

# TeMA

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The special issue collects the proceedings of the Session "Smart and Resilient Cities: Ideas and Practices from the South of Europe" of the European Conference On Climate Adaptation (ECCA), held in Copenhagen in May 2015. The contributions shed light on the relationships between the emerging paradigms of Smart City and Resilient City, providing hints for developing integrated strategies in the face of climate change.

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## SMART AND RESILIENT CITIES IDEAS AND PRACTICES FROM THE SOUTH OF EUROPE

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## SMART AND RESILIENT CITIES

IDEAS AND PRACTICES

FROM THE SOUTH OF EUROPE

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**Editorial correspondence**

Laboratory of Land Use Mobility and Environment  
DICEA - Department of Civil, Architectural and Environmental Engineering  
University of Naples "Federico II"  
Piazzale Tecchio, 80  
80125 Naples  
web: [www.tema.unina.it](http://www.tema.unina.it)  
e-mail: [redazione.tema@unina.it](mailto:redazione.tema@unina.it)

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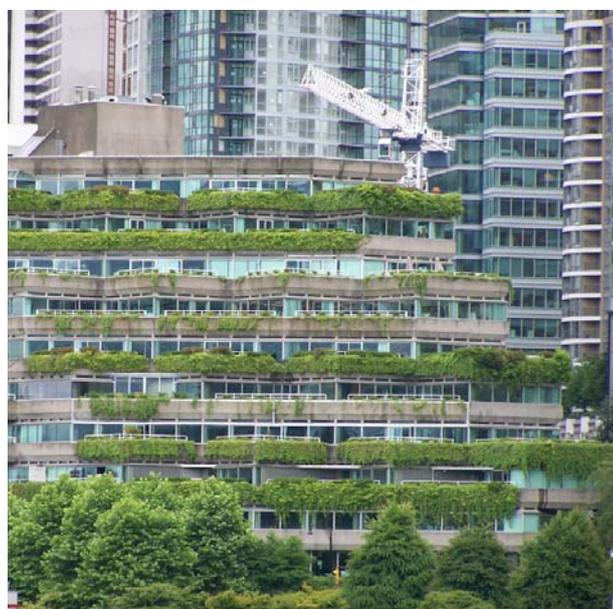
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## ADAPTATION TO CLIMATE CHANGE: BARRIERS IN THE TURKISH LOCAL CONTEXT

O. BALABAN<sup>a</sup>, M.SENOL BALABAN<sup>b</sup>

<sup>a,b</sup> City and Regional Planning Department, Middle East Technical  
University, Ankara, Turkey

<sup>a</sup> e-mail: [obalaban@metu.edu.tr](mailto:obalaban@metu.edu.tr);

URL: <http://crp.metu.edu.tr/staff/osman-balaban>

<sup>b</sup> e-mail: [mbalaban@metu.edu.tr](mailto:mbalaban@metu.edu.tr);

URL: <http://crp.metu.edu.tr/staff/meltem-senol-balaban>

### ABSTRACT

Climate change is one of the greatest environmental challenges that we face today. A certain level of climate change is now unavoidable. Along with mitigation efforts to curb further global warming, we have to take actions to adapt to the changing climatic conditions. Cities are on the front lines of climate change impacts. Therefore, the role of cities in climate change adaptation has been widely acknowledged in the last two decades. There are various obstacles that prevent city governments to develop adaptation policies. While some of these obstacles are universal, some of them are context-specific.

Based on the review of key policy documents and interviews with public officials, this paper focuses on analyzing the main barriers that prevent Turkish cities to develop and implement effective adaptation policies. The research results indicate that cities in Turkey face very similar barriers with their international counterparts in adaptation policymaking. Among the main barriers in the Turkish local context are lack of institutional and technical capacity as well as awareness and coordination problems among actors of climate policy. Due to such barriers, "municipal voluntarism", which mostly leads to voluntary and spontaneous actions, is the prevailing approach to climate policy development in Turkish cities. A series of reforms should be enacted by the central government to help cities overcome the barriers to climate change adaptation.

