

THE IMPACT OF TRANSNATIONAL MUNICIPAL NETWORKS ON CLIMATE  
POLICY-MAKING: THE CASE STUDY OF GAZIANTEP, NILUFER AND  
SEFERIHISAR MUNICIPALITIES

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Approval of the Graduate School of Social Sciences

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## **ABSTRACT**

### **THE IMPACT OF TRANSNATIONAL MUNICIPAL NETWORKS ON CLIMATE POLICY-MAKING: THE CASE STUDY OF GAZIANTEP, NILUFER AND SEFERIHISAR MUNICIPALITIES**

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Climate change is accepted as a global threat, which requires global solutions. The climate policy has witnessed a growing involvement of municipalities over the past 20 years. Urban responses to climate change have become increasingly important when the reluctance of national governments and the failure of international negotiations since the early 2000s are considered. As a city-based initiative to address the climate problem, Transnational Municipal Networks (TMNs) have emerged in order to guide local governments in shaping their local climate change strategies since the early 1990s. These networks provide a platform in which cities benefit from accessing to information, sharing experiences and knowledge with other member cities, technical support and opportunity to access funding through partnerships. This study focuses on understanding the reasons behind the municipalities' membership to TMNs as well as the outcomes of governing the climate problem through the TMNs with two major aims: the first one being the identification of the motivations and dynamics that led municipalities to become members of the TMNs, and the second being the designation of the extent that these networks affect local policy- and decision-making processes of the member cities.

Thus, the empirical research on three cases from Turkey will show what member cities gain from the TMNs in terms of practical and concrete outputs as well as of changes in the local policy- and decision-making processes. The three case municipalities are Gaziantep Metropolitan Municipality, Nilüfer Municipality, and Seferihisar Municipality, which are found to have memberships to several important TMNs.

**Keywords:** Climate Change Policy, Environmental Policy, Transnational Municipal Networks, Local Governments, Policy Diffusion

## ÖZ

### ULUSÖTESİ KENT AĞLARI'NIN İKLİM POLİTİKASI ÜRETME SÜREÇLERİ ÜZERİNDEKİ ETKİSİ: GAZİANTEP, NİLÜFER VE SEFERİHİSAR BELEDİYELERİ ÖRNEĞİ

Bütün, Gülsün Duygu

Yüksek Lisans, Kentsel Politika Planlaması ve Yerel Yönetimler Ana Bilim Dalı

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İklim değışikliđi, küresel çözümler gerektiren küresel bir tehdit olarak kabul edilmektedir. İklim politikası son 20 yıldır çok sayıda belediyenin harekete geçmesine şahit olmuştur. Merkezi yönetimlerin isteksizliđi ve uluslararası iklim müzakerelerinin sonuçsuz kalması sebebiyle, 2000'li yıllarla birlikte kentlerin iklim değışikliđi ile mücadeledeki rolü artmıştır. 1990'lı yılların başından itibaren kent tabanlı bir girişim olarak ortaya çıkan Ulusötesi Kent Ağları, yerel yönetimlere, yerel iklim değışikliđi politikalarını şekillendirme konusunda yön vermektedir. Dünyanın çeşitli bölgelerindeki birçok belediye, yerel iklim politikaları geliştirmek amacıyla bu ağlara gönüllü bir şekilde üye olmaktadır. Bu ağlar, üye belediyelerin teknik kapasitelerini artırmalarına, bilgiye ulaşmalarına, diđer üye kentlerle tecrübelerini paylaşmalarına ve ortaklıklar vasıtası ile finansmana ulaşmalarına olanak sağlamaktadır. Bu çalışma, belediyelerin ağlara üye olma sebeplerinin yanı sıra iklim probleminin ağlar üzerinden yönetiminin sonuçlarına odaklanmaktadır. Bu çalışmanın iki amacı vardır. Birincisi, belediyelerin ağlara üye olmasının arkasında yatan motivasyon ve dinamikleri belirlemek; ikincisi ise

bu ađların, üye kentlerin yerel politika ve karar alma süreçlerini ne ölçüde etkilediđini ortaya koymaktır. Böylelikle, Türkiye’deki üç belediye üzerine yapılacak ampirik araştırma sayesinde üye belediyelerin ađlardan elde ettiđi uygulamaya yönelik ve somut kazanımlara ek olarak yerel politika ve karar alma süreçlerinde yaşanan deđişim ortaya konacaktır. Bu kapsamda, bazı önemli Ulusötesi Kent Ađları’na üyelikleri bulunan Gaziantep Büyükşehir Belediyesi, Nilüfer Belediyesi ve Seferihisar Belediyesi örnekleri incelenecektir.

**Anahtar Kelimeler:** İklim Deđişikliği Politikası, Çevre Politikası, Ulusötesi Kent Ađları, Yerel Yönetimler, Politika Yayılımı

**To my parents**

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## LIST OF SYMBOLS AND ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
%	Percent
AFD	French Development Agency
BAU	Business as Usual
BEI	Baseline Emission Inventory
CBBC	Coordination Board of Climate Change
CBBCAM	Coordination Board on Climate Change and Air Management
CCP	Cities for Climate Protection
cCCR	carbons Cities Climate Registry
CCPI	Climate Change Performance Index
CDM	Clean Development Mechanism
CFCs	Chlorofluorocarbons
CH <sub>4</sub>	Methane
CMP	Parties to the Kyoto Protocol
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide-equivalent
COP	Conference of the Parties
EBRD	European Bank for Reconstruction and Development
EEA	European Economic Area
EFTA	European Free Trade Association
EPA	Environmental Protection Agency
EU	European Union
EU-GUGLE	European Cities serving as Green Urban Gate towards Leadership in Sustainable Energy
F-gases	Fluorinated Gases
GCCAP	Gaziantep Climate Change Action Plan

GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GWP	Global Warming Potential
H <sub>2</sub> O	Water Vapor
HCFCs	Hydro Chlorofluorocarbons
HFCs	Hydrofluorocarbons
ICLEI	International Council for Local Environmental Initiatives
INDC	Intended Nationally Determined Contributions
IPA	Instrument for Pre-accession Assistance
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
Ktoe	Kilotonne of Oil Equivalent
LEED	Leadership in Energy & Environmental Design
LULUCF	Land Use, Land-Use Change and Forestry
MDM	Metropolitan District Municipality
MM	Metropolitan Municipality
MoEU	the Ministry of Environment and Urbanization
MOP	Meeting of Parties to the Kyoto Protocol
N <sub>2</sub> O	Nitrous Oxide
NGO	Non-governmental Organization
OECD	Organisation for Economic Cooperation and Development
PFCs	Perfluorocarbons
PM	Province Municipality
Ppb	Parts per billion
Ppm	Parts per million
REC	Regional Environmental Center
REPLICATE	Renaissance of Places with Innovative Citizenship and Technologies
SEAP	Sustainable Energy Action Plan

SF <sub>6</sub>	Sulfur Hexafluoride
TMN	Transnational Municipal Network
TURKSTAT	Turkish Statistical Institute
UCLG	United Cities and Local Governments
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Organization for Education, Science and Culture
UNFCCC	United Nations Framework Convention on Climate Change
UN-HABITAT	United Nations Human Settlements Programme
WMO	World Meteorological Organization

# CHAPTER 1

## INTRODUCTION

### 1.1. Content of the Study

The climate of the Earth is changing. There are numerous extreme climatic events including high temperatures, droughts, heavy rains, storms, sea level rise, which humankind frequently face. Although climate change is not a recent phenomenon in which Earth's climate has been changing at different levels from the beginning of Earth's history of 4.5 billion years, industrial revolution has been a milestone for climate change since impacts of human activities directly influenced natural processes and changes that lead to climate change. Since the industrial revolution, concentrations of GHG in the atmosphere have dramatically increased particularly due to increasing consumption of fossil fuels, land-use and land cover changes. Thus, human activity especially after industrial revolution became one of the main causes of climate change as UNFCCC highlights (UNFCCC, 1992, p.7). When its distinct impacts are considered, climate change is accepted as one of the most serious and challenging issue threatening the global community in the current era.

Climate change is accepted as a global threat, which requires global solutions. Since Stockholm Conference as the first mega environmental conference in 1972, numerous international meetings and conferences were organized. However, these efforts did not end up with a concrete achievement in terms of global emission reduction targets. Although new legally binding agreement was agreed in Paris Climate Conference, scientists indicate that efforts of the parties remain limited to keep the temperature increase below 2 °C so long as countries maintain fossil fuel consumption (New Scientist, 2015, December 12).

The climate policy has witnessed a growing involvement of municipalities over the past 20 years. Urban responses to climate change have become increasingly important when the reluctance of national governments and the failure of international negotiations since the early 2000s are considered. What makes cities an important scale for addressing climate change is that the consensus seems to be that cities are a part of the problem. Cities where economic and social development realized already account for 60% of global greenhouse gases, and 78% of the world's energy, despite only accounting for 2% of global land area (UN-Habitat, n.d.). In addition, more than half of the world population lives in cities. Urban centers, with their high populations, infrastructures, economic activities, educational centers and amenities, will locate at the heart of global climate change impacts (Romero-Lankao, 2009, p.17). On the other hand, cities are accepted as a part of the solution. Because they are the sources of GHG, they are familiar with the idea of how to mitigate. Urban planning and management could decrease emissions via land use control, waste management, building codes, energy efficiency etc. Moreover public awareness and involvement could be better organized in cities. Thus, cities have become crucial actors for the global governance of climate change and have been involved in initiatives seeking to address climate change.

Transnational Municipal Networks (TMNs) have emerged in order to guide local governments in shaping their local climate strategies since the early 1990s. Many municipalities in various parts of the world have already become voluntary members of the TMNs in order to develop their local climate policies. These networks provide a platform in which cities benefit from accessing to information, sharing experiences and knowledge with other member cities, technical support and opportunity to access funding through partnerships. The general aims of the networks are almost identical in which they expect voluntary commitment targets to mitigate GHG; seek to improve the local capacity of municipalities to response climate change, exchange information, knowledge and experience among their member municipalities and stand up for the interests of their members at national, supranational and international level (Kern & Bulkeley, 2009, p.317; Betsill & Bulkeley, 2004, p.474).

In this study, the motivations and dynamics behind the local governments' membership to TMNs and the outcomes of governing climate change through TMNs will pave the way to assess the impacts of these networks on environmental policy making in Turkey.

## **1.2. Aim and Scope of the Study**

This study focuses on understanding the reasons behind the municipalities' membership to TMNs as well as the outcomes of governing the climate problem through the TMNs with two major aims: the first one being the identification of the motivations and dynamics that led municipalities to become members of the TMNs, and the second being the designation of the extent that these networks affect local policy- and decision-making processes of the member cities. Thus, the empirical research on three cases from Turkey will show what member cities gain from the TMNs in terms of practical and concrete outputs as well as of changes in the local policy- and decision-making processes. Therefore, two main question of the thesis are *what are the dynamics and driving forces behind local government participation in transnational municipal networks and to what extent these networks affect local policy- and decision-making processes of the member cities*. Answers to these questions will be guide to understand the impact of TMNs on local environmental policy making.

The study examines the Transnational Municipal Networks through which municipalities govern climate change. To examine this issue in depth, TMNs which focus on climate change is concentrated – C40, ICLEI, Cities for Climate Protection (CCP), Covenant of Mayors, Energy Cities, Eurocities, Compact of Mayor and Mayors Adapt. Thus, the case areas are some of the Turkish municipalities which are found to have memberships to several important TMNs. In order to understand governing climate change policies in municipalities, 29 municipalities are the possible case areas of the study. Some of these cities are major contributors with their population and economic activity to Turkey's total GHG emissions which increased by 124% between the years

1990 and 2011 (TURKSTAT, 2013, April 12). Therefore, their climate change policy strategies play a crucial role for other municipalities to address climate change.

According to Kern and Bulkeley, it is necessary to go beyond current network theories and to engage more explicitly with the issue of what networks do and how they achieve outcomes (2009, p.310). As Bulkeley et al. point out that researches of urban climate governance have been built mainly upon the basis of small numbers of cases concentrated in Europe, North America and Australia (2009, p.73). Thus, this study aims to address this gap by taking the municipalities in Turkey as a case study. In this context, one metropolitan municipality, one metropolitan district municipality and one town (or district) municipality, which put climate change at the top of their agenda, were selected. The reason for such scale differentiation is to see whether or not the scale of the municipality makes any difference in accessing to or benefiting from TMNs. one metropolitan municipality, one metropolitan district municipality and one town (or district) municipality, which put climate change at the top of their agenda, will be selected. Among six metropolitan municipalities, Gaziantep has joined three different networks including ICLEI, Energy Cities and Eurocities. Furthermore, Gaziantep is an associated city for EU-GUGLE (European Cities serving as Green Urban Gate towards Leadership in Sustainable Energy) project. Although studies on climate change have been decelerated after local elections held on 2014, Gaziantep still stands out with its Climate Action Plan prepared in 2011. Having been the first local climate action plan in Turkey, Gaziantep Climate Action Plan covers six strategic sectors including transport, waste management, water management, services, industry and housing. Within the context of action plan, Gaziantep committed to reduce its GHG emissions and energy consumption by 20% by the year 2023. Moreover, the municipality has been preparing Energy Action Plan. Therefore, Gaziantep Metropolitan Municipality is chosen out of six possible metropolitan municipalities.

For the second case, Nilüfer Municipality which is a metropolitan district municipality in Bursa with its 397.303 population has been concentratedly conducted environmental studies recently. Moreover, Nilüfer stand out with its membership to five different

transnational municipal networks including CCP, Covenant of Mayors, Energy Cities, Eurocities and Mayors Adapt as well as with its Sustainable Energy Action Plan with 20% emission reduction target by 2020. Having established an Energy Department by forming Energy Board of Directors, Nilüfer Municipality continues its projects in terms of renewable energy sources and energy efficiency. Hence, Nilüfer become the second case as a metropolitan district municipality of this study.

Finally for the third case, Seferihisar Municipality stands out with its membership to four different city networks which are ICLEI, Covenant of Mayors, Energy Cities and Compact of Mayors, although memberships date back a few years. The municipality has Sustainable Energy Action Plan with its 24% carbon emission reduction target by 2020. Moreover, Seferihisar is a “Slow City”, a network of towns and cities, which makes people and the environment the focal point of urban life rather than the global economy, mobility and industry and facilitates the use of renewable energy sources and the sustainable building technologies development (Türkseven Doğrusoy & Serin, 2015, p.41). Considering its commitment to sustainable environmental policies using innovative technologies to protect their region's natural resources as a Slow City, its membership to city networks become more meaningful in governing climate change at local level. Thus, Seferihisar is chosen as the third case study area for this study because of the fact that its willingness to environmental issues is noticeable.

### **1.3. Methodology of the Research**

Case study research comprises the research design of this study. According to Hartley (2004, p.323) case study research “consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context”. Within this framework, qualitative data are needed in order to answer the questions of this thesis. In this context, qualitative research method will be adopted to understand the basic characteristics of the fields.

For this study the following approach was adopted. The relevant literature, publications and previous case studies was reviewed in order to get sufficient knowledge on climate change in general and Transnational Municipal Networks active in climate change in particular. To be more precise, after defining global warming and climate change which is its direct consequence, evolution of climate policy was explained. The rise of cities as major players of climate policy and emergence of Transnational Municipal Networks in climate policy were enlarged, thus, the current state of TMNs and their influence on climate policy making at local level were discussed thoroughly.

As data collection method in qualitative research method, semi-structured interviews were realized. According to Mason (2004, 1020), having a flexible and fluid structure is the defining characteristic of semi-structured interviews, which include a structured sequence of questions to be asked in the same way of all interviewees. In this sense, the case studies in Gaziantep, Nilüfer and Seferihisar Municipalities were realized through 5 semi-structured interviews. The first two interviews were held in Seferihisar Municipality in municipal building in November 2015 and the interviewees were Bülent Köstem, Cittaslow Project Officer in Seferihisar Municipality and Cittaslow Turkey Network Coordinator, and Aslı Menekşe Odabaş who is Director of Research Planning and Projects Department. The second interview was conducted in Nilüfer Municipality in November 2015 and the interviewee was Bekir Sargın who is the Head of Energy Department of the municipality. The last interviews were realized in Gaziantep in December 2015 and the interviewees were Şafak Hengirmen Tercan who is former Head of Environmental Protection and Control Department of the municipality and Gökhan Yaman who is an environmental engineer in Gaziantep Municipality. The inquiries of semi-structured interview were organized as below:

1. How did you decide to join TMNs?
2. How did your membership process evolved?
3. Do you attend meetings? Do you organize personnel trainings?
4. Which studies did/do you conduct after you joined TMNs?
5. What did you expect? Did your expectations realized? If not, why?

6. How does your relationship with TMNs proceed?

Thus, the information obtained was analyzed and processed in order to achieve the aim of the study. In this sense, its consistency with the result of the interview was provided.

**Table 1:** Structure of the Study

<b>Basic Concepts</b>	<b>Scope and Objectives</b>	<b>Methodology</b>
-Climate change -Transnational Municipal Networks -Municipal environmental policies	-Member municipalities to TMN's: <ul style="list-style-type: none"> <li>• Gaziantep Metropolitan Municipality</li> <li>• Nilüfer Municipality</li> <li>• Seferihisar Municipality</li> </ul> -Designating the dynamics and driving forces behind local government participation in TMNs - Revealing to what extent these networks have affected local policy and decision making processes of member municipalities	-Case study (research design)  -Qualitative method (data collection)

Source: Prepared by the author

Table 1 shows the structure of study including basic concepts, scope and objectives and methodology of the thesis.

## **CHAPTER 2**

### **CLIMATE CHANGE AS A GLOBAL ENVIRONMENTAL PROBLEM**

#### **2.1. Introduction**

In this chapter, scientific evaluation and political framework of climate change as a global environmental problem is presented. In this context, how observed changes in climate evolved and what future projections of climate change indicate in parallel with global responses to address climate change are covered throughout the chapter.

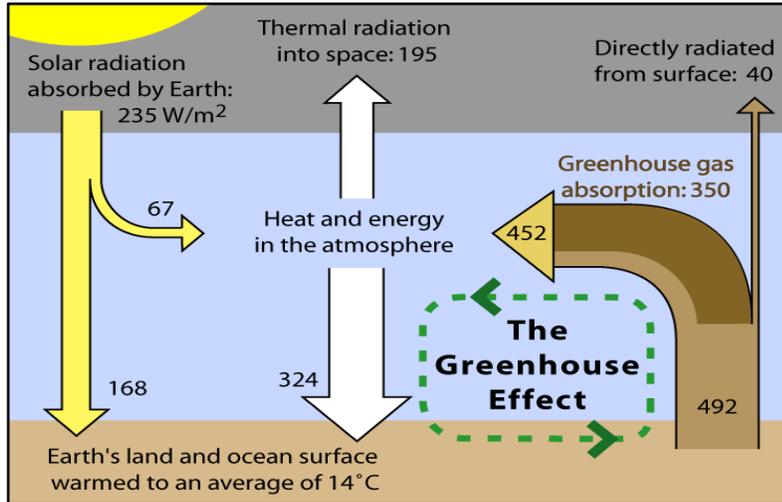
#### **2.2. Scientific Facts on Climate Change**

##### **2.2.1 Greenhouse Gases, Greenhouse Effect and the Global Warming**

The climate of the Earth is changing. Extreme climatic events are being experienced by human beings in their daily lives. High temperatures, droughts, heavy rains, storms, sea level rise that stem from melting of glaciers are the events we frequently face. Climate change is not a recent phenomenon. This is because that the Earth's climate has been changing at different levels from the beginning of Earth's history of 4.5 billion years. This continuous change has resulted in fluctuations between glacial and warming periods of climate. Industrial revolution has been a milestone for climate change because of the fact that impacts of human activities added much to natural processes and changes that lead to climate change. Since the industrial revolution, concentrations of greenhouse gas emissions in the atmosphere have increased especially due to increasing consumption of fossil fuels, land-use and land cover changes. Hence, besides it is accepted as a natural process, human activity especially after industrial revolution became one of the leading causes of climate change. When its deficit impacts are considered, climate change is accepted as one of the most serious and challenging problem threatening the global community in the current era.

United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (UNFCCC, 1992, p.7). According to Intergovernmental Panel on Climate Change (IPCC), climate change is “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer” (IPCC, 2014a, p.8). In other words, while UNFCCC highlights human activity as the cause of climate change when defining climate change, IPCC gives equal importance to human impacts and natural factors. Still, IPCC also emphasizes that human impact on climate is clear (IPCC, 2014b, p.36). Thus, both human activity and natural processes should be taken into consideration when defining climate change as a major threat to human life at present.

Climate change is highly related to concentrations of greenhouse gases (GHG) in the atmosphere, which are water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases (F-gases) emitted in the atmosphere. Sunlight (radiation) reaching the Earth’s surface are either reflected back into the atmosphere or absorbed by the Earth’s surface. Even when it is absorbed, some of the energy is released back into the atmosphere as heat. Greenhouse gases that are concentrated in the atmosphere block the reflected radiation and make the atmosphere warmer by slowing or preventing the loss of heat. This process is commonly defined as the “greenhouse effect” (EPA, n.d.-e). Although natural greenhouse effect is vital for human life on the Earth as it keeps the atmospheric temperatures at levels appropriate for human beings to survive (Figure 1). The anthropogenic greenhouse effect leads to global warming that increase the average temperatures of the atmosphere, which in turn result in significant changes in climatic conditions throughout the globe.



**Figure 1:** Greenhouse Effect

Source: Image created by Robert A. Rohde / Global Warming Art;  
[http://www.globalwarmingart.com/wiki/File:Greenhouse\\_Effect\\_png](http://www.globalwarmingart.com/wiki/File:Greenhouse_Effect_png)

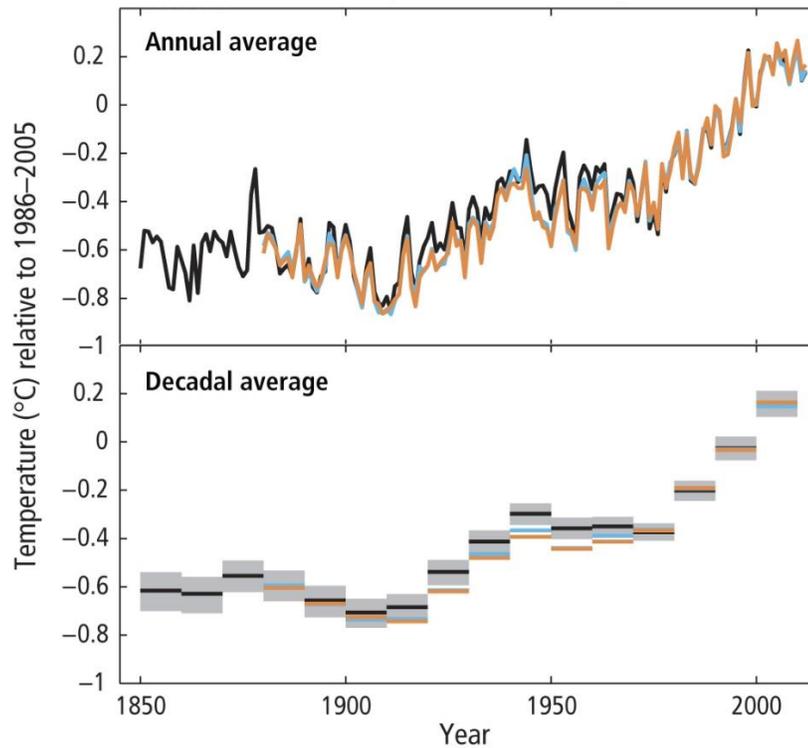
Among the GHG, water vapor (H<sub>2</sub>O), which has a short atmospheric lifetime, is the most important one due to the fact that it contributes to natural greenhouse effect (EPA, n.d.-e). However, human activity indirectly affects water vapor by having a role in increase of the atmospheric temperatures. Secondly, Carbon Dioxide (CO<sub>2</sub>) is the most potent greenhouse gas in terms of having significant impact on the composition of the atmosphere. CO<sub>2</sub> is emitted both naturally as part of carbon-cycle and anthropogenically through burning of fossil fuels and changes in land use and land cover. As for methane (CH<sub>4</sub>), although it is released naturally in wetlands, over 60% of total CH<sub>4</sub> emissions globally originates from human activities, such as agriculture, natural gas distribution and landfills (EPA, 2010). As being another greenhouse gas, nitrous oxide (N<sub>2</sub>O), which is naturally present in the atmosphere, is produced through agriculture, industrial processes and transportation. Human activities are responsible for about 40% of total N<sub>2</sub>O emissions globally (EPA, n.d.-h). Ozone which also has a short atmospheric lifetime -like water vapor, has an increasing concentration in the atmosphere owing to industrial activity. Finally, F-gases, which include chlorofluorocarbons (CFCs), hydro chlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>) have increasing being concentrated in the atmosphere

because of human activities like industrial processes rather than natural processes. F-gases are long-lived GHG unlike water vapor and ozone, thus, they can significantly affect global temperatures with their high global warming potential.

### **2.2.2. Observed and Projected Changes in Global Climatic Conditions**

The concentration of greenhouse gases began to increase sharply especially after 1950s due to population growth and increase in industrial activities that consume huge amount of fossil-fuels. In fact, rapid industrialization is closely related to human activities that increase the anthropogenic impact on climate change. Measurements indicate that current levels of many GHG are higher than any levels recorded before (EPA, n.d.-f).

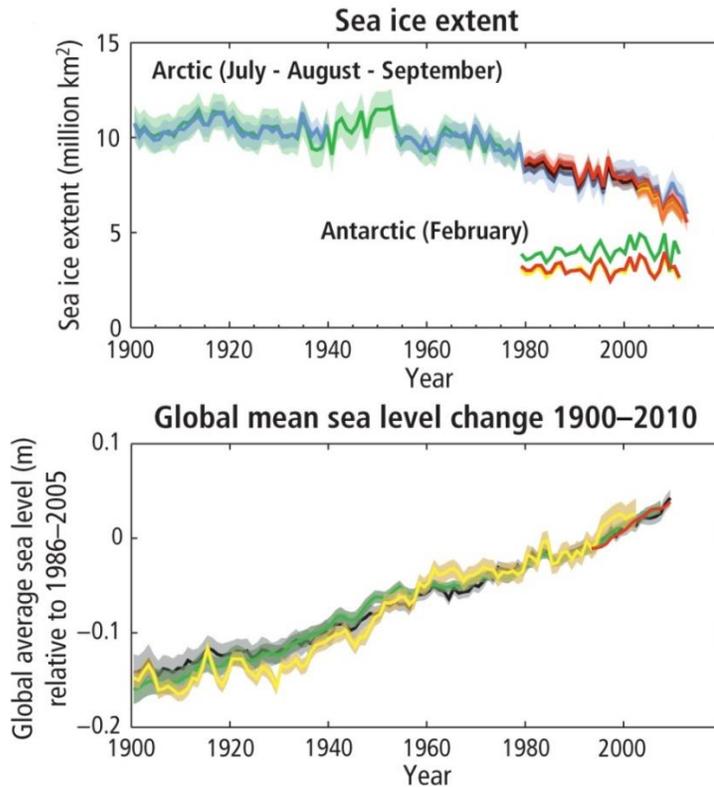
According to the 5<sup>th</sup> Assessment report of IPCC, which was released in 2014, human activity is the main emitter of GHG in the atmosphere and it is extremely likely that both the anthropogenic increase in GHG concentrations and other anthropogenic impacts resulted in more than half of the observed increase in global average surface temperature between the years of 1951 and 2010 (IPCC, 2014c, p.5). Warming of the climate system is so incontestable that the atmosphere and ocean have warmed, the extent of snow and ice have decreased, and sea levels have already risen (Figure 2 and Figure 3). Since 1850, there is not any decade which was warmer than each of the last three decades. The report also highlights that the globally averaged combined land and ocean surface temperature increased by 0.85°C over the period of 1880–2012 and by 0.89°C over the period of 1901–2012 and about 0.72°C over the period of 1951–2012 (Figure 2). Moreover, the warmest 30-year period of the last 800 years in the Northern Hemisphere was very likely the period from 1983 to 2012 (p. 2-4)



**Figure 2:** Observed globally averaged combined land and ocean surface temperature anomaly 1850–2012.

Source: (IPCC, 2014b, p.41)

According to research, sea ice extent worldwide has been decreasing prominently (Arctic Sea Ice Hits Smallest Extent in Satellite Era, 2012). Sea surface temperatures have been increasing and sea level has been rising as oceans absorb more heat owing to the greenhouse effect and as sea ice are melting. As oceans store more heat, the composition and chemistry of oceans change and as a result it threatens the biodiversity and ecosystems of oceans. In the 5<sup>th</sup> Assessment report of IPCC, it is stated that over the period 1901 to 2010, global mean sea level rose by 0.19 m. Moreover, the rate of sea level rise since the mid-19th century has been larger than the mean rate of the previous two millennia. Since the early 1970s, about 75% of the observed global mean sea level rise has been stemmed from glacier mass loss and ocean thermal expansion from warming together (IPCC, 2013 p.11). Figure 3 shows sea ice extent and global mean sea level change between 1900 and 2010.



**Figure 3:** Sea ice extent and Global mean sea level change 1900–2010.

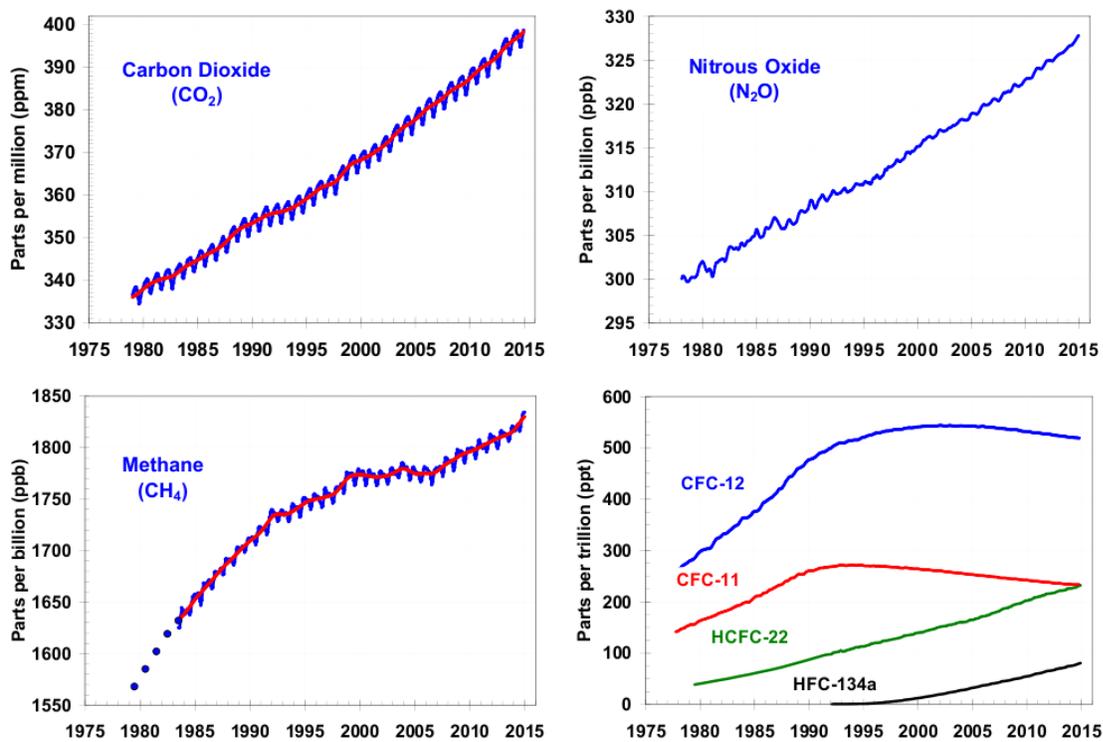
Source: (IPCC, 2014b, p.41)

From 1990 to 2010, there was 35% increase in net emissions of greenhouse gases stemmed from human activities worldwide (EPA, 2014a, p.2). Also, over this period, CO<sub>2</sub> emissions, which comprises about three-fourths of total emissions, increased by 42% (EPA, 2014c, p.1). Moreover, according to the measurement taken by Mauna Loa Observatory since 1958, CO<sub>2</sub> concentration in the atmosphere has been increasing dramatically. While annual average of CO<sub>2</sub> concentration was approximately 280 ppm<sup>1</sup> in pre-industrial times and about 333 ppm in 1977, it has reached to about 400 ppm in 2015 (NOAA, n.d.) In other words, it has increased by nearly 43% since pre-industrial times.

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<sup>1</sup> ppm: Parts per million

For nitrous oxide, while annual average of NO<sub>2</sub> concentrations was 270 ppb<sup>2</sup> in pre-industrial times, 299 ppb in 1977; it becomes 328 ppb in 2015, meaning that it has increased by nearly 21% since pre-industrial times. Moreover, annual average of CH<sub>4</sub> concentrations was 710 ppb in pre-industrial times and 1514 ppb in 1978 and exceeds 1840 ppb by 2015 (Etheridge et al., 2013, p. 15987). Therefore, there is nearly 159% increase in annual average of CH<sub>4</sub> concentrations since pre-industrial times (Figure 4).



**Figure 4:** Global average abundances of carbon dioxide, methane, nitrous oxide and F-gases, 1977-2015.

Source: National Oceanic & Atmospheric Administration: Annual Greenhouse Gas Index. Retrieved from <http://www.esrl.noaa.gov/gmd/aggi/aggi.html>

<sup>2</sup> ppb: Parts per billion

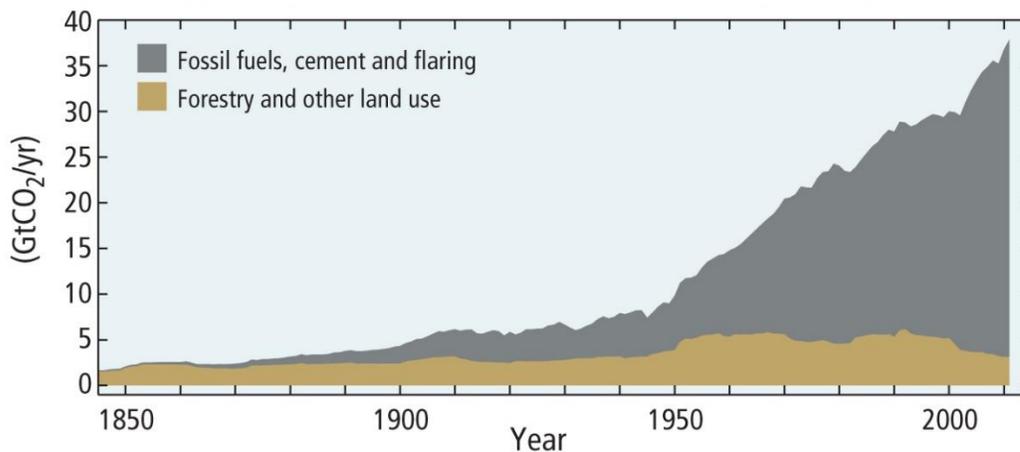
In order to compare the contributions of emissions of each greenhouse gases to climate change, emission metrics such as Global Warming Potential (GWP) and Global Temperature Change Potential can be used. Each GHG have different GWP. There are several factors to determine to what extent a particular greenhouse gas will affect the Earth’s climate. The lifetime of gas in the atmosphere and ability of the gas determines global warming potential of it. Global Warming Potential indicates “how much a given amount of the greenhouse gas is estimated to contribute to global warming over a specific period of time (for example, 100 years) after being emitted” (EPA, 2014b, p.7). For the Kyoto Protocol, GWP is measured from pulse emissions over a 100- year time frame. Secondly, Global Temperature Change Potential is “the ratio of change in global mean surface temperature at a chosen point in time from the substance of interest relative to that from CO<sub>2</sub>” (IPCC, 2013, 663). In order to compare GHG in terms of global warming potential, values is determined relative to carbon dioxide whose GWP is equal to 1 because of the fact that the gas is not destroyed over time (Table 2). The table below shows lifetimes, global warming potential and global temperature change potential over a 100-year time period of important GHG which have long atmospheric lifetime.

**Table 2: Major Long-Lived Greenhouse Gases and Their Characteristics**

<b>Greenhouse Gas</b>	<b>Lifetime in the atmosphere</b>	<b>100-Year Global Warming Potential</b>	<b>100-Year Global Temperature Change Potential</b>
<b>Carbon Dioxide</b>	see below*	1	1
<b>Methane</b>	12.4	28	4
<b>Nitrous Oxide</b>	12.4	265	234
<b>Fluorinated Gases</b>	A few weeks to thousands of years	Varies (the highest is sulfur hexafluoride at 23,500)	Varies (the highest is sulfur hexafluoride at 28,200)

Source: (IPCC, 2014b, p.87)

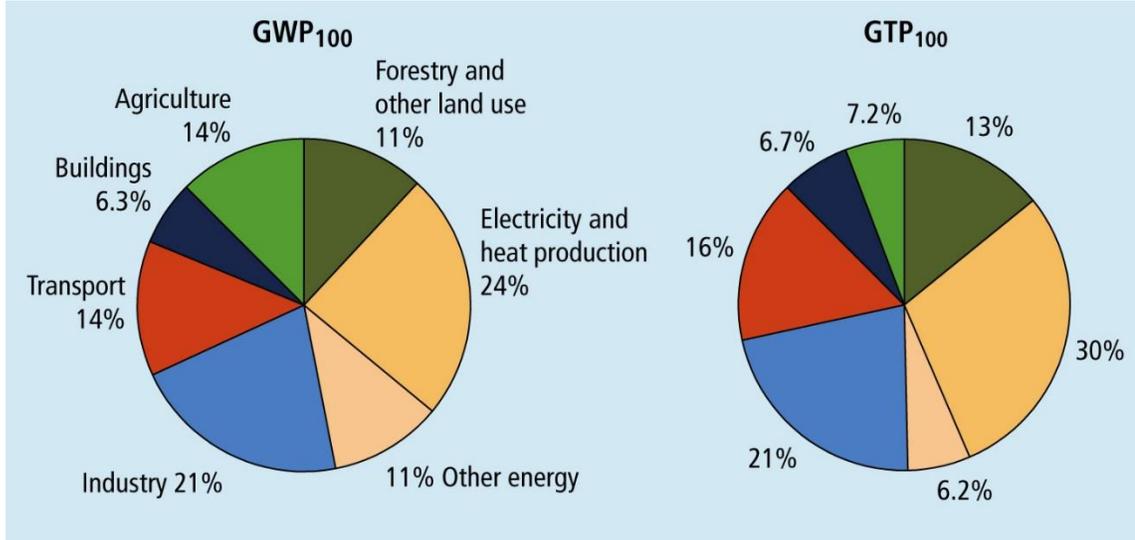
Although CO<sub>2</sub> has lower global warming potential than other GHG, it is emitted at a tremendous rate mainly due to fossil fuel use. In fact, CO<sub>2</sub> emissions from fossil fuel use and industrial activities made 78% increase in total GHG emissions from 1970 to 2010, with a contribution of similar percentage over the 2000–2010 period as Figure 5 shows (IPCC, 2014b, p.46). Thus, CO<sub>2</sub> emissions are one of the leading concerns which need taking of actions and precaution.



**Figure 5:** Annual Global Anthropogenic CO<sub>2</sub> Emissions from Fossil Fuel Combustion, Cement Production and Flaring, and Forestry and Other Land Use (gigatonne of CO<sub>2</sub>-equivalent per year, GtCO<sub>2</sub>/yr)

Source: (IPCC, 2014b, p.45)

When sectors contributing to total GHG are analyzed, electricity and heat production together with industry and transportation sectors come forefront. These sectors consume fossil fuel such as oil, gasoline, natural gas, diesel fuel, and coal, and thus responsible for 69% of all sectors in terms of contribution to GHG emissions (Figure 6).



**Figure 6:** Contributions by Sectors to Total GHG Emissions

Source: (IPCC, 2014b, p.88)

Considering that the world’s population is estimated to reach 8.1 billion in 2025 and 9.6 billion in 2050 and that global energy demand will grow by 37% by 2040 putting more pressure on the global energy system, these increasing factors are expected to result in further global warming in future with an increase in GHG emissions (United Nations Population Division, 2014, p.2; International Energy Agency, 2014, p.1). In the Fifth Assessment Report of IPCC, it is stated that even if anthropogenic GHG were stopped now, there would only be a slow decrease in the radiative forcing owing to concentrations of these long-lived greenhouse gases in the future, at a rate determined by the lifetime of the gas in the atmosphere (IPCC, 2013, p.1106).

