Cities Program. Both methodologies consist of general topics of climate change which are applicable for any city. Therefore, SECAP and GCAP have remained as strategy documents that reveal a political vision rather than plans that specify the method, budget and duration of the action.
- The plans were not actually prepared by the Municipality, but by AECOM, a private company partnered by the EBRD. Using its legal personality, the municipality obtained the relevant data from the official authorities and provided coordination between all parties involved in the process. It is not realistic to expect that a multinational private company will interfere in a

process where the municipality was unable to do so on its own to change the methodology in favor of the social dimension of climate adaptation.

- The limited or no participation of social policy experts and people working on social vulnerability in the preparation processes of the plans caused the plans not to address social vulnerabilities. This has resulted in the plans not being inclusive.

7.3. Recommendations for Further Research

In line with the findings of this study, the points to be considered while planning the local climate adaptation policy are as follows:

- Policy makers should prioritize adaptation strategies aimed at reducing and ultimately eliminating social vulnerabilities to the effects of climate change.
- Since climate action plans, in which international organizations are the main actors in the preparation process, remain a general framework that does not cover local vulnerabilities, climate adaptation planning should be supported with micro-scale plans that focus on local vulnerabilities in addition to these framework plans.
- Local actors should be involved more in the preparation process so that plans can fully cover local vulnerabilities and develop locally-specific solutions. It is very important that professional groups working to eliminate social vulnerabilities and ensure climate justice have a say in this process to develop action plans that do not exclude the social dimension of climate adaptation.

In conclusion, adaptation to climate change is the process of creating new ways for life to continue in changing climatic conditions.

Successful results from this process depend on policies and actions being applicable in all areas and layers of life in an inclusive way. This requires a close relationship between climate change policies and social policies. Which social policies should be prioritized in the process of adapting to climate change is a subject of study that is gaining importance day by day.

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APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

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MIDDLE EAST TECHNICAL UNIVERSITY

01 ARALIK 2022

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın H.Tarık ŞENGÜL

Danışmanlığını yürüttüğünüz İrem AYSALAR'ın ***"İklim Değişikliği Uyum Politikalarının Sosyal /Toplumsal Boyutu:İzmir Örneği"*** başlıklı araştırması İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek **0629-ODTUİAEK-2022** protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

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B. TURKISH SUMMARY / TÜRKÇE ÖZET

İklim değişikliği, 1970'li yıllardan beri küresel gündemde yer almakta ve artık tüm dünyada etkileri giderek artan bir kriz olarak tanımlanmaktadır. 1988 yılında Uluslararası İklim Değişikliği Paneli'nin (IPCC) kurulmasıyla resmi bir harekete dönüşen küresel iklim eylemi, bugün Taraflar Konferansı'nın (COP) yıllık toplantılarıyla devam etmektedir. İklim eylemi genel olarak azaltım ve uyum stratejileri etrafında şekillenmektedir. Azaltım, düşük karbonlu ve/veya yenilenebilir enerji kaynaklarına geçiş, enerji verimliliğinin artırılması ve doğa temelli çözümlerin teşvik edilmesi yoluyla sera gazı emisyonlarının (GHG) azaltılmasını ifade ederken; uyum, iklim değişikliğinin etkilerine karşı hazırlıklı olmak için gerekli önlemlerin alınması ve altyapı iyileştirmeleri, yasal ve kurumsal düzenlemeler ve sosyal kırılganlıkların giderilmesi yoluyla uyum kapasitesinin artırılması anlamına gelmektedir. Sera gazı emisyonlarını sınırlamak amacıyla tüm ölçeklerde benzer çabaların gösterildiği azaltım eyleminin aksine, uyum temelde bağlama ve büyük ölçüde yerel bilgiye bağlıdır (IPCC, 2018). Diğer bir deyişle, iklim değişikliğine uyum, çevresel ve sosyal kırılganlıklara göre yerel odaklı farklılaştırılmış çabaları gerektirmektedir. Uyum stratejileri bir yerden diğerine, bir sektörden/kurumdan diğerine, bir topluluktan diğerine veya bir yaşam alanından diğerine farklılık göstermektedir. Bu çalışma kapsamında kentsel iklim uyumunun üç boyutu belirlenmiştir; çevresel, kurumsal ve sosyal boyut. Çevresel boyut, uyum kapasitesini artırmak için altyapıya dayalı müdahaleleri ve doğal ekosistemleri korumak için doğa temelli çözümleri içerir. İklim

uyumunun kurumsal boyutu, yerel/ulusal yönetimler ve küresel kuruluşlar tarafından iklim değişikliği ile mücadele için öncelikler belirlenerek ve inisiyatif alınarak gerçekleştirilen eylemleri ifade eder. Bu çalışmanın temel odak noktası olan sosyal boyut, toplumsal kırılganlıkların ortadan kaldırılması ve iklim adaletinin sağlanmasına yönelik olan iklim uyum politikalarını kapsamaktadır.