### KEYWORDS:

climate change, climate policy, adaptation, cities, barriers, Turkey

## 1 INTRODUCTION

Climate change is one of the greatest environmental challenges of our time. If necessary measures are not taken, devastating impacts may be felt in cities of both developed and developing nations. IPCC (2014) underlines the importance of keeping the ongoing global warming below the critical threshold of 2°C and emphasizes the need to adapt human life to climate change impacts, some of which are already being observed. Cities are the most appropriate places where key measures to mitigate climate change and address its major impacts could be developed and implemented (Balaban, 2012a). As of 2014, 54% of the world's population is urban and that is expected to reach 66% by 2050 (UN DESA, 2014). At the same time, key economic activities are located in urban areas, making cities the major driving force of national economies. In Asia, for instance, 42% of the population that live in cities produce almost 80% of the region's total output of goods and services (UN HABITAT, 2010). The increasing concentrations of people and economic activities in cities generate a high demand for energy use and thus lead to increasing greenhouse gas (GHG) emissions. Cities are known to be responsible for between 67-76% of global energy use and for between 71-76% of energy-related CO<sub>2</sub> emissions (Seto et al., 2014). Furthermore, cities are potentially vulnerable to climate change impacts because they are located on coastal and riverine areas that are highly exposed to environmental challenges. On the other hand, despite being parts of the climate problem, cities can also be an essential part of the climate solution (Balaban, 2012a). Municipalities can control and manage various processes, which may affect GHG emissions and climate vulnerability as part of urban planning and management processes (Bulkeley, 2013).

Since the early-1990s, cities have increasingly been involved in climate change policy development by placing climate change issues on their agendas (Bulkeley et al., 2012). Many municipal authorities have recognized low-carbon urbanism as one of the major targets of their local development plans and policies. The establishment of municipal networks like ICLEI, C40, and the Covenant of Mayors has contributed positively to this process. Such networks have provided the world's cities with opportunities to learn from each other's experiences and share the most relevant and innovative solutions (Bouteligier, 2013).

Two major periods stand out when involvement of cities in climate policymaking is taken into consideration. These periods differ from each other in terms of the governance practices and policy responses applied. The 1990s constituted the first era, which is classified as "municipal voluntarism", whereas by the early 2000s, municipalities in collaboration with other urban actors started to engage in a more structural approach, which is defined as "strategic urbanism" (Bulkeley and Betsill, 2013). The main feature of the first era is that most, if not all, of the urban responses to climate change were taken by municipal authorities voluntarily, based mostly on the efforts of "policy entrepreneurs" (Bulkeley, 2010; Bulkeley & Betsill, 2013). In the second era, municipal authorities started to integrate climate change with wider urban agendas and to develop more structural responses (Bulkeley & Betsill, 2013). With the change from the first to the second wave of municipal activism for climate change, both the geography of urban responses and the actors in urban climate policymaking have changed. While the first era comprised only the initiatives taken by cities in the global north, the second era was characterized by the active involvement of cities from the global south in climate policymaking. In addition, social actors such as private companies, NGO's, etc. started to take part in developing urban responses to climate change in collaboration with municipal governments (Bulkeley & Betsill, 2013).

Nevertheless, the potential of cities to address the climate problem by integrating climate change concerns into urban management is not very easy to realize due to various obstacles (Bai, 2007). Current achievements in urban responses to climate change are limited and not evenly distributed. Betsill and Bulkeley (2007) define this situation as "the stubborn gap between the rhetoric and reality of local climate policy", arguing that the realities of governing climate change on the ground is way behind the policy

discourse of the relevance of urban responses for climate protection. While cities in some contexts have developed relevant and innovative climate policies, progress in cities in some other contexts remains in the initial transition phase. The gap between the rhetoric and the reality of local action for climate protection could even be observed among cities in the same country. A recent research on Dutch cities has shown that even in Netherlands, where urban responses to climate change are growing, there are differences in local climate policy development among the largest 25 municipalities in the country (den Exter, 2015). Turkey is one of the countries where local climate policy development is in its infancy. This paper aims to present the current level of climate policymaking in Turkey and discuss the major obstacles that hinder wider involvement of Turkish cities in climate policy with a particular focus on climate change adaptation.