Moreover, the IPCC estimates that in order to keep global mean temperature increase below 2°C which is “an upper limit beyond which the risks of grave damage to ecosystems, and of non-linear responses, are expected to increase rapidly” (IPCC, 2007, p.99), the world cannot emit more than about 1000 gigatonnes of CO<sub>2</sub> from 2014 forward (IPCC, 2013, p.27). Given the fact that emissions of some GHG have thousands of years of lifetime in the atmosphere and are not going to disappear in short-run,

limiting temperature increase to 2°C needs taking significant and urgent precautions in terms of the sectors contributing to total GHG emissions.

Projections for future climate change reveal the gravity of the situation. A warmer atmosphere, a warmer and more acidic ocean, higher sea levels, and larger changes in precipitation patterns are the factors which further changes are expected to cause. In this sense, according to the IPCC, global mean temperatures are expected to rise by 0.3°C to 4.8°C in the 21st century depending on how much governments control carbon emissions. Moreover, sea ice and glaciers will continue to decrease. Annual average precipitation is expected to increase in some areas and decrease in others. Global mean sea level is expected to rise by 0.26m to 0.82m for the period of 2081-2100 (IPCC, 2013, p. 89).

The changes in temperatures, GHG concentrations in the atmosphere, sea level rise, sea ice extent etc., have serious impacts on many fields such as ecosystems, water resources, human health, and agriculture. Climate change affects ecosystems and species in different ways. It can change their places by forcing them to migrate, blooming and mating cycle, result in extinction and ruin their food chain transforming current ecosystem (EPA, n.d.-b). Second, change in precipitation patterns, sea-level rise and warming temperatures have a significant impact on water resources and water quality (EPA, n.d.-a). While water demand is increasing, water supplies are considerably decreasing. Moreover, it affects many sectors, including energy, human health, agricultural production, and ecosystems. As another impact of climate change, human health is significantly suffering from illnesses and death stemmed from extreme weather events, warming temperatures, reduced air quality (EPA, n.d.-d). Also, people may become vulnerable to psychological and behavioral disorders. The last impact specified in this study is on agriculture. Agriculture is dependent on climatic conditions because of the fact that floods and droughts reduce agricultural production and its quality.

Considering the impact of climate change is that serious with its direct and indirect effects on societies and the environment, developing countries, especially least

developed ones, and the poorest societies are the most vulnerable to these impacts despite the fact that they make the minimum amount of contribution to global GHG emissions. In other words, many of the poorest countries will suffer from the most adverse impacts of climate change considering their low capacity to deal with harms. Thus, in order to prevent those impacts, there have been global attempts in the international arena since the early 1970s. The following section provides a discussion on the international efforts made as yet to address the global climate problem.

### **2.3. Political Framework of Climate Change**

In 1972, United Nations Conference on Human Environment was convened in Stockholm as the first mega environmental conference. The Stockholm Conference is known for putting environmental issues on the international agenda for the first time by highlighting the importance of preservation and enhancement of the human environment. It was also the first time to draw attention to climate change, thus, environmental issues got political and scientific concern globally. As a result of this conference, the United Nations Environment Programme (UNEP) was found as an authority that sets the global environmental agenda and promotes the coherent implementation of the international efforts to protect the global environment. In 1979, the First World Climate Conference was organized by the World Meteorological Organization (WMO) in Geneva as one of the first international meetings that highlighted global warming and climate change as a global environmental threat. This conference led to the establishment of Intergovernmental Panel on Climate Change (IPCC) which synthesizes the most recent available scientific and technical knowledge on climate change and produces periodical reports to disseminate the synthesized information. IPCC has produced five assessment reports and released them in 1990, 1995, 2001, 2007 and 2013.

20 years after the Stockholm Conference, the United Nations Conference on Environment and Development (UNCED), also known as the Rio Conference or Earth Summit was held in Rio de Janeiro in 1992. The Rio Conference is accepted as a

cornerstone in global environmental governance because of the fact that it highlighted economic and environmental issues could not be addressed independently from each other (United Nations, 1992). In the Rio Conference, the term “sustainable development”, which was brought to the attention of the international community by the Brundtland Commission in 1987, was tuned into a global goal in order to harmonize policies for economic development and environmental protection. The conference established Agenda 21, which was the international action plan for sustainable development. Besides, during Rio Conference, the Global Environmental Facility (GEF) was founded by the United Nations Development Programme, the United Nations Environment Program, and the World Bank considering the fact that dealing with environmental problems requires financial and technical resources. Since 1991, the GEF has provided \$13.5 billion in grants and leveraged \$65 billion in co-financing for 3,900 projects in fields of biological diversity, climate change, international waters and depletion of ozone layer in more than 165 developing countries (GEF, n.d.).

The Rio Conference had important outputs for climate policy. The most significant outcome of the Conference was the adoption of the United Nations Framework Convention on Climate Change (UNFCCC, n.d.-g). The convention emphasizes that climate change is a common concern of humankind and it aims to “stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UNFCCC, 1992, p.9). Moreover, the convention highlights that the parties are expected to protect climate systems on the basis of “common but differentiated responsibilities” (UNFCCC, 1992, p.9). “Common but differentiated responsibilities” states that developed countries should take more responsibility than developing countries in order to stabilize GHG concentrations in the atmosphere as they have contributed more to emissions of these gases since the industrial revolution.

Having entered into force in 1994, the UNFCCC has 195 countries including Turkey while it had 166 parties in 1992. The parties are divided into three groups as Annex 1, Annex 2 and Non-Annex 1 countries. Annex 1 countries are the Organization of

Economic Cooperation and Development (OECD) countries in 1992, economies in transition, including the Russian Federation, the Baltic States, and several Central and Eastern European States. Annex 1 countries are expected to reduce their GHG emissions to 1990 levels by the year 2000 (UNFCCC, 1992, p.12). As the second group, Annex 2 is a subset of Annex 1, including only the OECD members of Annex 1 countries. Annex 2 countries are required to support developing countries with financial resources in order to help them adapt to the adverse impacts of climate change (UNFCCC, 1992, p.14). Finally, Non-Annex 1 countries are the least developed and developing countries which are the most vulnerable to climate change, despite their lower contribution to GHG emissions and global warming. Non-Annex 1 countries have no obligations to reduce their emissions.

Annex 1, Annex 2 and Non-Annex 1 parties meet at the Conference of Parties regularly in order to realize the aims of the convention. Between the years 1995 and 2014, 20 Conference of Parties were held every year in different cities (Table 3).

**Table 3:** Conference of Parties Meetings between 1993 and 2015

<b>COP/CMP<sup>3</sup></b>	<b>PLACE</b>	<b>DATE</b>
COP 1	Berlin, Germany	March 28 - April 7 1995
COP 2	Geneva, Switzerland	July 8-19, 1996
COP 3	Kyoto, Japan	December 1-10, 1997
COP 4	Buenos Aires, Argentina	November 2-13, 1998
COP 5	Bonn, Germany	October 25 - November 5, 1999
COP 6 PART 1	The Hague, Netherlands	November 13 – 24, 2000
COP 6 PART 2	Bonn, Germany	July 16 – 27, 2001
COP 7	Marrakech, Morocco	October 29 – November 10, 2001
COP 8	New Delhi, India	October 23 - November 1, 2002
COP 9	Milan, Italy	December 1 – 12, 2003
COP 10	Buenos Aires, Argentina	December 6-17, 2004

<sup>3</sup> CMP is the supreme body of the Kyoto Protocol. CMP is also known as Meeting of Parties (MOP). The CMP and COP meet annually during the same period.

**Table 3 (continued)**

COP 11	Montreal, Canada	November 28 – December 9, 2005
COP 12	Nairobi, Kenya	November 6-17, 2006
COP 13	Bali, Indonesia	December 3-14, 2007
COP 14	Poznan, Poland	December 1-12, 2008
COP 15	Copenhagen, Denmark	December 7 – 18, 2009
COP 16	Cancun, Mexico	November 29 – December 10 2010
COP 17	Durban, South Africa	November 28 - December 9, 2011
COP 18	Doha, Qatar	November 26 - December 7, 2012
COP 19	Warsaw, Poland	November 11 – 22, 2013
COP 20	Lima, Peru	December 1-14, 2014
COP 21	Paris, France	November 30 – December 11, 2015

Source: Prepared by the author

Since emission targets in the treaty was found “not adequate” by the parties (Depledge, 2000), a binding document which sets emission reduction target was needed. Thus, the Kyoto Protocol, which has been a turning point in global environmental politics, was adopted in COP3 in Kyoto in 1997. The protocol came into force in 2005.

Annex 1 countries of the convention which have reduction targets are Annex B countries under the protocol. Other countries are listed as Non-Annex countries and they do not have specific commitments in terms of GHG reduction targets. The protocol lies heavily on developed countries for being responsible for high levels of GHG emissions for more than 150 years industrial activity under the principle of "common but differentiated responsibilities" (UNFCCC, n.d.-b). In this sense, the Kyoto Protocol set forth 5% reduction target below the 1990 levels for developed countries between the years 2008 and 2012, which is the first commitment period (UNFCCC, n.d.-d). Six main GHG (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>) are the gases which need to be reduced according to the protocol (UNFCCC, n.d.-c).

Currently, there are 83 signatories and 192 parties to the Kyoto Protocol (UNFCCC, n.d.-h). Although having signed the protocol, USA, which is accountable for 15% of the total global CO<sub>2</sub> emissions (Olivier et al., 2014, p.4), has not ratified it claiming that the Kyoto would damage the national economy (NBC News, 2005, June 30).

While the Kyoto Protocol makes binding commitments for the countries, it also enables them with flexible mechanisms to meet their targets. International Emission Trading allows countries below their legal requirements to sell the capacity to the countries with excess emissions (Baumert et al., 2003, p.137). As of 2014, about 40 countries and over 20 sub-national jurisdictions have launched initiatives on carbon pricing (World Bank, 2014, p.14). The second mechanism is the Clean Development Mechanism (CDM) that allows Annex B parties to develop emission-reduction project in collaboration with developing countries (UNFCCC, n.d.-f). Lastly, the Joint Implementation (JI) allows Annex B countries to implement projects that reduce emissions in any other Annex B country (UNFCCC, n.d.-e). The basic difference between CDM and JI is that the projects are implemented in Non-Annex parties in CDM whereas they are applied in Annex B parties in JI.

Bali Action Plan which was adopted in COP 13 in 2007 was a cornerstone in climate change negotiations since it provided a basis for negotiations for a post-2012 agreement for the Kyoto Protocol which was expired in 2012. The Bali Action Plan covered five main categories: shared vision, mitigation, adaptation, technology and financing (UNFCCC, n.d.-a).

The Bali Action Plan pointed to the COP15 as the time when the post-Kyoto mechanism would be agreed on. Therefore, COP 15, which was held in Copenhagen (Denmark) in 2009, has been one of the biggest conferences of parties meetings as yet with participation of nearly 115 world leaders (UNFCCC, 2009, December). COP 15 also drew a significant attention from media and public. After long discussions and negotiations, the parties could not reach a compromise on an agreement for the second commitment period, 2012-2020 in COP 15. Contrary to expectations, the conference did

not produce a legally binding document but did “take note” of the Copenhagen Accord. “Taking note” was explained by the UNFCCC Executive Secretary Yvo De Boer as “a way of recognizing that something is there, but not going so far as to associate yourself with it” (Cryderman, 2009, December 19). In this context, the accord can be considered as a politically binding document rather than a legally binding one (Faure & Wibisana, 2013, p.83).

Despite causing disappointment, Copenhagen Accord was notable in that developed countries pledged to provide \$30 billion in 2010-2012 period and \$100 billion by 2020 for adaptation and mitigation in developing countries. Moreover, the accord expected the parties to indicate their emission reduction targets for mitigation by 2010 in order to limit the temperature increase below 2°C (UNFCCC, 2009, December). However, these emission reduction targets were found inadequate resulting in ambition gap in COP 16 in Cancun (Mexico).

In Cancun, countries discussed on the size of the gap and their emission reduction pledge (UNFCCC, n.d.-m). Moreover, the parties asserted that adaptation should have the same priority as mitigation (UNFCCC, n.d.-k). In this sense, developing countries is provided with finance, technology and capacity-building support in order to adapt climate change and to tackle with the adverse impacts of climate change. Furthermore, Green Climate Fund, which financially supports developing countries and Adaptation Committee, which contributes to the implementation of stronger action on adaptation, were established by the Cancun Agreements (UNFCCC, 2010, November). Although Cancun was not adequate to close the ambition gap, it paved the way and became the basis for further negotiations (Chen et al., 2011, p.11).

COP 17 that followed the Cancun meeting was held in Durban (South Africa) in 2011. The governments agreed on the need of a legally binding global agreement addressing climate change no later than 2015 for the period beyond 2020 (UNFCCC, n.d.-j). In this sense, Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), a subsidiary body under convention, was launched to realize the negotiations on the new

global agreement. Moreover, governments decided the second commitment period of Kyoto Protocol to start from 1 January 2013 (UNFCCC, 2011, p.2).

The second commitment period beginning from 1 January 2013 was determined to be extended to 31 December 2020 in COP18 in Doha, Qatar (UNFCCC, 2012a, p.3). The Kyoto Protocol was amended in several points within the scope of Doha Amendment, which 37 countries ratified as of May 2015. Six greenhouse gases that needed to be reduced in terms of Kyoto Protocol became seven with nitrogen trifluoride (NF<sub>3</sub>) included in the second commitment period. Furthermore, parties are needed to reduce their emissions by 18% below 1990 levels in addition to review their emission reduction commitments in the second commitment period (UNFCCC, 2012b, p.4). These amendments, however, were not obligatory. The parties were not forced to follow the principles of the Kyoto Protocol after 2012, when the protocol was expired.

COP 19 to the UNFCCC was held in Warsaw (Poland) in 2013. The main outcome of the Warsaw Climate Change Conference was the establishment of the Warsaw International Mechanism on loss and damage associated with climate change impacts in developing countries, especially the vulnerable ones to such adverse impacts. Moreover, parties were invited to initiate or intensify their national targets, namely “Intended Nationally Determined Contributions (INDCs)” in order to address climate change by the end of the first quarter of 2015 (UNFCCC, 2013, p.4).

COP 20 was held in Lima (Peru) in 2014 and produced the Lima Call for Climate Action, which paves the way for climate agreement adopted at COP 21 in Paris (France) in 2015. In the context of Lima Call, an outline text for COP 21 is was agreed. Moreover, parties agreed to submit their INDCs determined in Warsaw Climate Change Conference in COP 19. In other words, countries will determine and designate their own targets to reduce GHG by themselves rather than communicating them with other parties (Taraska & Vogel, 2014). Also, during Lima, the capitalization of Green Climate Fund which provides financial support for vulnerable countries to climate change surpassed \$10 billion (Lima Call for Climate Action, 2014).

Finally, COP 21 to the UNFCCC was held in Paris (France) in 2015, which was one of the biggest international conferences in France. COP 21 drew more attention from media and public than any previous conferences of parties. The outcome of the conference, Paris Agreement, is widely accepted as an historic agreement since it was agreed by 195 nations. The agreement aims to keep “the increase in the global average temperature to well below 2 °C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5 °C” (UNFCCC, 2015, p.2). Another issue for the agreement is that parties will have to increase their emission reduction target every 5 years within the scope of their INDCs. Furthermore, the term “loss and damage” was used for the first time in Paris Agreement saying that “parties recognizes the importance of averting, minimizing and addressing loss and damage associated with the adverse effects of climate change” (UNFCCC, 2015, p.25).

Paris Agreement will enter into force when at least 55 parties representing 55% of global emissions have ratified it. However, according to World Resources Institute (WRI), at least one of the top four emitting parties including China, the United States, the European Union, or Russia should accede to the agreement in order to achieve 55% threshold (Northrop & Ross, 2016). In addition, the agreement has been criticized for parties’ insufficient efforts. When INDCs which countries submitted before and during the conference were analyzed, they fall short to keep the temperatures below 2 °C. In fact, INDCs will be able to limit the temperature increase to around 2.7 °C by the end of the century (Harvey, 2015, October 30). Moreover, some scientists claim that the efforts will continue to fall short as long as they keep investing in fossil fuels (New Scientist, 2015, December 12).

## **2.4. Conclusion**

Climate change is one of the most serious issues that the world nations face at present. Extreme weather events, high temperatures, drought, heavy rains, storms etc. are among the major impacts of climate change. Industrial revolution has been a milestone in that

sense since increasing consumption of fossil fuels resulted in high concentrations of GHG in the atmosphere. With the increasing GHG in the atmosphere, temperatures and sea levels are increased, the extent of snow and ice have decreased. In fact, it is extremely likely that human activity is the main contributor to concentrations of GHG in the atmosphere (IPCC, 2014c).

Since when adverse impacts of environmental problems became more obvious, environmental issues have drawn global attention. The process starting from the Stockholm Conference continued with numerous conferences and meetings and resulted in many international conventions, including the climate change regime. The Kyoto Protocol as the binding protocol of the international climate change regime has been the milestone attempt to reduce GHG emissions of developed countries. However, due to reluctance of some countries, the Kyoto Protocol could not achieve significant changes in terms of global emission reduction targets before it was expired in 2012. Although it is highly necessary, the international community could not manage to agree on a new legally binding agreement for the period beyond 2012. Although expectations in this respect realized in COP21, scientist think that efforts of the parties remain limited to keep the temperature increase below 2 °C so long as countries continue to use fossil fuels.

## CHAPTER 3

### CLIMATE CHANGE AND CITIES<sup>4</sup>

#### 3.1. Introduction

This chapter focuses on local governments which have emerged as major policy players to address climate change for nearly a quarter-century. Having been directly affected from the adverse impacts of climate change, cities are seen as part of the climate problem, and also part of the solution to mitigate and to adapt climate change. Thus, urban areas are now regarded a significant arena where climate governance could be performed as vertically and horizontally. Vertical collaboration refers to the relations between municipalities, regional authorities and national governments whereas horizontal collaboration refers to the relations between different agencies and policy divisions within municipal governments, which may appear in the form of transnational municipal networks.

#### 3.2. Cities as an Important Arena for Combating Climate Change

While international negotiations on a new legally binding global agreement addressing climate change are still in progress, cities have been taking increasing attention since the early 1990s, thus, local governments have become major policy players to address climate change since then (Kern & Alber, 2008, p.171). Local authorities were listed as one of the nine major groups in Agenda 21 document of the Rio Conference in 1992 and a whole chapter was devoted to the role of local governments in sustainable development (UNCED, 1992). Also they were officially recognized as governmental stakeholders at COP16 held in Cancun in 2010 (WMCCC, 2010, December 10). The

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<sup>4</sup> In this thesis, cities refer to local governments since literature reviewed for this study mostly use "cities" when addressing local governments.

two-way interactions between urban areas and climate change have promoted an effectual array of responses in urban areas during the last years (Sanchez-Rodriguez, Fragkias, Solecki, 2008, p.7). Although local governments were initially ignored by most climate-change scientists (Rosenzweig et al., 2010, p.909), relationships between cities and climate change have been studied by an increasing number of researchers focusing on municipal strategies, policies and measures, and the challenges that municipal authorities confront regarding policy implementation and effectiveness (Broto, Bulkeley, 2012, p.92). Some researchers claim that municipalities are better positioned than national governments to deal with climate change in terms of co-benefits of climate policy and cooperation at the local level and certain types of policies, especially those relating to spatial development and the built environment, transportation systems, management of natural resources, building and urban utilities (Kamal-Chaoui, & Robert, 2009, p.78). Concordantly, according to Department of the Environment, Transport and the Regions in London, local authorities as local, directly elected bodies have a critical role in working with local communities to take action to mitigate and adapt to the impacts of climate change by working (DETR, 2000, p.40).

Climate change is not only an environmental problem but also a main challenge for development (Sanchez-Rodriguez, Fragkias, Solecki, 2008, p.8), and urban areas are centers of development besides being sources of innovations and policy responses to reduce GHG emissions and adapt to the impacts of climate change (Romero-Lankao, 2008). Cities often emerge as “first responders” in their countries to tackle climate change (Rosenzweig et al., 2010, p.909; World Bank, 2010, p.14). In that sense, according to Deutsches Institut Für Urbanistik, many municipalities in Germany have set local emission reduction targets which are equal or more than the commitments of their national government (Beerman, 2014, p.171). Moreover, due to the fact that local governments have proximity to the general public and aim to provide daily services, they have a tendency to be more pragmatic than senior levels of government, thus, the rules of the game may be set by national governments, but it is cities that are the athletes (World Bank, 2010, p.14).

Despite the fact that cities were located close to rivers and oceans in order to have an advantage of transportation and connectivity (World Bank, 2010, p.8), now they experience the disadvantages of their waterside locations, as being exposed to sea level rise, floods, storm surges and heavy rains. In areas where climate is usually warmer, these water-based impacts are coupled with high temperatures, heat waves and drought. Thus, urban areas are highly vulnerable to most of the adverse impacts of climate change. Especially poor nations are the most vulnerable to those effects due to lack of resources and capacity to effectively and quickly protect themselves and to low-quality urban built environment (Kamal-Chaoui & Robert, 2009, p.60; Rosenzweig et al., 2011, p.5; Corfee-Morlot et al., 2009, p.12). Between 1990 and 2004, 22 of the 30 major natural disasters in urban areas were resulted from climate change, which threaten the health, social life, urban economy and function (Sanchez-Rodriguez, 2008, p.7). Furthermore, according to World Bank (2010), 15 of the 20 megacities of the world are under risk from sea level rise and coastal surges (World Bank, 2010, p.8). When considering the global averages, sea level is expected to rise by 0.26 m to 0.82 m during 2081 and 2100 (IPCC, 2013, p.89), thus, cities will continue to be affected from the adverse impacts of climate change.

Warmer temperatures take place in urban areas than their rural surroundings (known as the urban heat island effect) due to increase in human population's activities as EPA points out that "Air temperature of a city with 1 million people or more can be 1.8–5.4°F (1–3°C) warmer than its surroundings. In the evening, the difference can be as high as 22°F (12°C)" (EPA, n.d.-c). Moreover, the difference between urban and rural areas in average annual temperature is expected to increase by 1°C per decade (Kamal-Chaoui & Robert, 2009, p.57).

However, cities are not only categorized as the victims of climate change but also known to be responsible for climate change problem for several reasons. Today, 54% of the world's population live in the cities and 66% of the population is projected to be urbanized by 2050 (United Nation, 2015, p.1). Urbanization disproportionately affects

carbon cycle as it changes land use, produces impervious surfaces, fills wetlands and damages ecosystems. Moreover, weather climate system is forced by the built environment of urban areas since built environment is a source of heat, a poor water storage system, and an obstacle for atmospheric motion (Romero-Lankao, 2009, p.15). In this sense, more urbanized countries of OECD are inclined to produce higher levels of GHG emissions which are originated decreasingly from industrial activities and increasingly from energy services required for lighting, heating and cooling, appliance use, electronics use, and mobility (Kamal-Chaoui & Robert, 2009, p.35). Not only are cities high consumers of energy, but also they produce waste and associated GHG emissions. Due to the fact that large economic activity is realized in urban areas, urbanization and growth have a direct effect on greenhouse gas emissions of cities and related climate change (World Bank, 2010, p.18). Cities are responsible for 78% of the world's energy consumption and more than 60% of all carbon dioxide and significant amounts of other greenhouse gas emissions (Climate Change, n.d). In fact, world's 40 megacities produce 447 million tCO<sub>2</sub>e/yr of GHG which exceeds the individual annual GHG emissions of 167 countries that are Party to the UNFCCC (Carbonn Cities Climate Registry, 2011, p.10). Therefore, increasing urbanization will result in a significant increase in energy use and CO<sub>2</sub> emissions in countries where there is a shift from CO<sub>2</sub>-neutral energy sources like biomass and waste to CO<sub>2</sub>-intensive energy sources in terms of urban energy use (Kamal-Chaoui & Robert, 2009, p.9).

On the other hand, cities are also accepted as part of the climate solution (Table 4). As World Bank (2010, p.1) indicates, local governments can address climate change at a more tangible level by providing more immediate and effective communication between the public and decision makers compared to any other group. Reducing emissions is better achieved within municipalities via their control of energy, transportation, land use planning, building codes, waste management and community education (Zeppel, 2013, p.218). Moreover, synergies and relations between climate policy and sustainable development become most apparent at the local level and encourage cities –especially metropolitan regions with high innovative and creative capacities- to produce social and

technological innovations which help reduce GHG emissions (Kern & Alber, 2008, p.172), and adapt to heat waves, floods, sea level rise and other damages that climate change is expected to exacerbate (Romero-Lankao, 2009, p.17).

**Table 4:** Cities as part of the Climate Change Problem and Part of the Solution

<b>Part of the climate problem</b>	<b>Part of the climate solution</b>
<ul style="list-style-type: none"> <li>-54% of the world’s population lives in the cities by 2014.</li> <li>-66% of the population is projected to be urbanized by 2050.</li> <li>-Cities are responsible for 78% of the world’s energy consumption.</li> <li>-Large economic and social activity takes place in urban areas.</li> <li>-Cities are responsible for 60% of all GHG emissions.</li> <li>-By 2030, over 80 per cent of the increase in global annual energy demand above 2006 levels will come from cities in developing countries.</li> <li>-Rapid urbanization is creating significant urban challenges that will be exacerbated by climate change.</li> <li>-Cities have historically developed in locations that may be vulnerable to change, including in coastal areas and on rivers.</li> </ul>	<ul style="list-style-type: none"> <li>-Municipal authorities have responsibility for many processes that affect GHG emissions at the local level.</li> <li>-Municipalities have a democratic mandate from local populations to address issues that affect the city.</li> <li>-Municipalities have a history of addressing issues of sustainable climate development.</li> <li>-Municipalities can act as a ‘laboratory’ for testing innovative approaches.</li> <li>-Municipal authorities can act in partnership with private-sector and civil society actors.</li> <li>-Cities represent high concentrations of private-sector actors with growing commitment to act on climate change.</li> <li>-Cities provide arenas within which civil society is mobilizing to address climate change.</li> </ul>

Source: Adapted from Bulkeley (2013, p.8)

However, cities are not to be blamed for contributing to GHG emissions. It is the lifestyles that people follow in the city, the sprawl they generate, the ways they consume energy in urban buildings, which make cities the great polluters and consumers of energy (Kamal-Chaoui & Robert, 2009, p.18). In other words, GHG emissions do not

occur from some uniform and invisible source, but they are the product of our urban lifestyles: -the ways in which energy is consumed in our homes and cars and is used to make the goods we use in addition to how we manage the land and forests (Bulkeley, 2013, p.6).

In fact, not all cities contribute to carbon emissions in the same way (Kamal-Chaoui & Robert, 2009, p.18). Even the largest “carbon footprints”<sup>5</sup> do not necessarily belong to the largest cities (Romero-Lankao, 2009, p.15). Nevertheless, countries that have lower levels of emissions are low income countries and urbanized in lower levels, and also more vulnerable to climate change (Romero-Lankao, 2008, p.52). Different factors are responsible for the diverse levels and sources of GHG emissions in urban areas both within and across countries. These factors are (Romero-Lankao, 2008, p.52);

- Differences in their energy systems in national/regional scale and in the way energy production, transportation and other emitters operate,
- Degrees of economic development and affluence,
- Technology and technological innovations/acquisition,
- Climate, altitude and location regarding energy sources
- Demographic pattern and dynamics,
- Economic base and function of a city,
- Urban spatial form and transportation system,
- Markets and governance structure in which city operates.

### **3.3. Urban Climate Governance**

Since 1990s, the number of municipalities addressing climate change has grown significantly. Although efforts to address climate change were the concerns of a few pioneering cities in North America, Europe and Australia at the early stages, now both large global cities and cities which may be especially vulnerable to climate change across different global regions take action to address climate change by taking a more

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<sup>5</sup> Carbon footprint is the total amount of GHG produced by a person, family, building, organization, or company. Retrieved from <http://www.epa.gov/climatechange/glossary.html>

central place in urban political agendas (Bulkeley, 2013, p. 82). Governing climate change needs “an unprecedented level of cooperation, not only between countries, but also between different levels of governments, development agencies and the private sector” (De Boer, 2009, p.2). In that sense, multiple levels of governance are involved in the context for urban policymaking and programme implementation. According to Rosenau (2000, p.172), governance is described as below:

Governance occurs on a global scale through both the co-ordination of states and the activities of a vast array of rule systems that exercise authority in the pursuit of goals and that function outside normal national jurisdictions. Some of the systems are formalized, many consist of essentially informal structures, and some are still largely inchoate, but taken together they cumulate to governance on a global scale.

Vertical coordination among national, regional and local governments and horizontal coordination among climate policy agencies within -and among local governments in a region are required because of the fact that cities frequently need to collaborate with not only other cities and upper levels of government, but also private sector and non-governmental organizations in order to get the authority, technical expertise and funding required for their climate policy objectives (Kamal-Chaoui & Robert, 2009, p.78).

In order to design and implement climate change policy responses to address climate change, four modes of governing which rely on different sorts of policy instruments and interventions can be utilized by municipalities and other urban actors (Kamal-Chaoui & Robert, 2009, p.78; Bulkeley, 2013, p.91). First, *self-governing* refers to the capacity of municipalities to govern their own actions such as improving energy efficiency in government buildings and buildings of municipality and the greening of public transport vehicles (Bulkeley, 2013, p.92; Kern & Alber, 2008, p.174). Having relied on reorganization, institutional innovation and strategic investments, self-governing has been prevalent in cities in North and Global South because such approaches produce quick, confirmable reductions in emissions (Kern & Alber, 2008, p.174; Bulkeley, 2013, p. 92; Gore et al., 2009, p.508). The second mode of governing, *governing through enabling*, can be defined as the role of municipalities in coordinating and facilitating partnerships with private and community actors (Kamal-Chaoui & Robert, 2009, p.79;

Kern & Alber, 2008, p.174). Information and education campaigns, persuasion and incentives and specific partnership schemes can be involved in this mode which has been especially dominant in developed countries (Kern & Alber, 2008, p.174; Bulkeley, 2013, p.97). Third, *governing by provision* involves influencing low-carbon infrastructure development, programme administration and delivery of services and goods with lower-carbon footprint in the provision of services such as electricity, transportation, water, waste etc. to improve adaptive capacity (Bulkeley, 2013, p.93; Kamal-Chaoui & Robert, 2009, p.79). Provision-based governing is common in developing countries (UN-Habitat, 2011, p.108). The final mode of governing, *governing by authority*, refers that municipalities may enact regulations to reduce emissions or adapt to the impacts of climate change by identifying financial regulations, land-use planning, and setting codes and standards. Governing by regulation relies on the ability of local governments to perform regulations and to apply sanctions those which do not consent (Bulkeley, 2013, p.93). These modes are not mutually exclusive despite their differences in terms of processes, logics, and techniques, thus, a combination of these modes may be deployed by municipalities at any one time (Bulkeley, 2013, p.92). In Chapter 5, Gaziantep, Nilüfer and Seferihisar municipalities will be evaluated according to these three modes of governing.

Although strategic management, science-based policies, efficient financing, jurisdictional coordination, and citizen participation are required for addressing climate change, many city governments have limited powers and responsibilities to address the climate problem. (Rosenzweig et al., 2011, p.xxi; McCarney et al., 2011, p.250). Therefore, relations between local and national government can be critical in shaping urban climate governance (Bulkeley et al., 2009, p.15).

### **3.4. Climate Change Mitigation and Adaptation**

Responding to climate change contains two interrelated approaches: mitigation and adaptation.

Mitigation has been top emerging issue because addressing climate change has been sought at global, national and local levels (Bulkeley, 2013, p.106). Mitigation includes reducing emissions and limiting the levels of GHG gases in the atmosphere in order to slow and finally stop or even reverse the human impacts on climate (NASA, n.d.; Rosenzweig et al., 2011, p.x). According to the Fourth Assessment Report of IPCC, mitigation aims to stabilize “greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner” (IPCC, 2014c, p.4). However, GHG emissions in the atmosphere continue to rise (EPA, 2014a, p.1). After the challenges experienced at the global and national levels, municipalities have emerged as an important actor to develop responses to climate change because of the fact that they have jurisdiction over some of the key sectors that produce huge amount of GHG (Bulkeley, 2013, p.107). Mitigation will need energy systems, the design of buildings, transport networks, urban spatial patterns and zoning to be changed significantly in long-run (Rosenzweig et al., 2011, p.x). Thus, a range of activities and actions in terms of urban development, built environment and urban infrastructure can be undertaken in order to address climate change.

The second main track of actions for responding to climate change is climate change adaptation. Adaptation refers to adjustments to actual or expected adverse impacts of climate change and it aims to reduce vulnerability of societies to such impacts (NASA, n.d.). These adjustments can be either protective like guarding against the adverse impacts of climate change or opportunistic like drawing advantage from the beneficial opportunities associated with climate change (EPA, n.d.-g). In fact, adaptation to changes in climatic conditions is nothing new because individuals and socio-ecological systems showed a strong capacity to adapt to and cope with different climates and environmental changes throughout history (Pelling, 2011, p.5; EPA, n.d.-g; NASA, n.d.). However, “uncertainty in the ways through which climate change will be felt set

against its speed and scale of impact, combined with the invisibility of causal linkages in everyday life” is what makes climate change adaptation critically challenging (Pelling, 2011, p.5). Yet, governments at various levels are beginning to adopt adaptation plans and policies and to bring climate-change considerations and broader development plans together (IPCC, 2014d, p.8).

The main difference between mitigation and adaptation involves the scale of their effects and associated costs. On the one hand, adaptation will have effects primarily upon local scale in which strategies might be expensive particularly in large-scale infrastructure (World Bank, 2010, p.11). On the other hand, mitigation requires extensive behavioral changes and technological improvements and costs are usually high in short-run but become self-financed through cost savings over time (World Bank, 2010, p.11).

Synergies between adaptation and mitigation policies are quite important at the urban scale and this synergy enables these policies to be designed in a consistent framework (Hallegatte, Henriot & Corfee-Morlot, 2008, p.35). Significant benefits can be obtained from adaptation and mitigation policies such as reduced energy costs, increased local energy security and improved urban health (Kamal-Chaoui & Robert, 2008, p.65). Moreover, local governments are well positioned to develop policy and programmatic solutions in terms of mitigation and adaptation strategies in different sectors (Corfee-Morlot et al., 2009, p.30). With measures for adaptation and mitigation, cities become more livable and thus more competitive (Kamal-Chaoui & Robert, 2009, p.75). Table 5 shows local-level mitigation and adaptation policies across sectors.

**Table 5:** Local-Level Mitigation and Adaptation Policies across Sectors

<b>Sector</b>	<b>Mitigation</b>	<b>Adaptation</b>
Building	Energy efficiency measures	Adaptability in changes in climate extreme
Electricity Generation /Distribution	Fuel mix; use of renewable; transmission loss	Robustness of electricity infrastructure

**Table 5 (continued)**

Heating/Cooling	Energy demand management; renewable energy use	Robustness of cooling-heating infrastructure; Exacerbation of heat island effect
Waste Disposal	Shipping of waste; Methane emissions mitigation	
Transportation	Modal mix; Vehicle efficiency;	Effects of climate on infrastructure, Changes in use patterns
Land-use planning	Land-use regulation, Energy efficient development	Land-use regulation (reduce development vulnerability)
Water Provision	Emissions related to pumping	Long-term availabilities studies; water use measures

Source: (Hallegatte et al., 2008, p.35)

Therefore, the effectiveness of policy implementation at local level relies on policies that are able to meet mitigation and adaptation goals, as well as economic growth and local fiscal sustainability pursued (Kamal-Chaoui & Robert, 2009, p.18). However, climate change mitigation and adaptation has been shaped by institutional capacity and political and technical challenges and the lack of governing through enabling context, limited resources, political disputes and obdurate sociotechnical infrastructures have been the most important factors that limit action (Bulkeley, 2013, p.140). For example, most cities that develop climate plans are restricted by fiscal and policymaking limitations (Rosenzweig et al., 2011, p.xxii). Nevertheless, effective action on climate change mitigation and adaptation can be provided by the four key sectors emerged: effective leadership to overcome fragmentation across neighborhoods and sectors; efficient financing for amplified governance in cities; jurisdictional coordination across city, state, and national governments and citizen participation for inclusive local government decision-making on climate change (Rosenzweig et al., 2011, p.xxii). According to Bulkeley et al. (2009), there are key elements that constitute responses to mitigation and adaptation (Table 6).

**Table 6:** Key Elements that Shape Responses to Climate Mitigation and Adaptation

<b>Mitigation</b>	<b>Adaptation</b>
<ul style="list-style-type: none"> <li>-Effective policy entrepreneurs</li> <li>-Municipal competencies in critical areas such as transportation, infrastructure, energy and planning policy</li> <li>-Access to additional financial resources and flexibility in their deployment</li> <li>-An enabling policy framework at national and regional levels</li> <li>-The fit between jurisdictional areas and problem boundaries</li> <li>-The ability to engage partners in order to achieve action beyond the municipality</li> <li>-The knowledge and resource capacity, as well as political support, generated by networks and partnerships</li> <li>-The reframing of climate change as an issue of local importance and the absence of conflict between addressing climate change and other local priorities</li> </ul>	<ul style="list-style-type: none"> <li>-Availability of data and information about local impacts from climate change</li> <li>-Good governance</li> <li>-Access to financial and human resources, provided by the national government or international donors</li> <li>-Coordination of policies and measure across both local agencies and levels of government</li> <li>-Empowerment and training of civil society to help strengthen service provision, environmental management and the livelihoods of the most vulnerable people</li> <li>-Nurturing a sense of readiness for disaster emergency</li> </ul>

Source: Adapted from Bulkeley et al. (2009, p.77-78)

While mitigation has been the main focus of urban climate change policy and research, adaptation policies at the local level have received little attention from policy making communities at global, national and local levels (Bulkeley et al., 2009, p.10; Kamal-Chaoui & Robert, 2009, p.18; Blanco et al., 2011, p.237; Romero-Lankao, 2009, p.18; Bulkeley, 2013, p.143). Considering that even if anthropogenic GHG were stopped now, long-lived greenhouse gases will continue to cause further global warming in the future, the on-going neglect of urban adaptation is an important concern due to the fact that action to address vulnerabilities is urgently needed (IPCC, 2013, p.1106; Bulkeley, 2013, p.143). In other words, although policies of adaptation and mitigation require a

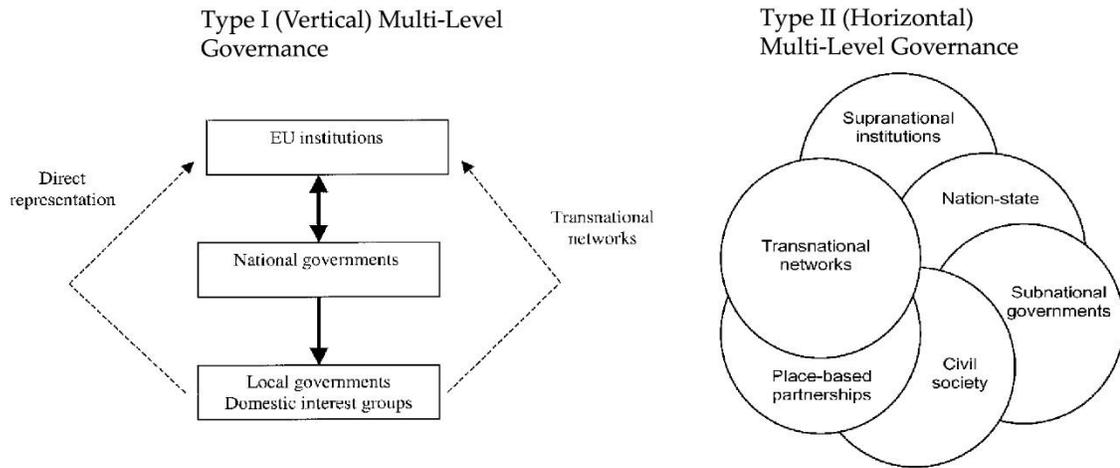
high level of investment, cost of delaying action can be even higher besides it can restrain future options for mitigation and adaptation in cities (World Bank, 2010, p.33; Kamal-Chaoui & Robert, 2009, p.10).