İklim değişikliğine karşı kırılganlık genellikle üç bileşenle açıklanır: maruz kalma, duyarlılık ve uyum sağlama kapasitesi (Hackfort & Burchardt, 2018; Parry ve diğerleri, 2007). İklim değişikliğine karşı sosyal kırılganlık ise, toplulukları iklim değişikliğinin olumsuz etkilerine karşı daha kırılgan hale getiren yoksulluk, cinsiyet, sosyal ve politik ilişkilerden dışlanma gibi sosyal parametreleri kapsamaktadır. Ayrıca bu kavram genellikle, bu toplulukların savunmasız olarak tanımlanmayacağı bir yaşam biçimi yaratmayı ifade eden iklim adaleti kavramıyla bağlantılıdır. Bu açıdan iklim değişikliğine uyumun sağlanması, çevresel müdahaleler ve kurumsal düzenlemelerle sınırlı kalmaktan ziyade toplumsal kırılganlığı ortadan kaldıracak etkin stratejilerin ne ölçüde geliştirildiğine bağlıdır.

Kentsel iklim uyumu ve sürdürülebilir kalkınma yaklaşımları, eylemlerin hem kapsamı hem de çeşitliliği açısından benzer amaçlara sahiptir. Kentsel iklim uyumu, iklim değişikliğiyle mücadele için çevresel, kurumsal ve sosyal stratejiler geliştirmekle ilgiliyken, sürdürülebilir kalkınma, çevrenin korunmasını, ekonomik kalkınmayı ve sosyal eşitliği teşvik etmekle ilgilidir. Her iki kavram kapsamındaki eylemlerin birbirini tamamlayıcı nitelikte olduğu söylenebilir. Bu nedenle yerel iklim uyumu planlaması, hem iklim eylem planları hem de sürdürülebilir kalkınma planları aracılığıyla karakterize edilebilir. Ana akımlaştırma yöntemi ve özgül yöntem, yerel yönetimler tarafından yerel uyum eylemleri geliştirmek için kullanılan iki

yaklaşımdır. Yerel iklim uyum planlaması, yerel yönetimlerin ulus ötesi iklim ağlarına katılımının boyutuna göre de şekillenmektedir. Bu ağların yerel paydaşlar arasında bilgi paylaşımını kolaylaştırmada ve işbirlikçi eylemi teşvik etmede önemli bir role sahip olduğu yaygın olarak belirtilmektedir. Bazıları iklim eylemi planlamasında yerel yönetimlere metodoloji ve teknik destek sağlarken, bazıları da iklim eylemi için ihtiyaç duydukları finansal kaynaklara erişim konusunda rehberlik sağlamaktadır. En çok bilinen ve üye sayısı yüksek olanlar ICLEI; C40; AB Belediye Başkanları Sözleşmesi; Küresel İklim ve Enerji Belediye Başkanları Sözleşmesi'dir. Ancak bu ağlar, bilgi paylaşımı ile sınırlı olmaları, hesap verebilirlik mekanizmalarına sahip olmamaları ve tüm üyelere eşit fırsatlar sağlamamaları nedeniyle eleştirilmektedir. Daha da önemlisi, bu ağlar iklim uyumu bağlamında doğrudan sosyal kırılganlıkları ele almamakta, çoğunlukla iklim uyumunu çevresel ve kurumsal eylemlere indirgemektedir. Bunun nedenlerinden biri, çok taraflı kalkınma bankaları (ÇKB) gibi iklim finansmanı kurumlarının, özellikle sosyal ve politik konuları ele alan uyum eylemlerine, azaltım eylemlerine kıyasla öncelik vermemesidir. ÇKB'ler, belirli araçların kullanımıyla ölçülebilen ve değerlendirilebilen eylemler için fon sağlar (Bazbauers, 2021). 2019 yılında sekiz ÇKB tarafından sağlanan uyum ve azaltım fonlarının payları karşılaştırıldığında, uyum finansmanının toplam payı 15.599 milyon dolar iken, 2019 yılında azaltım finansmanı 47.706 milyon dolardır (Gugliotta, 2021). Bu anlamda iklim uyumunun toplumsal boyutuna yönelik çalışmaların önünde iki katmanlı bir bariyerden söz edilebilir. Birincisi, uyum eylemleri geliştirme çabaları, azaltım eylemleri kadar desteklenmemektedir. İklim eylemi, iklim krizinin etkileriyle başa çıkma kapasitesi oluşturmaktan çok emisyonları azaltmaya odaklanmaktadır. İkinci olarak, altyapı odaklı ve teknoloji odaklı