There is a rich literature arguing the obstacles that impede cities from addressing the climate problem (Bai, 2007; Betsill & Bulkeley, 2007; Moser & Ekstrom, 2010; Galderisi, 2014; Barnett et al., 2015). Bai (2007) distinguishes between scale-related obstacles that tend to be universal and readiness-related obstacles that are specific to cities of the developing world. On the other hand, Betsill and Bulkeley (2007) mention other studies that suggest that local authorities in developed and developing countries face more or less the same obstacles to dealing with climate change. Although mitigation and adaptation have commonalities, they constitute different pathways in climate policy. Despite that, some studies suggest that there are not many differences between the obstacles faced by mitigation and adaptation efforts (Granberg & Elander, 2007; Storbjörk, 2007). At the same time, Barnett et al. (2015) point to "limits" along with "barriers" to climate change adaptation, and draw attention to identify processes, not just factors, that constrain adaptation.

Some of the barriers are institutional, originating from lack of competencies and capacity of the institutions that are in charge of developing adaptation policies. This is quite a common barrier particularly when local governments are considered. Bulkeley and Betsill (2003) found out that local government competencies and capacity were one of the key factors that limit climate policy development at local level in Australia, the UK and the US. According to Holgate (2007), the major barrier faced by city officials in Johannesburg (South Africa) was lack of capacity, as climate change was one of the many responsibilities of the related city official. Besides, there are organizational problems that originate from "a departmental approach" and result in lack of collaboration and coordination among different divisions of a municipality (Balaban and Puppim de Oliveira, 2014). Along with the institutional barriers, there are also significant economic barriers, mainly in terms of inadequate financial resources. In Mexico City, for instance, the institutional capacity problems were coupled with lack of financial resources and funding, and thereby constituted a major barrier to climate protection (Romero-Lankao, 2007). Bai (2007) argues that most cities in developing countries are not ready to deal with global environmental issues, as their financial capacities may not even suffice to address basic local issues, such as sanitation, waste collection, etc.

Previous research have shown that several technical factors might act as barriers to climate policy development. Technical knowledge is critical to develop successful climate protection policies (Betsill & Bulkeley, 2007; Moser & Ekstrom, 2010). Updated and accurate knowledge and information on the extent of the climate problem at local level, including emissions inventories, climatic risks and vulnerabilities, provide a sound basis for policymaking. Otherwise, as in the case of Sweden, uncertainty connected to climatic risks is weighted against short-term economic benefits of attractive waterfront development (Granberg & Elander, 2007). However, many local governments in both developed and developing countries lack the necessary technical knowledge and expertise as well as technological instruments for climate policymaking (Romero-Lankao, 2007; Bai, 2007; Granberg & Elander, 2007). Last but not the least, there are political barriers to develop and implement local climate change policies. Bai (2007) states that the long-term nature of the climate problem forms a contrast with other local issues, and thus lead local politicians to embrace the "not in my term" contention. Especially in developing countries, urgency of other urban problems usually

decreases the priority given to climate change by municipal authorities (Romero-Lankao, 2007). Low awareness of policymakers of climate change is another factor that adds to the problem of lack of political will. In many cities, policymakers tend to think that climate change is a global problem that requires national and global actions rather than local efforts (Bai, 2007).

The literature on barriers to climate policy shows the importance of case studies to find out context-specific barriers. Research on climate policy development in Turkey is quite limited. Particularly, a systematic overview on urban responses to climate change and on factors that impede development of such responses is missing. This paper aims to address this gap by analyzing the main factors that act as barriers to climate change adaptation in Turkish cities.

The paper is mainly based on the interviews made with officials of Ministry of Environment and Urbanization, Ministry of Foreign Affairs, Bursa and Gaziantep Metropolitan Municipalities. Six interviews were conducted with 11 experts in these agencies in 2014 and 2015. The Ministry of Environment and Urbanization is in charge of coordinating the development of national and local policies to address global warming and climate change. The Ministry of Foreign Affairs also has responsibility for protection of natural environment. The Ministry, in collaboration with other agencies, works to develop Turkey's national environment policy in line with international developments and treaties. Bursa and Gaziantep Metropolitan Municipalities can be considered forerunners in local climate policy in Turkey. Gaziantep is the first municipality in Turkey that developed a climate change action plan. Likewise, Bursa Metropolitan Municipality was volunteered to take part in an international project that aimed to build local capacity for climate change adaptation planning in Turkish cities. In addition to the interviews, secondary data and information were also gathered through analysis of various policy documents and expert reports as well as statistical yearbooks, bulletins and webpages of some public agencies. All the documents analyzed are publicly available and authentic.