In conclusion, according to Kern and Alber (2008, p.172), the actual responses of local governments to climate change rely on:

- The impact of climate change at the local level and how citizens and policy-makers perceive the vulnerabilities and risks,
- Competence and capacity and commitment of a city to address climate change,
- National programmes that promote local initiatives especially those with limited resources to pursue pioneers,
- The participation of cities in national and transnational municipal networks which promote experience, best practices and innovative solutions among their members.

In order to narrow and close the policy gaps between levels of government for a multilevel governance framework, tools are adopted for vertical and horizontal interaction (Corfee-Morlot et al., 2009, p.8). While vertical (or Type I) coordination refers the relation between municipalities, regional authorities and national governments, horizontal (or Type II) coordination indicates the relation between different agencies and policy divisions within municipal governments as it is shown in Figure 7 (Bulkeley et al., 2009, p.10). The vertical dimension of multilevel governance recognizes that national governments require working closely with regional and local governments in order to implement national climate strategies effectively (Corfee-Morlot et al., 2009, p.8). Also, considering the spatial mismatch in terms of coordination of mitigation and adaptation measures, horizontal collaboration within metro-regions is required as to depend on not only effective communication and coordination mechanisms beyond city boundaries but also the “foreign policy” of local authorities (Kern & Alber, 2008, p.183). As it is stated by Corfee-Morlot et al (2009, p.8), horizontal relationships at the sub-national level can appear “in the form of national and transnational networks and

coalitions”. In this context, the following section provides a discussion on Transnational Municipal Networks which have gained importance in recent years.



**Figure 7: Type I and Type II Multi-Level Governance**

Source: (Bulkeley et al., 2003, p. 238-239)

### 3.5. Transnational Networking

#### 3.5.1. General Characteristics and Structure of Transnational Municipal Networks

Although urban actors have become more aggressive in aiming to provide the economic competitiveness of their cities and to have a local voice in international negotiations, they may also cooperate with their peers and may emerge as a focal point for the development of best practices (UN–Habitat, 2011, p.167). This cooperation among urban actors has turned into a network type relationship which has been labeled as transnational municipal networks (Fünfgeld, 2015, p.68). Transnational climate governance refers the coordination among cities, companies, NGOs, and other sub- and non-state actors in order to govern climate change (Andonova et al., 2014, p.5). This coordination have proved to be critical in terms of urban capacity building to reduce emissions and increasing urban resilience (Romero-Lankao, 2008, p.23).

Andonova et al. (2009, p.56) emphasizes that transnationalization of governance “occurs when networks operating in the transnational sphere authoritatively steer constituents towards public goals”. Although transnationalization of governance is not a phenomenon limited to climate change, its emergence and proliferation are in conformity with climate change owing to several factors (Andonova et al, 2009, p.57). First, climate governance experiences the direct influence and initiatives of non-state actors whose interests and activities span borders and scales. Second, climate change is an issue that requires policy coordination vertically, horizontally, and across sectors and has to focus on multiple sectors often with divergent interests and roles. Third, practical implementation of three flexible mechanisms of the Kyoto Protocol has necessitated the creation of a range of governance structures. Fourth, as Andonova et al. (2009, p.58) remark, the evolving political landscape and involvement of nation states into climate change negotiations “provide additional incentives and terrain for the building of transnational governance networks”. Therefore, TMNs will hereafter refer to TMNs in the area of climate change.

There are three defining characteristics of TMNs. First, TMNs give member cities autonomy and freedom to join or leave. Second, having been non-hierarchical, horizontal and polycentric, they exist as a form of self-governing mode of governance. Third, members directly implement the decisions taken within the network (Kern & Bulkeley, 2009, p.310). The general aims of the networks are almost identical. They expect voluntary commitment targets to mitigate GHG; seek to improve the local capacity of municipalities to response climate change, exchange information, knowledge and experience among their member municipalities and stand up for the interests of their members at national, supranational and international level (Kern & Bulkeley, 2009, p.317; Betsill & Bulkeley, 2004, p.474). TMNs comprise a key source in providing knowledge and expertise for both pioneers and latecomers (Hakelberg, 2011, p.73). Moreover, according to Bulkeley et al. (2012, p. 595), TMNs realize set of functions: “agenda setting; information sharing; capacity building; soft and hard forms of regulation; and integration across different global environmental governance arenas.” They promote experience, best practices and innovative solutions among their members

(Kern & Alber, 2008, p.172). Involving into TMNs provides cities with not only the exchange of experience, but also access to funding sources through partnerships which helps cities overcome financial difficulties in addressing climate change (Kern & Bulkeley, 2009, p.315; Cameron, 2014, p.18).

Hakelberg (2011) explains the way TMNs influence their members' decision making by "governance by diffusion". Diffusion refers to processes in which "policymakers choose to adopt a particular policy even though they are not formally obliged to do so" (Hakelberg, 2011, p.6). Governance by diffusion enables TMNs to develop strategies to expedite policy dissemination among their members as well as the spread of local climate strategies. In this context, diffusion corresponds to processes in which policymakers voluntarily employ a certain policy in spite of not being formally obliged to do so. Diffusion occurs through three different ways: *diffusion via learning*, *diffusion via imitation* or *diffusion via competition* (Hakelberg, 2011). Diffusion via learning occurs when policymaker dissatisfies with the regulatory status quo and then seeks to find a better solution to the relevant policy problem. Second, diffusion via imitation refers that a member imitates another member in terms of adoption a strategy. Third, diffusion via competition means that cities adapt their policies for a competitive advantage (Hakelberg, 2011). In this sense, Gaziantep, Nilüfer and Seferihisar municipalities will also be evaluated according to these three modes of governing in Chapter 5.

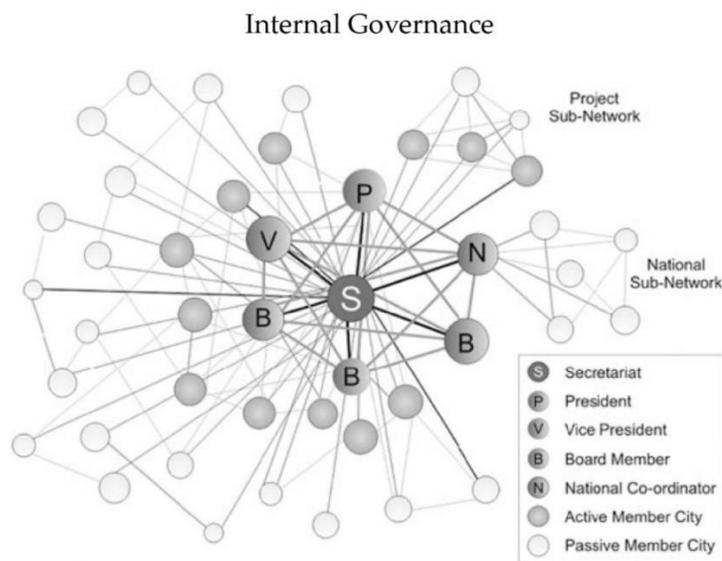
Diffusion via learning occurs when policymakers cannot overcome a certain policy problem and seeks to find suitable and efficient solutions to the corresponding problem elsewhere. In this context, they –especially when with limited resources- choose to learn from other political entities' experiences which have already responded a problem effectively instead of finding a totally new solution in order to avoid the possibility of failure of a policy measure (Biedenkopf, n.d., p. 6). Therefore, it becomes an efficient way and a short-cut to learn from others' experiences.

Hakelberg explains diffusion via imitation through “norm cascades” theory of Finnemore & Sikkink (1998), in which norm cascades occurs when policymakers adopt norms to conform to international pressure even in the absence of domestic pressure in that sense. In fact, according to Finnemore & Sikkink (1998, p.902), dissemination often occurs in which “international and transnational norm influences become more important than domestic politics for effecting norm change”. Norm cascades become an active process of international socialization in the field of climate change in which TMNs acts as agents of socialization making member cities feel pressurized to adopt local climate strategy. In this context, *legitimation*, *conformity* and *esteem* become the three possible motivations for member cities to respond to peer pressure (Finnemore & Sikkink, 1998, p.903). Legitimation covers that policymakers intend to gain legitimation for their actions from international organizations aside from local legitimation held by their own citizen. In this context, local legitimation is accompanied by international legitimation (Finnemore & Sikkink, 1998, p.903). Conformity, as the second motivation of member cities, occurs when policymakers conform to norms in order to show that they belong to the corresponding group. In this sense, policymakers feel obliged to conform to norms even though these norms are not within the boundaries of their jurisdiction (Hakelberg, 2011, p.9). Thus, Finnemore & Sikkink (1998, p.904) emphasizes that policymakers enhance their national and self-esteem by conforming the principles of the group in order to avert “the disapproval aroused by norm violation”.

As the third diffusion process, diffusion via competition occurs when cities adjust their policies to gain a competitive edge over other member cities. Competition can be either economic or political competition (Hakelberg, 2011, p.10). According to Maggetti & Gilardi (2013, p.5) competition refers to process in which “units react to one another in the attempt of attracting or retaining resources”. Economic competition is assumed to result in “races to the bottom” in which governments aim to increase economic competitiveness by lowering regulatory standards, or “races to the top” in which governments aim to prevent products with low standards from entering the market by raising product standards (Hakelberg, 2011, p.9-10; Bender et al, 2014, p.16-17).

Political competition, on the other hand, occurs when governments shape international policy development by positioning themselves as international leaders or early followers, thus, they minimize adaptation costs (Hakelberg, 2011, p.10; Bender et al, 2014, p.17).

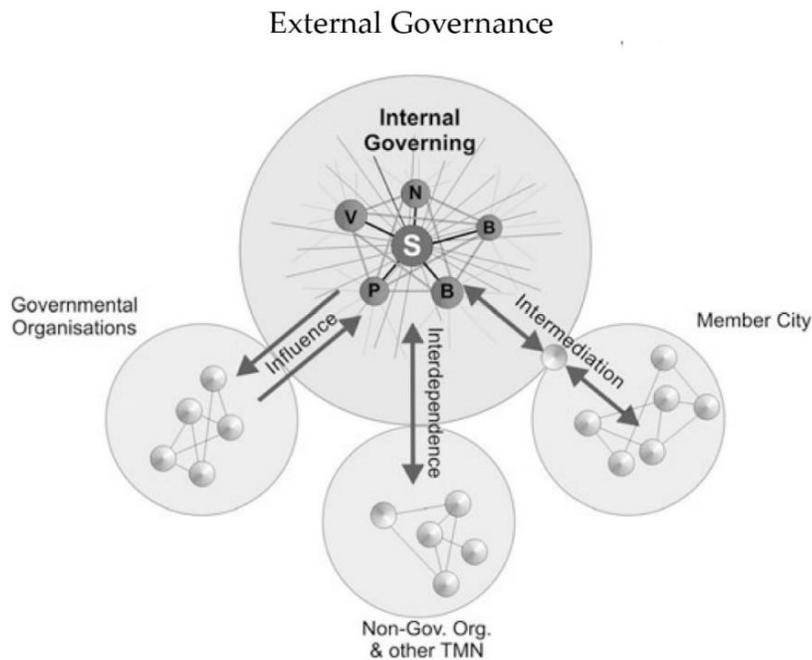
According to the research that Kern and Bulkeley (2009, p.323) conduct, the extent to which TMNs employ forms of governance and their governing capacities are critical to the success of networks considering the lack of hierarchical authority. First, internal governance aims to enroll new members, stabilize the network and achieve the goals of the network through their members via three core strategies: information and communication; project funding and co-operation; and recognition, benchmarking and certification that can provide reputation. Most TMNs have three groups of actors: *an international secretariat and national/sectoral coordinators* which are responsible for the internal governing of network and daily routines as well as external relations; *a Presidency, Board and General Assembly* that are in charge of general decision making between General Assembly meetings; and *member cities*, as it is indicated in Figure 8 (Kern & Bulkeley, 2009, p.314).



**Figure 8:** Structure of TMNs

Source: (Kern & Bulkeley, 2009, p.315)

Second, it is added by Kern and Bulkeley (2009, p.323) that, external governance contains “seeking to *influence* governmental actors, forms of *interdependence* with non-governmental actors and other TMNs and strategies for *intermediation* between actors at the network level and at the municipal level” (Figure 9).



**Figure 9:** Governing Capacities of TMNs

Source: (Kern & Bulkeley, 2009, p.320)

Having focused on 75 Transnational Climate Governance initiatives across 191 countries between the years 1990 and 2012, Andonova (2014) indicates a wide variety of governance activities and their composition; consisting of information and networking, standards and commitments, operations and financing; in which the initiatives engage (Figure 10).



**Figure 10:** Composition of Governance Activities in 2010

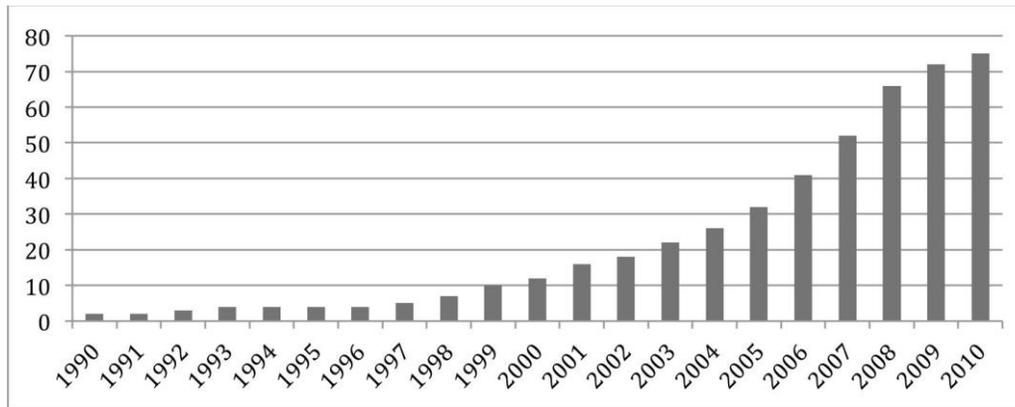
Source: (Andonova et al., 2014, p.10)

However, TMNs have limited governing capacities because of the fact that they are not authorized to control, to sanction and to force their members to implement specific strategies. Furthermore, Kern and Bulkeley (2009, p.329) suggest that it is easy to differentiate “a hard core of pioneers and a periphery consisting of relatively passive cities” because passive cities are the cities that hardly change their behaviors even if they deliberately involve a network. Likewise, there is a negative correlation between “the additional years of membership” and “the likelihood of a network member adopting a local climate strategy”, thus, members that do not adopt a local climate strategy within the first year of membership become passive (Hakelberg, 2011, p.73). Therefore, Kern and Bulkeley (2009, p.311) suggest that networks are “networks of pioneers for pioneers”.

### **3.5.2. Transnational Municipal Networks**

Since the beginning of 1990s, transnational municipal networks (hereafter TMNs) have gained a growing interest among scholars of international relations, and global environmental governance in particular, within the international arena. Although a few pioneer cities particularly in North America and Europe started the first wave of municipal action on climate change dominated by TMNs such as Cities for Climate Protection, Energy Cities and the Climate Alliance , the past decade has witnessed a

more geographically diverse range of cities than ever currently involve in TMNs (Figure 11).



**Figure 11:** The number of Transnational Climate Governance Initiatives between 1990 and 2010.

Source: (Andonova et al., 2014, p.9)

In addition to the existing networks, new networks have occurred over the past decade, such as C40 and Covenant of Mayors, with the growing focus on political commitment and strategic leadership (Fünfgeld, 2015, p.70). Although these networks have similar goals in tackling climate change, their geographic reach and number of members may differ (Table 7).

**Table 7:** Some of TMNs <sup>6</sup> in the area of Climate Change

TMN	Launched in	Goals	Geographic Reach	Number of Members (as of Aug. 2015)
Eurocities	1986	Offering members a platform for sharing knowledge and exchanging ideas through six thematic forums, a wide range of working groups, projects, activities and events.	Europe	over 130 of Europe's largest cities and 40 partner cities from 35 countries

<sup>6</sup> The TMNs indicated in the table are those who have members from Turkey.

**Table 7 (continued)**

ICLEI- Local Governments for Sustainability	1990	Strengthening local governments' capacity; providing advanced knowledge and delivering training to local governments; serving as cities' gateway to solutions for the future.	Global	Over 1200
Energy Cities	1990	Accelerating the energy transition of European cities and towns.	Europe	About 200 members from 26 countries
CCP- Cities for Climate Protection	1993	Addressing and facilitating climate change mitigation and adaptation at local community level.	Global	Over 1000 cities
C40- Cities Climate Leadership Group	2005	Driving urban action that reduces GHG emissions and climate risks, while increasing the health, wellbeing and economic opportunities of urban citizens.	Global	Over 75 of the world's greatest cities
Covenant of Mayors	2008	Endorsing and supporting the efforts deployed by local authorities in the implementation of sustainable energy policies.	Europe	6797
Compact of Mayors	2014	Reducing emissions, vulnerability and enhancing resilience to climate change.	Global	450
Mayors Adapt	2014	Inspiring and supporting local authorities to show leadership and take action on climate change adaptation (besides mitigation)	Europe	146 members from 24 countries

Source: Prepared by the author with regard to data provided in TMNs own websites

Here, the focus is on the following networks since they have at least one member from Turkey in the area of climate change:

- Eurocities,
- ICLEI,
- Energy Cities,
- Cities for Climate Protection,

- C40,
- Covenant of Mayors,
- Compact of Mayors,
- Mayors Adapt

### **3.5.2.1. Eurocities**

Having been established in 1986, Eurocities now have over 130 of Europe's largest cities and 40 partner cities from 35 countries, thus it represents 130 million citizens (Eurocities, n.d.-b). Eurocities is an English-speaking network and its premise is located in Brussels (Belgium). The primary objectives of the network are to give cities a voice in governance structures of European Union and to consolidate the significant role that local governments should play in a multilevel governance structure, as well as exchanging knowledge and development of common strategies and projects (Eurocities, n.d.-b). It connects cities across Europe to network, provides them with a wide range of working groups, projects, activities and events and enables them to exchange knowledge through six thematic groups involving Culture, Cooperation, Economy, Environment, Knowledge Society and Social Affairs. There are four types of membership. First, full membership is open to cities located in the member states of European Union or the European Economic Area (EEA). To become a full member, a city should be a regional center with an international dimension, usually having a population of more than 250,000 inhabitants. Second, associate members are those which are located outside of the European Union or the European Economic Area (EEA) with a population of more than 250,000 inhabitants. Third, associate partners are local authorities or organizations which are not eligible for full or associate membership. Last, associated business partners are companies which wish to include in Eurocities activities (Eurocities, n.d.-a).

In 2008, Eurocities (2008, p.6) made a “Declaration on Climate Change” which demonstrates the commitment of cities to addressing climate change. It is not a binding document but it is “a concrete text covering the diversity of public policies, and providing guidelines that can be used to implement policies on our territories to reach

the targeted reductions in greenhouse gases, which are crucial to climate stabilization.” The declaration comprises a roadmap and provides a framework for cities that seek to fight against climate change.

### **3.5.2.2. ICLEI**

ICLEI, also known as Local Governments for Sustainability, is a network of local governments that make a commitment to sustainable development. ICLEI was founded in 1990 under the name of the International Council for Local Environmental Initiatives to implement Agenda 21 locally across the world. Having promoted “local action for global sustainability and support cities to become sustainable, resilient, resource-efficient, bio-diverse, low-carbon; to build a smart infrastructure; and to develop an inclusive, green urban economy with the ultimate aim of achieving healthy and happy communities”, ICLEI now includes more than 1200 member cities worldwide (ICLEI, n.d.-c; ICLEI Europe, n.d.). Membership is open to local authorities with a political will for sustainable development as long as they pay annual fee based on population size in accordance with the country Gross National Income per capita. Governments receive several benefits as ICLEI members: technical tools, technical assistance, trainings and events, peer networks, case studies, recognition and leadership opportunities, funding updates and policy analyses and opportunities to affect national and international policy (ICLEI, n.d.-c). While World Secretariat of ICLEI is located in Bonn (Germany), there are 13 regional and country offices worldwide.

### **3.5.2.3. Energy Cities**

Energy Cities, also known as Energie-Cités, is a network of European municipalities and it was established in 1990. There are nearly 200 member municipalities and energy agencies of the network (Energy Cities, n.d.-b). Having had headquarters located in Besançon (France) and Brussels (Belgium), Energy Cities has founded relatively independent national sub-networks in France, Bulgaria, Romania, Poland and the Ukraine (Kern & Bulkeley, 2009, p.319). The main working languages of Energy Cities are English and French. The network is mainly active in five policy areas: energy

efficiency, renewable energies, climate mitigation and adaptation, regional policies and financing. Energy Cities also seeks to promote the recognition of the role of local authorities in climate mitigation and adaptation, exchanges experience among their members, disseminates good practices with more than 500 best practices available in the webpage of the network and provides tools. Also, Energy Cities assists their members for project preparation, transfer of information, study tours and conferences, and provides tools for member to reach the European 3x20 energy and climate objectives which involve cutting its GHG emissions by 20% below 1990 levels, reducing its energy use by 20% and achieving 20% of renewable energy in its energy supply (Energie-Cités, 2007, p.2, 12).

#### **3.5.2.4. Cities for Climate Protection (CCP) Campaign**

CCP (Cities for Climate Protection) was established in 1993 under the auspices of ICLEI. CCP is an English-speaking network and provides more than 1000 member cities with technical assistant and training to address climate change (ICLEI, n.d.-a). CCP aims to realize consolidating local commitments to mitigate GHG emissions, exchanging knowledge to facilitate development of cost-effective emission reduction policies, promoting best practices and enhancing national and international connections. In the context of the CCP, mitigation and adaptation actions are initiated through five milestone processes (Table 8).

**Table 8:** Five Milestone Processes of CCP

<b>Mitigation</b>	<b>Adaptation</b>
1. Conducting a baseline inventory of emission	1. Conducting a climate vulnerability, opportunity and resilience assessment
2. Setting an emission reduction target	2. Identifying adaptation strategies
3. Developing a local action plan	3. Developing a local action plan by prioritizing areas for action
4. Implementing the action plan	4. Implementing policies
5. Monitoring and evaluating the results.	5. Monitoring and evaluating the results.

Source: Adapted from ICLEI, CCP Campaign. Retrieved from <http://www.iclei-europe.org/ccp>

Member cities have the advantage of mainly two benefits motivating them: climate-related benefits such as reducing GHG and adapting climatic impacts, and co-benefits such as environmental and economic benefits (Betsill, 2001, p.2). To involve in CCP, the mayor should sign the Campaign Sign-up Document and commit to implement the five milestone processes including in the Document. There are two packages of CCP to participate involving CCP Europe Basic Package and CCP Europe Advance Package. Basic Package is offered for free to all CCP members and provides them with basic tools and guidance material. On the other hand, Advance Package is developed on fee-for-service basis and guides local climate and sustainable energy action. Since membership fees are lower compared to other networks, CCP requires third party funding more than others and nearly 45% of revenue of the network comes from EU projects (Kern & Bulkeley, 2009, p.324).

#### **3.5.2.5. C40**

C40, also known as Climate Leadership Group is a network of world's megacities taking action to address climate change as well as increasing the health, wellbeing and economic opportunities of urban citizens (C40, n.d.). C40 provides a platform for cities to exchange knowledge, cooperate to take meaningful, measurable and sustainable action in terms of climate change. Aiming to disseminate best practices and knowledge transfer among their members through direct technical assistance, facilitation of peer-to-peer exchange, research and knowledge management and communications to response climate change; C40 enables cities to work concertedly to achieve their goals (Erickson & Tempest, 2014, p.6). There are three types of membership categories based on population size, economic output, environmental leadership, and the length of a city's membership. As the first category, Megacities should have 3 million or more city population and/or 10 million or more metropolitan area population either currently or projected for 2025. Cities which are not eligible for population should be one of the top 25 global cities ranked by current GDP output at purchasing-power parity either currently or projected for 2025. Second, Innovator Cities must be a leader in the area of environmental sustainability. Third, category of Observer Cities is for new cities that

apply for Megacity or Innovator membership and they are admitted as Observer until they meet one year participation requirements of C40 (C40, n.d.).

Having involved over 75 of the world’s greatest cities, C40 aims to achieve measurable reductions in GHG emissions as well as providing local benefits such as cleaner air and water, decrease in energy costs, less traffic congestion, increase in quality of life, longer lifespans (C40, n.d.). In this context, C40 focuses on 7 initiative areas and 18 associated networks (Table 9).

**Table 9:** Current Networks by Initiative

<b>Initiatives</b>	<b>Networks</b>
Adaptation and Water	Climate Risk Assessment, Connecting Delta Cities and Cool Cities
Energy	District Energy, Municipal Building Efficiency and Private Building Efficiency
Finance and Economic Development	Creditworthiness, Green Growth and Sustainable Infrastructure Finance
Measurement and Planning	Global Standards and Measurement and Reporting
Solid Waste Management	Sustainable Solid Waste Systems and Waste to Resources
Sustainable Communities	Climate Positive Development, Sustainable Urban Development and Transit-Oriented Development
Transportation	Bus Rapid Transit and Low Emission Vehicles

Source: (C40, n.d.)

### **3.5.2.6. Covenant of Mayors**

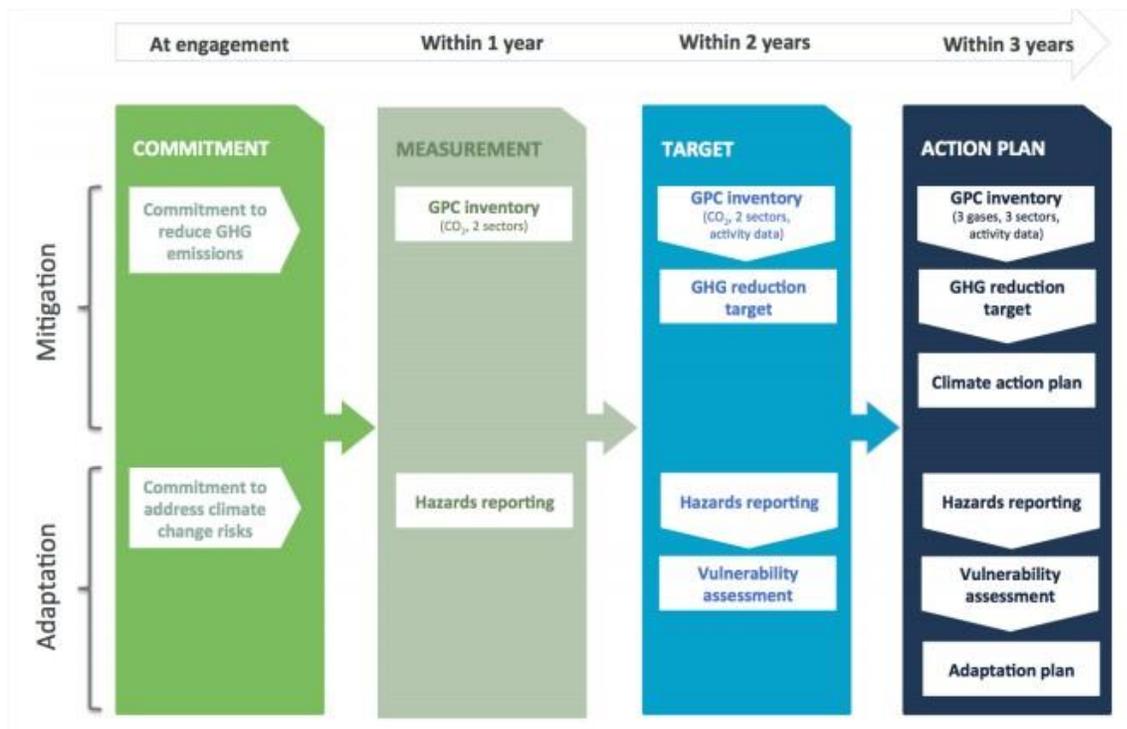
The Covenant of Mayors is the mainstream initiative which targets local actors to voluntarily committing to mitigating climate change by adopting sustainable energy policies. The Covenant of Mayors now involves 6797 signatories from 55 states in Europe and is open to all local actors independently of their size and stage of implementation of their energy and climate policies (Covenant of Mayors, n.d.-b). Local

authorities seek to realize and move beyond the European Union 20% CO<sub>2</sub> emissions reduction target by 2020 by signing the Covenant of Mayors. It has a unique characteristic since it is the only initiative of its kind that mobilize local and regional authorities around the fulfilment of EU objectives known as 3x20 targets as well as an exceptional model of multi-governance and "subsidiarity" in action (Climate Alliance, n.d.). In order to realize 20% CO<sub>2</sub> emissions reduction commitments, signatories commit to undertake several actions. First, they prepare a Baseline Emission Inventory (BEI) as a basis for the Sustainable Energy Action Plan (SEAP), which covers CO<sub>2</sub> emissions, resulted from energy consumption in the territory of the local authority including municipal buildings, equipment and facilities, non-municipal buildings, equipment and facilities, residential buildings; municipal public lighting and urban road transportation (Climate Alliance, n.d.). Second, signatories submit a Sustainable Energy Action Plan (SEAP) within the year after signing the Covenant of Mayors. In the context of SEAP, they outline the actions to show how they will reach their commitments. As a next step, they submit an implementation report no later than two year after submission of the Action Plan.

#### **3.5.2.7. Compact of Mayors**

As a global coalition of mayors, Compact of Mayors was established by UN Secretary-General Ban Ki-moon and Michael R. Bloomberg, U.N. Secretary-General's Special Envoy for Cities and Climate Change, in 2014 under the leadership of the world's global city networks – C40, ICLEI and the United Cities and Local Governments (UCLG) as well as United Nations Human Settlements Programme (UN-HABITAT) at the 2014 United Nations Climate Summit (Compact of Mayors, 2014, p.9). The network aims to reduce GHG emissions, reduce vulnerability and to promote resilience to climate change with a transparent and supportive approach. Compact of Mayors supports cities for more climate actions, standardizes how urban climate data are reported and makes the data available for public. Any city can join Compact of Mayors when they meet the criteria. Cities have to engage in four phases each of which has a two-step process: mitigation and adaptation. The phases that cities have to engage in are Commitment, Inventory,

Target and Plan. First they register commitment to reduce GHG emissions at engagement, second they take inventory within one year, third they set reduction targets and establish a measurement system within two years, and fourth that prepare an action plan within three years (Figure 12). When cities complete all requirements, they get “Compliant” badge.



**Figure 12:** Four Phases of Compact of Mayors

Source: (Compact of Mayors, 2014, p.9)

### 3.5.2.8. Mayors Adapt

Mayors Adapt is an initiative of the European Commission’s Directorate General Climate Action within the framework of Covenant of Mayors to engage and support cities in adapting to climate change. The initiative established in 2014 is the first pan-European initiative to support cities in taking the lead on adaptation to climate change (Mayors Adapt, n.d.). Mayors Adapt adopts the model of the Covenant of Mayors initiative with a parallel exercise for adaptation. The number of member cities has

reached to 146 from EU and European Free Trade Association (EFTA) and EU Candidates. Cities commit to contributing to the overall aim of the EU Adaptation Strategy by either developing a local adaptation strategy or integrating adaptation to climate change into existing plans within the first two years after signing (Table 10). Mayors Adapts aims to inspire cities to take leadership on climate change adaptation, to support them to develop strategies for action and to translate and accelerate action on adaptation to improve local resilience to vulnerabilities.

**Table 10:** Step-by-step Process of Mayors Adapt

<b>Step-by-step approach</b>	<b>Submissions</b>
Get started: secure commitment and ensure management,	A local adaptation strategy or the respective relevant adaptation documents, including the results of the risk & vulnerability assessment, identifying clear responsibilities and resources, and outlining the adaptation actions - within two years following the formal signing of the Commitment;
Assess risks and vulnerabilities as a basis to prioritize adaptation actions,	
Identify adaptation options,	
Assess adaptation options,	
Implement adaptation options,	
Regularly monitor and evaluate progress, and adjust the local adaptation strategy accordingly.	An Implementation Progress Report every second year according to the framework of the initiative

Source: (Mayors Adapt, n.d.)

All local authorities located in Europe are free to join Mayors Adapt. Mayors Adapt offers visibility and communication for cities on commitment to adaptation, a practical support by a helpdesk for operational questions, knowledge support and synergies with the Covenant of Mayors and other relevant climate initiatives.

### **3.6. Conclusion**

Cities have been drawing growing attention with the notion of “think globally, act locally” of the 1992 Earth Summit since they are highly affected from adverse impacts of climate change and accepted as a part of the climate problem and also a part of the

solution for several reasons. First of all, cities are considerably vulnerable to climatic impacts such as sea level rise, high temperatures, floods, droughts and heavy rains. Cities are accepted as a source of climate problem since more than half of the world population lives in cities and become urbanized which means that they are inclined to produce higher levels of GHG emissions with increasing rate of urbanization. Also, large economic activity is concentrated in cities which consume more than three fourth of worlds energy and produce significant amount of GHG emissions. However, cities are also accepted as a part of the solution for climate change as cities better achieve addressing climate change via their control of energy, transportation, land use planning etc. with their high innovative and creative capacities. Local authorities can control community energy use via several tools and potentials in ways that national governments cannot (ICLEI, n.d.-b, p.10; Fay, 2007, p.5). Moreover, cities comprise more effective communication between citizens and policy makers than any other groups can. Therefore, the role of cities play to address climate change has been quite dissociated from national and international policy frameworks, and local governments have become major policy players to address climate change for nearly a quarter-century (Corfee-Morlot et al., 2009, p.7).

Governing climate change thus requires cooperation between countries as well as different levels of governments, agencies, non-governmental organizations and private sectors since climate change is an issue that requires policy coordination vertically, horizontally, and across sectors in order to design and implement climate change policy responses to mitigate GHG emissions and to adapt to climatic impacts (Andonova et al., 2009, p.57; Corfee-Morlot et al., 2009, p.11). In fact, action on climate change covers both adaptation and mitigation simultaneously (Corfee-Morlot et al., 2009, p.12). Urban policymaking and programme implementation involve multiple levels of governance. While vertical collaboration refers the relation between municipalities, regional authorities and national governments, horizontal collaboration indicates the relation between different agencies and policy divisions within municipal governments, which may appear in the form of transnational municipal networks. Effective governance of

climate change therefore must include networks and partnerships which cut across the local, national and international levels (Betsill, 2001, p.9).

Transnational Municipal Networks (TMNs), that have gained increasing interest since 1990s, have been instrumental in improving knowledge and methods with its catalytic potential in climate change mitigation and adaptation at the local scale (Fünfgeld, 2015, p.69). They comprise a key resource of knowledge, information, experience and best practices for their members and improve their local capacity to address climate change (Table 11). Moreover, they provide their members to meet funding sources to overcome financial limitations to response climate change.

**Table 11: Summary of TMNs**

TMN	Eligibility					Main Focus	Offers
	Geographic Location	Population Threshold	GDP	Mitigation Pledge	Adaptation Pledge		
Eurocities	+	+				Strategic challenges of local governments	-Sharing knowledge, -Exchanging ideas
ICLEI						Sustainable development	-Technical assistance, trainings, -Funding updates and policy analyses -Opportunities to affect national and international policy
Energy Cities	+			+		Energy efficiency, climate mitigation	-Strengthen the role and skills of local authorities -Represent cities' interests and influence national and EU policies -Promote members' initiatives

**Table 11 (continued)**

CCP				+	+	Climate mitigation and adaptation	-Peer-to-peer exchange, cooperation -Proven methodology and guidance -Advocacy at international and European forums
C40		+	+	+	+	Climate Change	-Direct technical assistance; -Facilitation of peer-to-peer exchange; -Research, knowledge management & communications.
Covenant of Mayors	+			+		Climate change mitigation	-Extra commitment to CO2 reduction; -Make their territory pioneer; -Benefit from EU support; qualify for funding available to signatories;
Compact of Mayors	+			+	+	Climate mitigation and adaptation	-Platform to demonstrate and to meet commitment -Increased investor confidence and capital flows into cities -Mechanism for national governments to recognize local commitments
Mayors Adapt	+				+	Climate adaptation	-High visibility at the EU level -Wide-ranging support and knowledge sharing -EU funding and designing finance schemes

Source: Prepared by the author

## CHAPTER 4

### TECHNICAL AND POLICY ISSUES OF CLIMATIC CHANGE IN TURKEY

#### 4.1. Introduction

The climate of Turkey is also changing. Recently, Turkey has frequently experienced hydro-meteorological hazards including floods, storms, hails and droughts (Ekonomi Gazetecileri Derneği, 2015). Moreover, Turkey gets warmer and there have been changes in seasonal varieties. Since Turkey is a developing country, its economic growth causes high energy demand which is based mainly on fossil fuels to increase, thus, GHG emissions of Turkey continues to rise.

Turkey is located in an area which is projected to be one of the most vulnerable areas to climate change. Future climate projections also affirm those findings. Correspondingly, Turkish cities might be under high risk because of high urbanization rate and that a large amount of population concentrated on coastal cities and surroundings. Despite the fact that climate change policies are determined by the national government, local governments respond to climate change both vertically and horizontally in some way.

#### 4.2. Observed Changes in Climate and Climate Change Projections for Turkey

Situated between 36-42° north latitude and between 26-45° east longitude, Turkey has territories in both Asia and Europe continents. Topographically, Turkey has a mountainous landscape being nearly 1100 meters above sea level. Two mountain ranges lie almost parallel to southern and northern coasts and between these mountains, there are high plateaus. Also, Turkey is surrounded by three seas which are the Black Sea in the north, the Aegean Sea on the west, and the Mediterranean Sea on the south. Thus, significant differences in climatic conditions occur from one region to another. While the Mediterranean and Aegean coastal areas experience hot and dry summers and mild

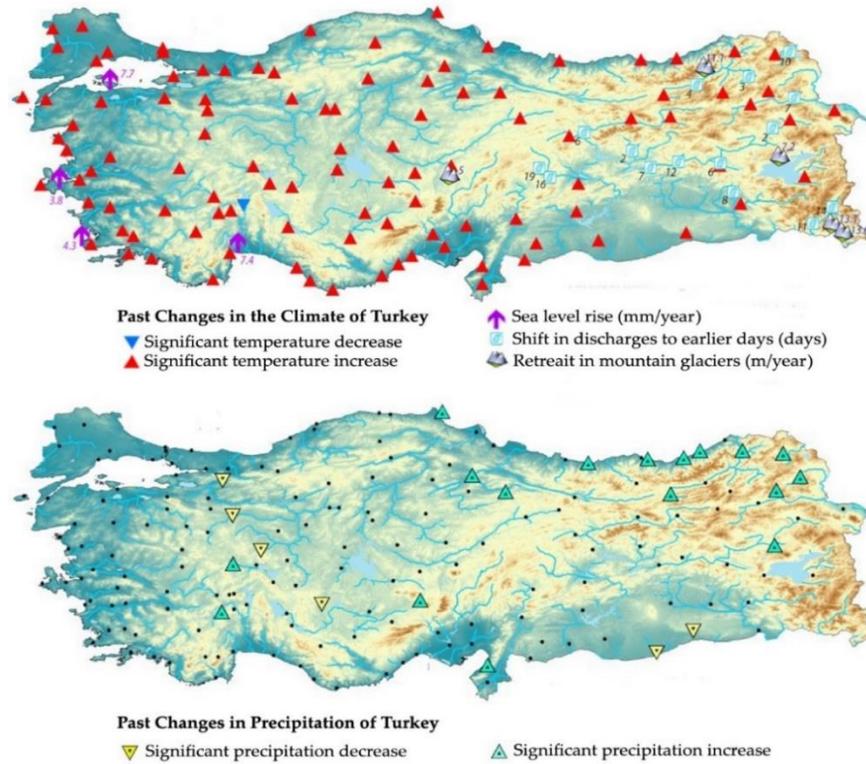
and wet winters, the inland Anatolian plateau experiences extremes of hot summers and cold winters with less precipitation. The Black Sea coastal region experiences warm summers, cool and wet winters with precipitation in all seasons.

According to Talu (2015, p.304), Turkey is one of the vulnerable countries to climate change because Turkey meets most of the criteria of vulnerability stated in UNFCCC as follows:

- Turkey has a considerable amount of low-lying coastal areas especially river deltas.
- Turkey has arid and semi-arid areas as well as forested areas and areas inclined to forest decay. Thus, those areas can be easily destroyed by fire.
- Turkey is prone to drought, desertification and natural disasters.
- Urban atmospheric pollution is observed especially in winters in most of cities in Turkey due to industrial activities, transportation, urbanization etc.
- Mediterranean Basin where Turkey is located in is one of the most vulnerable regions to adverse impacts of climate change according to 5<sup>th</sup> Assessment Report of IPCC (2013, p.1266).