uyum eylemleri desteklenmektedir. Bu stratejiler, eylem planlarında yoğun bir şekilde yer almaktadır. Öte yandan, toplumsal kırılganlıkların giderilmesine ve iklim adaletinin sağlanmasına yönelik eylemler genellikle iklim eylemi gündeminde yer bulmamaktadır. Örneğin iklim eylem planlarında yoksulluk, toplumsal cinsiyet gibi kavramlardan söz edilmemektir. Özetle, iklim uyumunun sosyal boyutu, iklim eyleminin ana aktörleri olan ulusötesi ağlar ve finansal kuruluşlar tarafından genellikle ihmal edilmekte ve bu da iklim değişikliğinin en yıkıcı etkilerine maruz kalması en muhtemel grupları dışlayan iklim eylem planları ile sonuçlanmaktadır.

Bu çalışma, yerel iklim eylem planlarında yer alan kentsel iklim uyum politikalarının sosyal boyutuna odaklanmaktadır. İklim eyleminin çevresel ve kurumsal boyutları üzerine yapılan birçok çalışmanın aksine, toplumsal boyutuna ilişkin yeterli çalışma bulunmamaktadır. Bu çalışma, iklim uyumunun sosyal boyutunu sosyal kırılganlık ve iklim adaleti kavramlarıyla açıklayarak literatüre katkıda bulunmayı amaçlamaktadır. Bu bağlamda İzmir ili, İzmir Büyükşehir Belediyesi tarafından hazırlanan iki adet iklim eylem planına ve belediyenin koordinasyonunda yürütülen sürdürülebilirlik faaliyetlerine ilişkin kentsel yönetişim ağlarına sahip olması nedeniyle araştırma alanı olarak seçilmiştir.

Araştırma sorusu şu şekilde formüle edilmiştir: İklim değişikliğiyle mücadelede hangi iklim uyum politikaları toplumsal kırılganlığı ele alıyor ve bu politikalar iklim adaletine ne ölçüde katkıda bulunuyor? Bu soruları cevaplamak için beş ana hedef belirlenmiştir:

- Kentsel iklim uyum politikalarını etkiledikleri alanlara göre detaylı olarak araştırmak
- İklim uyumu ve sürdürülebilir kalkınma arasındaki ilişkiyi ve birbirini ne ölçüde tamamladığını anlamak

- Yerel uyum planlamasını ve finansman mekanizmalarını keşfetmek
- Türkiye'nin ulusal iklim eylem planlarını iklim uyumunun sosyal boyutu açısından değerlendirmek
- İzmir Büyükşehir Belediyesi'nin iklim uyum politikalarını ve eylemlerini değerlendirmek ve bu politika ve eylemlerin sosyal kırılganlığı ele alıp almadığını belirtmek

Bu araştırmanın Türkiye'deki yerel yönetimlerin iklim uyum stratejilerinin analizine ilişkin literatüre katkı sağlaması beklenmektedir. Özellikle, iklim uyum planlaması konusunda toplumsal kırılganlıkları bütünüyle dikkate alan kentsel politikaların önerilmesi beklenmektedir.