The next section presents the key facts about Turkey's position on the climate change debate. In the third section, the existing situation in Turkish cities with regard to development of policy responses to address climate change is discussed. Based on the interviews conducted, and the review of the policy documents, main barriers that hinder widespread implementation of climate change adaptation policies and strategies in Turkish cities are argued in the fourth section. Finally, in the conclusion, some policy implications are suggested in order to overcome the barriers discussed in the paper.

## 2 THE CONTEXT OF TURKEY

### 2.1 TURKEY IN THE CONTEXT OF AN INTERNATIONAL CLIMATE REGIME

Turkey became an official party to the United Nations Frame Convention on Climate Change (UNFCCC) on 24 May 2004, and to the Kyoto Protocol on 26 August 2009. Compared to other OECD countries, it has taken quite a long time for Turkey to become a party to both agreements. This was due to the controversial position of Turkey in the Annexes of the UNFCCC. Turkey was included in both Annex I and Annex II as an OECD country. However, as opposed to other nations included in both Annexes, Turkey's contribution to global GHG emissions was lower and also the country was (and is still) facing major socio-economic development challenges. After years of negotiations, Turkey was removed from Annex II of the UNFCCC, and parties were invited to recognize the special conditions which place Turkey in a different position from other Annex I countries at the COP7 meeting in 2001 (MoEU, 2010a). Thereafter, the Turkish government ratified the convention and the protocol.

Turkey does not have emission reduction targets under the Kyoto Protocol. However, national communication documents have been prepared and submitted by the national government since becoming a

party to the convention. The last communication submitted was Turkey's Fifth National Communication (FNC), which was commissioned in the light of the situation in 2011 (MoEU, 2013).

## 2.2 THE NATIONAL POLICY CONTEXT

Although Turkey has become an official party to the international climate regime somewhat later than many other nations, the national government has been taking legal and institutional steps to deal with the climate problem since 2000. Among the first of such steps is the establishment of a Coordination Board on Climate Change in 2001 with the aim of coordinating the public sector's activities on climate change mitigation and adaptation. The board was then restructured in 2004, 2010 and 2012 after Turkey became a party to the UNFCCC and the Kyoto Protocol (MoEU, 2010a). The restructuring process mainly widened the scope of the board by renewing its participant structure and including new representatives from various public and private sector institutions.

The United Nations Joint Program on Enhancing the Capacity of Turkey to Adapt to Climate Change was launched in 2008 to form strategies and strengthen the institutional capacity of Turkey to adapt to climate change (MoEU, 2013). The Joint Program aims to integrate national, regional and local policies within the scope of Turkey's development objectives in a sustainable way.<sup>1</sup> The Program has led to several activities to improve capacities within national and local institutions to predict and manage climatic risks. Following the launch of the Joint Program, in 2009, an important institutional step was taken. A new division was established under the Ministry of Environment and Urbanization, namely the Department of Climate Change, to deal with mitigation and adaptation policies at the national level.

The main central policy document for climate change in Turkey is the National Climate Change Strategy Document (NCCSD), which was prepared with participation of various actors in public and private sectors in 2009-10. The Strategy Document, which covers the period from 2010 to 2020, acts as a guide for mitigating and adapting to climate change, and includes emission reduction strategies, adaptation, financing and technology policies within the limits of national possibilities (MoEU, 2013). The strategy document proposed the preparation of a national action for climate change (MoEU, 2010a). Based on this recommendation, The National Climate Change Action Plan (NCCAP) was prepared with a wide range of stakeholders under the coordination of the Ministry of Environment and Urbanization and published in July 2011.