In fact, studies affirm that Turkey is affected from the adverse impacts of climate change. As Figure 13 shows, Turkey's climate is changing as below as it is highlighted by Şen (2013, p.13):

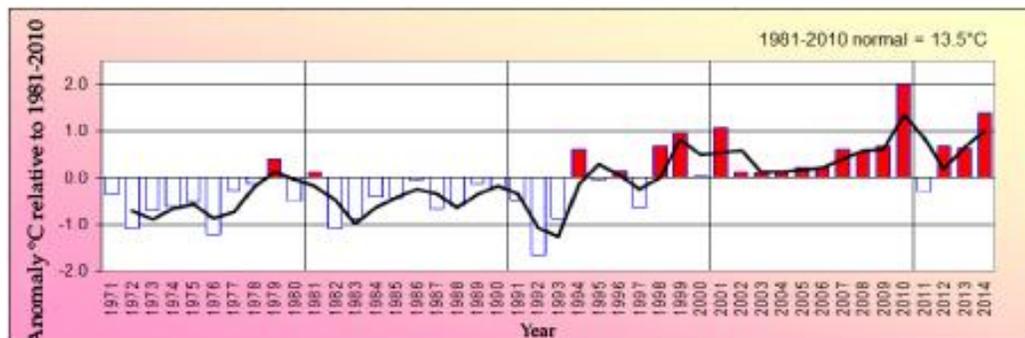
- Temperatures of Turkey increase all around the country. Also, the most increase occur in summer, warm seasons expand.
- Precipitation in Turkey increases especially in the northeastern part.
- Mountain glaciers are retreating by 10 meter in a year.
- Timing of the peak discharges has shifted to one week earlier.
- Sea level rise is observed in the surrounding seas of Turkey
- Natural hazards increase in parallel with temperature increase.



**Figure 13:** Historical Changes in the Climate of Turkey

Source: (Şen et al., 2013, p.5)

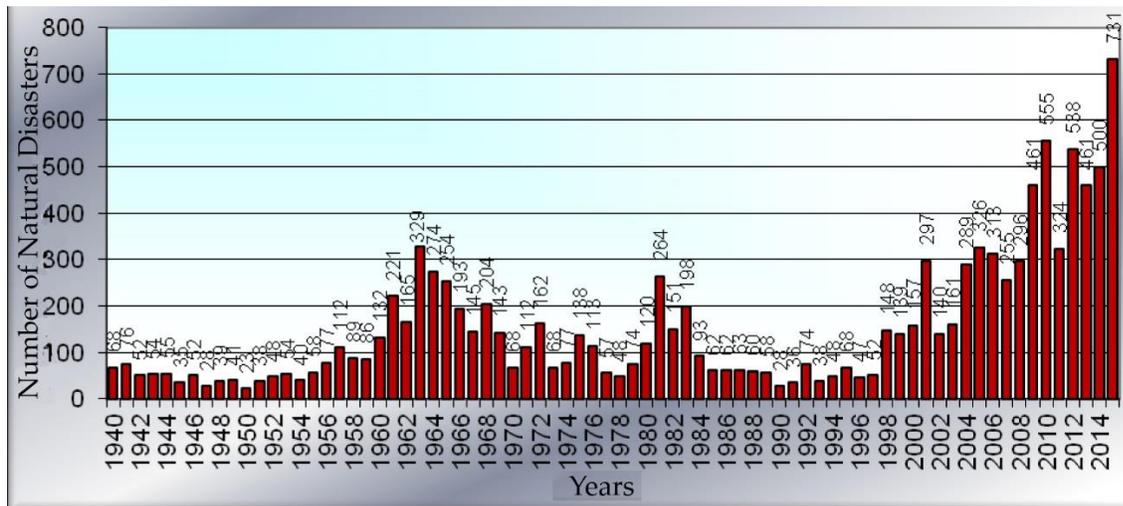
Concordantly, temperature increase in Turkey can be seen in Turkey Mean Temperature Anomaly (Figure 14). Moreover, the year 2010 was recorded as the hottest year with 2 °C deviation (Turkish State Meteorological Service, 2016a, p.2).



**Figure 14:** Turkey Mean Temperature Anomaly

Source: (Turkish State Meteorological Service, 2015, p.5)

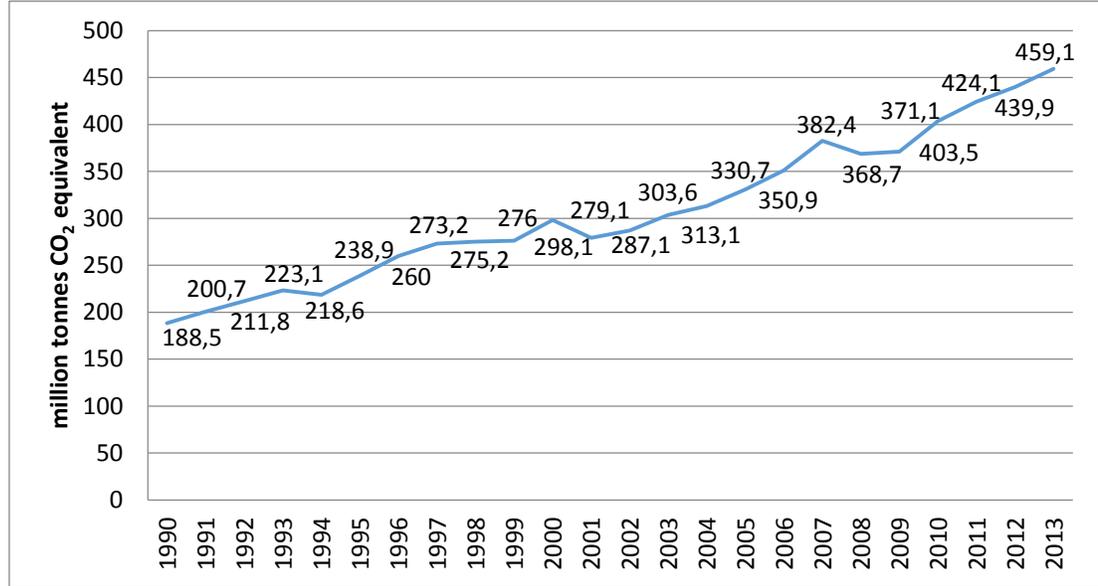
In addition, Turkey substantially experiences meteorological disasters especially in the year 2015 with 731 meteorological disasters. That 731 disasters happened in 2015 is remarkable considering the number of disasters in 1940-2015 period (Figure 15).



**Figure 15:** The number of the meteorology-originated natural disasters, 1940-2015

Source: (Turkish State Meteorological Service, 2016b)

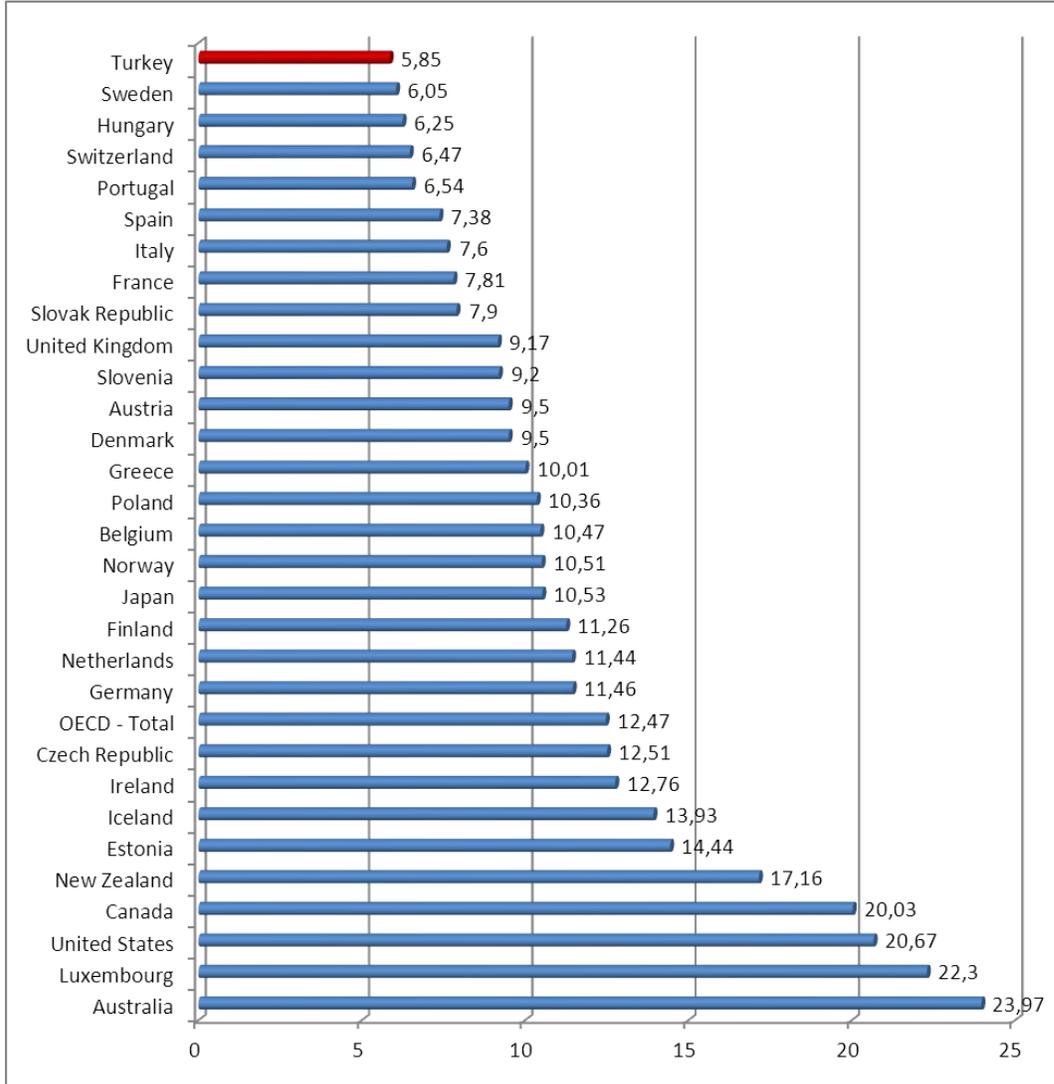
Since climate change is highly related to concentrations of GHG in the atmosphere, GHG emissions in Turkey resulted in those processes to be experienced as mentioned above. In this context, GHG emissions of Turkey have been increasing. Total GHG emissions of Turkey excluding the land use, land use change and forestry (LULUCF) sector, is 459.1 million tonnes (Mt) of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) in 2013. Thus, emissions increased 143.5% above 1990 levels (Figure 16). Moreover, having been estimated as 3.96 tonnes per capita in 1990, total GHG emissions per capita reached to 6.04 tonnes in 2013 (TURKSTAT, 2015).



**Figure 16:** GHG Emissions of Turkey, 1990-2013

Source: (TURKSTAT, 2012)

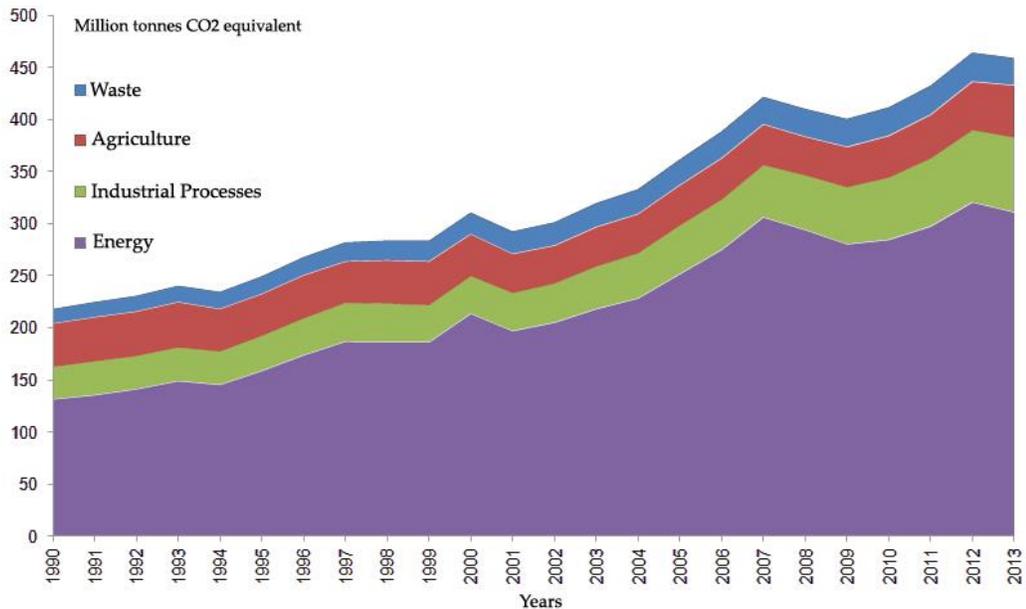
According to GHG emissions databases of OECD in 2012, Turkey is the least contributor to total GHG emissions per capita with 5.85 tonnes among the Thirty OECD countries where Australia comes in the first place with 23.97 tonnes per capita and the average of OECD countries is 12.47 tonnes (Figure 17). However, Turkey comes in the second place among OECD member countries and in third place among European countries in terms of emission increase rate (Talu, 2015, p.320).



**Figure 17:** Total GHG emissions per capita in OECD Countries in 2012

Source: Adapted from OECD Statistics, <http://stats.oecd.org/>

In overall 2013 emissions, the energy sector had the largest portion with 67.8% and has been characterized as the major emitter of GHG in Turkey. The energy sector was followed by industrial processes with 15.7%, agricultural activities with 10.8% and waste with 5.7% as it is indicated in Figure 18 (TURKSTAT, 2015b).



**Figure 18:** Greenhouse gas emissions by sectors, 1990 – 2013

Source: (TURKSTAT, 2015a)

Most of the energy sector emissions are due to fossil fuel combustion. According to 2011 data, 65.4% of primary energy supply and 90.2% of primary energy consumption belong to fossil fuels in Turkey (Yılmaz, 2012, p.36). In spite of a potential to produce %30 of its electricity need from the renewable by 2023, Turkey plans to increase electricity generation from domestic coal sources by 78% by the year 2018 based on 2013 data, which will result in further adverse impacts on Turkey’s climate in future with an increase in GHG emissions (Herdem, 2014, Ministry of Development, 2014, p.2). In fact, climate performance of Turkey is considered as “very poor”. According to Germanwatch Climate Change Performance Index 2016, Turkey ranked 50<sup>th</sup> among 58 countries and enhanced its placement in the CCPI from 51 to 50 where places 1 to 3 are empty because of countries inefficacy to prevent the adverse impacts of climate change (Burck et al., 2015).

In this context, Turkey seems to be suffering from the further impacts of climate change in the future. When climate change projections for Turkey considered, findings are as follows according to Şen (2013, p.19),

- The temperatures will increase in all seasons in every part of Turkey. According to IPCC A2 scenario, the temperatures are projected to increase between 4.5°C and 5°C along coastal areas and 5°C and 6°C in the inland Anatolia between 2071-2100 periods when taking 1961-1990 period as reference (Demir et al., 2008, p.368).
- While precipitation will decrease in southern parts of Turkey, it will tend to increase in the northeastern parts. This will increase landslide risk in the northeastern parts of Turkey.
- Sea level rise will affect the low-lying coastal areas and river deltas.
- Increase in temperature and decrease in precipitation is expected to result in water stress.

The changes in temperatures, GHG emissions in the atmosphere, sea level rise in Turkey do have and will have direct impacts on many fields such as human and water resources and agriculture, forest, tourism, and energy sectors (Şen, 2013, p.20). Considering those serious impacts, the following section provides a discussion on the efforts of Turkey made as yet to address the climate problem of Turkey.

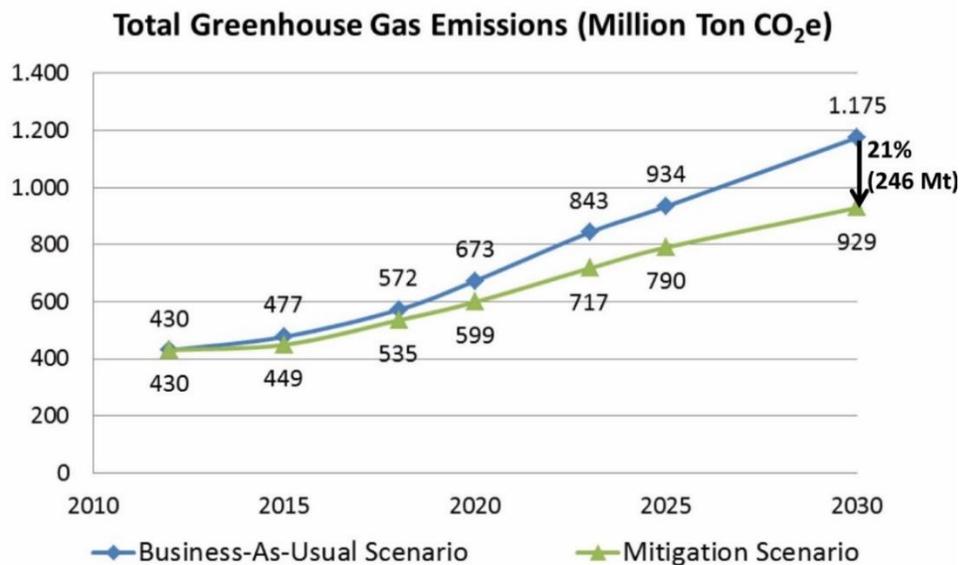
### **4.3. Political Framework of Climate Change in Turkey**

#### **4.3.1 Turkey's Position in International Climate Regime**

Climate regime of Turkey started to get into action in early 1990s. Over the period until Rio Conference in 1992, Turkey joined The Second World Climate Conference held in Geneva in 1990 which was the first meeting that Turkey joined in terms of global environmental politics, took part in International Negotiation Committee for a framework convention on climate change and established Ministry of Environment in 1991. When UNFCCC was adopted in 1992, Turkey was listed both as Annex 1 and Annex 2 country because of being a member country of OECD. However, Turkey opposed to being stated as Annex 1 or Annex 2 country claiming not being a developed country or economy in transition. After 8 years of negotiation period, Turkey was

included in Annex 1 to the Convention with “special circumstances” at COP7 in 2001 and became a party to the Convention in 2004 (UNFCCC, 2001). Having ratified the convention, Turkey gained right to benefit from GEF.

After 2004, more studies and projects in terms of climate change were conducted in Turkey. Moreover, Turkey presented its first GHG inventory to UNFCCC in 2006, and this inventory revealed that Turkey increased its GHG emission by 74.4% in 2014 based on 1990 levels (Şahin, 2014, p.29). In 2009, Turkey became a party to the Kyoto. When Kyoto Protocol was adopted in 1997, Turkey was not a party to the Convention. Since Turkey was not included in Annex B for the Kyoto, Turkey was not obliged to have specific commitments in terms of GHG reduction targets.



**Figure 19:** Turkey’s INDC

Source: (UNFCCC, n.d.-i).

In 2015, Turkey submitted its INDC that targets 21% reduction in GHG emissions including land use, land use change and forestry (LULUCF) from the Business as Usual (BAU) level by 2030 as shown in Figure 19 (UNFCCC, n.d.-i). When LULUCF is

excluded, this target means that there will be 389% increase compared to 1990 levels, or a 110% increase compared to 2012 levels (Climate Action Tracker, 2015, October 22).

**Table 12:** Overview of coal projects per country, added capacity, expected total CO<sub>2</sub> emissions

Country	Number of projects	Capacity involved (in megawatts)	CO <sub>2</sub> additions (million tonnes) (expected total CO <sub>2</sub> emissions of new units per country, assuming an average lifetime of 40 years)
Bosnia & Herzegovina	8	3900	729
Croatia	1	500	86
Czech Republic	1	750	150
FYROM	1	300	59
Germany	4	5120	601
Greece	1	660	125
Italy	1	350	7
Kosovo	1	600	118
Montenegro	1	254	50
Poland	6	8845	1583
Romania	2	790	155
Serbia	5	2900	497
Turkey	75	>65000	11773
United Kingdom	3	1466	96
Ukraine	2	1260	215

Source: (CAN Europe, 2015)

According to Joint First and Second Biennial Report under the UNFCCC that Turkey submitted in January, 2016, Turkey as a non-Annex B country has not any quantified emission reduction pledge within the reporting period of the report or in any foreseeable future (UNFCCC, 2016, p.40). Besides, Turkey continues to invest in fossil fuels which mostly contribute to global warming. Turkey has 75 new coal projects that would make Turkey the third biggest user of coal in the world (Table 12). Therefore, Turkey is widely criticized for not making enough effort to limit the temperature increase below

2°C. In this context, following part focuses on the institutional arrangements in Turkey to combat climate change.

#### **4.3.2. Institutional Arrangements for Climate Change**

Legal arrangements for climate change have been intensified since early 2000s in Turkey. As one of the first steps, having been established by State Planning Organization, Specialized Commission on Climate Change published Special Commission Report on Climate Change in preparation of 8<sup>th</sup> Development Plan in 2000. The commission was the first commission on climate change within a development plan. In 2001, Coordination Board of Climate Change (CBCC) was established under the chairmanship of former Minister of Environment and Forestry to coordinate climate change strategy of Turkey. Members of the board were ministries and institutions including Ministries of Environment and Forestry, Agriculture and Rural Affairs, Foreign Affairs, Finance, Public works and Settlement, Transport and Communication, Industry and Trade, Energy and Natural Resources, Health, Treasury and State Planning Organization as well as the Union of Chambers and Exchanges (TOBB) and Association of Industrialists and Businessmen as non-governmental organizations (Dusunceli et al, 2010). Having experienced some revisions and different participants since then, the board has renamed as Coordination Board on Climate Change and Air Management (CBCCAM) in 2013. CBCCAM continues its studies under seven working groups below:

1. GHG Mitigation by Ministry of Environment and Urbanization
2. Impacts of Climate Change and Adaptation by Ministry of Environment and Urbanization
3. GHG Inventory by TURKSTAT
4. Finance by Undersecretariat of Treasury
5. Technology Development and Transfer by Ministry of Science, Industry and Technology
6. Capacity Building by Ministry of Environment and Urbanization

## 7. Air Management by Ministry of Environment and Urbanization

In 2006, Turkey submitted its First National Inventory of GHG to the UNFCCC and a year later presented Initial National Communication to the UNFCCC. Moreover, a Research Commission occurred in Grand National Assembly to evaluate the effects of global warming. The year 2009 witnessed an important institutional development that Department of Climate Change was established under the former Ministry of Environment and Forestry to perform studies on climate change at national level (Figure 20). This department was closed abruptly and its responsibilities were transferred to the Department of Air Management in 2013.



**Figure 20:** Organizational Chart of Climate Change Department

Source: Ministry of Environment and Urbanization. Retrieved from <http://iklim.cob.gov.tr/iklim/AnaSayfa/Baskanlik/teskilatSemasi.aspx?sflang=en>

Turkey has three main documents to tackle and adapt to climate change. As the main national strategic document, National Climate Change Strategy was prepared in 2010 in order to “contribute to global efforts to reduce the impacts of climate change, taking into account its own special circumstances and capacity” and “to guide the actions to tackle climate change during the period 2010-2020” (MoEU, 2010a, p.6). According to the strategy, Turkey took its position as below (MoEU, 2010a, p.11):

Turkey aims to support, and facilitate its emission reduction and adaptation efforts by benefiting from financing and technology transfer facilities available to countries with similar economic development levels as Turkey.

After National Climate Change Strategy recommended an action plan on climate change, National Climate Change Action Plan was prepared in 2011, as a roadmap to identify the targets to combat climate change for the period 2011-2023 (MoEU, 2010a, p.30). Although in Turkey, climate change policies focus on mitigation rather than adaptation, Turkey's National Climate Change Adaptation Strategy and Action Plan was prepared to integrate climate change adaptation into national, regional and local policies emphasizing on vulnerable areas including Water Resources Management, Agriculture and Food Security, Ecosystem Services, Biodiversity and Forestry, Natural Disaster Risk Management and Public Health sectors (Talu, 2015, p.387). In addition to these plans, legislative regulations that shape Turkey's climate change strategy are summarized in Table 13.

**Table 13:** Official Documents of Turkey's National Policy Framework on Climate Change

<b>Document</b>	<b>Type</b>	<b>Date</b>	<b>Importance</b>
Law No: 4990 to accede to the UNFCCC	Legislation	October 16, 2003	Turkey acceded to become a party to the UNFCCC.
Law No: 5836 Turkey's accession to the Kyoto Protocol to the UNFCCC	Legislation	February 5, 2009	Turkey acceded to become a party to the Kyoto Protocol.
Turkey's National Climate Change Strategy (2010-2020)	Strategy Paper	May, 2010	Turkey determined strategies to tackle climate change.
National Climate Change Action Plan (2011-2023)	Action Plan	2011 and 2012	Turkey determined a roadmap which set strategic targets.
Turkey's National Climate Change Adaptation Strategy and Action Plan	Strategy Paper and Action Plan	November, 2011	Turkey determined its adaptation strategies.

Source: Adapted from Şahin (2014, p.32-34)

In addition to national government, local governments also perform some studies and actions even if they seem inadequate to response climate change. The next section provides a discussion on involvement of Turkish cities in climate policy.

#### 4.4. The Role of Local Governments

Urban governance of climate change in Turkey is a significant arena because of the rate of urbanization. While 76.8% of the population lived in the cities in 2011, in 2015 92.1% of the population in Turkey lives in cities with the law numbered 6360 which merges towns in metropolitan municipalities into districts (TURKSTAT, 2016).

In 2014, REC Turkey Office started Strengthening Institutional Capacity for Environmental Management in Turkey Project (ÇEKAP) funded by the EU Instrument for Pre-accession Assistance (IPA) programme. Within the context of the Component C of the project, namely Local Environmental Planning, an online survey was sent to Private Secretariat of 1000 municipalities including, metropolitan municipalities, metropolitan district municipalities, provincial municipalities and district municipalities. In this sense, 396 municipalities filled out this survey (Table 14).

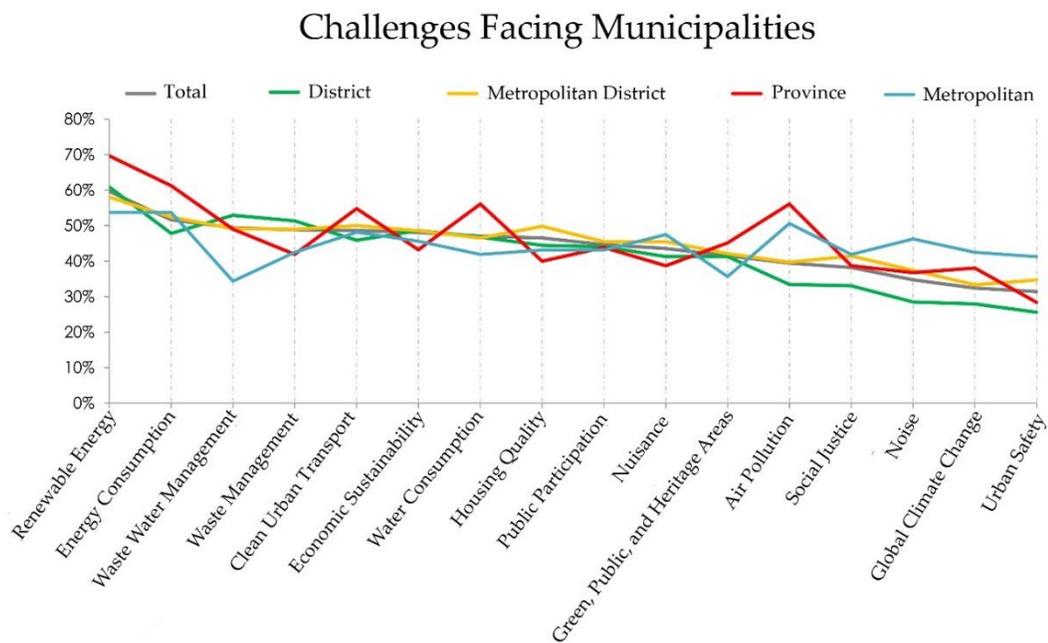
**Table 14:** Survey Conducted by REC Turkey in the context of ÇEKAP

Type of Municipality	Number of Municipalities in Turkey	Municipalities Filling out the Survey	Required Number	Confidence Level (%)
Metropolitan Municipalities	30	28	28	88%
Provincial Municipalities	51	30	44	91%
Metropolitan District Municipalities	519	188	178	60%
District Municipalities	400	150	162	96%
Total	1000	396	412	99%

Source: Prepared by the author

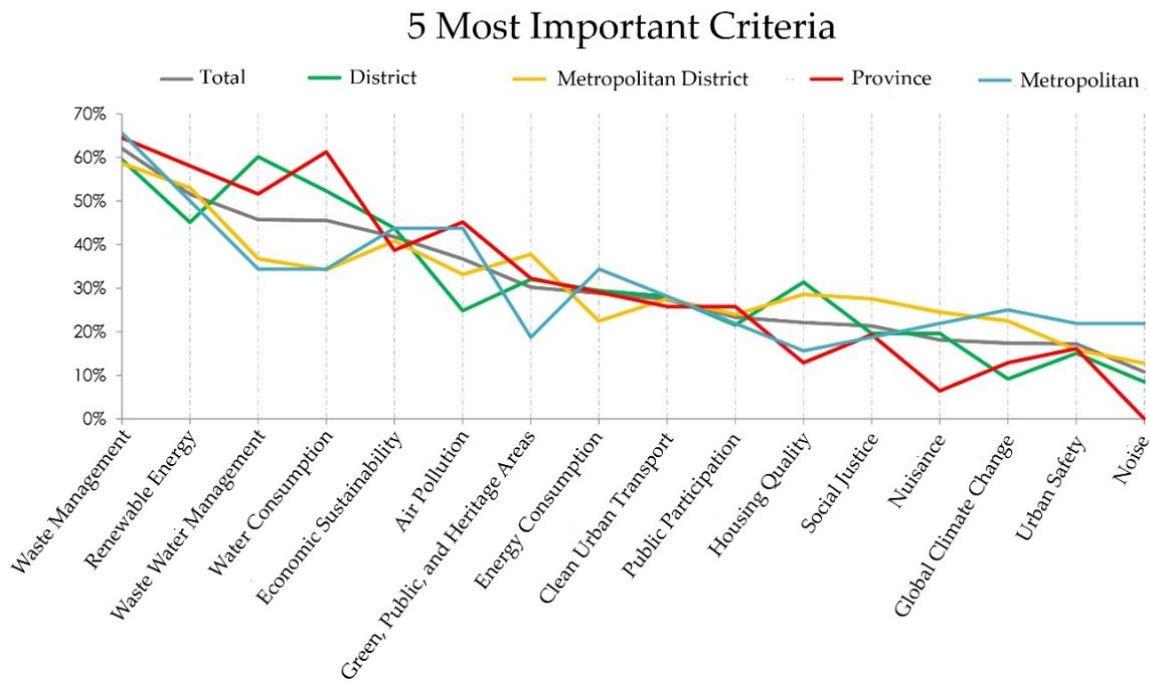
Within the scope of the survey, municipalities were asked to evaluate 16 criteria for sustainability for different aspects. These criteria include Global Climate Change, Air Quality, Urban Clean Transportation, Waste Management, Energy Consumption, Renewable Energy, Water Consumption, Waste Water Management, Nuisance, Noise, Social Justice, Housing Quality, Urban Safety, Economic Sustainability, Green, Public and Heritage Areas, and Citizen Participation.

Municipalities were asked to specify challenges facing them. While Global Climate Change is one of the most challenging fields for metropolitan municipalities, it constitutes less of a problem for other types of municipalities than other criteria. In this sense, 43% of metropolitan municipalities, 38% of provincial municipalities, 33% of metropolitan district municipalities and 28% of district municipalities see Global Climate Change as a challenging field facing municipality (Figure 21). In general, Global Climate Change do not pose a problem for 68% of all municipalities.



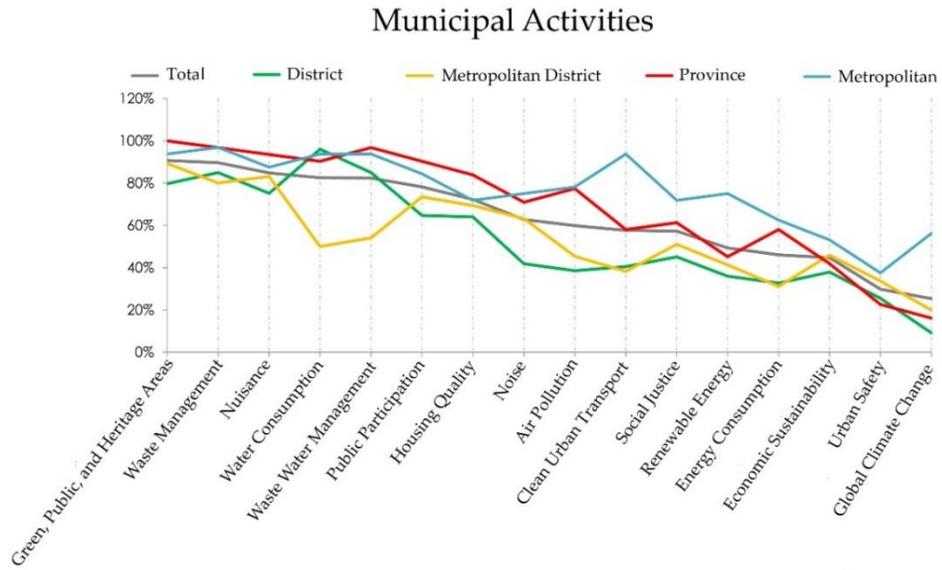
**Figure 21:** Challenges Facing Municipalities

Second, municipalities were asked to choose the 5 Most Important Criteria. For district municipalities, Global Climate Change represents the least important field (Figure 22). In general manner, this criterion is seen as one of the 2 least important criteria. To put it differently, 83% of municipalities do not regard this criterion as one of the 5 Most Important Criteria.



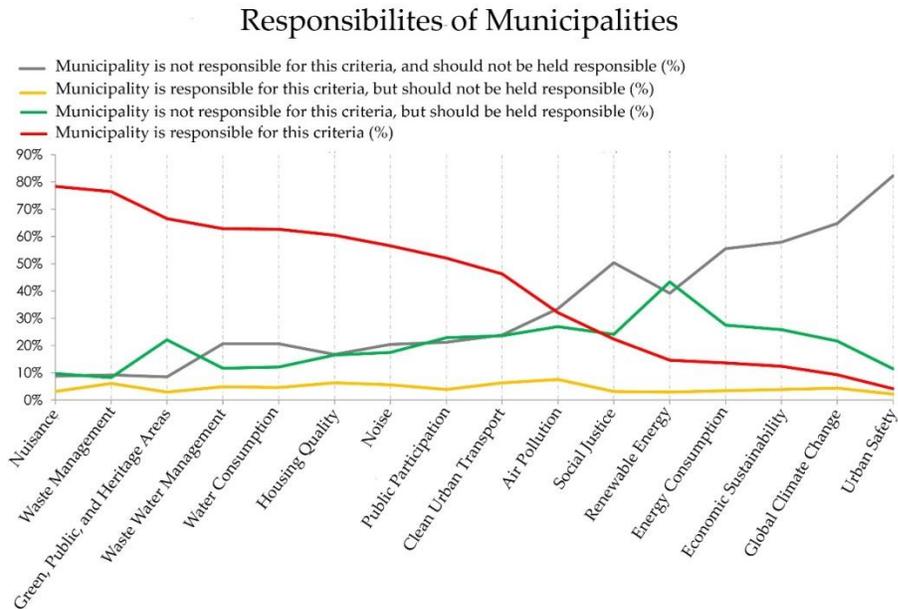
**Figure 22:** The 5 Most Important Criteria

56% of metropolitan municipalities, 16% of provincial municipalities, 20% of metropolitan district municipalities and 9% of district municipalities carry out activities on Global Climate Change (Figure 23). In general terms, Global Climate Change is the field on which municipalities perform less than any other criterion.



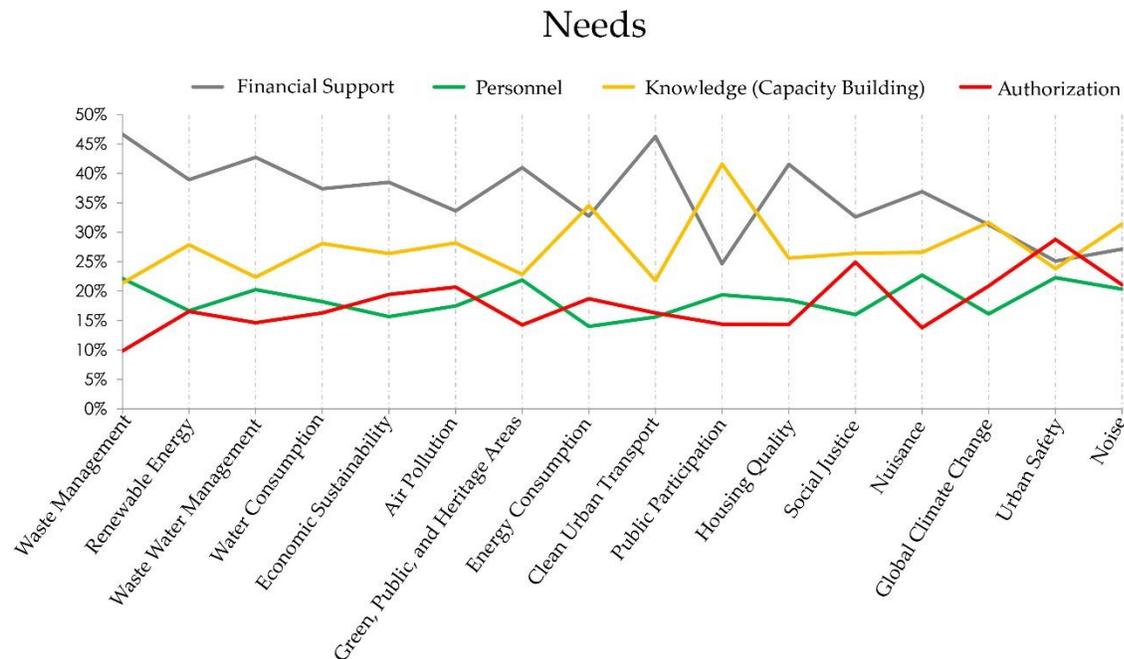
**Figure 23: Municipal Activities**

While more than 60% of all municipalities remark that their municipality is not responsible for Global Climate Change and should not be held responsible, 22% of them specify that municipality should be held responsible (Figure 24). In that sense, municipalities are reluctant to take responsibility for this criterion.



**Figure 24: Responsibilities of Municipalities**

Last but not least, 32% of municipalities indicate that they need capacity building, 31% of them remark that they need financial support, followed by authorization with 21% and personnel with 16% for Global Climate Change criterion (Figure 25). In this context, access to finance and increasing knowledge in terms of climate change come to the forefront for municipalities in order to address Global Climate Change.



**Figure 25: Needs of Municipalities**

In general terms, the survey shows that Turkish municipalities do not see Global Climate Change as an important and challenging criterion when compared to other criteria. Furthermore, they hardly carry out activities on this field. Considering that Turkey locates in one of the most vulnerable areas to climate change, local governments response to climate change is striking.

Although climate change policies have been determined by the national government in Turkey and local governments have not been given direct responsibility to combat climate change by Turkish municipal laws, official documents of Turkey’s national climate change policy highlights the importance of local governments in the context of vertical governance. According to National Climate Change Action Plan, local

authorities are specified as crucial bodies with substantial responsibility (MoEU, 2011, p.2). Also, they are assigned as relevant and responsible organizations for different actions. The Integrated Urban Development Strategy and Action Plan (MoEU, 2010b, p.2) includes strategies and actions on climate change emphasizing that “it is important to minimize the adverse impacts of climate change, decrease energy consumption in urban areas, increase energy efficiency, and mitigate pressures on biological diversity, agricultural lands, forests lands, protected areas and ecosystems”. In this context, the action “the energy efficient and climate-sensitive strategies for settlements will be prepared” was determined within the Integrated Urban Development Strategy and Action Plan (MoEUb, 2010, p.42).

Turkish cities give more priority to mitigation than adaptation since adaptation need long-term policies and strategies and adaptation policies are harder to implement than mitigation policies (Balaban & Şenol-Balaban, 2015, p.14). However, Ministry of Environment and Urbanization conducts Expansion of Resilient Cities to Climate Change Project in order to provide risk management of climate change in coastal areas and expand cities resilience to climate change by promoting sustainable urban development policies (Öztürk, 2012). Therefore, City Climate Resilience Strategy is expected to be prepared as an output document.