Bu çalışma, vaka çalışması odaklı nitel bir araştırma olarak oluşturulmuştur. Akademik yayınlar, bilimsel raporlar, çevrimiçi kaynaklar, basılı broşürler ve kitapçıklar, haritalar, fotoğraflar ve derinlemesine görüşmeler bu araştırmayı gerçekleştirmek için toplanan veri kaynaklarıdır. Çalışma boyunca aşağıdaki adımlar izlendi:

- Google Akademik, ODTÜ Kütüphanesi ve JSTOR gibi veri tabanları kullanılarak iklim değişikliğine uyum konusunda güncel akademik yayınlar detaylı bir şekilde incelenmiştir. IPCC, Birleşmiş Milletler vb. uluslararası kuruluşlar tarafından yayınlanan küresel iklim eylemi ile ilgili bilimsel raporlar incelenmiştir.
- İklim uyum planlamasında Türkiye'nin durumunu anlamak için ulusal iklim eylem belgeleri incelenmiştir. Ardından İzmir Büyükşehir Belediyesi tarafından hazırlanan İzmir yerel iklim eylem belgeleri iklim uyumunun toplumsal boyutu açısından incelenmiştir. Türkiye İstatistik Kurumu ve diğer uluslararası

güvenilir kuruluşlardan alınan istatistikler ve son iklim durumu ile ilgili haberler de incelendi.

- Son olarak, iklim eylem planı geliştirme süreci, kapsamı ve metodolojileri hakkında bilgi toplamak için İzmir'in iklim eylem planlarının hazırlanmasına katılan kişilerle toplamda dört görüşme yapılmıştır. İlk görüşme İzmir Büyükşehir Belediyesi İklim Değişikliği ve Temiz Enerji Müdürlüğü'nde mühendis olarak çalışan ve iklim eylem planları sorumlusu olan Dr. Çağlar Tükel ile gerçekleştirildi. İkinci görüşme, İzmir Büyükşehir Belediyesi'nde sürdürülebilirlik uzmanı olarak çalışan ve İzmir Yeşil Şehir Eylem Planı danışmanı olan Ferdi Akarsu ile gerçekleştirildi. Üçüncü görüşme TMMOB Çevre Mühendisleri Odası İzmir Şubesi üyesi Rahile Yeni ile gerçekleştirildi. Son röportaj ise İzmir Kalkınma Ajansı Yeşil Büyüme Politikaları Birimi Başkanı Emine Bilgen Eymirli ile gerçekleştirildi. Görüşmelerden önce görüşülen kişilere çalışmanın amacı, toplantının akışı ve görüşmeden ayrılma hakları hakkında bilgi verilmiştir. Bu çalışmaya kendi istekleri ile katkıda bulunmuşlardır.

Bu çalışma yedi bölümden oluşmaktadır. İlk bölüm, konuyla ilgili genel bilgileri, araştırmanın amacını, kapsamını, metodolojisini ve yapısını içeren giriş bölümüdür.

Giriş bölümünün ardından ikinci bölümde kentsel iklim uyumunun tarihsel arka planı açıklamış ve temel kavramlar tanımlanmıştır. Uyum ve azaltım stratejileri birlikte küresel iklim eylemini şekillendirmektedir. Yerel uyum politikaları genellikle iklim eylem planları aracılığıyla belirlenir. IPCC'ye göre uyum politikaları kademeli ve dönüşümsel olarak sınıflandırılmaktadır. Uyum politikaları çevresel, kurumsal ve sosyal olmak üzere üç farklı boyutta incelense de bu çalışmanın asıl odak noktası sosyal boyuttur.

Sosyal boyut, sosyal kırılganlık ve iklim adaleti kavramlarıyla açıklanmaktadır. Sosyal kırılganlık, yoksulluk ve sosyal ve politik ilişkilerden dışlanma olarak tanımlanırken, iklim adaleti, bu kırılganlıkların ortadan kaldırıldığı bir yaşam biçimini ifade etmektedir.

Üçüncü bölümde iklim uyumu ve sürdürülebilir kalkınma kavramları arasındaki ilişki ve iki kavramın birbirini ne ölçüde tamamladığı açıklanmaktadır. İklim uyumu ve sürdürülebilirlik farklı iki kavram olsa da benzer amaçlar üzerine formüle edilmektedir. Sosyal boyutu göz ardı edilmeyen bütüncül bir iklim uyum politikası, iklim adaletini sağlayarak sürdürülebilir kalkınma hedefine katkıda bulunurken, benzer şekilde, sürdürülebilir kalkınma hedefleri, iklim uyumunun sağlanmasını kolaylaştıracak stratejileri içermektedir.