Another important policy document at national level is the National Climate Change Adaptation Strategy and Action Plan, which was approved by the Ministry of Environment and Urbanization in 2012 for the period of 2011-2023. The Adaptation Strategy and Action Plan was developed under the UN Joint Program on Enhancing the Capacity of Turkey to Adapt to Climate Change. Based on the technical and scientific studies and preparations, the adaptation strategy focuses on the following five fields as the most crucial policy fields for climate change adaptation in Turkey (MoEU, 2014):

- Water Resources Management;
- Agricultural Sector and Food Security;
- Ecosystem Services, Biodiversity and Forestry;
- Natural Disaster Risk Management;
- Public Health.

All in all, in terms of legal and institutional reforms, Turkey is not far behind its international counterparts. As in many other nations, which are actively responding to the climate problem, key plans and policy documents have already been prepared and introduced by the national governments. Whether or not these documents have led to positive outcomes in practice is still not clear.

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<sup>1</sup> Please see the project website: <http://www.mdgfund.org/program/enhancingcapacityturkeyadaptclimatechange>

## 2.3 TURKEY'S CONTRIBUTION TO CLIMATE CHANGE

Turkey is an emerging economy and its energy demand is increasing with its overall economic growth. However, the level of energy consumption in Turkey is less than that of OECD countries and the world average. According to International Energy Agency (IEA) data (MoEU, 2013), Turkey's primary energy consumption was 1.39 TEP/person in 2008, which is below the world average (1.83 TEP/person) and the OECD average (4.56 TEP/person).

Likewise, Turkey's per capita GHG emissions are among the lowest in the OECD and UNFCCC Annex I countries, indicating a lower historical responsibility for global warming than the advanced nations. For instance, in 2012, the OECD average of GHGs per capita was 12.47 tonnes, whereas Turkey's per capita GHGs was 5.85 tonnes, the lowest among all OECD countries (OECDStat, 2015).<sup>2</sup> Despite the lower historical responsibility, there was a stable increase in Turkey's GHG emissions between 1990 and 2012, except for 1994, 1999, 2001 and 2008 when reductions were observed mainly due to economic crises (MoEU, 2013). Turkey's total GHG emissions in 1990 were 188 million tonnes of CO<sub>2</sub> eq (LULUCF excluded). This increased to 298 million tonnes of CO<sub>2</sub> eq in 2000, 403 million tonnes of CO<sub>2</sub> eq in 2010 and finally 439 million tonnes of CO<sub>2</sub> eq in 2012 (Table 1).

Turkey's per capita emissions have also been increasing since 1990. While per capita GHG emissions amounted to 3.42 tonnes of CO<sub>2</sub> eq. in 1990, it increased to 4.4 tonnes of CO<sub>2</sub> eq in 2000 and 5.9 tonnes of CO<sub>2</sub> eq in 2012 (MoEU, 2013). However, Turkey's per capita emissions are still below the OECD average.

The energy sector is the major emitter of GHGs in Turkey. From 1990 to 2012, GHGs from the energy sector more than doubled, increasing from 132.8 million to 308.6 million tonnes of CO<sub>2</sub> eq (Table 1). Most of the energy sector emissions are due to fossil fuel combustion.

| SECTORS                    | 1990   | 1995   | 2000   | 2005   | 2009   | 2010   | 2011   | 2012   |
|----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Energy                     | 132.88 | 161.50 | 213.23 | 242.41 | 279.01 | 285.14 | 301.34 | 308.60 |
| Industry                   | 15.44  | 24.21  | 24.37  | 28.78  | 33.16  | 55.67  | 58.61  | 62.77  |
| Agriculture                | 30.39  | 29.23  | 27.85  | 26.28  | 26.10  | 27.13  | 28.83  | 32.28  |
| Waste                      | 9.72   | 23.88  | 32.64  | 33.27  | 32.88  | 35.56  | 35.31  | 36.22  |
| Compared to<br>1990 levels | 100    | 126.74 | 158.19 | 175.52 | 196.96 | 214.13 | 225.06 | 233.44 |
| Total                      | 188.43 | 238.82 | 298.09 | 330.74 | 371.15 | 403.49 | 424.09 | 439.87 |

Table 1 Aggregated GHG Emissions by Sectors, million tonnes of CO<sub>2</sub> eq. excl. LULUCF (TurkStat, 2013)

## 2.4 LIKELY IMPACTS OF CLIMATE CHANGE IN TURKEY

There are no precise and updated scientific data and information on the potential impacts of climate change at local level in Turkey. In most policy documents, broad estimations are based on regional and global scenarios and expectations. Turkey's First National Communication on Climate Change, prepared in 2007, mentions that the likely impacts of climate change in Turkey may include increasing summer temperatures, loss of surface water, droughts, coastal erosion and floods (MoEF, 2007).