Bursa and Gaziantep are the cities which can be accepted as pioneers in terms of local climate change policy. In 2014, Bursa Metropolitan Municipality became one of the first urban areas that The National Climate Change Adaptation Strategy and Action Plan implemented as a pilot case. In this context, the project aimed to increase the technical capacity for adaptation and institutional capacity of the municipality and thus to develop strategies to adapt to climate change. In order to guide other municipalities, Cities Adaptation Support Package was prepared. However, there has not been any progress since the project completed (Balaban & Şenol-Balaban, 2015, p.14). Moreover, Bursa Metropolitan Municipality prepared a local energy action plan towards the end of 2015.

Gaziantep, as another pioneer city, prepared a local climate change action plan for the first time in Turkey with the financial support of the French Development Agency (AFD). Within the scope of the plan, Gaziantep Metropolitan Municipality aimed to reduce 15% of CO<sub>2</sub> per capita and 15% of energy consumption by 2023 by evaluating various sectors including housing, services, industry, transport and urbanism and solid wastes and water (Gaziantep Metropolitan Municipality, 2011). Currently, The European Bank for Reconstruction and Development (EBRD) is considering providing support to the Gaziantep Metropolitan Municipality in updating the existing Gaziantep Climate Change Action Plan (GCCAP) which will increase both reduction targets in the GCCAP to minimum 20% in 2023 (EBRD, 2015).

Within the context of horizontal governance, Turkish cities started to become members of TMNs especially over the last decade while European cities memberships date back to early 1990s. Since then, 29 municipalities have become members to TMNs including C40, ICLEI, CCP, Covenant of Mayors, Energy Cities, Eurocities' Environment Group, Compact of Mayors and Mayors Adapt (Table 15). From 29 municipalities, 6 of them are metropolitan municipalities, 4 of them are provincial municipalities, 13 of them are metropolitan district municipalities and 6 of them are district municipalities.

**Table 15:** Turkish Member Cities to TMNs

City\ Network	C40	ICLEI	CCP	Covenant of Mayors	Energy Cities	Euro cities	Compact of Mayors	Mayors Adapt
Istanbul Metropolitan Municipality (MM)						Nov. 2004	Dec. 2015	
Gaziantep Metropolitan Municipality (MM)		Sept. 2012			Apr. 2010	Nov. 2012		
Bursa Metropolitan Municipality (MM)		Dec. 1995				Nov. 2006		
İzmir Metropolitan Municipality (MM)				Apr. 2015		Nov. 2008		
Konya Metropolitan Municipality (MM)		Jan. 2012				Nov. 2012		
Antalya Metropolitan Municipality (MM)				Jan. 2013				
Sivas Municipality (PM)			June 2009					
Yalova Municipality (PM)			June 2009					

**Table 15 (continued)**

Muğla Municipality (PM)			June 2009					
Nevşehir Municipality (PM)			June 2009					
Çankaya Municipality (MDM)			June 2009	Mar. 2015				
Beyoğlu Municipality (MDM)			June 2009					
Maltepe Municipality (MDM)				Oct. 2014				
Şişli Municipality (MDM)		Mar. 2010	June 2009					
Keçiören Municipality (MDM)			June 2009					
Kartal Municipality (MDM)		Mar. 2011						
Bornova Municipality (MDM)				May 2011	Apr. 2012			
Kadıköy Municipality (MDM)			June 2009	Jan. 2012				
Karşıyaka Municipality (MDM)				Jan. 2011	Apr. 2014			
Nilüfer Municipality (MDM)			June 2009	Oct. 2014	Apr. 2014	Nov. 2012		Oct. 2014
Tepebaşı Municipality (MDM)				Apr. 2013				
Büyükçekmece Municipality (MDM)					Apr. 2014			
Beşiktaş Municipality (MDM)							Dec. 2015	
Alanya Municipality (DM)			June 2009					
Bodrum Municipality (DM)			June 2009					
Halkapınar Municipality (DM)			June 2009					
Karadeniz Ereğli Municipality (DM)			June 2009					
Seferihisar Municipality (DM)		Dec. 2012		Nov. 2011	Apr. 2011		Apr. 2015	
Mezitli Municipality (DM)						Nov. 2015		

Source: Prepared by the author

Note: 1: MM: Metropolitan Municipality PM: Province Municipality MDM: Metropolitan District Municipality DM: District Municipality

Geographic distribution of 29 member cities is shown as below (Figure 26). According to the figure, majority of member cities are located in the western part of Turkey. In addition that the distribution is scattered, eastern part of Turkey do not have any cities that joined TMNs. Considering Turkey is one of the vulnerable countries and locates in an area that is projected to be one of the most vulnerable areas to climate change, cities negligence to TMNs is remarkable.



**Figure 26:** Geographic Distribution of Member Cities of TMNs in Turkey

Source: Prepared by the author

Member cities realized several projects and studies under the umbrella of the networks. Cities for Climate Protection Campaign which was initiated by ICLEI and coordinated by Regional Environmental Center (REC) Country Office Turkey enabled cities in Turkey to prepare project to address climate change. Kadıköy Municipality became the first district municipality, which prepared its GHG emissions inventory within the scope of CCP. Ataşehir Municipality also prepared its GHG inventory with the help of REC Turkey. Çankaya Municipality prepared a guide, “Climate Change: Problem of Life”, in order to increase public awareness highlighting to consume less. However, CCP programme seems to be inactive for a long time because the last time the member list was updated was in September 2010. Moreover, The carbonn Cities Climate Registry

(cCCR) of ICLEI publishes reports of carbon footprint of Istanbul, Nevşehir, Kadıköy and Yalova municipalities every year.

Under the umbrella of Covenant of Mayors, Turkish municipalities prepare their Sustainable Energy Action Plan and set GHG emission reduction targets. In this context, Antalya, Bornova, Kadıköy, Karşıyaka, Seferihisar, Tepebaşı and Nilüfer municipalities commit to reduce their GHG emissions by 23%, 25%, 20%, 35%, 24%, 23% and 20% respectively by 2020 in terms of their SEAP (Covenant of Mayors, n.d.-a).

For Energy Cities; Gaziantep, Bornova and Seferihisar municipalities are one step forward than other member municipalities with their participation to ENGAGE campaign that commits all citizens and stakeholders to make personal energy-saving commitments and thus contribute to the energy and climate targets of the cities (Energy Cities, n.d.-a). Moreover, the mayor of Bornova Municipality is a member of Board of Directors of Energy Cities and Energy Cities' Annual Conference will be held in Bornova in June, 2016.

#### **4.5 Conclusion**

Turkey locates in an area which is projected to be one of the most vulnerable areas to climate change. Thus, climate change policies become significant because Turkey gets warmer and GHG emissions continue to increase. However Turkey insists on investing fossil fuels which is the major cause of global warming and avoids to have quantified emission reduction target in any foreseeable future. Still, plans and strategic documents have been prepared by the national government to respond climate change at the national level.

To continue with the urban responses to climate change, Turkish cities contribute to climate change problem and are affected from the problem at the same time considering the high urbanization rate of Turkey. As a consequence of that, climatic problems make difficulties for municipalities especially after their borders were expanded with the law

numbered 6360. In spite of the fact that national government determined climate change policies, local governments have been indicated as relevant and responsible bodies to address climate change in official plans and strategic documents. In fact Turkish municipalities find climate change less important and less challenging issue than other environmental problems, and they hardly take action on this field. Besides, climate change policies give more priority to mitigation rather than adaptation measures which are crucial for coastal areas vulnerable to climate change. For horizontal governance, which emerges in the form of transnational municipal networks, several Turkish cities have participated in networks especially since the last decade. Although some of them realized several projects to mitigate and adapt to the adverse impacts of climate change, their activities are not in the same league. Since Gaziantep, Nilüfer and Seferihisar are local pioneers in combating climate change by developing a local climate strategy, the following chapter focuses on Gaziantep, Nilüfer and Seferihisar municipalities as case studies in order to better understand their motivations and actions under the umbrella of TMNs.

## CHAPTER 5

### THE CASES OF GAZIANTEP, NILUFER AND SEFERIHSAR MUNICIPALITIES

#### 5.1 Introduction

This study aims to reveal the motivations and dynamics of municipalities to become members of TMNs and to designate to what extent these networks have affected local policy and decision making processes of member municipalities. In order to realize this aim, three municipalities, which adopted a climate strategy, chosen as case studies: one metropolitan municipality, one metropolitan district municipality and one town municipality. However, these cities did not show a significant difference in terms of motivations to join TMNs and decision making processes, resulting from their administrative differences.

Gaziantep metropolitan municipality has been chosen, as the City is a member of three different networks including ICLEI, Energy Cities and Eurocities. In addition, Gaziantep was accepted as an associated city for EU-GUGLE project. Although municipal activism for climate change has been in a declining trend since the last local elections in 2014 (mainly due to the change of the mayor), Gaziantep still stands out with its Climate Action Plan that was prepared in 2011. Having been one and only local climate action plan among Turkish cities, Gaziantep Climate Action Plan covers six strategic sectors including transport, waste management, water management, services, industry and housing. Within the context of climate action plan, Gaziantep has committed itself to reduce GHG emissions and energy consumption by 20% by the year 2023. Besides, the municipality has been preparing an Energy Action Plan. Given these local efforts and actions, Gaziantep Metropolitan Municipality has been chosen as a case city among the six possible metropolitan municipalities that have TMN connection.

The second case city is the Nilüfer Municipality, which is a metropolitan district municipality within the jurisdiction of Bursa Metropolitan Municipality. The Nilüfer municipality has recently been known for its actions and efforts for environmental protection. Nilüfer municipality has already developed membership with five different TMNs including CCP, Covenant of Mayors, Energy Cities, Eurocities and Mayors Adapt. Thus, Nilüfer has the highest number of membership to TMNs among Turkish municipalities. Besides, Nilüfer has been preparing a Sustainable Energy Action Plan with 20% emission reduction target by 2020. After establishing an Energy Department by forming Energy Board of Directors, Nilüfer Municipality conducts projects in terms of renewable energy sources and energy efficiency. This recent progress achieved by the Nilüfer municipality has been important for choosing the city as our second case study.

As the last case, Seferihisar Municipality has been chosen among the six possible town municipalities that have membership to TMNs. Seferihisar Municipality is a member of four different TMNs such as ICLEI, Covenant of Mayors, Energy Cities and Compact of Mayors. The municipality has committed itself to reduce GHG emissions by 24% within the scope of Sustainable Energy Action Plan. Moreover, Seferihisar is a “Slow City-Cittaslow”, which is a network of towns and cities that aims to sustain the quality of life. In fact, Seferihisar is the first Cittaslow in Turkey. As the city has already been engaged in sustainable environmental policies as a Slow City, Seferihisar Municipality was chosen as the third case study in this research.

To conduct this research, the following approach was adopted. First, the relevant literature including academic and other related publications, policy reports, news, factsheets, etc. were reviewed in order to get sufficient knowledge on such issues as global warming, climate change as well as on the links between cities, climate change and TMNs. After explaining the background of climate change problem, the rise of cities as major players of climate policy and emergence of TMNs in climate policy were discussed. Besides, climatic changes in Turkey and the national climate policy of Turkey were presented. Finally, an introduction on the Turkish cities that are characterized by TMN memberships has been made.

The case studies of Gaziantep, Nilüfer and Seferihisar Municipalities have been realized through 5 semi-structured interviews. The first interviews were held in Seferihisar Municipality in November 2015 and the interviewees were Bülent Köstem, the Cittaslow Project Officer in Seferihisar Municipality and the Cittaslow Turkey Network Coordinator, and Aslı Menekşe Odabaş who is the Director of Research Planning and Projects Department of Seferihisar Municipality. The second interview was conducted in Nilüfer Municipality in November 2015 with Bekir Sargin who is the Head of Energy Department of the municipality. The last interviews were realized in Gaziantep in December 2015. The interviewees were Şafak Hengirmen Tercan, who is the former Head of Environmental Protection and Control Department of the municipality, and Gökhan Yaman, who is an environmental engineer working at the Gaziantep Metropolitan Municipality. The major inquiries of the semi-structured interviews are as follows:

1. How did you decide to join TMNs?
2. How has your membership process evolved?
3. Did you attend any meetings? Did you organize personnel trainings?
4. Which studies/actions did/do you conduct after you joined TMNs?
5. What did you expect? Were your expectations realized? If not, why?
6. How did your relationship with TMNs proceed?

In what follows, after presenting the background information on Seferihisar, Nilüfer and Gaziantep cities respectively, the results of the case study research will be provided.

## **5.2. The Municipality of Seferihisar**

### **5.2.1. Introduction to Seferihisar City**

Seferihisar is a coastal district of Izmir located in Aegean Region in Turkey with a distance of 45 km from Izmir. The city is surrounded by Urla in the north, Menderes in the east and Aegean Region in the west and south. With a surface area of 386 km<sup>2</sup>, Seferihisar is 28 meters above the sea level (Izmir Kalkınma Ajansı, 2013). The city

does not have a railway connection but it is accessible via airway through Izmir Adnan Menderes Airport.

Based on the period of 2007-2015, while Turkey's rate of annual population growth has been %13.7, Seferihisar's growth has been %44.6. Although the overall population of Seferihisar is 36.335 people in 2015, it is estimated that population during summer months reaches to 150.000 since Seferihisar is a coastal resort city and a tourism hotspot.

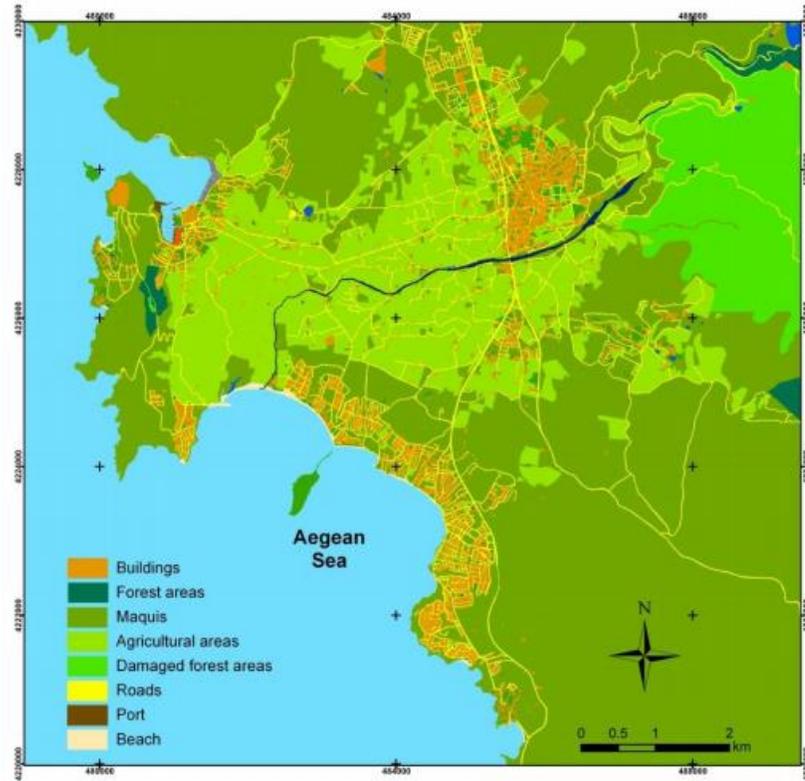


**Figure 27:** Location of Seferihisar

Source: Prepared by the author

Almost half (50.4%) of the total surface area of Seferihisar is covered by forestland, heathland and maquis shrub land. On the other hand, a quarter of it (23%) is agricultural land, which constitutes the major economic lifeline of the city. The economy of Seferihisar is based on agriculture, especially olive cultivation as it shown in Figure 28 (Izmir Development Agency, 2008, p.120). Moreover, greenhouse agriculture, fishery and animal husbandry have become new income sources for residents of Seferihisar.

Furthermore, tourism is the sector that highly contributes to local economy. However, 80% of the population is engaged in agriculture (Şahinkaya, 2010, p.12).



**Figure 28:** Land Use Map of Seferihisar

Source: (Özyurt et al., 2013, p.622)

Tourism sector has started to contribute to the economy of Seferihisar especially after Seferihisar joined Cittaslow, which is a sustainable and volunteered network to improve the quality of life in towns and villages. Although the city has lost some of its distinctive architectural character and historical heritage inherited from Seljuk and Ottoman periods as well as modern periods, Seferihisar already has 50 designated protected areas, including 34 archeological sites, 11 natural protection areas and 3 historical protection areas (Türkseven Doğrusoy & Serin, 2015, p.41; Izmir Development Agency, 2008 p.307). Moreover, the city has 27 immovable cultural properties (Covenant of Mayors, 2013, p.9).

Among natural hazards, erosion comes first in Seferihisar. The mismatch between land capability classification and land use is known to cause erosion. Strong erosion prevails 75% of the basin which involves Seferihisar, moderate erosion dominates 15% and normal erosion is observed in 10% of the basin especially in sloping land without vegetation cover (Gülersoy, 2014, p.173).

Climate of Seferihisar is affected by the sea because the city is not surrounded by high mountains. In general, Seferihisar has a Mediterranean climate where winters are mild and rainy and summers are hot and arid. While mean annual average temperature of Seferihisar is 16.4°C, maximum mean monthly temperature is 35.2°C in July and minimum mean monthly temperature is 4.2°C in January according to records of meteorological station between 1929 and 1995 (Covenant of Mayors, 2013, p.9). Total mean annual rainfall is 599.5 mm and December has the highest rainfall with 131.6 mm (Altun, 2006, p.10). In Seferihisar, the annual mean wind speed is nearly 3.5 m/s and there are nearly 165 days of annual sunshine (Türkseven Doğrusoy & Serin, 2015, p.42).

Seferihisar is located in a first degree earthquake region characterized by active fault lines especially located in south-east direction of Cumali-Doğanbey region. Because of these active fault lines, Seferihisar has geothermal resources which potentially could be used in medical tourism, producing geothermal energy and green housing (Izmir Metropolitan Municipality, n.d. 203). Moreover, Seferihisar has considerable renewable energy sources in terms of solar, wind and geothermal energy (Türkseven Doğrusoy & Serin, 2015, p.41).

### **5.2.2. Greenhouse Gas Emissions of Seferihisar City**

Within the scope of Seferihisar Sustainable Energy Action Plan (SEAP), the GHG emission inventory of the municipality and Seferihisar district was prepared. In this context, while 43% of municipal institutional emissions belongs to public transportation, 27% of emissions results from building and facilities and street lighting and traffic lights in Seferihisar. Also, fuel consumption of vehicle fleet of the municipality is responsible

29% of total institutional emissions of the municipality as it is indicated in Table 16 (Covenant of Mayors, 2013, p.14).

**Table 16:** Sources and Distributions of Institutional Greenhouse Gas Emissions of Seferihisar Municipality in 2012

Category	Total MWH	Total tonnes of CO <sub>2</sub> e	Ratio %
Buildings and Facilities	408	217	6.9
Street Lighting and Traffic Lights	1,238	658	20.1
Municipal Fleet	3,830	906	29
Public Transport	5,841	1,352	43
Business Aviation	-	20	0.6
Fugitive Emissions	-	12	0.4
<b>TOTAL</b>	<b>11,317</b>	<b>3,165</b>	<b>100</b>

Source: (Covenant of Mayors, 2013, p.14)

For GHGs of Seferihisar city, 35% of total emissions originate from vehicles, while 22.1% of them from residential buildings. Also solid waste and waste water utilities are responsible for 23.5% of total emissions of the city (Table 17).

**Table 17:** GHG Emissions of Seferihisar District in 2012

Category	Total MWH	Total tonnes of CO <sub>2</sub> e	Ratio %
Residential	29,952	13,363	22.1
Commercial	7,757	3,743	6.2
Industrial	2,259	1,201	2
Vehicles	90,421	21,188	35
Solid Waste	-	10,224	16.9
Waste Water	-	4,009	6.6
Agriculture and Land Use	-	6,728	11.1
<b>TOTAL</b>	<b>130,389</b>	<b>60,456</b>	<b>100</b>

Source: (Covenant of Mayors, 2013, p.16)

### 5.2.3. Emission Reduction Plan of Seferihisar Municipality

Having been a member of Covenant of Mayors, Seferihisar prepared a Baseline Emission Inventory as a basis for the SEAP, which covers CO<sub>2</sub> emissions originating from energy consumption within the boundaries of the local authority including municipal buildings, equipment and facilities, non-municipal buildings, equipment and facilities, residential buildings, municipal public lighting and urban road transportation (Climate Alliance, n.d.). Emission reduction targets of Seferihisar Municipality towards 2020 are set by choosing 2012 as a base year. In this context, total emissions of Seferihisar were calculated as 55,679 tCO<sub>2</sub>e in 2012 and SEAP was prepared with respect to those measures (Table 18).

**Table 18:** GHG Emissions of Seferihisar Municipality in 2012 as part of SEAP

<b>Seferihisar</b>	<b>MWh</b>	<b>tCO<sub>2</sub>e</b>
Buildings, Equipment/Facilities and Industries	39,354	17,981
Municipal buildings, equipment and facilities	408	217
Non-municipal buildings, equipment and facilities	7,757	3,743
Residential buildings	29,952	13,363
Municipal public lighting	1,238	658
Transport	100,093	23,466
Municipal fleet	3,830	906
Public transport	5,841	1,352
Private and commercial transport	90,421	21,188
Other Emissions	0	14,233
Solid Waste Disposal	-	10,224
Waste Water Treatment	-	4,009
<b>TOTAL</b>	<b>139,447</b>	<b>55,679</b>

Source: (Covenant of Mayors, 2013, p. 18)

According to the scenario of Seferihisar Municipality, in 2020 the population is projected to be 41,000 by increasing more than 31% (Covenant of Mayors, 2013, p.19). In this context, total emissions of Seferihisar are projected to be 70,000 tCO<sub>2</sub>e with a

25% increase from 2012 levels. However, the measures and actions that are planned to be taken by the municipality as part of the SEAP are expected to provide nearly 28,000 tCO<sub>2</sub>e reduction. In other words, total emissions of Seferihisar Municipality will be approximately 42,000 tCO<sub>2</sub>e by 2020. This means that the municipality plans to reduce their emissions by 24% below 2012 levels by the year 2020 (Covenant of Mayors, 2013, p.19).

#### **5.2.4. Seferihisar in the Context of TMNs**

##### **5.2.4.1. The Motivation and Emergence of Memberships to TMNs**

Seferihisar Municipality has memberships to four different TMNs including Energy Cities since April 2011, Covenant of Mayors since November 2011, ICLEI since December 2012, and Compact of Mayors since April 2015. Besides, Seferihisar is a Cittaslow which is a network of towns and cities that makes people and the environment the focal point of urban life rather than the global economy, mobility and industry and facilitates the use of renewable energy sources and the sustainable building technologies development (Türkseven Doğrusoy & Serin, 2015, p.41).

Seferihisar's TMN memberships can be accepted as the consequence of Cittaslow membership. It was highlighted by Odabaş that the main reason why Seferihisar joined these networks was to fulfill the criteria of Cittaslow and to promote Seferihisar's branding (A. M. Odabaş, personal communication, November 20, 2015). Indeed, Odabaş stated that:

Cittaslow was the factor that motivated us to be a member of TMNs. Cittaslow had 59 criteria at that time and 50% of them had to be met. We thought that we could meet them with the help of TMNs. We had deficiencies and TMNs could enable us to overcome these deficiencies, which was the main driving force for us.

This answer indicates that benefiting from knowledge, experience and best practices provided by the networks have been the primary factor for Seferihisar Municipality.

When the municipality joined Cittaslow Movement in 2009, Seferihisar was the first member whose application was accepted without any examination and review by

Cittaslow for the first time in its history (Şahinkaya, 2010 p.14). Cittaslow normally have some criteria consisting of seven fields including Energy and Environmental Policy, Infrastructure Policies, Quality of Urban Life Policies, Agricultural, Touristic and Artisan Policies, Policies for Hospitality, Awareness and Training, Social Cohesion and Partnerships. The first three fields have criteria directly associated with climate change. Odabaş mentioned that Cittaslow acknowledges TMNs as they are based on the ground of sustainable development. Moreover, Köstem also stated that the municipality has worked for making municipal operations more sustainable and for following an environment-friendly development model since Cittaslow membership in 2009, thus, Seferihisar memberships to TMNs strengthen Cittaslow membership (B. Köstem, personal communication, November 20, 2015).

Seferihisar's memberships to TMNs came after another. Seferihisar Municipality officials met the directors of Energy Cities, when it they joined the Open Days with Cittaslow. In a similar way, after joining a the General Meeting of Energy Cities, the municipality officials got in touch withmet the Covenant of Mayors. Besides, Odabaş stated that "We realized that people in these networks are the same old people". This is to say that one membership stimulates another. It was also noted by Odabaş that, after the meetings they attended, the municipality administration decided to join these networks by negotiating with them from the outset whether or not Seferihisar, as a small municipality, could manage to fulfill all the requirements of the networks.

#### **5.2.4.2. Actions and Policies Introduced in the Context of TMNs**

Seferihisar has realized several projects before and after its membership to TMNs. Personnel training was one of these projects. After joining Cittaslow in 2009, the municipality has realized a training programme on sustainability issues for the personnel for 3-4 months in 2010 (A. M. Odabaş, personal communication, November 20, 2015). The study aimed to broaden the awareness and understanding of the municipal staff on sustainability as well as help them create a vision on urban sustainability. Odabaş stated that:

Personnel ranging from municipal police to sanitation worker had some ideas relevant to this issue. We created a non-hierarchical environment where all municipal personnel equally expressed opinions in order to draw their attention to the issue. We named this event as the “Opinion Café”.

Thus, municipality personnel were invited to contribute to the sustainability related projects of the municipality and their ideas were considered.

Seferihisar was the first district municipality that joined Energy Cities and also the second municipality after Gaziantep from Turkey. Seferihisar Municipality became a member of Energy Cities in 2011 and committed to develop, implement and disseminate policies so as to set an example to other regions (Covenant of Mayors, 2013, p.2). Moreover, Seferihisar Municipality has been engaged in Display Campaign, which is a voluntary scheme to publicly display the energy and environmental performances of public buildings of local authorities. The municipality has also joined the ENGAGE, which is an initiative of Energy Cities on participative communications. By joining the ENGAGE Campaign, cities aim to encourage citizens and municipal staff to prepare posters showing their pledges and monitor these pledges. Within the scope of this campaign, Seferihisar added one more badge to their local efforts and actions (A. M. Odabaş, personal communication, November 20, 2015).

Seferihisar Municipality joined Covenant of Mayors initiative in 2011 and committed to prepare Baseline Emission Inventory (BEI), to prepare Sustainable Energy Action Plan (SEAP) and to submit an implementation report at least every second year after submission of the Action Plan, to encourage activities including Local Energy Days to involve stakeholders and citizens in a common dialogue and to spread the message of the Covenant of Mayors by encouraging other local authorities to join and by involving major organizations and workshops (Covenant of Mayors, 2013, p.3).

According to the SEAP of Seferihisar Municipality, the city has organized a meeting for training, briefing and team building. After building the team, relevant responsibilities were divided. Also, the training has had several contents including:

- Local Governments in Climate Negotiations,

- Introduction to the Project and Expectations,
- Climate Change from A to Izzard: Basic Information,
- Relationship between Cities and Climate Change,
- What Can Be Done at City Scale? - Case Studies from World Cities,
- Introduction to Emission Calculation,
- Why Cities Should Prepare Emission Inventory?
- Emission Calculation Methods in Cities,
- Advantages of Inventory,
- Case Studies from the World,
- Steps of Emission Calculation,
- Setting Scope and Frame of Emission Preparation,
- Collecting, Planning and Processing Data,
- Setting Emission Reduction Target,
- Reporting of Emissions

When collecting data, the municipality experienced some obstacles. For data quality and detail, human resource capacity was insufficient (Covenant of Mayors, 2013, p.4). According to Odabaş, one of the biggest problems in Turkey is the absence of correct and retroactive databases (A. M. Odabaş, personal communication, November 20, 2015). The municipality had difficulties in collecting data since district-level municipalities in Turkey have lower authorization than provincial and metropolitan municipalities. Thus, the team had to generate its own data to reach the correct results, for example the team itself counted out the number of cars passing through Seferihisar. After completing the data collection and verification, Baseline Emission Inventory was prepared.

Seferihisar Municipality prepared the SEAP within the scope of its membership to Covenant of Mayors, by which the municipality has committed to reduce city emissions by 24%. In order to reach this target, several projects have been initiated by the municipality (Table 19).

**Table 19:** Projects for GHG Emissions Reduction Target of Seferihisar Municipality

Buildings	<ul style="list-style-type: none"><li>-Energy Efficiency Operations in Municipal Buildings</li><li>-Insulation in Residential Buildings</li><li>-Energy Efficient Urban Transformation in Residential Buildings</li><li>-Energy Efficiency Operations in Newly Developed Housing</li><li>-Energy Efficiency Operations in Commercial Buildings</li></ul>
Transportation	<ul style="list-style-type: none"><li>-Greening the Municipal Fleet</li><li>-CNG Transformation of Municipal Buses</li><li>-Promoting Bicycle Commuting</li><li>-Promoting Pedestrian Commuting</li><li>-Traffic Optimization</li><li>-Integration of Seferihisar into Izmir Railway System</li></ul>
Lighting	<ul style="list-style-type: none"><li>-Greening the Street Lighting</li><li>-Implementation of PV Panels to Street Lighting Systems</li></ul>
Renewable Energy	<ul style="list-style-type: none"><li>-PV Power System Applications</li><li>-Biogas LFG</li><li>-Installation of Municipal PV Power Systems</li></ul>
Solid Waste and Waste Water Management	<ul style="list-style-type: none"><li>-Solid Waste Landfill</li><li>-Waste Water</li></ul>
Campaigns	<ul style="list-style-type: none"><li>-Public Awareness Campaigns for Energy Saving</li></ul>

Source: (Covenant of Mayors, 2013, p.18)

In 2010, Seferihisar Municipality joined National Photovoltaic Technology Platform and committed to contribute to the studies for the development of photovoltaic technologies in Turkey. In this context, the municipality installed 800 photovoltaic (PV) solar panels at the top of the market place near the municipality building. These panels generates 310.000 KW energy for each year, thus, the municipality managed to reduce 180.000 kg of GHG emissions per year. According to Odabaş, with the completion of this project, Seferihisar has reached the emission reduction target committed within the scope of Covenant of Mayors (A. M. Odabaş, personal communication, November 20, 2015).

#### **5.2.4.3. Expectations from TMNs and Current Relationship**

According to Odabaş, memberships to TMNs provided the municipality with significant experience and knowledge and also broaden its horizon. Since Seferihisar was a

Cittaslow at the beginning, the municipality focused more on rural development. In this sense, TMNs help the municipality to consider environmental sustainability and climate change.

However, there are some limitations for Seferihisar to fully focus on TMNs. According to Köstem, it is quite hard to fully benefit from TMNs since there has to be some qualified personnel that work only for these projects. The personnel of the municipality have lots of work to do other than the work originate from TMN membership. Therefore, if Seferihisar Municipality had personnel, who worked only for TMN projects, deeper benefits could have been achieved and better integration with TMNs could have been satisfied (B. Köstem, personal communication, November 20, 2015). As another point of view, Odabaş argues that it is hard to reach funding opportunities because Turkey is a non-EU country. It is added by Odabaş that not being able to benefit from funding constitutes bigger problem than municipal capacity deficiency. In fact, Seferihisar as a small municipality with limited budget could not benefit every funding which TMNs provide cities with access. Odabaş expected that TMNs would help the municipality obtain EU funding since Turkey is a candidate country for EU membership (A. M. Odabaş, personal communication, November 20, 2015).

For the time being, Seferihisar Municipality attends the meetings and workshops of TMNs. According to Odabaş, since Seferihisar developed an efficient public relations plan and prepared the SEAP which was quite hard for a small municipality, the municipality is welcomed with sympathy by TMNs (A. M. Odabaş, personal communication, November 20, 2015).

### **5.3. The Municipality of Nilüfer**

#### **5.3.1. Introduction to Nilüfer City**

Nilüfer Municipality was established as a metropolitan district on the western part of Bursa to meet the housing demand of the city in 1987 when Bursa becomes a greater municipality. Nilüfer is one of the seven metropolitan district municipalities of Bursa in

Marmara Region. Nilüfer is located in the southeast of Marmara Sea and northwest of Mount Olympus (Figure 29). The city takes its name from Nilüfer River which passes through it. With a surface area of 495.75 km<sup>2</sup>, Seferihisar is 100-150 meters above sea level.



**Figure 29:** Location of Nilüfer

Source: Prepared by the author

Based on the period of 2007-2015, while Turkey's rate of annual population growth has been %13.7, it has been %59 in Nilüfer. On other words, for the past eight years, Nilüfer's annual population growth has been over four times more than Turkey's, thus, population of Nilüfer increases significantly every year.

The economy of Nilüfer is mainly based on industry, particularly automobile and textile industries, since the city hosts seven organized industrial zones where tens of thousands

of employees work. Thus, Nilüfer as an industrial city highly contributes to the economy of Turkey. Agriculture also contributes to the economy of the city. 38% of the land area of Nilüfer is agricultural land, whereas forestland and heathland cover 36% of the district (Nilüfer Municipality, 2014, p.19). Because of fertile agricultural lands, not only agricultural production but also fishery, beekeeping, silkworm-breeding and animal husbandry take place in rural parts of Nilüfer District.

The landform of the city is covered with plains; however, the southern part of the city has uplands near Olympus Misios Mountain. The climate of Nilüfer is the combination of Mediterranean and Black Sea climate where winters are mild and wet and summers are hot and arid. Mean annual rainfall is 700 mm and the city receives more rain especially in winter and spring. While the mean annual average temperature of Nilüfer is 14.5°C, annual mean relative humidity is 75% (Uludag University, 2011, p.17).

The main problems in terms of environmental pollution in Nilüfer are water and wastewater pollution, loss of wetlands, odor pollution, solid and hazardous wastes, air pollution (BEBKA, 2011, p.33). Water and wastewater pollution results from lack of wastewater treatment facility, leakages from municipal water system and insufficient sewage system. Moreover, direct discharge of domestic and industrial wastes without treatment, arrival of pesticide and fertilizer residues to river as well as arrival of air pollutants to receiving environments via precipitation substantially cause water pollution. While industrial activity in the district result in loss of wetlands, direct discharge of domestic and industrial wastes without treatment and wastewater treatment facilities leads to odor problems. Solid and hazardous wastes also pose an environmental problem because of lack of coordination among municipalities, unrecorded wastes, and informal collection of solid wastes by waste pickers, lack of public awareness and lack of sanctions in spite of sanitary disposal of solid wastes (BEBKA, 2011, p.34; BEBKA, 2014, p.312). Finally, air pollution results from fossil fuels used in industrial activities and heating systems in the city. As another problem, intensive activities of block stone quarries in Nilüfer cause dust, noise pollution, quake and visual pollution (BEBKA, 2014, p.305).

In order to overcome such problems, Nilüfer Municipality has implemented several projects regarding renewable energy and climate change. In 2009, Nilüfer hosted %100 Recycling House Project, which aimed to support young entrepreneurs in innovative, creative, participant and sustainable environmental projects. In the context of this project, the recycling house produces its electricity and heating from solar energy (UNDP, 2009, May 1). In 2010, within the context of Solar Harvest Project, a pilot public park was started to be illuminated by electricity generated from solar power. By this means, savings were used in order to extent this project to all public parks in Nilüfer (Alternaturk.org, 2010). Also in 2010, Watch out for Cyclist Project promoted cycling by building 10 km cycle path, cycle stand and cycle rental system (BAŞKA-DER, 2009). Furthermore, the municipality launched Small Steps Lead to Big Marks project which aimed to build awareness in terms of individual carbon footprints by keeping the changes in carbon footprints of participants through surveys (NTV, 2010, May 4). As another project, Change Your Bags, Change Your Future aimed to promote recyclable bags instead of plastic bags in shopping areas. In this sense, usage of plastic bags was stopped in 2010 (Haberler.com, 2010, May 10). Nilüfer Municipality has become finalist in Livable Communities 2011 Awards with this project.

In addition, Nilüfer has many environment-friendly projects including Collection of Waste Batteries, Green Nilüfer Week, Packaging Waste Sculpture Competition, Car Sharing, and Waste Oil Collecting Competition among Schools etc. Nilüfer is the only municipality in Turkey which has incessantly been collecting for recycling for 20 years and 140,947 people have been trained for recycling for the past 5 years (Nilüfer Municipality, 2015, September 28). Furthermore, air quality has been monitored since 2007 and noise measurement and prevention studies have been realized by the municipality. In this sense, students in secondary and high schools has been training on air pollution by the municipality (Nilüfer Municipality, 2015, November 19). Besides, Low Carbon Hero was awarded to Nilüfer Municipality with the “Project on Identifying and Changing the Employee Behaviors to Reduce Transportation Carbon Footprint”

(Haberler.com, 2015). Moreover, Nilüfer Municipality has been working on Eco-City Project which grounds on renewable energy sources.

Therefore, it can be stated that Nilüfer Municipality substantially puts emphasis on renewable energy, energy efficiency, waste management and sustainable development when considering their projects mentioned above. Also, the municipality gives importance to public awareness, especially in schools.

### 5.3.2. Greenhouse Gas Emissions of Nilüfer City

Nilüfer Municipality has prepared its SEAP in the context of Covenant of Mayors membership in January 2016. In this sense, GHG emissions of municipal operations were calculated as 9.263,250 tCO<sub>2</sub>e. While direct emissions represent 51% of total emissions, indirect emissions and other indirect emissions represent 16% and 33% respectively (Table 20).

**Table 20:** GHG Emissions of Nilüfer Municipality in 2013

Sources of GHG Emissions of Nilüfer Municipality	Energy Consumption (MWh)	Emissions (tCO <sub>2</sub> e)	Ratio (%)
Direct Emissions	14,375	4,767	51
Municipal Buildings- Energy Consumption	3,846	701	-
Municipal fleet	10,529.45	2,147	-
Refrigerant Gas		1,919	-
Indirect Emissions	3,124	1,474	16
Municipal Buildings-Electricity Consumption	3,124	1,474	-
Other Indirect Emissions	10,754.349	3022.25	33
Municipal Subcontractor Services	4,360.349	1183	-
Private and Commercial Vehicles	6394	1666.25	-
Other		173	-
<b>TOTAL</b>		<b>9,263.25</b>	<b>100</b>

Source: Adapted from Covenant of Mayors (2016, p.37)

Furthermore, GHG emission of Nilüfer District is 746,893.728 tCO<sub>2</sub>e when industrial emissions are excluded. Thus, emission per capita is 2.084 tCO<sub>2</sub>e. (Covenant of Mayors, 2016, p.38). In this context, buildings, equipment and facilities represent 56%, transport represents 38% and other emissions represents 6% of total emissions (Table 21). Industry sector alone emits approximately 4.5 million tonnes of CO<sub>2</sub>e which is six times more than industry-excluded emissions of the district. In other words, industry stands out with its huge contribution to total emissions of Nilüfer district.