Dördüncü bölümde yerel iklim uyum planlaması anlatılmıştır. Ana akımlaştırma yaklaşımı ve özgül yaklaşım, yerel yönetimler tarafından iklim uyum planlamasında kullanılan iki yöntemdir. Uyum planlama sürecinde ulus ötesi iklim ağlarının önemli bir rolü vardır. Çünkü belediyeler genellikle bu ağlar tarafından sağlanan metodolojileri takip etmektedirler. İklim finansmanı kuruluşları da planlama sürecini finanse etmeyi tercih ettikleri eylemler ve projeler doğrultusunda yönlendirmektedir. Bu nedenle, uyum eylemleri genellikle azaltım eylemlerinin göre daha az desteklenmektedir. Aynı şekilde, sosyal kırılganlıkların ortadan kaldırılmasına yönelik uyum eylemleri, altyapı temelli uyum eylemlerinin gerisinde kalmaktadır.

Beşinci bölümde Türkiye'nin mevcut iklim değişikliği durumu açıklanmakta ve iklim eylemi ile ilgili ulusal politika belgeleri iklim uyumunun sosyal boyutu açısından değerlendirilmektedir. Bu politika belgeleri çoğunlukla teknik ve çevresel hedeflerden oluşmaktadır. Yoksulluk analizi tarım sektörüyle sınırlı iken hassas grup analizi sadece yerel halkı, küçük çiftçileri ve kadın çiftçileri

kapsamaktadır. “Piyasa, bürokratik, ortaklık ve sosyal” ilişkilerden dışlanmış oldukları için halihazırda herhangi bir çevresel ve ekonomik krize karşı savunmasız durumda olan kentli yoksullara (Reimer, 2004) ilişkin herhangi bir analiz bulunmamaktadır.

Altıncı bölümde İzmir Büyükşehir Belediyesi'nin kentsel iklim uyum politikaları açıklanmaktadır. İzmir Büyükşehir Belediyesi tarafından hazırlanan Stratejik Plan, Sürdürülebilir Enerji ve İklim Eylem Planı ve Yeşil Şehir Eylem Planı'nda yer alan iklim uyum stratejilerinin sosyal kırılganlıkları ele alıp almadığını incelenmektedir. İzmir Büyükşehir Belediyesi, Başkanlar Sözleşmesi’nin belirlediği metodoloji ile İzmir Sürdürülebilir Enerji ve İklim Eylem Planı’nı hazırlarken, İzmir Yeşil Şehir Eylem Planı’nı ise Avrupa İmar ve Kalkınma Bankası’nın belirlediği metodoloji ile hazırlamıştır. Büyükşehir Belediyesi tarafından iki iklim eylem planı geliştirilmiş olmasına rağmen, hedef ve eylemlerin hiçbiri doğrudan sosyal kırılganlıklara odaklanmamakta ve kentsel iklim adaletini sağlamayı amaçlamamaktadır. Bunun iki temel nedeni vardır: Birincisi, uluslararası partner kuruluşlar tarafından belirlenen algoritmalar, bir eylem alanı olarak sosyal kırılganlıkların ortadan kaldırılmasını kapsamamaktadır. İkincisi, bu alan Belediye için dahi bir öncelik olmadığı için planlara dahil etme girişiminde bulunulmamıştır. Dolayısıyla bu planların iklim değişikliğine uyum sağlama ve kapsayıcı olma konusunda da yeterli olmadığı söylenebilir.

İklim uyum eylemleri ile sürdürülebilir kalkınma hedefleri arasındaki yakın ilişkiyi dikkate alan İzmir Büyükşehir Belediyesi, yerel iklim eylemini bu ilişki çerçevesinde kurgulamaktadır. Bir yandan ulusötesi ağlara katılarak ve bu ağların belirlediği metodolojileri kullanarak iklim değişikliği eylem planları geliştirmiştir. Öte yandan, sürdürülebilir kalkınma hedeflerini Stratejik Plan’a dahil ederek bir tür ana akımlaştırma stratejisi uygulamıştır. Aynı zamanda, İzmir’i

sürdürülebilir bir kent haline getirmek amacıyla tüm şehir aktörlerini birlikte çalışmak üzere bir araya getiren İzmir Sürdürülebilr Kentsel Gelişim Ağı'nı kurmuştur. Bu anlamda İzmir'in iklim uyum eylemleri üç farklı bağlamda değerlendirilebilir.