However, Turkey is geographically a broad country and includes diverse environmental and climatic varieties. Therefore, conduct of studies at the local level in order to determine the potential impacts of climate change in major regions is a must. Such studies will certainly make effective contributions to the preparation processes of better and more accurate adaptation strategies. In this respect, a Participatory Vulnerability

<sup>2</sup> The data were extracted from OECD.Stat on 15 June 2015.  
Available at: [https://stats.oecd.org/Index.aspx?DataSetCode=AIR\\_GHG](https://stats.oecd.org/Index.aspx?DataSetCode=AIR_GHG)

Analysis (PVA)<sup>3</sup> has been carried out in several provinces located in different geographic regions in order to find impacts of climate change and vulnerability in Turkey (MoEU, 2010b). The analysis has been conducted under the UN Joint Programme on Enhancing the Capacity of Turkey to Adapt to Climate Change under the coordination of the Ministry of Environment and Urbanization. The stakeholder responses indicated the most common impacts in Turkey as follows (MoEU, 2010b):

- Temperature increases causing warmer winters with less snow;
- Heat waves and greater drought frequency;
- Increasing irregularity in rainfall patterns;
- Reduction in surface and fresh water resources due to previous impacts;
- Greater frequency of floods due to sudden and heavy rainfall;
- Gradual shifting of the seasons.

The same climate events create different challenges for urban areas and populations compared with rural populations. In Turkey, urban areas are expected to be seriously affected by climate change impacts. First of all, Turkey is a flood-prone country, where both riverine and flash floods are often observed in many cities (Senol-Balaban, 2009). Climate change is expected to increase flood risks in Turkish cities (Balaban, 2010). We have already been observing unexpected flood events and losses mainly due to sudden and heavy rains that overload the infrastructure systems of cities. At the other extreme, heat waves due to temperature increases and drought conditions due to lack of rain over extended periods are expected to hit many cities in Turkey. Moreover, heat waves and drought may result in over-exploitation of water resources and deepen water shortage, which is already a major problem for Turkish cities. Turkey is a peninsular country, where a considerable part of the population is concentrated in coastal areas. Therefore, rising sea levels, coastal flooding and salty water mixing with fresh water resources are also serious challenges for numerous Turkish cities. Finally, many Turkish cities suffer from air pollution that may increase as the temperature rises.

Some of these likely impacts are already with us. In recent years, Turkey has faced a number of severe weather events. For instance, a severe heat wave and drought in 2007 across the Marmara region caused an increase in food prices across Turkey. Besides, an erratic flood in Istanbul in 2009 caused many casualties and economic damage. Both national and local governments have undertaken, and still undertake, actions and initiatives to address climate change, although in an insufficient manner. The next section elaborates on such actions and initiatives recently taken by Turkish cities

### 3 URBAN RESPONSES TO CLIMATE CHANGE IN TURKEY

A recent research project that aimed to analyze the involvement of Turkish Metropolitan Municipalities in climate change mitigation and adaptation indicates that most of the municipalities are involved in climate change policy in some way (Gedikli & Balaban, 2014). However, the responses or actions they undertake show great variety. Energy, waste management and urban transport are the most popular sectors, where several municipal authorities have undertaken responses or developed strategies in relation to climate change. Such responses include energy efficiency measures, renewable energy generation utilities, energy generation from residual waste and gas in landfill and wastewater treatment sites, light rail systems and tram projects, bike routes, etc. (Gedikli and Balaban, 2014).