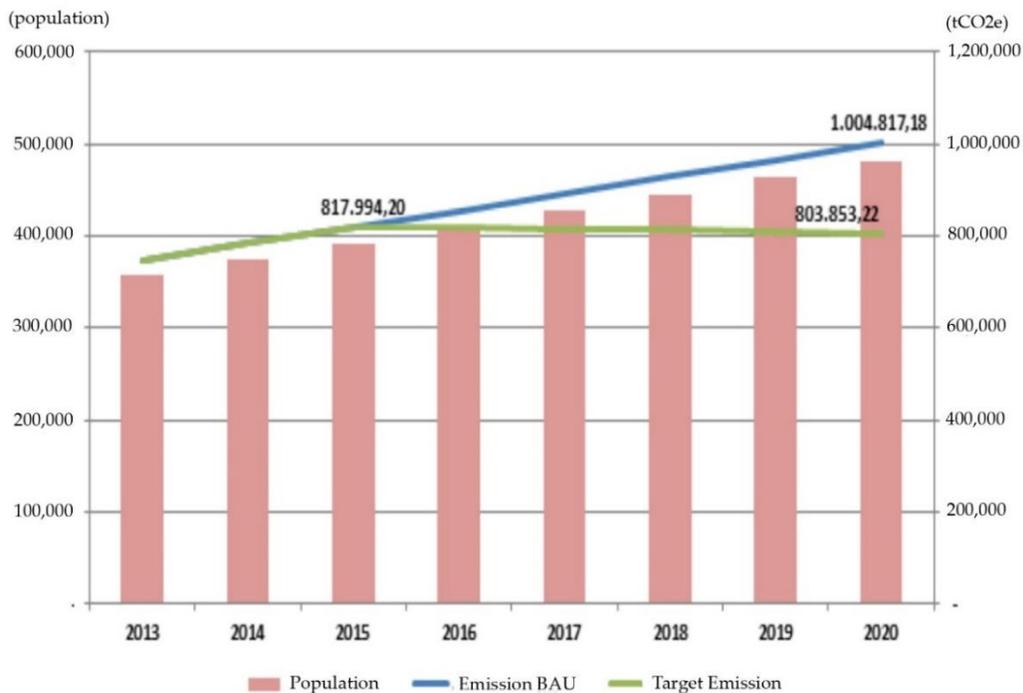
**Table 21:** GHG Emissions of Nilüfer District in 2013

<b>Sources of GHG Emissions of Nilüfer District</b>	<b>Total Energy Consumption (MWh)</b>	<b>Emissions (tCO<sub>2</sub>e)</b>	<b>Ratio (%)</b>
Buildings, Equipment/Facilities	22,855,281	415,205.53	56
Municipal buildings, equipment and facilities	6,970	3,389	
Non-municipal buildings, equipment and facilities	180,825	44,142.060	
Residential buildings	1,508,315	356,705.190	
Municipal public lighting	23,240	10,969.280	
Industry	21,135,931	4,245,421.55	-
Transport	1,057,446.862	285,127.964	38
Municipal fleet	14,889.802	4,637.980	
Public transport	71,864.400	23,692.984	
Private and commercial transport	970,692.660	256,797	
Other Emissions	-	46,560.234	6
Solid Waste Management	-	32,663	
Waste Water Management	-	13,897.234	
Total (industry included)	23,912,727.862	4,992,315.278	-
TOTAL (industry excluded)	2,776,796.862	746,893.728	100

Source: Adapted from Covenant of Mayors (2016, p.36)

### 5.3.3. Emission Reduction Plan of Nilüfer Municipality

Based on business as usual scenario, Nilüfer District will emit 1,004,817 tCO<sub>2</sub>e in 2020. However, the municipality commits to reduce its emissions by 20% in accordance with its SEAP; thus, emissions of Nilüfer District will reach to 803,853 tCO<sub>2</sub>e with the reduction target (Figure 30). In this sense, Nilüfer will reduce its emissions by 200,964 tCO<sub>2</sub>e until 2020, and emission per capita will become 1.667 tCO<sub>2</sub>e (Covenant of Mayors, 2016, p.38).



**Figure 30:** Projections of Population and Emission of Nilüfer District

Source: Adapted from Covenant of Mayors (2016, p.39)

### 5.3.4. Nilüfer in the Context of TMNs

#### 5.3.4.1. The Motivation and Emergence of Memberships to TMNs

Nilüfer Municipality has memberships to five different TMNs including Cities for Climate Protection since June 2009, Eurocities Environment Group since November 2012, Energy Cities since April 2014, Covenant of Mayors since October 2014, and

Mayors Adapt since October 2014. In this context, Nilüfer is the leading municipality with most memberships to TMNs in Turkey.

The membership process began with CCP membership in 2009 and this process was managed by Evrim Ekiz and Çağrı Demirel Arabacı, two officials of the municipality. A couple of years ago, the municipality established an Energy Department and formed an Energy Board of Directors, since then, Bekir Sargin has been managing the TMN membership related processes as the Head of Energy Department in Nilüfer Municipality. The Energy Board of Directors aims to make the municipality more active and a pioneer and an exemplary in the field of environmental protection by obtaining all of the energy required for service points of the municipality from renewable energy until 2023 (Covenant of Mayors, 2016, p.3). Furthermore, the Energy Department of the municipality has produced several projects in the field of sustainable development, renewable energy and climate change, and Mustafa Bozbey, the mayor of Nilüfer Municipality, has developed a social point of view for these projects (B. Sargin, personal communication, December 4, 2015). In fact, the mayor supports and adopts all these projects in order to provide an ecological-friendly environment where public and nature are in compliance (Nilüfer Municipality, 2014, September 26).

Nilüfer's memberships to TMNs came after another as it was the case in Seferihisar. The municipality officials has met with Mayors Adapt and Covenant of Mayors networks when they attended to a meeting of Energy Cities. It was mentioned by Sargin that memberships to TMNs was already covering the projects that the municipality produced like an umbrella. What motivated the municipality to join the networks was the need and demand for benefiting from experiences and knowledge of pioneers that are one step ahead (B. Sargin, personal communication, December 4, 2015). Moreover, Sargin added that:

The municipality wanted to enter into obligation in order to force itself and to be more disciplined. Because, in Turkey, providing discipline while working is hardly achieved.

In other words, the municipality intended to benefit from experiences of peers in order to conduct its climate related studies in a more systematic way.

#### **5.3.4.2. Actions and Policies Introduced in the Context of TMNs**

Nilüfer Municipality has realized many projects before and during its TMNs memberships. Nilüfer Municipality is known to prepare climate-friendly projects including Sun Harvest, 100% Recycling House, Car Sharing since 2005 when climate change was not in the agenda of many municipalities in Turkey (Nilüfer Municipality, 2014, November 25). Thus, Nilüfer is an important city in the area of local environmental policy-making. In this sense, Nilüfer Municipality endeavors to form a team in order to be deeply involved in TMNs and is planning to invest substantially in forming a team and personnel training (B. Sargin, personal communication, December 4, 2015).

Nilüfer became the only municipality whose project was supported by HORIZON 2020 (B. Sargin, personal communication, December 4, 2015). In fact, it has been accepted as a “follower city” in The REPLICATE (Renaissance of Places with Innovative Citizenship and Technologies) Project, which aims to build integrated smart city solutions to struggle with problems including poor air quality, unsustainable energy use and traffic congestion (Zeetta Networks, 2015). In this sense, the municipality has received 174,300 EUR from EU through HORIZON 2020 programme, in which Covenant of Mayors membership was one of the reasons why Nilüfer obtained this grant (B. Sargin, personal communication, December 4, 2015).

Nilüfer is the only municipality which joined Mayors Adapt from Turkey as of 2015. Within the context of Mayors Adapt, the municipality committed to either develop a local adaptation strategy or integrating adaptation strategies into existing plans within the first two years after signing.

Nilüfer Municipality has been a member of Covenant of Mayors since October 2014 and prepared its SEAP in January, 2016 by committing to reduce its emissions by 20% by

the year 2020. In order to reach this target, the municipality is planning to realize several projects which are listed in Table 22.

**Table 22:** Projects in the context of GHG Emission Reduction in Nilüfer

<b>Projects</b>	<b>Energy Saving (MWh)</b>	<b>Emission Reduction (tCO<sub>2</sub>e)</b>
<b>Buildings</b>	720,907	155,108
Energy Cooperative (20,000 Green House)	40,000	18,880
Municipal Transition to Renewable Energy (wind, solar)	4,600	2,171
Energy Efficient Urban Transformation	200,016	40,230
Energy Efficient Thermal Insulation	341,972	68,802
Energy Efficient Household Appliances Project	132,925	24,226
Energy Saving in Municipal Buildings	1,394	435
Refrigerant Gas Saving in Municipal Buildings		364
<b>Transportation</b>	161,523	43,655
Promoting Railway Commuting	161,523	43,655
Promoting Bicycle Commuting		
<b>Raising Awareness</b>		8,149
Establishment a Pilot Farm and Reducing the Amount of Biodegradable Wastes		8,149
Establishing an Industry, Climate Change and Technology Platform		
Raising Public Awareness		
<b>TOTAL</b>	882,430	206,912

Source: (Covenant of Mayors, 2016, p.55)

Sargin stated that while the SEAP was in preparation, data collection comprised a major problem for the municipality (B. Sargin, personal communication, December 4, 2015). Although Bursa Metropolitan Municipality has started to prepare its emission inventory later than Nilüfer Municipality, it completed earlier than Nilüfer, since metropolitan municipalities could get access to data easier than district municipalities. Another

problem in calculation of emissions inventory and definition of emissions reduction target was the rapid increase of population in Nilüfer District. Every person that migrates to the city brings with it an additional emissions of 4-5 tonnes of GHGs. Thus, projects may become insufficient to reduce the ever-increasing emissions (B. Sargın, personal communication, December 4, 2015). In fact, 2020 is a very early date to realize the commitments made for Covenant of Mayors. According to Sargın, a city at Seferihisar level can succeed this, however, Nilüfer is really a big city and it may be hard to realize the goals on such short notice (B. Sargın, personal communication, December 4, 2015).

Within the scope of TMNs, there are several projects which Nilüfer Municipality has not realized yet, however, they are in project phase. According to Sargın, realization of projects in renewable energy field requires significant time to be completed. Nilüfer Municipality is planning to establish an Energy Cooperative and continues wind turbine project in Lapseki, Çanakkale (Nilüfer Municipality, 2015, June 11). 60% of the permission process has been completed. In this context, the municipality will realize 10,000 Green House Project which will use renewable energy via Energy Cooperative (B. Sargın, personal communication, December 4, 2015).

#### **5.3.4.3. Expectations from TMNs and Current Relationship**

According to Sargın, Nilüfer Municipality joined TMNs without great expectations. The municipality endeavors to engage with TMNs in order to benefit from their experiences and be inspired from their knowledge since the networks are one step ahead. In this sense, in order to fully benefit from their experience and knowledge, the municipality continues to join different networks. Furthermore, Nilüfer Municipality follows other Turkish municipalities to see the way they experience in this process. Sargın highlighted that municipalities, which prepared a SEAP except for Nilüfer have insufficient technical capacity. He claims that:

When Nilüfer Municipality visited a municipality which have a senior relationship with TMNs and conduct studies on this field, we realized that their projects were very simple with low technical capacity. They are good at lobbying at which we are bad and we are really good at technical capacity at which they are bad.

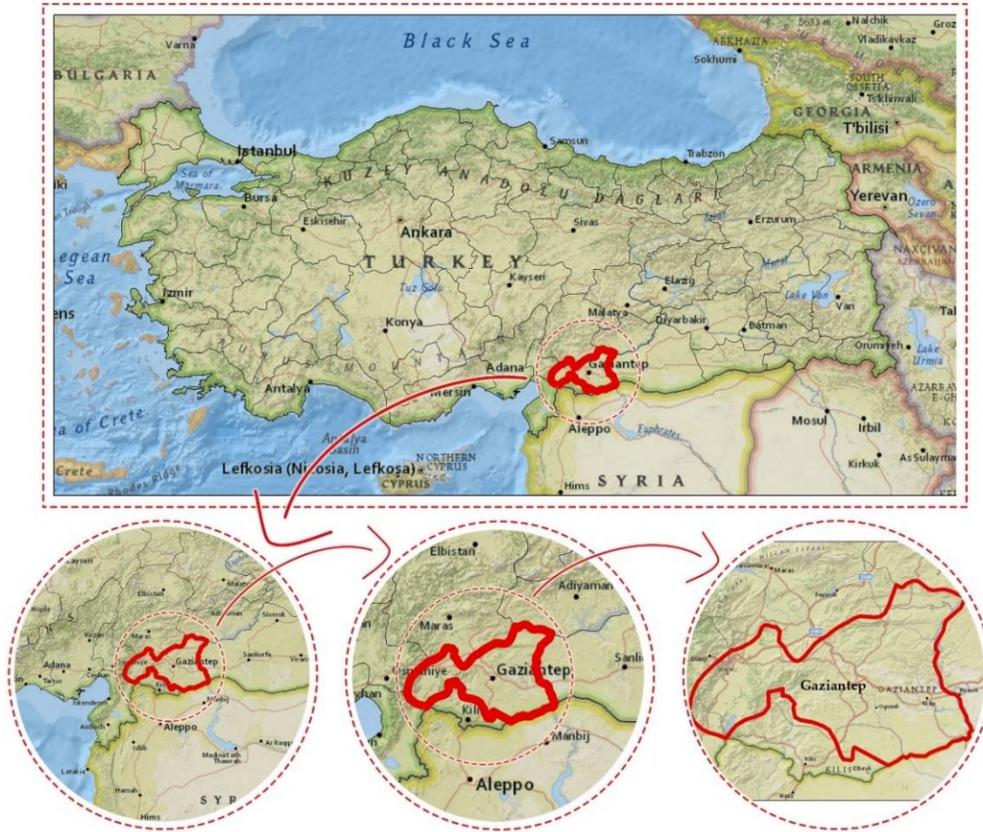
Nilüfer already is a member to five different networks and when it enhances its relations with TMNs, the city will increase its recognition in international arena in terms of climate change mitigation and adaptation.

As of the moment, Nilüfer Municipality attends the meetings and workshops of TMNs and shares their projects with them in those meetings. However, as Sargin highlights, the relationship of the municipality and TMNs is not up to what is expected because of the fact that the municipality has not form a team yet.

#### **5.4. The Municipality of Gaziantep**

##### **5.4.1. Introduction to Gaziantep City**

Gaziantep is a metropolitan city that locates in the southeastern part of Turkey (Figure 31). The city is surrounded by Adıyaman and Kahramanmaraş provinces in the north, Osmaniye and Hatay provinces in the west, Şanlıurfa province in the east and Kilis province and Syria in the south. With a surface area of 6845 km<sup>2</sup>, Gaziantep is 855 meters above sea level. The northern part of the city is a mountainous, while the southern part has lowlands. Since Gaziantep is located on the intersection point of Mesopotamia and Mediterranean region as well as on the historical Silk Road, it has a well-developed transportation system, which makes city a strategic point in transportation. The city is also accessible via railway and airway through which international flights are realized.



**Figure 31:** Location of Gaziantep

Source: Prepared by the author

Based on the period of 2007-2015, while Turkey's rate of annual population growth has been %13.7, it has been %27 in Gaziantep. Gaziantep, as an industrial city, receives significant number of immigrants every year, thus, unplanned and irregular urbanization took place in the city, which decreased the quality of life of the local community.

The economy of Gaziantep is based on industry and Gaziantep is the center of industry in its region with its high accessibility. There are 8 organized industrial zones and 8 small industrial zones in which more than 100.000 people work. Leading sector of Gaziantep industry is manufacturing including textile, food, mechanical and chemical industries. Agriculture is also an important sector in Gaziantep Province. Agricultural land covers 62% of the province, whereas grass and pasture lands cover 7% and forestry

covers 15% (Tarım, n.d.). Gaziantep is accepted as the center of the Southeastern Anatolia Project, which aims to realize social and economic development of the region by using its own resources, with its industry and trading volume. Both industry and agriculture products exported bring significant economic profits to the city.

Tourism is another important sector for Gaziantep, since the city hosted numerous civilizations, and contains 1107 cultural heritage values. 160 of these heritage values are archeological sites and 947 are civil architecture (Gaziantep Metropolitan Municipality, 2015, p.8). Moreover, Gaziantep has become a member of UNESCO Creative Cities Network in gastronomy field in 2015.

Gaziantep experiences a combination of Mediterranean climate and continental climate. In general, winters are mild and rainy and summers are hot and arid in Gaziantep. The city receives the most rain in winter and spring. While the highest and lowest temperatures ever measured are respectively 44°C and -17.5°C, mean annual average temperature is 14.5 °C (Ipekyolu Development Agency, 2015, p.9). Snow typically covers the land surface for 10 days in a year on average and the annual mean wind speed is nearly 2.2 m/s (Ministry of Forestry and Water Affairs, 2013, p.28). Furthermore, 77 endemic taxon have been identified in Gaziantep and 7 species of them are Gaziantep endemic (Ministry of Forestry and Water Affairs, 2013, p.28).

Gaziantep loses a significant amount of agricultural land every year because of urbanization and industrialization. Agricultural land becomes infertile because of misuse of it and soil pollution stemming from urban and industrial wastes (Ipekyolu Development Agency, 2015, p.192). Therefore, strong erosion prevails 26% of Gaziantep, moderate erosion dominates 32.2% of the city (Tunç & Özkan, 2010, p.144).

Electricity is produced mainly from hydroelectric and fossil fuel power in Gaziantep (Ipekyolu Development Agency, 2015, p.167). Having had 2 fossil fuel power plants and 4 hydroelectric power plants in 2002, Gaziantep had 10 fossil fuel power plants, 4 hydroelectric power plants and 2 biomass plants in 2011. In fact, Gaziantep continues to

invest in fossil fuels despite the fact that the municipality is planning to establish wind power plant and solar power plant that will prevent 892.5 tonnes of GHG emissions in a year (Milliyet, 2015, November 6).

Gaziantep has experienced air pollution recently because of increased fossil fuel consumption for indoor heating (Governorship of Gaziantep, 2015, p.19). In this context, Gaziantep was selected as one of the pilot metropolitan areas for Urban Air Quality Assessment System Improvement Project (KENTAIR). The project aimed to determine the sources of pollution and prevent them. Furthermore, the municipality prepared a Clean Air Action Plan, which aimed to determine the sources of air pollution, to take precautions and make studies in this respect (Governorship of Gaziantep, 2015, p.14).

Gaziantep Metropolitan Municipality works on several environmental projects including cogeneration and biogas power plant, environment-friendly municipal building, Green House project as LEEDS-PLATINUM nominee, and Ecological City project as the first project in this field in Turkey. Within the context of Ecological City project, the municipality aims to provide an ecological and sustainable urban environment, where sensitive to the environment and community take place, buildings consume less energy and emit less CO<sub>2</sub>, huge recreational sites are provided.

Moreover, Gaziantep was chosen as an associated city for EU-GUGLE (European Cities serving as Green Urban Gate towards Leadership in Sustainable Energy) project which aims to “demonstrate the feasibility of nearly-zero energy building renovation models in view of triggering large-scale, Europe-wide replication in smart cities and communities by 2020” (EU-GUGLE, n.d.). In this context, Gaziantep Metropolitan Municipality aims to raise public awareness in terms of energy efficiency and renewable sources by informing local community and to bring technical assistance with several activities including (Tercan, 2013):

- Creation of the Energy Info Points
- Identification and training of the advisors

- Preparation of an implementation plan & a multiannual action program
- Production of technical, communication, monitoring and evaluation tools
- Exchanges with foreign networks.

Furthermore, Gaziantep Metropolitan Municipality has been preparing an Energy Action Plan, which aims to develop institutional capacity of the municipality in the field of renewable energy, energy efficiency and energy management. By developing an Energy Action Plan, Gaziantep has proved to be a pioneer in sustainable urban policy in Turkey in addition to its updated GCCAP. This action plan enables Gaziantep to determine its strategic targets on energy and to lower the costs through efficient use of energy (Enerji Gündemi, 2015).

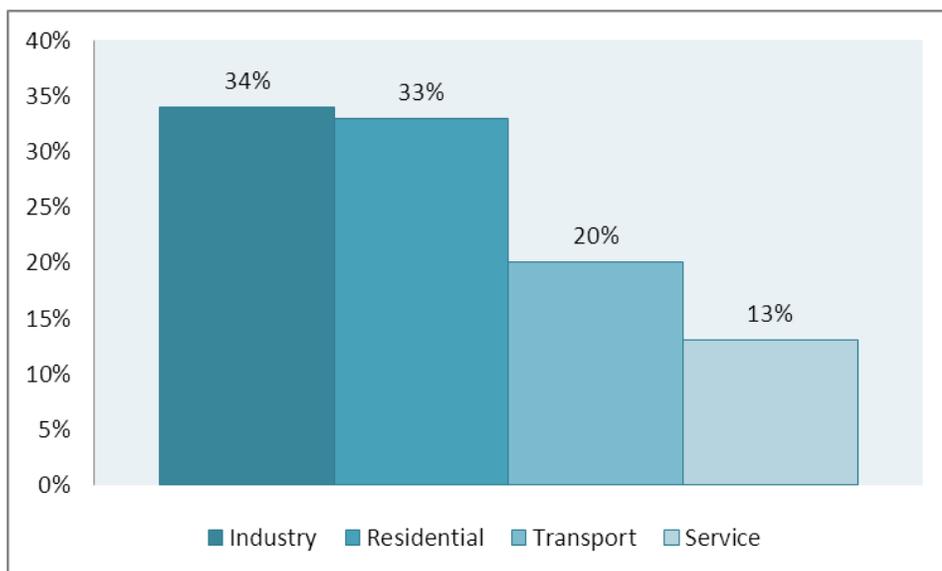
#### **5.4.2. Greenhouse Gas Emissions of Gaziantep**

Gaziantep prepared its Climate Change Action Plan (GCCAP) in 2011, which was the first local climate action plan in Turkey and became forerunner in the field of sustainable urban policy. This plan was financed by French Development Agency (AFD) and Gaziantep Metropolitan Municipality and conducted by Mavi Consultants and Gaziantep University with a bottom up analysis method based on the methodology of the ADEME (French Environment and Energy Management Agency) which is an accounting method for GHG emissions. The weaknesses of this action plan were that:

- The plan did not include explicit implementation plan despite determined division of responsibilities.
- Since intermediate objectives were not introduced, compatibility between realizations and goals was not observable.
- Actions were not identified in case of failure of goals.

Thus, for the time being, GCCAP has been updated under Updating and Implementation of the Gaziantep Climate Change Action Plan (GCCAP) using IPCC and UNFCCC methods (Kıraç & Yılmaz, 2015).

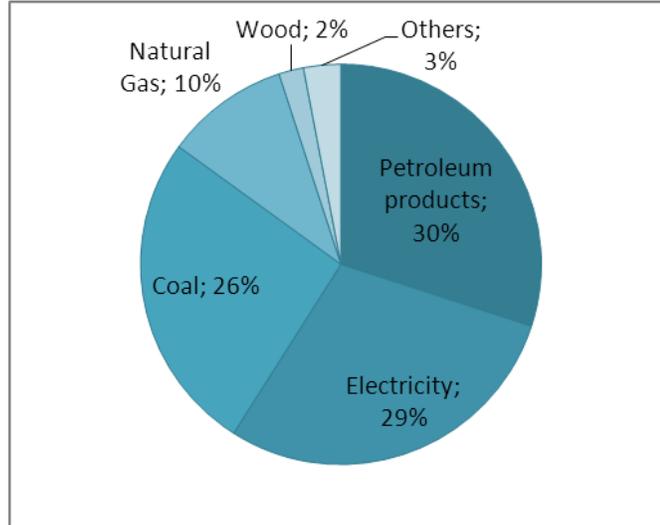
According to the action plan prepared in 2011, Gaziantep's total energy balance was 960 ktoe (kilotonne of oil equivalent) only with local freight transport and it reached to 990 ktoe when kerosene sales at the airport and fuel sales for freight trucks were added. When sectoral distribution is considered in Figure 32, industrial sector consumes most energy with 34%. Second energy consuming sector is the residential sector with a share of %33, almost equal to industry. Transport sector is responsible for 20% and lastly service sector consumes 13% of total energy consumption in the city (Gaziantep Metropolitan Municipality, 2011, p.25).



**Figure 32:** Sectoral Distribution of Energy Consumption in Gaziantep in 2011

Source: Adapted from Gaziantep Metropolitan Municipality (2011, p.25)

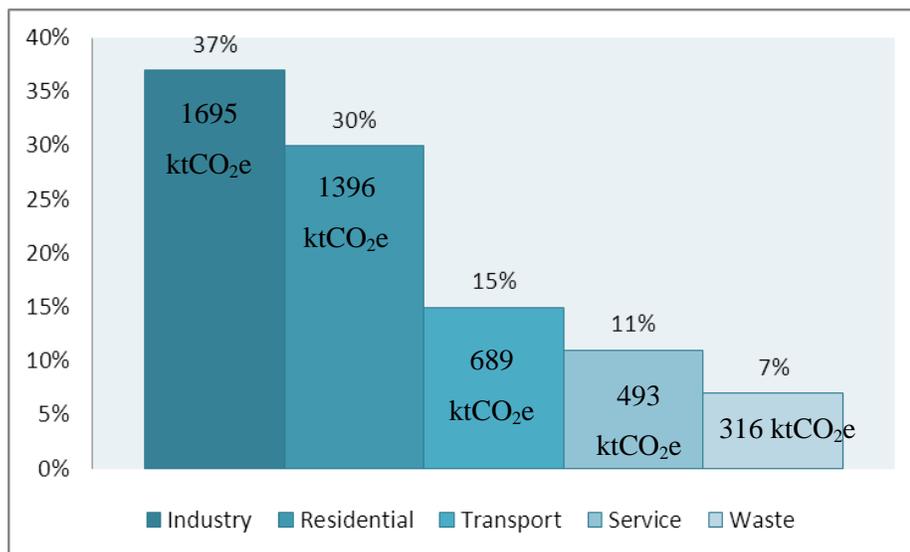
Within the context of energy products, petroleum products, electricity, coal, natural gas and wood represented respectively 30%, 29%, 26%, 10% and 2% of energy products (Figure 33). Considering a remarkable amount of electricity is produced via fossil fuel power, Gaziantep's dependence on fossil fuels is striking.



**Figure 33:** Distribution of Energy Products in Gaziantep in 2011

Source: Adapted from Gaziantep Metropolitan Municipality (2011, p.25)

As GCCAP indicates that Gaziantep's total emission balance was 4,560 ktCO<sub>2</sub>e including activities of residents and territory and GHG emission per capita was 3.52 tCO<sub>2</sub>e in 2011. Figure 34 shows the sectoral distribution of GHG emissions in Gaziantep in 2011. In this context, industry became the sector, which emitted most GHG emissions by 37% with its high dependence on fossil fuels. As the second emitter, residential sector represented 30% of total emissions since residents consumed a high amount of fossil fuels for heating. As plan indicates, 70% of housing stock used coal facilities, 15% used electric heater, 6% used natural gas heater, 5% used wood equipment and 4% used fuel heater (Gaziantep Metropolitan Municipality, 2011, p.31). Transport (daily, short distance), service and waste sectors were responsible for 15%, 11% and 7% respectively.



**Figure 34:** Sectoral Distribution of GHG emissions in Gaziantep in 2011

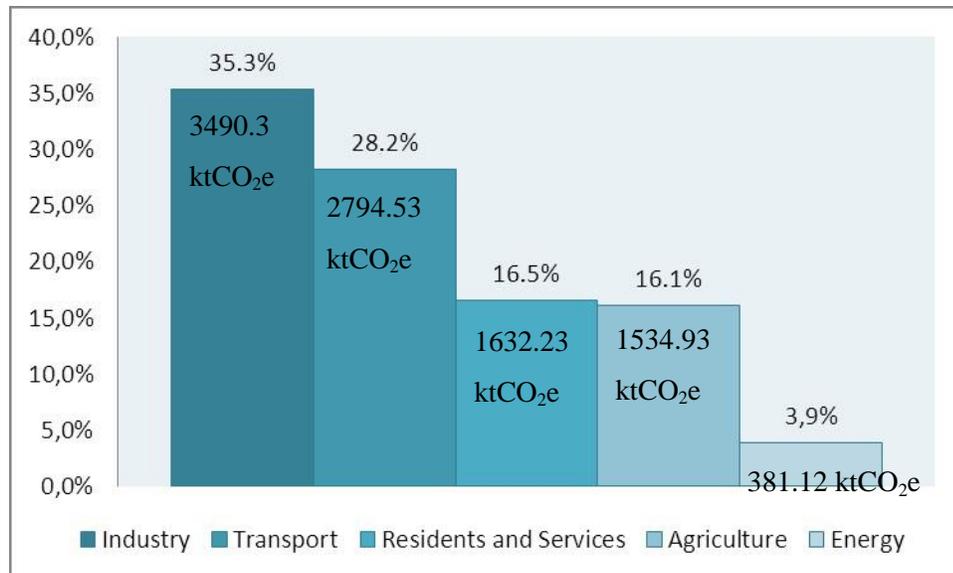
Source: Adapted from Gaziantep Metropolitan Municipality (2011, p.28)

Within the context of Updating and Implementation of the Gaziantep Climate Change Action Plan, sectors, which are evaluated for GHG emissions are different than sectors in GCCAP in 2011. Updated GCCAP include industry, transport, residents and services, agriculture and energy as GHG emitters. In order to compare the differences in GHG emissions, their amounts as ktCO<sub>2</sub>e were indicated in figures. However, the reasons of the huge difference between 2011 and 2015 levels have been explained as below (Kıraç & Yılmaz, 2015);

- Methodologies are different.
- GCCAP in 2011 did not include some key sectors including agriculture and non-energy emissions emitted in industrial sector.
- Updated GCCAP includes N<sub>2</sub>O, HFC, CH<sub>4</sub> and PFC.
- Economic development and population increase.

Based on Figure 34 and Figure 35, GHG emissions from industry sector has tripled over the past 4 years, which is directly related with a significant amount of fossil fuel consumed in industry sector. Transportation related GHG emissions quadrupled between the years 2011 and 2015; this might result from transport sector in 2011, which covered

daily and short distance transportation and increasing car ownership rates. Emissions of residents and services were 1889 ktCO<sub>2</sub>e in 2011 and decreased to 1632.23 ktCO<sub>2</sub>e in 2015. Since residents consume energy mostly for heating purposes, decrease might be explained by temperature increase and substitution of coal with gas.



**Figure 35:** Sectoral Distribution of GHG emissions in Gaziantep in 2015

Source: Adapted from Kırac & Yılmaz (2015, p.18-19)

According to updated GCCAP in 2015, Gaziantep's total emissions balance has reached to 9,893.12 ktCO<sub>2</sub>e which is doubled based on 2011 levels and GHG emission per capita became 5.24 tCO<sub>2</sub>e which increased one and a half of 2011 levels. In other words, the emissions increased significantly considering 2011 measurements and actions seem not to come a long way for the past 4 years.

#### **5.4.3. Emissions Reduction Plan of Gaziantep Metropolitan Municipality**

GCCAP aimed to reduce CO<sub>2</sub> per capita by 15% and to reach 3 tCO<sub>2</sub>e per capita as well as to reduce energy consumption per capita by 15% by 2023. In the context of updated GCCAP, the municipality increased its reduction targets to minimum 20% in 2023 as it is shown in Figure 36 (Kırac & Yılmaz, 2015).



**Figure 36:** Emission Reduction and Energy Consumption Targets in the context of Updated GCCAP

Source: Adapted from Kırac & Yılmaz (2015, p.22)

Within the scope of updated GCCAP, emission reduction targets are planned to be realized through a variety of projects by the municipality as below (Kırac & Yılmaz, 2015):

- Establishing a Climate Change Department,
- Measuring, reporting and verification (MRV) of GHG emissions emitted by different sectors of the municipality,
- Establishing Emission Trading System for the municipality,

- Public awareness and motivation plan,
- Increasing energy audit and electricity savings,
- Enhancing sustainability in organized industrial parks,
- Encouraging collective heating and cooling systems,
- Increasing energy efficiency of waste water treatment,
- Preparing Cycling Plan,
- Green Fleet Plan,
- Methane production from agricultural by-products,
- Substitution of coal with gas,
- Increasing the quality of public lighting,
- Sustainable solid waste management.

Thus, Gaziantep Metropolitan Municipality aims to provide its emissions reduction target by preparing several projects covering industry, transport, residents and services, agriculture and energy sectors in the context of updated GCCAP.

#### **5.4.4. Gaziantep in the Context of TMNs**

##### **5.4.4.1. The Motivation and Emergence of Memberships to TMNs**

Gaziantep Metropolitan Municipality joined three different TMNs including Energy Cities in April 2010, ICLEI in September 2012, and Eurocities Environment Group in November 2012 when the previous mayor Asım Güzelbey was in office. Although Gaziantep Metropolitan Municipality applied to become a member of C40, its request was not accepted by the network (Ş. H. Tercan, personal communication, December 18, 2015).

Gaziantep Metropolitan Municipality prepared the first local climate action plan countrywide in 2011. Also, Gaziantep is an associated city for EU-GUGLE (European Cities serving as Green Urban Gate towards Leadership in Sustainable Energy) project to implement smart renovation activities including energy performance, quality of life, and cost efficiency during the project (EU-GUGLE, n.d.).

The reason why Gaziantep Metropolitan Municipality prepared a local climate action plan was to take part in international community and to reach funds and grants (Haberler.com, 2010). According to Yaman, GCCAP was a significant step which broadened the horizon of Gaziantep municipal administration since Ecological City project and acceptance from EU-GUGLE consortium were part of the GCCAP (G. Yaman, personal communication, December 18, 2015). The process of memberships to TMNs started when the municipality was preparing GCCAP. It was mentioned by Tercan that, when preparing GCCAP, the municipality started to follow other municipalities with climate action plan and realized that they were members of TMNs (Ş. H. Tercan, personal communication, December 18, 2015).

There are two reasons why Gaziantep Metropolitan Municipality intended to join TMNs. It was highlighted by Tercan and Yaman that what motivated the municipality was to obtain funds and grants at first since municipalities generally need finance to realize their projects and EU stipulates memberships to TMNs before providing funds to municipalities (Ş. H. Tercan and G. Yaman, personal communication, December 18, 2015). Tercan added that TMNs guide municipalities on sharing knowledge and experiences, which was another factor to join them. After the municipality met with directors of the networks and realized that GCCAP already met certain criteria of TMNs, Gaziantep Metropolitan Municipality decided to join the networks. In this process, the mayor supported the environment team of the municipality to become members to the networks (Ş. H. Tercan, personal communication, December 18, 2015).

In summary, access to funding and benefiting from knowledge and experience of other cities comprised the motivations behind Gaziantep Metropolitan Municipality's memberships to TMNs which was a process started during the preparation of GCCAP.

In local elections held in 2014 in Turkey, the current mayor Fatma Şahin was elected as the Metropolitan Mayor of Gaziantep City. After then, the project team including the former mayor, the secretary general, the deputy secretary general and the head of

department, which prepared GCCAP, had to leave their positions within the municipal administrations. For this reason, actions and efforts taken in relation to TMNs have come to a standstill since then.

#### **5.4.4.2. Actions and Policies Introduced in the Context of TMNs**

Gaziantep Metropolitan Municipality has realized several projects after joining the TMNs until the core team dissolved in 2014. When Tercan was in office, the municipality was regularly attending the meetings and conferences of Eurocities, ICLEI and Energy Cities. In the context of Eurocities, Tercan stated that the municipality prepared several reports on transport policies with Eurocities (Ş. H. Tercan, personal communication, December 18, 2015).

Within the scope of ICLEI, Gaziantep Municipality was chosen as one of the 29 URBAN-LEDS cities. Funded by European Commission, URBAN-LEDS (An Urban Low Emissions Development Strategy) project aims to provide low carbon development strategies in developing countries. These strategies are expected to be integrated into urban development plans. In this sense, Gaziantep was included in experienced European Cities group and is expected to support the process by sharing its experiences and knowledge with 8 model cities and 21 satellite cities in 4 emerging economy countries. However, Gaziantep's activity in URBAN-LEDS project was also suspended because of change of mayor and its team, thus, the municipality could no benefit from the budget of this project. The municipality is getting ready to involve in this project again, thus, 1.4 million EUR will be available for Gaziantep. Moreover, it was highlighted by Tercan that Gaziantep was cited as the best practice by ICLEI since Gaziantep with a high population unlike European cities has prepared a local climate action plan (Ş. H. Tercan, personal communication, December 18, 2015).

Gaziantep Metropolitan Municipality has presented its projects in meetings organized by Energy Cities. The municipality also joined ENGAGE campaign of Energy Cities network. In this sense, the municipality has taken several actions in schools in order to

raise awareness on energy efficiency and climate change (Memurlar.net, 2013, April 20).

Like Seferihisar and Nilüfer, acquiring data constituted a serious problem while Gaziantep Metropolitan Municipality was preparing GCCAP. This problem was solved with the help of the governor. According to Tercan, political support is very important while implementing plans and projects (Ş. H. Tercan, personal communication, December 18, 2015).

According to Tercan, Gaziantep Metropolitan Municipality reached the target of emissions reduction by 20% that was committed within the scope of GCCAP when 3 new tramlines came into operation as well as waste-to-energy project and urban transformation project in Şahinbey District were realized (Ş. H. Tercan, personal communication, December 18, 2015).

#### **5.4.4.3. Expectations from TMNs and Current Relationship**

According to Tercan and Yaman, there are several benefits of being members of TMNs. As Tercan stated, TMNs guide the municipality on sharing experiences, and the Gaziantep Municipality has consulted with the networks on some projects when Tercan was the head of Environmental Protection and Control Department. Moreover, Yaman stated that the networks educated the personnel of the municipality, which in turn increased the number of qualified personnel and enabled the municipality to implement locally what they have learnt in training. He also added that it became easier to receive grants by joining TMNs, as funding institutions usually favor member municipalities (G. Yaman, personal communication, December 18, 2015).

In general, Gaziantep became a well-known city among peers, which work in the area of climate change by preparing GCCAP. By this means, Gaziantep Metropolitan Municipality represented the city and Turkey in those platforms that focus on urban responses to climate change (Ş. H. Tercan, personal communication, December 18, 2015). Tercan added that:

“I wish all municipalities joined TMNs since they open the horizons of the member municipalities.”

After the core team, which prepared GCCAP dissolved, enthusiasm and activity of Gaziantep in the context of TMNs diminished. In this sense, Elisa Kerschbaumer from ICLEI asserted that Gaziantep is not as active as it used to be before the elections in 2014 (E. Kerschbaumer, personal communication, August 10, 2015). Yaman admitted that the process with TMNs has slowed down until then despite the fact that the municipality still continues to attend the meetings when invited. Thus, he added that expectations from the networks have partially been realized (G. Yaman, personal communication, December 18, 2015). Likewise, it was stated by Tercan that Gaziantep Greater Municipality is not that active since the team left the municipality because the contacts with the networks are lost and the awareness is decreased (Ş. H. Tercan, personal communication, December 18, 2015).

### **5.5. Evaluation of Gaziantep, Nilüfer and Seferihisar Municipalities in the context of TMNs.**

Gaziantep, Nilüfer and Seferihisar Municipalities were selected as case study areas due to several memberships to different TMNS. In the empirical research, all related actions, reports, plans and projects of these cities in relation to TMNs and climate policy have been examined. Furthermore, field visits to the municipalities have been useful to understand their motivations behind network membership and to see to what extent their local environmental policy-making has been affected from TMN membership. Each case study city corresponds to a particular scale within the hierarchy of municipal governments in Turkey including a metropolitan municipality, a metropolitan district municipality and a town (or district) municipality. The reason for such scale differentiation is to see whether or not the scale of the municipality makes any difference in accessing to or benefiting from TMNs.

The climate-related TMNs that have several Turkish municipalities as members are C40, ICLEI, Cities for Climate Protection (CCP), Covenant of Mayors, Energy Cities,

Eurocities, Compact of Mayor and Mayors Adapt. Nilüfer and Seferihisar Municipalities seems to have focused more on the Covenant of Mayors, as both cities prepared a Sustainable Energy Action Plan with a minimum 20% emissions reduction target, which is the concrete output of the membership to Covenant of Mayors. Thus, when officials from these two cities were talking about their TMN memberships, they unwittingly tended to talk about their relations with the Covenant of Mayors network. As for Gaziantep Metropolitan Municipality, which was already preparing its local energy action plan before joining to any TMN, the focus is more on ICLEI and Energy Cities. Gaziantep was included in URBAN-LEDS project of ICLEI; however, the process has been suspended after the local elections, due to the change in priorities of the newly elected mayor. It has been understood that after the local elections, the core working team that initiated and developed climate-related actions including TMN memberships dissolved and the key officials left office. On the other hand, the municipality continues its actions with regard to ENGAGEMENT project of Energy Cities, which aims to raise awareness on energy efficiency and climate change.