İlk olarak, İzmir Büyükşehir Belediyesi'nin sürdürülebilir kalkınma hedeflerini Stratejik Plan'a entegre etmesi –ana akımlaştırma yaklaşımı- iklim uyumu ile sürdürülebilirlik yaklaşımları arasındaki bağlantı düşünüldüğünde önemli bir adımdır. Fakat sosyal kırılganlık ve iklim adaletine yönelik doğrudan herhangi bir hedef tanımlanmaması iklim uyumunun sosyal boyutunun göz ardı edildiğini göstermektedir. Sosyal boyuta yönelik yoğun çalışmalar yapılmadan iklim uyumunun sağlanması olası değildir. Bu yüzden İzmir Büyükşehir Belediyesinin uyguladığı bu ana akımlaştırma yöntemi önemli bir adım olmakla birlikte yeterli değildir.

İkincisi, yukarıda belirtildiği gibi, İzmir Büyükşehir Belediyesi iki farklı ulusötesi ağa katılarak iki farklı iklim eylem planı, SECAP ve GCAP geliştirmiştir. Kullanılan metodolojiler farklı olsa da her iki planda belirlenen eylemler büyük ölçüde aynıdır. Zaman ve kaynak harcamak açısından aynı eylemleri içeren iki plan yapmak tartışmalı bir konudur. Ayrıca bu planların yeterince kapsayıcı olmadığı ve çoğunlukla çevresel ve teknik stratejilerle sınırlı kaldığı söylenebilir. Her iki planın da çok uluslu aktörler ve ulusal ölçekte çalışan şirketlerle birlikte hazırlanmış olması, planların kentin kendine özgü çevresel ve sosyal hassasiyetlerini ele almayan, sadece genel bir çerçeve çizen bir strateji belgesi olarak kalmasına neden olmuştur. Başka bir deyişle, tüm görüşmecilerin belirttiği gibi, İzmir'in kendine özgü çevresel, ekonomik ve sosyal kırılganlıklarının azaltılması konusunda bilgi ve deneyime sahip çeşitli yerel aktörlerin sınırlı katılımı, yerel kırılganlıklar açısından iklim değişikliğine karşı zayıf bir tepki ile sonuçlanmıştır.

Bu planların uyum eylemleri incelendiğinde, uyumun sosyal boyutunu, yani sosyal kırılganlık, iklim adaleti, cinsiyet vb. doğrudan vurgulayan hiçbir eylem yoktur. Bu standartlardaki eksiklikler doğrudan geliştirilen planlarda görülmektedir. Ancak burada önemli bir detay vardır: İzmir Büyükşehir Belediyesi, GCAP'ı hazırlarken metodolojide belirlenen başlıklar arasında yer almayan *deniz biyolojisi* başlığını da eylem alanı olarak ekleme girişiminde bulunmuştur. Öte yandan, Belediye'nin toplumsal hassasiyetleri ele alan bir eylem alanı girişiminde bulunmaması, bu konunun henüz öncelikler arasında olmadığını göstermektedir. İkincisi, planlar aslında belediye tarafından değil, EBRD'nin ortak olduğu özel bir şirket olan AECOM tarafından hazırlanmıştır. Yukarıda belirtildiği üzere belediye, sürece dahil olan kurumlar arasındaki koordinasyonu sağlamış ve tüzel kişiliğini kullanarak resmi kurumlara resmi yazıları yazmış ve gerekli verileri talep etmiştir. Belediyenin inisiyatif alarak yerel iklim uyumunun sosyal boyutu lehine metodolojiye müdahale edemediği bir süreçte, bu müdahalenin çok uluslu özel bir şirket tarafından yapılması beklenemez.