Furthermore, the research also highlighted that in almost all the cities, where urban responses to climate change are being taken, more priority is given to mitigation than adaptation (Gedikli & Balaban, 2014). While current urban responses predominantly aim to mitigate GHG emissions, actions for climate adaptation are

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<sup>3</sup> PVA is a systematic process that involves local communities and other stakeholders in a rapid examination of their vulnerability to climate change, and at the same time facilitates the identification of actions that can reduce local vulnerability to climate change.

barely visible in local policy documents in Turkey. This statement has also been verified by officials of the Ministry of Environment and Urbanization who were interviewed as part of the research presented in this paper. So, municipal authorities in Turkey give more priority to mitigation than adaptation at present. Such a situation is also observed in other international contexts (Betsill & Bulkeley, 2007). Granberg and Elander (2007) argue that Swedish municipalities have given a high-priority to mitigation than adaptation, and adopted climate mitigation goals in line with the guiding principles at the national level. One possible reason for the priority given to mitigation may be that mitigation policies are relatively easier to develop and implement than adaptation ones at initial stages of climate policy development. Policies and strategies for climate change adaptation usually require long-term and structural efforts to transform urban systems. Without mainstreaming climate change into all relevant aspects of urban development, such structural and systemic efforts cannot be made.

On the other hand, one recent initiative for climate change adaptation in Turkey is a joint international project, which was hosted by Bursa Metropolitan Municipality. The project was funded by the UK Foreign & Commonwealth Office (FCO) in Ankara and led by Ricardo-AEA with the support of Bluecern (Ricardo-AEA, 2014)<sup>4</sup>. The Ministry of Environment and Urbanization, as the principle institution in charge of climate policy in Turkey, has coordinated and supported the project. The National Climate Change Adaptation Strategy and Action Plan of Turkey recognizes that cities will be crucial in helping the country adapt to climate change. The action plan also pointed to the need to help municipal governments develop their own adaptation strategies in such a way as to initiate a process to understand the risks and vulnerabilities to climate change and to develop a coordinated response. In this respect, the joint international project aimed to build capacity and provide support to the Bursa Metropolitan Municipality, which volunteered to develop their city-level climate change adaptation strategy and action plan (Ricardo-AEA, 2014). The lessons learned from the pilot case of Bursa were used to develop a Cities Adaptation Support Package (CASP) and a Roadmap able to guide other municipalities through the processes towards city-level climate change adaptation plans and a national urban adaptation programme for cities. Nevertheless, no progress has been made since the completion of the project. Neither the Ministry nor Bursa City has made follow-up events and actions.

#### 4 BARRIERS TO CLIMATE CHANGE ADAPTATION IN TURKISH CITIES

Climate change adaptation is an emerging policy field in Turkey. The legal and institutional reforms, specific policies and funding schemes that are required for climate change adaptation are recently being discussed by national and local governments. Current progress at national level is limited to the development of a national action plan and the establishment of a specific division for adaptation under the Ministry of Environment and Urbanization. Furthermore, through the collaboration of MoEU and Bursa City, a pilot project on capacity development for adaptation policymaking has been conducted and a guideline has been produced to help municipal governments develop their local strategies to address the risks and vulnerabilities to climate change. Other than these, there are no remarkable actions and projects on climate change adaptation at any level of governance in Turkey.

On the other hand, risk mitigation and management is an important policy concern for national and local governments in Turkey. Turkish cities are prone to several natural hazards such as earthquakes, floods and landslides. There is a central agency in Turkey, named Disaster and Emergency Management Presidency

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<sup>4</sup> The Foreign & Commonwealth Office (FCO) aims to promote action on global issues in areas of strategic importance to the UK. As Turkey is one of the FCO's priority countries, the office provides funding to certain projects in Turkey. Ricardo-AEA is a global sustainability consultancy with expertise in energy and climate change. The firm has provided training and support to Bursa – through workshops, study visits, on-going remote coaching, stakeholder engagement and dissemination. Bluecern is an international sustainability consultancy with a strong presence in both Turkey and the UK, working on a range of projects in both countries and with strong relationships with the Turkish Government (Ricardo-AEA, 2014).