### **5.5.1. Motivations and Dynamics that Led Gaziantep, Nilüfer and Seferihisar Municipalities to Join TMNs**

Seferihisar Municipality has devoted itself to increase the quality of life in the city especially after joining Cittaslow network. The mayor, Tunç Soyer, plays an active role as one of the vice-presidents in the organizational structure of the network. Also, Bülent Köstem, one of the interviewees of this research from Seferihisar Municipality, is Turkey's Coordinator of Cittaslow network. Considering the significance of Cittaslow for Seferihisar Municipality, it comprised a basis for the municipality to join other TMNs related to climate change. In that sense, the municipality joined Energy Cities, Covenant of Mayors, ICLEI and Compact of Mayors networks. Odabaş highlighted that Cittaslow membership and process has been the main motivation behind Seferihisar's memberships to other TMNs. Thus, it can be argued that Seferihisar city aimed to become a better Cittaslow by joining other TMNs, since they helped the municipality fulfill the criteria of Cittaslow. It seems that Seferihisar city has reached win-win

situations by engaging with several city networks. Furthermore, it should be added that one membership stimulated the other in the case of Seferihisar Municipality, which ended up with membership to 4 different networks. Although Sargin from Nilüfer Municipality claimed that it was easier to set an emission reduction target and achieve it for a small municipality like Seferihisar with nearly 36.000 population, Seferihisar's enthusiasm to pursue sustainable development and address climate change deserves acknowledgment. Seferihisar Municipality has managed to place itself on the map as a serious actor in this field both nationally and internationally.

In the Nilüfer case, the municipality joined 5 different networks including Cities for Climate Protection, Eurocities Environment Group, Energy Cities, Covenant of Mayors and Mayors Adapt. This multiple membership makes Nilüfer Municipality the leading municipality with the highest number of memberships to TMNs among Turkish cities. The municipality intends to become an active, a pioneer and an exemplary city in the field of environmental protection by realizing various projects related to environmental protection and climate change. The main motivation of Nilüfer Municipality to join TMNs was to conduct climate-related studies in a more disciplined and systematic way. In that sense, the municipality established an Energy Bureau in order to concentrate on environmental policies and renewable energy initiatives, which would reduce GHG emissions of the city as well as to properly focus on and follow TMN activities that help combat climate change. Furthermore, as being one and only member to Mayors Adapt, Nilüfer will either develop a local adaptation strategy or integrate adaptation policies into existing plans within the first two years after signing. In this context, Nilüfer's membership to Mayors Adapt is an important but belated step towards adoption of adaptation strategies since local climate policies remain limited to mitigation rather than adaptation for Turkish municipalities. Besides, like Seferihisar Municipality, Nilüfer municipality also joined the networks consecutively, thus, one membership was followed by the other.

Gaziantep Metropolitan Municipality is the first municipal authority in Turkey that prepared a local climate action plan. Thus, Gaziantep drew wide attention at both

national and international levels. After realizing that municipalities that prepared local climate action plans were mostly members of TMNs, Gaziantep Metropolitan Municipality has decided to join 3 different networks, including Energy Cities, ICLEI, and Eurocities Environment Group. The first communications with the networks took place when the city was preparing the Gaziantep Climate Change Action Plan (GCCAP). What motivates Gaziantep to be included in TMNs was to access funding and grants as well as to benefit from knowledge and experiences of other member cities. The city officials aimed to increase their knowledge and experience to better prepare a climate change action plan by means of network memberships. Asım Güzelbey was the mayor at the time when Gaziantep city was taking significant steps for addressing climate change and working for developing memberships with TMNS. However, Güzelbey had to leave his post in 2014 and with the new mayor, the core environment team including the secretary general, the deputy secretary general and the head of environment department dissolved. Therefore, the decisions of GCCAP were not fully realized and actions defined within the scope of TMNs have been suspended since then. Officials from some networks also admit that contrary to its previous performance, Gaziantep has been very passive since the 2014 local elections. On the other hand, the municipality has been working for updating the GCCAP because there were problems with the methodology of the previous one. Furthermore, the local conditions have changed dramatically in Gaziantep after rapid incoming of Syrian refugees as well as domestic migration from towns, villages and neighboring provinces.

According to Hakelberg (2011), governance by diffusion takes place when TMNs influence decision-making processes of member cities. In this context, TMNs develop strategies in order to accelerate policy dissemination among their member cities. Diffusion occurs in three different ways: via learning, via imitation and via competition. In his research, Hakelberg examines the cases of Hanover and Offenbach in order to understand their diffusion processes. Therefore, cases of Gaziantep, Nilüfer and Seferihisar municipalities should be evaluated according to learning, imitation and competition processes.

When policymakers are not satisfied with the regulatory status quo and seek a better solution to a policy problem, diffusion via learning occurs (Hakelberg, 2011, p.7). In this sense, benefiting from experiences, knowledge, expertise, innovation and best practices comprise the first reason why Gaziantep, Nilüfer and Seferihisar municipalities engage in transnational activity. All three municipalities claimed that the networks help improve technical capacity of municipalities by sharing knowledge and experience and best practices among peers and increase the number of qualified personnel via training activities. For instance, personnel of Seferihisar Municipality have been trained before preparing the SEAP in terms of several contents including global climate change, urban responses to climate change, preparing emission inventory, emission calculation methods, emission reduction targets and reporting of emissions etc. In this context, Seferihisar Municipality increased its technical capacity regarding climate change. Odabaş highlighted that TMN memberships enriched the work agenda of Seferihisar municipality by adding climate change. Before TMN membership the city focused more on rural development as a Cittaslow. As a consequence of capacity increase, Seferihisar Municipality committed to reduce its GHG emissions by 24% within the scope of SEAP. Nilüfer and Gaziantep municipalities, on the other hand, increased their technical capacity through workshops and conferences that TMNs provided. By considering these cases, TMNs influence member cities by accelerating learning processes in which the networks enable municipalities to reach available information, contact with peers and improve capacities in order to combat climate change at local level, as it was also found in the case studies of Hanover and Offenbach conducted by Hakelberg (2011, p.73). Therefore, Seferihisar, Nilüfer and Gaziantep cases are consistent with what Hakelberg highlights, since municipalities emphasize that they lack the necessary technical capacity and knowledge in order to act locally in climate change.

The access to funding is the second motivation for Gaziantep, Nilüfer and Seferihisar cities to become members to TMNs. Financial incentives gain importance for municipalities with limited resources and know-how. According to Yaman, TMN membership is important to access EU funds as EU stipulates network membership

before providing cities with funds and grants. In that sense, Gaziantep will receive 1.4 million EUR as one of the 29 cities of URBAN-LEDS project of ICLEI. Furthermore, TMNs membership made a positive impact for Gaziantep to be accepted as an associated city for EU-GUGLE, thus, Gaziantep has benefited from the project fund. Although accessing to funds was one of the main motivations of Gaziantep to join TMNs, benefiting from funding opportunities has remained limited for Gaziantep. It was explained by Tercan that although TMNs are effective to reach funds and grants, Gaziantep Metropolitan Municipality has not made sufficient effort to access funds. Nilüfer Municipality, on the other hand, has been accepted as a “follower city” in the REPLICATE project and has received 174,300 EUR from EU through HORIZON 2020 programme. According to Sargin, Covenant of Mayors membership was an important factor to obtain this fund from EU.

Second, diffusion via imitation occurs when policymakers develop policies in response to normative expectations (Hakelberg, 2011, p.10). Imitation is promoted through benchmarking since it compares the performance of local governments on adoption of local climate strategy. Benchmarking also increase the awareness of appropriate solutions and peer pressure on latecomers or new entrants to introduce implementations common among peers as it shows the overall progress of other cities. (Hakelberg, 2011, p.13). In his research, Hakelberg (2011, p.73) propounds that TMNs have not accelerated imitation processes in Hanover and Offenbach cases, by stating that “despite the set up of milestone and benchmarking systems, the share of previous adopters does not affect the likelihood of a network member to introduce a local climate strategy”. However, in Gaziantep, Nilüfer and Seferihisar cases, an imitation process could be mentioned. While preparing the GCCAP, Gaziantep Metropolitan Municipality examined local action plans of forerunner cities and realized that they are all members of TMNs. After attending the meetings of the networks and comprehend what they offers to member municipalities, the municipality decided to join the networks. Thus, it can be concluded that Gaziantep imitated pioneers before and also after joining TMNs in order to benefit from facilities of the networks. Similarly, before preparing its SEAP, Nilüfer

Municipality visited Turkish municipalities, which already adopted the SEAP in order to learn the way they experienced the process. Sargın stated that “We would like to be inspired from their knowledge since the networks are one step ahead.” In this sense, it can be argued that Nilüfer Municipality imitated other Turkish municipalities’ experiences with preparation of the SEAP before preparing its own plan. Furthermore, previous adopters affect the likelihood of Nilüfer and Seferihisar municipalities to adopt a local climate strategy unlike Hanover and Offenbach cases. Therefore, Turkish municipalities imitate pioneers of the networks when deciding to join them, aiming to catch up with cities which have already come a long way in adopting climate change strategy as an emerging policy field. Although Gaziantep seems to be dissociated from Nilüfer and Seferihisar in this sense since Gaziantep was already introducing a local climate strategy before joining the TMNs, Gaziantep became member of the networks by imitating previous adopters in order to manage the process in response to normative expectations. Therefore, norm cascades have been observed in these cases.

Norm cascades occur through three possible motivations for member cities: legitimation, conformity and esteem (Finnemore & Sikkink, 1998, p.903). For legitimation, Turkish municipalities intend to gain a positive reputation both in international and national scene by adopting local climate strategy. Gaziantep, Nilüfer and Seferihisar municipalities gained international legitimation, as they were welcomed with sympathy when they attended the international meetings of TMNs, which increased their positive reputation and recognition in this field among their peers. However, international legitimation have not contributed to local legitimation held by citizens of these cities since all interviewees clearly stated that citizens are not aware of their municipalities’ participation in networks. For conformity, Turkish municipalities comply with norms of TMNs although they are not formally obliged to combat with climate change by Turkish legislation, in order to show that they belong to the group. All interviewees stated that they feel belonging to the networks and see themselves as part of them. Finally for esteem, Gaziantep, Nilüfer and Seferihisar Municipalities embrace norms in order to enhance their esteem. For instance, Gaziantep was cited as the best practice by ICLEI

and shared their projects in these meetings. Likewise, mayors of Nilüfer and Seferihisar municipalities often attend conferences and meetings of the networks and inform peers regarding their local climate strategies and projects to reduce GHG emissions. In fact, they represent not only their cities, but also Turkey by sharing their climate strategies in meetings of TMNs, thus, they explicitly express that they gain national and self-esteem as well as positive reputation.

The final diffusion process, diffusion via competition, occurs when local governments aim to have a competitive advantage by adapting their policies. Neither economic competition nor political competition has been observed in Gaziantep, Nilüfer and Seferihisar cases at international level. However, it could be asserted that local political competition exists considering the Gaziantep case. Gaziantep was the first municipality to prepare a local climate action plan and has influenced local climate policy development by adopting the role of local leader in that sense. In fact, the Ministry of Environment and Urbanization now aims to increase the number of local governments adopting local climate action plan and later on, to expand this practice to the all around the country. Therefore, Gaziantep will enjoy minimizing adaptation costs because of being pioneer in this field.

Kern and Bulkeley (2009, p.326) define pioneer cities as an active part of a certain network's evolution from the beginning. In this context, there is a mutually beneficial relationship in which pioneers take the opportunity to reach knowledge, funding and local legitimacy, in return for contributing to the network by sharing its own experiences to peers. Passive cities, on the other hand, are those which cannot or do not participate in network activities due to the lack of financial, human and political resources (Kern & Bulkeley, 2009, p.327). Still, even passive cities can benefit from external legitimacy and inspiration facilities of networks and continue their activities, even if financial stress, political indifference or opposition to local climate action takes place (Kern & Bulkeley, 2009, p.327). At this point, Hakelberg states that when members do not develop a local climate strategy one year after membership, they become passive. In this sense, Gaziantep, Nilüfer and Seferihisar municipalities can be accepted as passive cities

since they are not that much active in network activities and are not stimulated to enhance their performance, which may be due to Turkey's being a non-EU country. Although they maintain their membership by paying annual fees, they do not make further efforts to set more ambitious targets or to go beyond what networks demand. For instance, Odabaş claimed that Seferihisar Municipality fulfilled the entire emission reduction commitment to Covenant of Mayors by installing photovoltaic panels at the top of market place. On the other hand, the municipality did not submit its implementation report that was supposed to be submitted in 2015. Furthermore, although Gaziantep was preparing a local climate action plan before joining TMNs, it has not been that active as it should be as being a municipality with climate action plan. It is arguable that if the municipality actively engaged in networks, its action plan might not have failed. That is to say, even though they adopted a local climate strategy within the first year of membership, or before the membership, these cities can be accepted as passive cities in transnational context. However, these cities can be counted on the fingers of one hand in Turkey in terms of adoption of local climate strategy. The survey of REC Turkey conducted with municipalities as indicated in Chapter 4 showed that Turkish municipalities do not take climate change as an important and challenging problem and they hardly perform activities on this field. In this sense, even though Gaziantep, Nilüfer and Seferihisar municipalities' performance in combating climate problem is not at a sufficient level compared to international examples, they have taken certain steps and may well serve as information sources for other cities in Turkey that have not develop a climate policy yet. In this context, TMNs should find a way to focus more on passive cities to stimulate them for further efforts. Considering the urgency of climate action, more cities should be involved in transnational activity because cities are the athletes of climate parkour. Also, support of national government is needed for increasing capacities of municipalities because in current situation, municipalities perform a voluntary task, which they are not formally obliged in the eye of Turkish legislation. In other words, cities should not be left alone to combat climate problem, but should be supported by national governments.

Although networks can often not reach passive cities through diffusion strategies, the presence of governing bodies who are at least partially motivated to develop climate friendly policies leads to diffusion strategies to proceed (Hakelberg, 2011, p.54). Thus, learning and imitation processes have been observed as two main diffusion processes for Gaziantep, Nilüfer and Seferihisar municipalities in common despite not being pioneers in general terms. Competition only in local terms, on the other hand, is seen only in Gaziantep case since it has a competitive advantage in Turkey by having prepared local climate action plan at the first place.

### **5.5.2. The Extent that TMNs Affect Local Policy- and Decision-Making Processes of Gaziantep, Nilüfer and Seferihisar Municipalities**

According to Kern and Alber (2008, p.5), municipalities can deploy four modes of governance within the framework of local climate policy, including self-governing, governing through enabling, governing by provision and governing by authority. Self-governing refers to the capacity of municipalities to govern their activities in which municipalities show leadership and commitment to addressing climate change, for example energy efficiency improvements of municipal buildings. Governing through enabling refers to coordinating role of municipalities which deployed mechanisms to enable other actors to reduce GHG emissions. Governing by provision refers to delivery of services and resources through infrastructure and financial means by municipality, for example providing public transport or waste facilities. Governing by authority refers to that municipalities use powers of regulation in order to reduce GHG emissions. Municipalities may deploy a combination of these four modes of urban climate governance in seeking to address climate change. In this context, Table 23 indicates the actions of Gaziantep, Nilüfer and Seferihisar municipalities, which are categorized with regards to four modes of governing. Bold ones are the actions on which TMNs have direct or indirect impact to be realized.

**Table 23:** Actions of Gaziantep, Nilüfer and Seferihisar Municipalities within the context of Urban Climate Governance

Municipality	Mode of Governing	Actions
Seferihisar	Self-Governing	<ul style="list-style-type: none"> <li>•Green fleets (within the context of SEAP by Covenant of Mayors)</li> <li>•Energy efficiency schemes in municipal buildings (within the context of SEAP by Covenant of Mayors)</li> </ul>
	Governing through Enabling	<ul style="list-style-type: none"> <li>•Campaigns for energy efficiency (Display Campaign by Energy Cities; Local Energy Days by Covenant of Mayors)</li> <li>•Advice on energy efficiency to businesses and citizens (ENGAGE Campaign by Energy Cities)</li> <li>•Promotion of the use of renewable energy</li> </ul>
	Governing by Provision	<ul style="list-style-type: none"> <li>•Clean energy service provision (Photovoltaic solar panels)</li> <li>•Waste service provision</li> <li>•Recycling, composting and reuse schemes</li> </ul>
	Governing by Authority	<ul style="list-style-type: none"> <li>•Strategic energy planning to enhance energy conservation (SEAP by Covenant of Mayors)</li> </ul>
Nilüfer	Self-Governing	<ul style="list-style-type: none"> <li>•Energy efficiency schemes in municipal buildings (within the context of SEAP by Covenant of Mayors)</li> <li>•Eco-house and renewable energy demonstration projects (Solar Harvest Project; %100 Recycling House Project; Green House)</li> <li>•Mobility management for employees</li> <li>•Green fleets (within the context of SEAP by Covenant of Mayors)</li> <li>•Demonstration projects – house or neighbourhood scale (Building a Model Ranch project)</li> <li>•Eco-house and renewable energy demonstration projects. (Green House)</li> </ul>
	Governing through Enabling	<ul style="list-style-type: none"> <li>•Campaigns for energy efficiency (Watch out for Cyclist Project; Small Steps Lead to Big Marks; Change Your Bags, Change Your Future; Green Nilüfer Week; Waste Oil Collecting Competition; Energy Efficient Thermal Insulation; Industry, Climate Change and Technology Platform)</li> <li>•Promotion of the use of renewable energy</li> <li>•Education campaigns</li> <li>•Campaigns for reducing, reusing and recycling waste (Packaging Waste Sculpture Competition)</li> </ul>

**Table 23 (continued)**

Nilüfer	Governing by Provision	<ul style="list-style-type: none"> <li>• <b>Clean energy service provision (Energy Cooperative)</b></li> <li>• Waste service provision</li> <li>• Installations for recycling, composting and ‘waste to energy’ facilities (Cogeneration Project)</li> <li>• Recycling, composting and reuse schemes</li> </ul>
	Governing by Authority	<ul style="list-style-type: none"> <li>• <b>Strategic energy planning to enhance energy conservation (SEAP by Covenant of Mayors)</b></li> <li>• <b>Planning of sites for renewable installations (Eco-City; Energy Efficient Urban Transformation Project)</b></li> </ul>
Gaziantep	Self-Governing	<ul style="list-style-type: none"> <li>• Energy efficiency schemes in municipal buildings</li> <li>• Eco-house and renewable energy demonstration projects. (Green House)</li> <li>• Green fleets</li> <li>• Demonstration projects – house or neighbourhood scale.</li> </ul>
	Governing through Enabling	<ul style="list-style-type: none"> <li>• <b>Campaigns for energy efficiency (EU-GUGLE; ENGAGE)</b></li> <li>• <b>Promotion of the use of renewable energy</b></li> <li>• <b>Advice on energy efficiency to businesses and citizens (ENGAGE Campaign by Energy Cities)</b></li> <li>• <b>Education campaigns (ENGAGE Campaign by Energy Cities)</b></li> </ul>
	Governing by Provision	<ul style="list-style-type: none"> <li>• Clean energy service provision</li> <li>• Public transport service provision</li> <li>• Provision of infrastructure for alternative forms of transport</li> <li>• Waste service provision</li> <li>• Installations for recycling, composting and ‘waste to energy’ facilities</li> <li>• Recycling, composting and reuse schemes</li> </ul>
	Governing by Authority	<ul style="list-style-type: none"> <li>• Strategic energy planning to enhance energy conservation (Energy Action Plan)</li> <li>• Transport planning to limit car use and provide walking and cycling infrastructure (Transportation Master Plan)</li> <li>• Planning of sites for renewable installations (Ecological City)</li> </ul>

Source: Adapted from Kern. & Alber (2008, p.6)

As it shown in Table 23 above, TMNs have substantially contributed to mitigation policies of these municipalities, especially of Seferihisar and Nilüfer. Although Nilüfer Municipality had already focused on environmental issues before TMN membership, TMNs impact on Nilüfer environmental policy making is remarkable since their projects become comprehensive and pinpoint actions towards climate-friendly policies and SEAP was prepared. This result is also consistent with the main motivation of Nilüfer Municipality when joining TMNs, which is conducting climate related studies in a more disciplined and systematic way. Accordingly, Seferihisar Municipality had focused more on rural development before joining TMNs, thus, the municipality sought to realize climate-friendly projects by joining TMNs and adopted SEAP. In this sense, Seferihisar membership to TMNs has served this purpose. For Gaziantep Metropolitan Municipality, on the other hand, TMNs membership seems to contribute only to enabling mode of governance of the municipality, in which several awareness raising and education campaigns for energy efficiency was realized with the help of TMNs. This is because Gaziantep Metropolitan Municipality had already adopted a climate strategy before joining TMNs.

However, there are several limitations faced by Gaziantep, Nilüfer and Seferihisar municipalities. The limitations caused problems in fully concentrating on TMNs and on realizing corresponding activities in climate field. First of all, all of the municipalities highlighted that they had substantial difficulties acquiring data. From district to metropolitan municipality, acquiring data constitutes a major biggest problem. Because they cannot reach accurate and updated data easily, it becomes harder to prepare an emissions inventory and set targets. At this point, political support becomes one of the key factors to manage the process efficiently. For instance, Gaziantep Metropolitan Municipality obtained data for the GCCAP by visiting a large number of institutions. Therefore, as Tercan highlights, political support is very important when data is needed.

Second limitation is the capacity deficiency meaning the lack of qualified personnel, which would work only for transnational activities. Since municipal personnel have

other routine tasks that are supposed to be maintained, municipalities could not fully focus on the networks activity, thus, they could not entirely integrate with the networks. Finally, as Turkey is not a member country to the EU, municipalities could not benefit from every financial opportunity to which TMNs help cities access. Not benefiting from funding because of being a non-EU country poses a significant problem for municipalities because of the fact that they have limited budget to realize climate friendly projects that do not have a high priority on the political agenda.

Despite the limitations faced by municipalities, transnational networking is found very valuable, inspiring and stimulating by all of the interviewees of this research. In conferences and workshops of TMNs, they find chance to draw lessons from solutions of the peers which have already faced a similar climate problem. They work to attend these meetings to the extent permitted by their budget, time and capacity. Even if they have political enthusiasm towards taking climate-friendly actions by learning from their peers; budget, time and capacity become the challenging factors for them to properly focus on. In fact, this is where three degrees of municipalities differentiate. Seferihisar as a small municipality has difficulties to fully attend those meetings since it has a relatively limited budget and personnel who already have a large number of routine tasks rather than focusing on TMNs. Still, Seferihisar has managed to prepare its SEAP and reduce emissions by 24%. In this sense, enthusiasm and determination of a city become decisive in transnational activity and make diffusion strategies to proceed despite a number of restrictions facing it.

In conclusion, Nilüfer and Seferihisar municipalities' actions on climate change mitigation can be clearly attributed to their involvement in networks. In this sense, TMNs help the municipality to bring order into its studies by directing them towards a concrete goal and provide a roadmap on climate change strategies and actions which the municipality simply follows. For Gaziantep, membership to TMNs contributed to technical capacity of the municipality to be improved as well as enabled the municipality to reach funding non-straightforwardly, by making a positive impact on funder.

**Table 24:** Summary of Motivations and Benefits of TMNs for Gaziantep, Nilüfer and Seferihisar Municipalities

<b>Motivations to Become Member in TMNs</b>			
Gaziantep		-Information and knowledge exchange -Accessing to funds and grants	
Nilüfer		-Information and knowledge exchange -Accessing to funds and grants	
Seferihisar		-Information and knowledge exchange -Accessing to funds and grants	
<b>Gains</b>		<b>YES</b>	<b>NO</b>
Information	Gaziantep	-In conferences and workshops	
	Nilüfer	-In conferences and workshops	
	Seferihisar	-In conferences and workshops	
Access to Finance	Gaziantep	- URBAN-LEDS Project of ICLEI -EU-GUGLE via EU 7th Framework Programme	
	Nilüfer	-REPLICATE Project via HORIZON 2020	
	Seferihisar		-Could not reach funds because of not being a member of EU
Award	Gaziantep	-Best case for GCCAP	
	Nilüfer		-No award
	Seferihisar		-No award
Impact of Membership	Gaziantep	-Reached funds through partnership -Increased technical capacity through workshops -Increased recognition -Shared experience in conferences	
	Nilüfer	-Adopted climate strategy - GHG emissions reductions -Reached funds through partnership -Increased technical capacity through workshops -Shared experience in conferences	
	Seferihisar	-Adopted climate strategy - GHG emissions reductions -Increased technical capacity through workshops -Shared experience in conferences	

**Table 24 (continued)**

Legitimation	Gaziantep	-Increased positive reputation and recognition	- Citizens not aware of membership
	Nilüfer	-Increased positive reputation and recognition	- Citizens not aware of membership
	Seferihisar	-Increased positive reputation and recognition	- Citizens not aware of membership
Challenges	Gaziantep	-Data collection	
	Nilüfer	-Data collection	
	Seferihisar	-Data collection -Limited budget, personnel and time	

Source: Prepared by the author

## CHAPTER 6

### CONCLUSION

This study mainly focused on understanding the reasons behind the Turkish municipalities' membership to TMNs as well as the outcomes of governing the climate problem through the TMNs. In this sense, this study had two major aims: the first one being the identification of the motivations and dynamics that led municipalities to become members of the TMNs, and the second being the designation of the extent that these networks affect local policy- and decision-making processes of the member cities. Therefore, the empirical research on three cases from Turkey indicated what member cities gained from the TMNs in terms of practical and concrete outputs as well as of changes in the local policy- and decision-making processes. Gaziantep Metropolitan Municipality, Nilüfer Municipality, and Seferihisar Municipality, representing 3 different hierarchies of municipalities, were chosen as three case areas of the research as they are found to have memberships to several important TMNs.

#### **6.1. Summary and Findings of the Research**

This study covered six chapters when introduction and conclusion included. First chapter of this study gave details on thesis content, aim and scope as well as methodology used in realizing the study.

Second chapter included climate change as a global environmental problem. In this context, how observed changes in climate evolved and what future projections of climate change show in addition to global responses to address climate change were covered throughout the chapter. Climate change is one of the most serious problems facing humankind. Extreme weather events, high temperatures, drought, heavy rains, storms etc. can be indicated as several major impacts of climate change. Industrial revolution

comprised a milestone due to the fact that high concentration of GHG emitted in the atmosphere through a high degree of fossil fuel consumption. High concentrations of GHG resulted in increase in temperatures and sea level rise as well as decline in snow cover and ice. IPCC clearly highlighted that human activity is the main contributor to GHG concentrations, thus, climate change (IPCC, 2014c). As impacts of environmental issues became explicit, they gained global attention. Stockholm Conference, which is first major conference on international environmental issues of United Nations, was followed by numerous conferences and meetings. In this context, Kyoto Protocol was a milestone document for international climate regime as it aimed to reduce GHG emissions of the world's industrialized nations. Nevertheless, Kyoto Protocol failed to slow GHG emissions because of the unwillingness of some countries. In COP 21, a new legally binding global agreement addressing climate change for the period beyond 2020 was agreed by 195 nations with the aim of keeping the temperature increase below 2 °C above preindustrial levels. However, INDCs of nations fall short to achieve this target. As nations continue to invest fossil fuels, it seems unlikely to limit the global temperature increase well below to 2 °C. In brief, this chapter included scientific evaluation and political framework of climate change as a global environmental problem.

Third chapter was on the importance of cities in combating climate change. After failure of international negotiations, cities gained increasing attention since they are highly affected from adverse impacts of climate change and accepted as a part of the climate problem and also a part of the solution for several reasons. Today, more than half of the world's population live in cities producing higher levels of GHG emissions with increasing rate of urbanization. Furthermore, large economic activity is concentrated in cities which consume 78% world's energy and produce a large amount of GHG emissions. Nonetheless, cities are accepted as a part of the solution to climate problem because cities can better succeed to address climate change through controlling energy, transportation, land use planning etc. Local authorities can control community energy use via several tools and potentials in ways that national governments cannot (ICLEI,

n.d.-b, p.10; Fay, 2007, p.5). Also, cities provide more effective communication between citizens and policy makers than any other groups can. Thus, cities' role in combating climate change marks a different tack from international and national context because national and international efforts fall too short and remain clumsy to achieve meaningful results. In this sense, author focused on governing climate change at urban level and modes of governing which municipalities deploy to address climate change. Furthermore, the importance of vertical and horizontal collaboration for urban climate governance was provided. Vertical collaboration is characterized by the relation between municipalities, regional authorities and national governments, horizontal collaboration indicates the relation between different agencies and policy divisions within municipal governments, which may emerge in the form of transnational municipal networks. At this point, as the main subject of the thesis, TMNs were examined. Having emerged since the early 1990s, TMNs aim to guide local governments in directing their local climate change strategies. They provide knowledge, experience, know-how and best practices for their members and improve their local capacity to combat climate change. Moreover, they provide an opportunity for municipalities to reach financial sources through partnerships. After defining general characteristics and structure of TMNs, how TMNs influence their members' decision making was emphasized in this chapter.

In the next chapter of this study, technical and policy issues of climatic change in Turkey were examined. First of all, observed changes in climate and climate change projections for Turkey were indicated. According to IPCC (2013, p.1266), Mediterranean Basin in which Turkey is located is one of the most vulnerable regions to adverse impacts of climate change. Thus, Turkey is substantially affected from the adverse impacts of climate change considering the changes in temperatures, precipitation, glaciers, peak discharge, sea level rise and number of natural hazards, and projected to be suffering from the further impacts of climate change in the future (Şen, 2013, p.13). Moreover, GHG emissions of Turkey continue to increase. In fact emissions increased 143.5% above 1990 levels in 2013 and 67.8% of total emissions corresponds to energy sector (TURKSTAT, 2012; TURKSTAT, 2015b). Next, Turkey's position in

international climate regime and institutional arrangements for climate change was emphasized. However, Turkey persists on investing fossil fuels which is the major contributor to global warming and avoids to have quantified emission reduction target in any foreseeable future (UNFCCC, 2016, p.40). In addition, by focusing on Turkish cities, a discussion on involvement of Turkish cities in climate policy was provided. Although official documents of Turkey's national climate change policy highlights the importance of local governments and The Integrated Urban Development Strategy and Action Plan calls for the energy efficient and climate-sensitive strategies for settlements, local governments have not been given direct responsibility to combat climate change by Turkish municipal laws. According to the results of a survey conducted with Turkish municipalities by REC Turkey, Turkish municipalities do not see Climate Change as an important and challenging issue compared to other environmental problems, and they hardly take action on this field. Despite of this dramatic result of the survey, several cities have adopted a local climate strategy by joining TMNs or by themselves with voluntary efforts since the last decade. 29 Turkish cities found to be member of TMNs.

Chapter 5 covered the case study of the thesis. The aim of the study was to identify the motivations and dynamics behind Turkish municipalities' membership to TMNs and to clarify the extent to which TMNs have affected local policy and decision making processes of member municipalities. In line with this purpose, three municipalities were chosen as case areas: one metropolitan municipality, one metropolitan district municipality and one district municipality. However, these cities did not show a significant difference in terms of motivations to join TMNs and decision making processes, resulting from their administrative differences. In other words, the difference was not because of their administrative structures but because of visionary mayors and their positions in their political parties.

As the first case study, Gaziantep was chosen as one of the case areas among metropolitan municipalities. Gaziantep is a member of three different networks including ICLEI, Energy Cities and Eurocities. However, Gaziantep Metropolitan Municipality focus more on ICLEI and Energy Cities by taking place of their projects. In

spite of the fact that the number of municipal actions on climate change has decreased after local elections held on 2014 when new mayor took office, Gaziantep still stands out with its Climate Action Plan prepared in 2011. Within the scope of action plan, Gaziantep committed to reduce its GHG emissions and energy consumption by 20% by the year 2023. Besides, the municipality has been preparing Energy Action Plan. Therefore, Gaziantep Metropolitan Municipality was chosen out of six possible metropolitan municipalities. As the second case area of the research, Nilüfer Municipality which is a metropolitan district municipality in Bursa has focused on environmental studies recently. Nilüfer stands out with its membership to five different TMNs including CCP, Covenant of Mayors, Energy Cities, Eurocities and Mayors Adapt, thus, Nilüfer has the largest number of membership to TMNs among Turkish municipalities. Still, Nilüfer Municipality focus more on Covenant of Mayors since it results in preparation of SEAP as a concrete output. In this sense, Nilüfer has just completed its SEAP with 20% emission reduction commitment by 2020. Moreover, Nilüfer' membership to Mayors Adapt is important because Nilüfer is the only Turkish member municipality of the network. Because membership to Mayors Adapt is a new process, its impact could not evaluated. On the other hand, after establishing an Energy Department by forming Energy Board of Directors, Nilüfer Municipality has been taking several actions in terms of renewable energy sources and energy efficiency. For this reason, Nilüfer became the second case area in this study. Finally, Seferihisar Municipality was chosen as the last case area. Seferihisar Municipality joined four different TMNs including ICLEI, Covenant of Mayors, Energy Cities and Compact of Mayors, however the focus of municipality is more on Covenant of Mayors because the network expects SEAP to be prepared. The municipality pledged to reduce emissions by 24% within the context of SEAP. Besides, Seferihisar is the first Cittaslow in Turkey. Because Seferihisar Municipality has already focused sustainable environmental policies as a Slow City, it was chosen as another case area for this study.

For this research, the following approach was adopted. First of all, the relevant literature, publications, reports, news and academic publications were reviewed in order to obtain

sufficient knowledge on these municipalities and their environmental policies. Next, 5 semi-structured interviews were conducted in November and December 2015 with officials from Gaziantep, Nilüfer and Seferihisar municipalities who have a comprehensive knowledge on climate-friendly policies of their municipalities and the membership processes of their municipalities with TMNs. The inquiries of semi-structured interview were organized as below:

1. How did you decide to join TMNs?
2. How did your membership process evolved?
3. Do you attend meetings? Do you organize personnel trainings?
4. Which studies did/do you conduct after you joined TMNs?
5. What did you expect? Did your expectations realized? If not, why?
6. How does your relationship with TMNs proceed?

After providing background information on Seferihisar, Nilüfer and Gaziantep respectively, these cases were evaluated in two parts in the light of the responses to the inquiries above. The first part of the evaluation was on motivations and dynamics that led Gaziantep, Nilüfer and Seferihisar municipalities to join TMNs. In this context, their motivations were analyzed within the scope of the concept of governance via diffusion through learning, imitation and competition.

Diffusion via learning occurred in these cases because of the following reasons. Benefiting from experiences, knowledge, expertise, innovation and best practices comprised the first reason why Gaziantep, Nilüfer and Seferihisar municipalities engage in transnational activity. These three municipalities highlighted that the networks help improve technical capacity of municipalities by sharing knowledge and experience and best practices among peers and increase the number of qualified personnel via training activities, after emphasizing the lack of the necessary technical capacity and knowledge in order to act locally in climate change. The access to funding constituted the second motivation behind Gaziantep, Nilüfer and Seferihisar municipalities' memberships to

TMNs. Since municipalities have limited resources, TMNs become effective tools to reach funds and grants.

Diffusion via imitation was observed in these cases because Gaziantep, Nilüfer and Seferihisar municipalities imitated pioneers of the networks when deciding to join them, aiming to catch up with cities which have already come a long way. In other words, these three municipalities imitated previous adapters in order to manage the process in response to normative expectations. Unlike Gaziantep Metropolitan Municipality, Seferihisar and Nilüfer municipalities were affected from previous adopters to adopt a local climate strategy as an emerging policy field. Therefore, norm cascade occurred in these three cases through three motivations: legitimation, conformity and esteem.

For the final diffusion process, diffusion via competition could not be observed in these cases. Nevertheless, it could be asserted that local political competition existed considering the Gaziantep case because the municipality influenced local climate policy development by playing the role of local leader in that sense, thus, will enjoy minimizing adaptation costs in terms of climate policy implementation as pioneer in this field.

Moreover, Gaziantep, Nilüfer and Seferihisar can be accepted as passive cities since they are not that much active in network activities and are not stimulated to enhance their performance, which may resulted from Turkey's being a non-EU country. Although they continue to pay annual fees, they do not make further effort to set more ambitious targets or to go beyond what networks demand. However, these cities can be counted on the fingers of one hand in Turkey in terms of adoption of local climate strategy. In this sense, even though Gaziantep, Nilüfer and Seferihisar municipalities' performance in combating climate problem is not at a sufficient level, they have taken certain steps in which they may serve information source for other cities in Turkey that have not develop a climate policy yet, thus, they can be accepted as pioneer cities of Turkey. Although passive cities are often not reached by TMNs through diffusion strategies, the presence of motivated officials to develop climate friendly policies in

Gaziantep, Nilüfer and Seferihisar municipalities led to diffusion strategies to proceed. Therefore, learning and imitation processes have been observed as two main diffusion processes for Gaziantep, Nilüfer and Seferihisar municipalities in common in spite of not being pioneers in transnational context.

The second part of the evaluation was on the extent that TMNs affect local policy- and decision-making processes of Gaziantep, Nilüfer and Seferihisar municipalities. When actions in terms of self-governing, governing through enabling, governing by provision and governing by authority deployed by these three municipalities were analyzed, it can be clearly said that TMNs have substantially contributed to mitigation policies of these municipalities, especially of Seferihisar and Nilüfer. Although Nilüfer Municipality had already attached importance to environmental issues before joining TMNs, TMNs impact on Nilüfer's environmental policy making was significant since their projects become comprehensive and pinpoint actions towards climate-friendly policies and TMNs conducted to preparation of SEAP. This result is also consistent with the main motivation of Nilüfer Municipality when joining TMNs, which is conducting climate related studies in a more disciplined and systematic way. In a similar way, the focus of Seferihisar Municipality was more on rural development before joining TMNs, thus, the municipality aimed to implement climate-friendly policies by joining TMNs and managed to adopt SEAP. For Gaziantep Metropolitan Municipality, on the other hand, TMNs membership seemed to have contributed only to enabling mode of governance of the municipality, in which several awareness raising and education campaigns for energy efficiency was realized through TMNs. This is because Gaziantep Metropolitan Municipality had already developed a climate strategy before joining TMNs.

On the other hand, interviews revealed that there are some challenges for Gaziantep, Nilüfer and Seferihisar municipalities to fully concentrate on TMNs and on taking corresponding actions in climate field. In fact, these issues include problem of acquiring data and capacity deficiency. While the former requires political support in order to overcome, the latter covers lack of qualified personnel and financial difficulties. Capacity deficiency manifests itself particularly in Seferihisar as a small municipality

with limited resources. Still, enthusiasm and determination of a city become decisive in transnational activity and enable diffusion strategies to proceed even though several challenges exist.

In conclusion, increased information resulted in the adoption of local climate strategy for Seferihisar and Nilüfer municipalities, because increased knowledge is accompanied by efficiency to solve the corresponding climate problem. Therefore, Nilüfer and Seferihisar municipalities' actions on climate change mitigation can be clearly attributed to their involvement in networks. In this sense, TMNs help the municipality to bring order into its studies by directing them towards a concrete goal and provide a roadmap on climate strategies and actions which the municipality simply follows. For Gaziantep, TMNs membership contributed to technical capacity of the municipality to be improved and to reaching funding on which TMNs membership made a positive impact.

## **6.2. Policy Implications**

To begin with, climate change policies should be designed in an integrated manner. Although more importance is given to mitigation policies in Turkey, adaptation policies should be considered together with mitigation measures. Turkey locates in a region which is one of the most vulnerable areas to climate change, thus, it is not enough to reduce GHG emissions without adapting to its adverse impacts. When they are considered together, cities become more resistant to climate change by taking significant measures, thus, become more livable places with increased quality of life. However, addressing climate change requires urgent action. GHG emissions increase, earth gets warmer and climate is changing. In fact, even if GHG are not emitted anymore, they will result in further global warming due to their long-lasting characteristics in the atmosphere (IPCC, 2013, p.1106). Although most cities have turned a blind eye to climate change and its policies, they can be ones which will suffer most from its impacts eventually. It is frequently encountered in Turkey that the mayor of a city which is damaged due to a climate related disaster tends to claim "it comes from Allah". To put it differently, although the scale of impact is directly related with improper practices in

terms of urban planning and taking no measures needed to adapt, negligence become a dominant behavior among cities with no proper mitigation and adaptation policies. Although some pioneer cities of Turkey have taken certain steps in mitigation, adaptation have been a concern of only a few municipalities. This is the very reason Turkish municipalities should consider mitigation and adaptation policies together by designing them in a consistent context. Even though it is very unlikely right now, climate mitigation and adaptation should be mandatory for all municipalities.

Climate change requires policy coordination vertically, horizontally, and across sectors in order to design and implement climate policy responses to mitigate GHG emissions and to adapt to climatic impacts. Thus, in the context of vertical coordination, support of national government is needed for increasing capacities of municipalities and for paving the way for local action because in current situation, municipalities perform a voluntary task, which they are not formally obliged in the eye of Turkish legislation. Thus, cooperation and collaboration between local and national governments can be critical to govern climate change at the local level. In this sense, cities should not be left alone to combat climate problem, but should be supported by national governments. With the political support, cities can achieve more to address climate change. In fact, the ministry has started a project to establish a national network which aims to create climate-friendly cities and increase competence of cities in terms of adopting climate change strategy by providing financial support. A national network can be more attractive for municipalities since their problems and challenges are almost common and they are governed through the same Turkish legal context.