Üçüncüsü, İzmir Büyükşehir Belediyesi'nin iklim eylemini bir de sürdürülebilirlik yaklaşımı kapsamında yürüttüğü söylenebilir. Bu yaklaşım doğrultusunda kurulan ve bir kent ittifakı olan İzmri SKGA'nın faaliyetleri daha çok farkındalık yaratmaya odaklıdır. İzmir SKGA'nın faaliyetlerinin hedef kitlesi bugüne kadar üniversite mezunu genç insanlar, ilçe belediyeleri ve kentteki özel şirketler olmuştur. Bunun dışında belki de en önemli faaliyetlerden biri sürdürülebilir kalkınma hedeflerinin yerelleştirilmesi amacıyla hazırlanan Gönüllü Yerel Değerlendirme Raporu'dur (VLR). Her bir sürdürülebilir kalkınma hedefi için İzmir'in mevcut durumu ve yapılması gerekenler bu raporla birlikte belirlenmiştir. İklim uyumu ve sürdürülebilirlik arasındaki bağlantı dikkate alındığında, VLR

raporunun hem iklim uyum planlaması hem de sürdürülebilir kalkınma için çok önemli bir kaynak olduğunu söylemek mümkündür. Ancak yine de şunu belirtmek gerekir ki; İzmir SKGA'nın sosyal açıdan kırılgan grupları hedef alan herhangi planlı bir faaliyeti bulunmamaktadır. İklim uyum planlamasına ek olarak sürdürülebilir kalkınma faaliyetleri kapsamında da sosyal kırılganlık ve iklim adaleti konusu göz ardı edilmektedir.

İzmir Büyükşehir Belediyesi tarafından hazırlanan iklim eylem planlarının yeterince kapsayıcı olmamasının ve altyapı temelli eylemlerle sınırlı olmasının sebepleri aşağıdaki gibi özetlenebilir:

- SECAP, Başkanlar Sözleşmesi (CoM) metodolojisine göre geliştirilirken GCAP, EBRD'nin Yeşil Şehirler Programı metodolojisine göre geliştirilmiştir. Her iki metodoloji de herhangi bir şehir için geçerli olabilecek genel iklim değişikliği konularını içermektedir. Bu nedenle SECAP ve GCAP, eylemin yöntemini, bütçesini ve uygulanması için biçilen süreyi belirleyen planlardan ziyade politik bir vizyon ortaya koyan strateji belgeleri olarak kalmıştır.
- Planlar aslında İzmir Büyükşehir Belediyesi tarafından değil, EBRD'nin partneri olan çok uluslu özel bir danışmanlık firması olan AECOM tarafından hazırlanmıştır. Belediye bu süreçte tüzel kişiliğini kullanarak ilgili verileri resmi makamlardan almış ve sürece dahil olan tüm taraflar arasında koordinasyonu sağlamıştır. İzmir Büyükşehir Belediyesi iklim uyumunun sosyal boyutunu planın metodolojisine dahil etmek için bir girişimde bulunmamıştır.
- Planların hazırlanma süreçlerine sosyal politika uzmanlarının ve toplumsal kırılganlık konusunda çalışan kişilerin sınırlı katılmış olması veya hiç katılmamış olması, planlarda sosyal kırılganlıkların ele alınmamasına neden olmuştur. Bu durum

iklim eylem planlarının kapsayıcı olmamasıyla ve yerel problemlere yerele özgü eylemler öneremememesiyle sonuçlanmıştır.

İklim uyumu yaklaşımlarının tarihsel arka planı incelendiğinde, odak noktasının büyük ölçüde teknik/mühendislik temelli stratejiler olduğu açıktır. Aynı şekilde, dönüşümsel uyumdan ziyade kademeli uyum stratejilerinin izlendiğini de söylemek mümkündür. Fakat kademeli uyumun iklim değişikliği ile mücadelede yetersizliğinin anlaşılmasıyla, dönüşümsel uyum yaşamın birçok alanıında önemli dönüşümleri hedefleyen daha kapsamlı bir strateji olarak ön plana çıkmaktadır. Uyum eylemleri kademeli uyumda olduğu gibi sadece kurumsal veya çevresel iyileştirmelere değil, aynı zamanda yaşamın sosyal, ekonomik ve kültürel yönlerine de odaklanmalıdır. Daha da önemlisi, insanların ve toplulukların iklim değişikliğine karşı kırılganlıkları sosyal adalet perspektifiyle değerlendirilmeli ve bu kırılganlıkları ortadan kaldırmaya yönelik politikalar geliştirilmelidir.