Furthermore, the ministry should deploy programs which promote local climate actions. Still, Climate Change Department of Ministry of Environment and Urbanization should encourage and support municipalities to join TMNs because municipalities have limited technical capacity to combat climate problem at the local level and TMNs are highly experienced in this respect. More cities should be involved in transnational activity considering the urgency of climate action because case areas showed that TMNs membership contributed to develop local climate strategy or to enhance it through

capacity increase and funding schemes. Case study of the research revealed that joining the networks enabled cities to develop climate friendly policies at local level by disseminating information. On the other hand, TMNs should find a way to focus more on passive cities including Gaziantep, Nilüfer and Seferihisar to stimulate them for further efforts.

Citizen awareness is vital for climate actions to succeed because citizens' priorities become municipal priorities. However, citizens in Gaziantep, Nilüfer and Seferihisar are hardly aware of municipal action on climate change, thus, climate actions remain limited without public awareness. Not only should citizens be informed about the adverse impacts of climate change at the local level but also the way they perceive the vulnerabilities should be revealed. Therefore, in order for municipalities to implement climate policies, first it should take place at the top of citizens' agenda. Furthermore, not only citizens but also the presence of a mayor who is enthusiastic about taking local climate action are vital to adopt climate strategies.

### **6.3. Recommendations for Further Studies**

In this thesis it was intended to understand the motivations and dynamics behind the local governments' membership to Transnational Municipal Networks (TMNs) and the outcomes of TMN membership in climate governance. To make a contribution to the previous work in the literature; cases of Gaziantep, Nilüfer and Seferihisar municipalities have been examined in detail. Local governments contribute to policy dissemination by joining TMNs. Furthermore, they benefit from increased knowledge, positive reputation and recognition as well as funding opportunities as a result of their TMN connection.

Moreover, it could be mentioned that mayors gain legitimation and support through networking. This research shows that local enthusiasm and mayors' determination are the decisive factors for transnational activity and these factors could enable diffusion strategies at local level even though several challenges exist. On the other hand, local

enthusiasm and determination run short to explain the reasons why mayors seek to join transnational networking. In Turkey, for instance, networking is neither promoted by central government nor by the general public in cities. In other words, there are neither top-down nor bottom-up reasons for cities to take part in transnational networking processes. Interviewees in Gaziantep, Nilüfer and Seferihisar Municipalities clearly stated that citizens are not aware of their municipalities' participation in networks, so, bottom-up push did not occur in transnational activity of municipalities. Besides, top-down encouragement did not occur in networking activities of the case study cities because network membership is not promoted by central government. Therefore, it seems that initiatives and determination of some mayors appear as the major motivation and factor for network membership in Turkey. This makes the following question crucial: *why are mayors so decisive and enthusiastic in transnational networking activities?*

In fact, local authorities in Turkey are controlled by the central government through administrative tutelage, which means that mayors are not given extensive power and authorities. Mayors are not very powerful actors and their autonomy in their relation to federal politicians and decision-makers is limited. In this sense, mayors may be in search for ways to respond to the dissatisfaction they get from regulatory status quo. They may aim to increase their legitimation and action-base as well as to go beyond the mentality of their political parties through networking. Thus, this process may be explained through the concept of *autonomy building* since mayors seek to build autonomy and to be taken seriously by the central government through networking.

Autonomy building may enable mayors to increase their power and legitimation. Thus, it is important to discuss and examine the economic, ideological, political and cultural dynamics behind mayor-led local initiatives. In fact, this research reveals the importance of answering of some further questions, like for instance, *is networking realized in order to provide economic development of a city or are there other factors to explain the motivations of mayor-led networking initiatives?* In Gaziantep, Nilüfer and Seferihisar cities, mayors aim to contribute to the branding of their cities as well as to benefit from

several advantages provided by networks. At this point, network initiatives mentioned here do not refer only networks focusing on climate change, but all networks in which local governments join in order to combat social, economic and environmental problems of their cities in an effective manner. Therefore, future research should focus on finding out *why mayors are so enthusiastic to join networking processes* and *how networking strategies of municipalities evolve*.

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## APPENDICES

### APPENDIX A: TURKISH SUMMARY

İklimler hızla değişmektedir. Yüksek sıcaklıklar, kuraklık, şiddetli yağmurlar, fırtına, deniz seviyesinde yükselme gibi aşırı iklim olayları, insanoğlunun sıklıkla karşılaştığı sorunlar arasındadır. İklim değişikliği yeni bir olgu değildir. Öyle ki, iklim 4,5 milyar yıllık dünya tarihinin başından beri çeşitli seviyelerde değişiklik göstermiştir. Buna rağmen, Sanayi Devrimi bu konuda bir dönüm noktası olmuş, beşeri faaliyetler iklim değişikliğinin doğal sürecini doğrudan etkilemiştir. Sanayi Devrimi'nden bu yana atmosferdeki sera gazı konsantrasyonu, artan fosil yakıt tüketimi, arazi kullanımı ve arazi örtüsü değişimi sebebiyle ciddi oranda artış göstermiştir. Bu sebeple, UNFCCC'nin de belirttiği gibi, Sanayi Devrimi sonrası beşeri faaliyetler iklim değişikliğinin temel sebeplerinden birini oluşturmaktadır (UNFCCC, 1992, p.7). Etkileri göz önünde bulundurulduğunda, iklim değişikliği tüm zamanların en ciddi ve zorlu problemlerinden bir tanesi olarak ortaya çıkmaktadır.

İklim değişikliği, küresel çözümler gerektiren küresel bir tehdit olarak kabul edilmektedir. Çevre konusunda ilk büyük konferans olan Stockholm Konferansı'ndan beri sayısız uluslararası toplantılar ve konferanslar düzenlenmesine rağmen, emisyon azaltımı konusunda somut bir başarı sağlanamamıştır. Paris'te yeni bir anlaşmanın kabul edilmesine rağmen, bilim insanları ülkelerin fosil yakıt kullanımına devam etmeleri halinde sıcaklık artışını 2°C'nin altında tutma hedefinin gerçekten uzak olduğunu vurgulamaktadır.

İklim politikası son 20 yıldır çok sayıda belediyenin harekete geçmesine şahit olmuştur. Merkezi yönetimlerin isteksizliği ve uluslararası iklim müzakerelerinin sonuçsuz

kalması sebebiyle, 2000’li yıllarla birlikte kentlerin iklim deęişikliği ile mücadeledeki rolü artmıştır.

1990’lı yılların başından itibaren kent tabanlı bir girişim olarak ortaya çıkan Ulusötesi Kent Ağları, yerel yönetimlere, yerel iklim deęişikliği politikalarını şekillendirme konusunda yön vermektedir. Dünyanın çeşitli bölgelerindeki birçok belediye, yerel iklim politikaları geliştirmek amacıyla bu ağlara gönüllü bir şekilde üye olmaktadır. Bu ağlar, üye belediyelerin teknik kapasitelerini artırmalarına, bilgiye ulaşmalarına, diğer üye kentlerle tecrübelerini paylaşmalarına ve ortaklıklar vasıtası ile finansmana ulaşmalarına olanak sağlamaktadır. Bu ağların amaçları birbirinin hemen hemen aynısı olmakla birlikte; bu amaçlar belediyelerin sera gazı azaltım taahhüdünde bulunmasının sağlanması, iklim deęişikliği ile mücadele konusunda yerel kapasitenin artırılması, üyeler arasındaki bilgi ve tecrübe paylaşımının sağlanması ve üye kentlerin çıkarlarının ulusal, ulusüstü ve uluslararası boyutta temsil edilmesi olarak sıralanabilir (Kern & Bulkeley, 2009, p.317; Betsill & Bulkeley, 2004, p.474).

Bu çalışma, belediyelerin ağlara üye olma sebeplerinin yanı sıra iklim probleminin ağlar üzerinden yönetiminin sonuçlarına odaklanmaktadır. Bu çalışmanın iki amacı vardır. Birincisi, belediyelerin ağlara üye olmasının arkasında yatan motivasyon ve dinamikleri belirlemek; ikincisi ise bu ağların, üye kentlerin yerel politika ve karar alma süreçlerini ne ölçüde etkilediğini ortaya koymaktır. Böylelikle, Türkiye’deki üç belediye üzerine yapılan ampirik araştırma sayesinde üye belediyelerin ağlardan elde ettiği uygulamaya yönelik ve somut kazanımlara ek olarak yerel politika ve karar alma süreçlerinde yaşanan deęişim ortaya konmuştur. Bu kapsamda, bazı önemli Ulusötesi Kent Ağları’na üyelikleri bulunan Gaziantep Büyükşehir Belediyesi, Nilüfer Belediyesi ve Seferihisar Belediyesi örnekleri incelenecektir. Bu nedenle, bu tezde *belediyelerin ağlara üye olmasının arkasında yatan motivasyon ve dinamikler nelerdir ve bu ağlar üye kentlerin yerel politika ve karar alma süreçlerini ne ölçüde etkilemiştir* sorularına yanıt aranmıştır.

Bu çalışma Ulusötesi Kent Ağları üzerinden belediyelerin iklim yönetişimine odaklanmaktadır. Bu kapsamda, iklim değişikliği alanında aktif olan C40, ICLEI, Cities for Climate Protection (CCP), Covenant of Mayors, Energy Cities, Eurocities, Compact of Mayor ve Mayors Adapt ağlarına yoğunlaşmıştır. Bu sebeple, bu ağlara üyelikleri bulunan bazı belediyeler, örnek alan incelemesi olarak seçilmek üzere değerlendirilmiştir. Sonuç olarak 29 belediyenin bu ağlara üye olduğu saptanmıştır. Bu kentlerden bazıları, 1990-2011 yılları arasında toplam sera gazı emisyonlarını %124 artıran Türkiye'nin sahip olduğu bu artışa en çok katkı yapan kentler arasındadır (Seragazı Emisyon Envanteri, 2013). Bu yüzden bu kentlerin iklim politikası stratejileri diğer kentlerin iklim mücadelesi için önemli bir rol oynamaktadır.

Kern ve Bulkeley'e göre, mevcut ağ teorilerinin ötesine geçip, ağların ne yaptığı ve nasıl başarı sağladığına odaklanmak gerekmektedir (2009, p.310). Bulkeley'in de belirttiği gibi, kentsel iklim yönetişimine yönelik yapılan araştırmalar genel olarak Avrupa, Kuzey Amerika ve Avustralya'daki bir grup kente yoğunlaşmaktadır (2009). Dolayısıyla bu çalışma Türkiye'deki belediyeleri örnek alan olarak inceleyerek bu alandaki boşluğun giderilmesini amaçlamaktadır. Daha önce bahsedildiği gibi bu 29 belediye arasından bir büyükşehir belediyesi, bir merkez ilçe belediyesi ve bir ilçe belediyesi seçilmiştir. Burada bahsedilen merkez ilçe ve ilçe, büyükşehir belediyesine bağlı ilçeleri de içerebilir.

Ağlara üyeliği bulunan 6 büyükşehir belediyesi arasından seçilen ilk örnek alan Gaziantep Büyükşehir Belediyesi'dir. Gaziantep Büyükşehir Belediyesi'nin ICLEI, Energy Cities ve Eurocities ağlarına üyelikleri bulunmaktadır. Bunun yanı sıra, Gaziantep EU-GUGLE projesi için seçilen ortak şehirlerden bir tanesidir. 2014 yılında gerçekleşen yerel seçimlerden sonar iklim değişikliğine yönelik yapılan çalışmalar yavaşlansa da, Gaziantep 2011 yılında hazırlanmış olduğu İklim Eylem Planı dolayısıyla ön plana çıkmaktadır. Türkiye'deki ilk yerel iklim eylem planı olan Gaziantep İklim Değişikliği Eylem Planı; ulaşım, atık yönetimi, su yönetimi, hizmetler, sanayi ve konut sektörleri olmak üzere 6 sektöre yoğunlaşmıştır. Bu plan kapsamında, Gaziantep 2023

yılı itibari ile sera gazı emisyonlarını ve enerji tüketimini %20 azaltmayı taahhüt etmiştir. Buna ek olarak, Gaziantep Büyükşehir Belediyesi bir süredir Enerji Eylem Planı hazırlama çalışmalarını sürdürmektedir. Tüm bu sebeplerden dolayı, Gaziantep Büyükşehir Belediyesi 6 büyükşehir belediyesi arasından örnek alan çalışması olarak seçilmiştir.

İkinci örnek alan çalışması olarak Nilüfer Belediyesi, son zamanlarda çevre konusunda yoğun çalışmalar yapmaktadır. CCP, Covenant of Mayors, Energy Cities, Eurocities and Mayors Adapt ağlarına üyelikleri bulunan Nilüfer, 5 farklı ağa üye olduğu için diğer belediyelerden farklılaşmaktadır. Bunun yanı sıra Nilüfer Belediyesi Sürdürülebilir Enerji Eylem Planı hazırlayarak 2020 yılında sera gazı emisyonlarını %20 azaltmayı taahhüt etmiştir. Yenilenebilir enerji kaynakları ve enerji verimliliği konusunda uzun süredir projeler hazırlayan Nilüfer Belediyesi, bu kapsamda, Enerji Yönetim Kurulu'nu oluşturarak, Enerji Bürosu'nu kurmuştur. Bu yüzden Nilüfer Belediyesi, örnek inceleme yapılan bir diğer belediye olarak seçilmiştir.

Üçüncü örnek alan çalışması olarak ise Seferihisar Belediyesi seçilmiştir. Seferihisar Belediye'sinin ICLEI, Covenant of Mayors, Energy Cities ve Compact of Mayors olmak üzere 4 ağa üyeliği bulunmaktadır. Belediye, Sürdürülebilir Enerji Eylem Planı çerçevesinde %24 sera gazı emisyonu azaltımı hedeflemektedir. Bunun yanı sıra Seferihisar, küçük ölçekli kentlerin oluşturduğu, küresel ekonomi, mobilite, sanayiden ziyade çevreyi ve insanı kent yaşamının merkezine koyan, yenilenebilir enerji kaynaklarına ve sürdürülebilir bina teknolojilerine önem veren ve gönüllü bir hareket olan Citta Slow ağının bir üyesidir (Türkseven Doğrusoy & Serin, 2015, p.41). Bir Slow City olarak sürdürülebilir çevre politikalarına yönelik yapmış olduğu taahhüt düşünüldüğünde, Seferihisar'ın yereldeki iklim değişikliği mücadelesinde Ulusötesi Kent Ağları'na üyeliği daha anlamlı hale gelmektedir. Çevre yönetimi alanındaki istekliliği de göz önüne alınarak, Seferihisar bu çalışmanın üçüncü alan incelemesi olarak seçilmiştir.

Araştırma kapsamında hedeflenen cevaplara ulaşabilmek adına nitel araştırma yönteminden yararlanılmıştır. Bu kapsamda, ilgili konuda geliştirilen akademik yazın, yayınlar, raporlar ve daha önce yapılmış örnek alan çalışmaları incelenerek, iklim değişikliği, Ulusötesi Kent Ağları ve incelenen örnek alanlar hakkında kapsamlı bilgi toplamak amaçlanmıştır. Diğer bir deyişle, küresel ısınma ve onun doğal sonucu olan iklim değişikliği tanımlandıktan sonra, iklim politikasının gelişimi ortaya konmuştur. İklim politikalarında kentlerin yükselişi ve Ulusötesi Kent Ağları'nın ortaya çıkışı üzerine odaklanılmıştır. Bu sayede bu ağların mevcut durumu ortaya konarak, yerel iklim politikası üretme süreçlerine etkileri tartışılmıştır. Nitel araştırmanın veri toplama yöntemi olarak yarı yapılandırılmış görüşmeler gerçekleştirilmiştir. Bu anlamda örnek alan çalışmaları Gaziantep Büyükşehir, Nilüfer ve Seferihisar belediyelerinde tamamlanan 5 yarı-yapılandırılmış görüşme ile gerçekleştirilmiştir. İlk iki görüşme Kasım 2015 tarihinde Seferihisar Belediyesi'nde gerçekleştirilmiştir. İlk görüşmeci Bülent Köstem, Seferihisar Belediyesi'nde Proje Sorumlusu ve Cittaslow Türkiye Koordinatörü olarak görev yapmaktadır. İkinci görüşme Seferihisar Belediyesi Etüd Proje Müdürü olarak görev yapan Aslı Menekşe Odabaş ile yapılmıştır. Bir diğer görüşme Kasım 2015 tarihinde Nilüfer Belediyesi Enerji Büro Sorumlusu olan Bekir Sargın ile gerçekleştirilmiştir. Son görüşmeler ise Gaziantep Belediyesi'nde Çevre Mühendisi olarak görev yapan Gökhan Yaman ve 2014 yılında görevinden ayrılan Çevre Koruma ve Kontrol Daire Başkanı Şafak Hengirmen Tercan ile yapılmıştır. Yapılan görüşmelerde sorulan sorular aşağıdaki şekilde düzenlenmiştir. Bu sorular ışığında, çalışmanın amacı doğrultusunda verilen yanıtlar analiz edilmiş ve değerlendirilmiştir.

1. Ulusötesi Kent Ağları'na katılmaya nasıl karar verdiniz?
2. Üyelik süreciniz nasıl gelişti?
3. Toplantılara katılıyor musunuz? Personel eğitimleri gerçekleştiriyor musunuz?
4. Üyelikten sonra gerçekleştirdiğiniz projeleriniz var mı? Varsa neler?
5. Beklentileriniz neydi? Gerçekleşti mi? Gerçekleşmedi ise nedeni nedir?
6. Ağlarla ilişkileriniz nasıl devam ediyor?

Bu tez çalışması, giriş ve sonuç bölümleri de dâhil edildiğinde altı bölümden oluşmaktadır. İlk bölümde çalışmanın içeriği, amacı, kapsamı ve yöntemi üzerinde durulmuştur. Çalışmanın ikinci bölümünde ise, küresel bir çevre problemi olan iklim değişikliği ele alınmıştır. Bu kapsamda iklimde gözlenen değişimlerin gelişimi ve iklim değişikliği konusunda geleceğe yönelik öngörülerin ne gösterdiği ve iklim değişikliği ile mücadeleye küresel anlamda nasıl yanıt verildiği üzerinde durulmuştur.

Üçüncü bölüm, iklim değişikliği ile mücadelede kentlerin önemine odaklanmıştır. Kentlerin iklim mücadelesinde öne çıkmasının sebeplerinden biri, kentlerin iklim sorununun bir parçası olarak görülmesidir. Ekonomik ve sosyal kalkınmanın gerçekleştiği kentler, sera gazlarının %60'ından sorumludur. Dünyanın yalnızca %2'lik bir kısmını kaplamalarına rağmen, dünyadaki enerjinin %78'ini tüketmektedir (Climate Change, n.d.). Bunun yanında, dünya nüfusunun yarısından fazlası kentlerde yaşamaktadır. Kentler sahip olduğu nüfus, altyapı, ekonomik faaliyetler ve eğitim olanakları ile küresel iklim değişikliği etkilerinin odağında yer alacaklardır. Diğer taraftan kentler iklim probleminde çözümün de bir parçası konumundadır. Kentler sera gazı emisyonlarının kaynağı oldukları için, azaltımın nasıl yapılabileceğini de bilmektedirler. Kent planlama ve kent yönetimi; arazi kullanımı, atık yönetimi ve enerji verimliliği aracılığı ile emisyon azaltımında söz sahibi olabilir. Buna ek olarak, halk bilinci ve katılımı kentlerde daha iyi organize edilebilir. Bu nedenle kentler küresel iklim değişikliği yönetimi konusunda kritik öneme sahip olmakla birlikte, iklim probleminin çözümü için farklı platformlarda yer almaktadır. Ulusal ve uluslararası çabalar anlamlı sonuçlar elde etmek için fazla yetersiz ve ağır kaldığı için, iklim değişikliği ile mücadelede kentler ulusal ve uluslararası çerçeveden farklı bir yolda ilerlemektedir. Bu nedenle yazar, belediyelerin yürüttüğü kentsel iklim politikalarının yönetimine ve yöntemlerine odaklanmıştır. Buna ek olarak, kentsel iklim yönetimi çerçevesinde yatay ve dikey işbirlikleri ele alınmıştır. Dikey işbirliği belediyeler, bölgesel otoriteler ve merkezi hükümet arasındaki ilişkiler bütünü işaret ederken, yatay işbirliği farklı aktörler ve yerel yönetimlerin karar organları arasındaki ilişkiye karşılık gelir. Yatay işbirliği, Ulusötesi Kent Ağları olarak ortaya çıkabilir. Çalışmanın bu noktasında, bu ağlar

üzerine yoğunlaşmıştır. Ağların genel özellikleri, amaçları ve yapıları ortaya konduktan sonra, üye belediyelerin karar alma süreçlerini nasıl etkiledikleri incelenmiştir.

Sonraki bölümde, iklim değişikliğinin bilimsel ve politik çerçevesi Türkiye açısından ele alınmıştır. Türkiye ikliminde gözlenen değişimler ve yapılan öngörüler ortaya konmuştur. Türkiye'nin içinde bulunduğu Akdeniz Havzası, iklim değişikliğinden en çok etkilenecek bölgeler arasında yer almaktadır (IPCC, 2013, p.1266). Bu nedenle, sıcaklık, yağış rejimi, buzullar, pik debi, deniz seviyesi ve doğal afetler sayısındaki değişimler dikkate alındığında, Türkiye iklim değişikliğinin olumsuz etkilerinden önemli oranda etkilenmekte ve gelecekte de etkilenmeye devam edeceği öngörülmektedir. (Şen, 2013, p.13). Buna ek olarak, Türkiye'nin sera gazı emisyonu artmaya devam etmektedir. 2013 yılı emisyonları 1990 yılı emisyonlarının %143,5'i seviyesine çıkmıştır (TUIK, 2012). Toplam emisyonların %67,8'i enerji sektörü faaliyetlerinden kaynaklanmaktadır (TUIK, 2015b). Tezin bu bölümünde, Türkiye'nin uluslararası iklim rejimine yönelik politikaları ve yasal düzenlemeler anlatılmıştır. Birleşmiş Milletler İklim Değişikliği Çerçeve Sözleşmesi (BMİDÇS) Kapsamında Türkiye'nin Birinci ve İkinci İki Yıllık Raporu'na göre Türkiye'nin emisyon azaltım taahhüdünde bulunmadığı ve öngörülebilir bir süre dahilinde de taahhütte bulunma planı olmadığı belirtilmiştir (UNFCCC, 2016, p.40). Türkiye fosil yakıtlar üzerine yatırım yapmaya devam etmektedir. Buna ek olarak, Türkiye'deki kentlerin yürüttüğü iklim politikaları ele alınmıştır. Türkiye'nin ulusal iklim stratejisi belediyelerin iklim değişikliği konusundaki önemine vurgu yapmasına rağmen, Türkiye'deki belediyelerin iklim değişikliği ile mücadelede yasal bir zorunluluğu bulunmamaktadır. REC Türkiye'nin yapmış olduğu anket çalışmasına göre, Türkiye'deki belediyeler iklim değişikliğini diğer çevre problemlerine göre daha az önemli ve daha az sorun yaşadıkları bir alan olarak görmekte ve iklim değişikliği belediyeler tarafından en az çalışma yapılan alan olarak ortaya çıkmaktadır. Anketin gösterdiği çarpıcı sonuca rağmen, bazı kentler gönüllü olarak kendiliğinden ya da Ulusötesi Kent Ağları'nda yer alarak yerel iklim politikası geliştirmiştir.

Beşinci bölüm, tezin örnek alan incelemesini kapsamaktadır. Tezin amacı doğrultusunda, seçilen üç belediyenin bu araştırma için uygun görülme sebepleri ele

alınmıştır. Seferihisar, Nilüfer ve Gaziantep kentlerine yönelik temel bilgilerin verilmesinin ardından, bu kentlerin sera gazı emisyonları, emisyon azaltım planları ve yöntemleri ortaya konmuştur. Belediye çalışanları ile gerçekleştirilen görüşmeler ışığında, belediyelerin Ulusötesi Kent Ağları deneyimleri; katılma motivasyonları, üye olduktan sonra gerçekleştirdikleri faaliyetler ve politikalar, ağlardan beklentileri ve ağlarla olan mevcut ilişkileri olmak üzere üç bölümde incelenmiştir. Sonrasında, bu üç örnek alan incelemesi iki bölümde değerlendirilmiştir. Değerlendirmenin ilk bölümünde, Seferihisar, Nilüfer and Gaziantep belediyelerinin Ulusötesi Kent Ağları'na üye olma nedenleri irdelenmiştir. Bu nedenler, politika yayılımı (policy diffusion) kavramı ile analiz edilmiştir. Politika yayılımı üç şekilde gerçekleşir: *öğrenme yoluyla yayılım, taklit yoluyla yayılım ve yarışma yoluyla yayılım*.

Öğrenme yoluyla yayılım, politika yapıcının bir politika probleminin çözümüne yönelik mevcut düzenlemeleri yeterli bulmayarak daha etkili bir çözüm arayışına girme sürecine karşılık gelir (Hakelberg, 2011, p.7). Özellikle sınırlı kaynaklara sahip olduklarında, başarısız olma riski olan tamamen yeni bir politika çözümü üretmektense, başka bir politik oluşumun o soruna yönelik başarı elde ettiği çözümü öğrenme yoluna giderler (Biedenkopf, n.d., p. 6). Gaziantep, Nilüfer ve Seferihisar belediyeleri için öğrenme yoluyla yayılım süreçleri gözlenmiştir. Diğer kentlerin tecrübelerinden, bilgilerinden, uzmanlıklarından ve deneyimlerinden yararlanma isteği, bu kentlerin Ulusötesi Kent Ağları'na üye olma sebeplerinden biridir. Üç belediyenin çalışanları da, ağların bilgi, tecrübe ve en iyi örnekleri paylaşarak belediyenin teknik kapasitesini arttırdığını, eğitim programları ve konferanslar vasıtasıyla belediyenin kalifiye eleman sayısını artırmasına olanak sağladığını belirtmiştir. Bu kapsamda, ağlar sınırlı kaynaklara sahip olan bu belediyeler için finansmana erişimde etkin bir araç konumundadır. Bu sebeple finansmana erişim, belediyeleri üyelik konusunda motive eden sebeplerden ikincisidir.

Taklit yoluyla yayılım ise, bir kentin normatif beklentilere karşılık olarak strateji geliştirirken bir diğer üye kenti taklit etme sürecine karşılık gelmektedir (Hakelberg, 2011, p.10). Kıyaslama (benchmarking), yerel yönetimlerin yerel iklim stratejisi oluşturma performanslarını karşılaştırdığı için taklit sürecini hızlandıran bir etki

yapmaktadır. Kıyaslama ayrıca etkin çözümler konusunda farkındalık oluşturmalarının yanı sıra, ağa sonradan veya yeni katılan üyeler üzerinde politika üretmeleri için baskı oluşturur (Hakelberg, 2011, p.13). Taklit yoluyla yayılma süreci, Gaziantep, Nilüfer ve Seferihisar belediyelerinde gözlenmiştir. Bu belediyeler, ağlara katılma aşamasında öncü belediyeleri taklit etmiş, bu konuda belli bir yol almış olduklarından dolayı onları yakalamayı amaçlamışlardır. Taklit süreci Nilüfer ve Seferihisar belediyelerinde iklim politikası oluşturma amacı taşırken, Gaziantep ağlara üyeliğinden önce iklim politikası olan bir belediye olarak öncü belediyeleri takip etmiştir. Bu sebeple, bu üç örnek alan incelemesinde de norm yayılımından söz edilebilir. Norm yayılımı, politika yapıcılarının – bu anlamda yerel bir baskı olmasa bile- uluslararası baskıya karşılık olarak normlar kabul ederler (Finnemore & Sikkink, 1998). Bu yayılım üç sebeple olmaktadır: meşruluk kazanma, kabul görme ve itibar kazanma. Her üç belediye de katıldıkları konferanslarda sempati ile karşılanmış, tanınırlıklarını arttırmış, uluslararası alanda meşruluk kazanmışlardır. Buna rağmen, uluslararası meşruluğun yerel anlamda bir etkisi olmamış, görüşmeciler belediyelerinin ağlara katılımının halk tarafından bilinmediğini açıkça belirtmiştir. Üye kentlerin ikinci motivasyonu olan kabul görme, politika yapıcılarının kendilerini belirli bir gruba ait olarak göstermek için norm kabul etmeleri sürecine karşılık gelmektedir (Hakelberg, 2011, p.9. Bu süreçte kentler, uyumsuz olarak addedilmemek ve dışlanmamak için norm kabul ederek, ulusal itibarlarını ve özsaygılarını arttırmışlardır. Gaziantep, Nilüfer ve Seferihisar belediyeleri çalışanları, kendilerini ağların bir parçası olarak hissettiklerini ve aidiyet duyduklarını belirtmiştir. Tüm bu sebeplerden ötürü, bu üç örnek alan incelemesinde de norm yayılımından söz edilebilir.

Öğrenme yoluyla yayılım ve taklit yoluyla yayılımın ardından, üçüncü yayılım süreci olan yarışma yoluyla yayılım, kentlerin bir başka kente ekonomik veya siyasi üstünlük sağlamak amacıyla politika geliştirme sürecine karşılık gelmektedir (Hakelberg, 2011, p.10). Yarışma süreci, kaynak çekme ya da kaynakların devamlılığını sağlama amacı taşır (Maggetti & Gilardi (2013, p.5). Gaziantep, Nilüfer ve Seferihisar belediyelerinde uluslararası anlamda bir yarışma yoluyla yayılım sürecinin gözlenmemesine rağmen,

Gaziantep örneğinde yerel siyasi yarışın varlığından söz edilebilir. Bunun sebebi, Gaziantep Türkiye’de bir iklim stratejisi geliştiren ilk belediye olarak yerel iklim politikası gelişimini etkileyerek bu anlamda yerel lider olarak kabul edilmektedir. Bu sayede, iklim politikası uygulama sürecinde adaptasyon maliyetlerini minimize etmiş olacaktır.

Kern & Bulkeley’e göre merkezde yer alan öncü kentler ile periferide yer alan pasif kentleri ayırt etmek kolaydır. Bunun sebebi, pasif kentler bir ağa isteyerek katılmış olsalar bile davranışlarını çok zor değiştirmektedirler (2009, p.329). Buna ek olarak, üye olarak geçirilen süre arttıkça, üye kentin bir iklim stratejisi geliştirme ihtimali azalmaktadır. Bu nedenle bir üye kent, üyeliğini takip eden bir yıllık süre içerisinde bir iklim stratejisi oluşturmadığı takdirde pasif duruma geçmektedir (Hakelberg, 2011, p.73). Bu sebeple Ulusötesi Kent Ağları için “öncü kentler için öncü kentlerin ağları” benzetmesi yapılmaktadır (Kern & Bulkeley, 2009, p.311). Ağlar kapsamında çok etkin olmadıkları ve ağlar tarafından performanslarını artırmaları konusunda teşvik edilmemeleri sebebiyle -ağlar tarafından teşvik edilmemeleri, Türkiye’nin AB üyesi bir ülke olmamasıyla gerekçelendirilebilir-, Gaziantep, Nilüfer ve Seferihisar belediyeleri pasif kentler olarak kabul edilebilir. Bu kentler üyelik aidatlarını ödemelerine rağmen, daha iddialı hedef koyma ve ağların taleplerinden fazlasını yapma konusunda fazladan bir çaba göstermemektedir. Buna rağmen Türkiye’deki bu kentler, iklim politikası geliştirmiş kentler olarak, iki elin parmaklarını geçmeyecek sayıdadır. Bu anlamda, Gaziantep, Nilüfer ve Seferihisar kentlerinin iklim değişikliği ile mücadelede gösterdikleri performans yeterli düzeyde olmasa da, bu konuda belirli bir yol alarak henüz bir iklim stratejisi geliştirmemiş kentler için birer bilgi kaynağı niteliğinde oldukları için, bu kentler Türkiye’nin öncü kentleri olarak tanımlanabilir. Pasif kentler ağlar tarafından ikinci plana itilse de, Gaziantep, Nilüfer ve Seferihisar belediyelerinde iklim dostu politikalar geliştirme konusunda hevesli ve istekli çalışanların varlığı, yayılım sürecin devam etmesini sağlamıştır. Sonuç olarak, ulusötesi bağlamda öncü kentler arasında yer almasalar da, politika yayılım şekillerinden olan öğrenme ve taklit süreçleri her üç belediyede de ortak olarak gözlenmiştir.

Değerlendirmenin ikinci bölümünde, Ulusötesi Kent Ağları'nın Gaziantep, Nilüfer ve Seferihisar belediyelerinin yerel politika ve karar alma süreçlerini ne ölçüde etkilediği sorusuna yanıt aranmıştır. Belediyeler, bir iklim politikasının tasarlanmasında ve uygulanmasında, farklı türde politika araçları ve müdahalelerine dayanan 4 farklı yönetim yönteminden yararlanırlar (Chaoui & Robert, 2009, p.78; Bulkeley, 2013, p.91). Bu yöntemlerinden birincisi olan *öz yönetim*, belediyelerin kendi faaliyetlerini yürütme kapasitesine karşılık gelmektedir. Örneğin, belediye binalarında enerji verimliliğinin artırılması ya da toplu taşıma araçlarının düşük karbonlu olarak geliştirilmesi vb. (Bulkeley, 2013, p.92; Kern & Alber, 2008, p.174). Öz yönetim, kentler için hızlı ve doğrulanabilir bir sera gazı azaltımı sağlar (Gore et al., 2009, p.508). İkinci yönetim yöntemi olan *etkinleştirme yoluyla yönetim*, belediyelerin özel sektör ve yerel toplulukla ortaklıklar oluşturma ve koordine etme rolü olarak tanımlanmaktadır (Kamal-Chaoui & Robert, 2009, p.79; Kern & Alber, 2008, p.174). Örneğin, bilgilendirme ve eğitim kampanyaları, ikna ve teşvik ve belirli ortaklık programları vb. (Bulkeley, 2013, p.97). Üçüncü yönetim yöntemi olan *sunum yoluyla yönetim*, uyum kapasitesini artıran; elektrik, ulaşım, su, atık vb. gibi düşük karbonlu altyapı, düşük karbon ayak izine sahip hizmet ve malların sağlanması sürecini içerir. (Bulkeley, 2013, p.93; Kamal-Chaoui & Robert, 2009, p.79). Son yönetim yöntemi olan *düzenleme yoluyla yönetim* ise belediyelerin finansal düzenlemeler, arazi kullanım planlaması, standart belirleme vasıtasıyla, sera gazı emisyonlarının azaltılması ve uyum kapasitesinin geliştirilmesi için yaptığı düzenlemeleri kapsamaktadır. Düzenleme yoluyla yönetim belediyelerin düzenlemeleri uygulayabilme ve uymayanları cezalandırabilme gücüne dayanır (Bulkeley, 2013, p.93). Süreçleri, mantıkları ve tekniklerinin farklılığına rağmen, bu yöntemler birbirini dışlamazlar. Bu nedenle, bu yöntemlerin kombinasyonu belediyeler tarafından kullanılabilir. (Bulkeley, 2013, p.92).

Gaziantep, Nilüfer ve Seferihisar belediyelerinin yönetim yöntemleri incelendiğinde, Ulusötesi Kent Ağları'nın, belediyelerin –özellikle Seferihisar ve Nilüfer belediyeleri- sera gazı azaltım politikalarına önemli derecede katkı sağladığı gözlenmiştir. Nilüfer Belediyesi bu ağlara üye olmadan önce de çevre politikalarına önem veren bir belediye

olmasına rağmen, Ulusötesi Kent Ağları'nın Nilüfer Belediyesi'nin çevre politikası üretme sürecine olan etkisi önemli boyuttadır. Bunun sebebi, belediyenin çevre yönetimi üzerine yaptığı faaliyetler ağlara üyelik sonrasında daha kapsamlı ve hedefe yönelik faaliyetler olarak ortaya çıkmıştır. Buna ek olarak, Nilüfer Belediyesi, Covenant of Mayors üyeliğinin bir gereği olarak Sürdürülebilir Enerji Eylem Planı hazırlamıştır. Bu sonuç, Nilüfer Belediyesi'nin ağlara üye olma nedeni olan "iklim dostu faaliyetleri daha disiplinli ve sistematik bir şekilde yürütme" hedefi ile tutarlılık göstermektedir. Seferihisar örneğinde ise, belediye ağlara katılmadan önce kırsal kalkınma politikalarına odaklandığı için, ağlar ile birlikte iklim dostu politikalar geliştirmeyi amaçlamıştır. Seferihisar Belediyesi de Nilüfer Belediyesi gibi Covenant of Mayors ağı üyeliği ile birlikte, Sürdürülebilir Enerji Eylem Planı hazırlamıştır. Diğer taraftan Gaziantep örneğinde ise, Ulusötesi Kent Ağları'na üyeliği yalnızca etkinleştirme yoluyla yönetim yöntemine katkı sağlamış görünmektedir. Bu kapsamda Gaziantep Büyükşehir Belediyesi, ağlar vasıtasıyla enerji verimliliği üzerine bazı farkındalık artırma ve eğitim kampanyaları düzenlemiştir. Ağların yalnızca bu yöneme katkı sağlaması, Gaziantep Büyükşehir Belediyesi'nin ağlara katılmadan önce bir iklim stratejisi geliştirmesi ile açıklanabilir.

Diğer taraftan, belediye çalışanları ile yapılan görüşmeler, belediyelerin Ulusötesi Kent Ağları'na odaklanmalarına ve bu kapsamda yapacakları iklim odaklı faaliyetlere engel teşkil eden bazı sorunları ortaya koymuştur. Bunlardan ilki, veriye ulaşma sorunu, ikincisi ise kapasite eksikliğidir. Veriye ulaşma sorunun çözümü politik destek gerektirirken, kapasite eksikliği ise kalifiye personel eksikliği ve finansal zorlukları kapsamaktadır. Kapasite eksikliği özellikle kısıtlı kaynağa sahip küçük bir belediye olan Seferihisar'da kendini göstermiştir. Buna rağmen, bir belediyenin kararlılığı ve istekliliği ulusötesi faaliyetlerde belirleyici rol oynamakta, karşılaşılan sorunlara rağmen yayılım sürecinin devamlılığını sağlamaktadır.

Sonuç olarak, artan bilgi birikimi Seferihisar ve Nilüfer belediyelerinin yerel iklim stratejisi geliştirmesini sağlamıştır çünkü artan bilgi birikimi, ilgili iklim probleminin çözümü için daha etkin çözümler sunmaktadır. Bu nedenle, Seferihisar ve Nilüfer

belediyelerinin sera gazı azaltım faaliyetleri doğrudan Ulusötesi İklim Ağları'na üyelikleri ile ilişkilendirilebilir. Bu kapsamda, bu ağlar somut bir hedef doğrultusunda belediyelerin faaliyetlerini düzene sokmuş, iklim değişikliği ile mücadeleye yönelik belediyelerin kolaylıkla takip edebileceği bir yol haritası oluşturmuştur. Gaziantep Büyükşehir Belediyesi açısından bakıldığında ise, ağlara üyelik belediyenin teknik kapasite gelişimine katkı sağlamış ve finansmana erişiminde olumlu bir etki yaratmıştır.

## APPENDIX B: TEZ FOTOKOPİSİ İZİN FORMU

### ENSTİTÜ

Fen Bilimleri Enstitüsü	<input type="checkbox"/>
Sosyal Bilimler Enstitüsü	<input checked="" type="checkbox"/>
Uygulamalı Matematik Enstitüsü	<input type="checkbox"/>
Enformatik Enstitüsü	<input type="checkbox"/>
Deniz Bilimleri Enstitüsü	<input type="checkbox"/>

### YAZARIN

Soyadı : Bütün  
Adı : Gülsün Duygu  
Bölümü : Kentsel Politika Planlaması ve Yerel Yönetimler

**TEZİN ADI** (İngilizce) : The Impact of Transnational Municipal Networks on Climate Policy-Making: The Case Study of Gaziantep, Nilüfer and Seferihisar Municipalities

**TEZİN TÜRÜ** : Yüksek Lisans  Doktora

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir.
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir.
3. Tezimden bir bir (1) yıl süreyle fotokopi alınamaz.

**TEZİN KÜTÜPHANEYE TESLİM TARİHİ:**