İklim uyum sürecinin başarısı, her politika ve stratejinin hedef kitle, etki alanı vb. gibi belirli faktörlere göre sınıflandırılmasına bağlıdır. Ayrıca bu sınıflandırılmış politikalar ve eylemler arasındaki karmaşık bağlantıyı göz ardı etmek imkansızdır. Etkili adaptasyon stratejileri bu nedenle birbiriyle uyum içinde çalışacak şekilde tasarlanmalıdır. Ancak en önemlisi, asıl amaç değişen koşullardan en çok etkilenen grupların kapasitelerini uyarlamak ve geliştirmek olduğunda, bu politika ve eylemlerin uyumun hangi yönüne dahil olduğuna bakılmaksızın başarılı olması mümkündür.

İklim uyumu iklim adaletine ulaşmak amacıyla yeni koşullarda yaşamanın yeni yollarını yaratma sürecidir. Dolayısıyla bu süreçten başarılı sonuçlar alınması, politikaların ve eylemlerin hayatın her alanında ve katmanında kapsayıcı bir şekilde uygulanabilir olmasına bağlıdır. Ancak bu çalışma, iklim eyleminin sosyal boyutunun göz

ardı edilmesinin iki nedeni olduğunu göstermiştir. İlk olarak, uyum eylemleri geliştirme çabaları, hafifletme eylemleri üretme çabaları kadar destek görmemektedir. İklim eylemi neredeyse her ölçekte toplumların krizin yansımalarıyla başa çıkma kapasitelerini artırmak yerine emisyonları azaltmaya öncelik vermektedir. İkinci olarak, teknoloji ve altyapıya odaklanan uyum eylemleri teşvik edilmektedir. Eylem planları büyük ölçüde bu stratejilere dayanmaktadır. Bununla birlikte, sosyal kırılganlıkları ele alan ve iklim adaletini sağlamaya yönelik girişimler genellikle gündemde değildir. İklim eylem planları cinsiyet veya yoksulluk gibi konuları içermemektedir. İklim eylemindeki ana aktörler -ulusötesi ağlar ve finansal kuruluşlar- tipik olarak iklim adaptasyonunun sosyal yönünü göz ardı ederek yerel yönetimlerin iklimin şiddetli etkilerini yaşaması en muhtemel toplulukları göz ardı eden iklim eylem planları geliştirmesine yol açmaktadır. Kısaca, iklim eylem planları siyasi bir vizyonu ifade etmesi açısından önemli olsa da, uluslararası şehir ağları ve finans kurumlarının metodolojileri ile hazırlanan çerçeve planların bir şehrin kendine özgü kırılganlıklarını ortadan kaldırmak için yeterli olmadığı açıktır.

Bu çalışmanın bulguları doğrultusunda yerel iklim uyum politikası planlanırken göz önünde bulundurulması gereken hususlar şunlardır:

- Politika yapıcılar iklim değişikliğinin etkilerine karşı sosyal kırılganlıkları azaltmayı ve en nihayetinde ortadan kaldırmayı amaçlayan uyum stratejilerine öncelik vermelidir.
- Hazırlanış sürecinde uluslararası kuruluşların ana aktör olduğu iklim eylem planları yerel kırılganlıkları kapsamayan genel bir çerçeve olarak kaldığından ötürü, iklim uyum planlaması bu çerçeve planlara ek olarak yerel

kırılganlıklara odaklanan mikro ölçeklerdeki planlarla desteklenmelidir.

- Planların yerel kırılganlıkları bütünüyle içermesi ve yerele özgü çözümler geliştirebilmesi için yapılış sürecine tüm yerel aktörlerin katılımı sağlanmalıdır. Özellikle sosyal kırılganlıkların ortadan kaldırılması ve iklim adaletinin sağlanması yönünde çalışmalar yapan meslek gruplarının bu süreçte söz sahibi olabilmesi iklim uyumunun sosyal boyutunu dışarıda bırakmayan eylem planları geliştirmek açısından çok önemlidir.

Sonuç olarak, iklim değişikline uyum, değişen iklim koşullarında yaşamın devam etmesi için yeni yollar yaratma sürecidir. Bu süreçten başarılı sonuçlar alınması, politikaların ve eylemlerin hayatın her alanında ve katmanında kapsayıcı bir şekilde uygulanabilir olmasına bağlıdır. Bu durum iklim değişikliği politikaları ile sosyal politikalar arasında yakın bir ilişki gerektirmektedir. İklim değişikline uyum sağlama sürecinde hangi sosyal politikalara öncelik verilmesi gerektiği gün geçtikçe önem kazanan bir çalışma konusudur.

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