(AFAD), which is in charge of risk and disaster management as the sole authority. AFAD works for preventing disasters and minimizing disaster-related damages, for planning and coordinating the post-disaster response as well as for promoting cooperation among various government agencies. Although AFAD is a central agency, it also works at the local level with 81 provincial branches across Turkey in addition to 11 search and rescue units (see AFAD's webpage; <https://www.afad.gov.tr/EN/IcerikDetay.aspx?ID=1>). Significant efforts have been made by AFAD to improve Turkey's disaster management system either by solely or in cooperation with a range of government institutions and non-governmental organizations. Nevertheless, mitigation and management of earthquake and flood risks so far dominated the scope of AFAD's efforts. Climate change is not visible in AFAD's agenda at present. In AFAD's Strategic Plan for the Period of 2013-2017, climate change is mentioned only a couple of times as one of the emerging issues that will have an impact on AFAD's works and administrative strategies (AFAD, 2012). Furthermore, there is no department in the agency, which is directly in charge of climate change adaptation or of mainstreaming climate change in Turkey's disaster management system. Therefore, climate change adaptation and disaster risk management were and are being carried out as separate policy fields in Turkey. On the other hand, several case studies emphasized the need for mainstreaming adaptation strategies into existing policies and programs, especially the disaster risk management and land-use planning processes (Galderisi, 2014). Climate change adaptation measures are usually categorized as "soft-adaptation" and "hard-adaptation" measures (OECD, 2015). "Soft-adaptation" is characterized by "soft" solutions such as empowering local communities, educating target groups and information sharing, capacity building, policy and strategy development and institutional arrangements (Sovacool, 2011; OECD, 2015). On the other hand, "hard-adaptation" measures are more complex and capital-intensive, and based on use of specific technologies to build, improve or enforce artificial human-built infrastructure systems (Sovacool, 2011). Based on the current level of climate change adaptation policy development in Turkey, it could be stated that both national and local governments in Turkey are mostly working for developing "soft adaptation" measures. "Soft" measures, especially community involvement and capacity building schemes, are crucial for an effective climate change adaptation policy. However, "soft-adaptation" measures taken so far in Turkey are limited to development of some non-binding policy and strategy documents as well as guidelines. The interviews conducted with public officials have confirmed the limited and fragmented nature of the current "soft-adaptation" measures in Turkey and also the need for improving them. Although "soft" measures are of central importance for effective adaptation, they should be supplemented by "hard" solutions. There has to be a good balance of "soft" and "hard" measures in an effective climate policy development, depending on the local circumstances and needs. Such a balance between "soft" and "hard" measures is defined as "combined adaptation", which is argued to provide the best results (OECD, 2015). "Hard" measures for climate change adaptation are still not on the agenda of governmental authorities in Turkey. It should be noted that the structural measures and actions taken by AFAD as part of the agency's disaster risk management agenda have no explicit link with climate change adaptation. In other words, climate change adaptation is not a major concern for disaster risk management efforts in Turkey. As in many countries, several barriers could be identified in Turkey that hinder the widespread adoption of climate change adaptation goals and strategies in cities. These barriers are mostly in line with the international experience. In the following section, major barriers in the governance of climate change adaptation in Turkey are discussed.

#### 4.1 INSTITUTIONAL BARRIERS

The low level of involvement of Turkish municipalities in climate change adaptation is not surprising. The dominant approach to climate policymaking in Turkey at present is "municipal voluntarism" (Gedikli and

Balaban, 2014). Municipal voluntarism is an important approach that could enable cities to undertake actions and develop policies to address the climate problem. However, this sort of policy approach mostly leads to voluntary, spontaneous or easy-to-implement actions for climate change mitigation. Betsill and Bulkeley (2007) argue that during when municipal voluntarism dominated climate policymaking worldwide, most, if not all, of the actions taken in cities were mitigation-oriented, including finance mechanisms to reduce energy use, standards to improve energy efficiency, development of renewable energy projects, etc.

Climate change adaptation, on the other hand, requires structural measures and systemic efforts to transform urban systems so as to increase the resilience of cities to climate change impacts. For instance, without building an extensive green space network, cities may not be able to address heat stress and flash flood risks. Despite its merits to initiate and push forward the climate change agenda at local level, municipal voluntarism is not a sufficient policy approach to deal with fundamental aspects of climate change adaptation, such as determination of local climate change risks and impacts, as well as structural requirements for adaptation (i.e. provision of an extensive green space network). Therefore, for better and wider achievements in climate change adaptation in Turkish cities, an integrated approach that mainstreams climate change-related objectives into the key sectors and fields of urban policymaking is required.

At present, there are no binding laws or regulations forcing national and local governments in Turkey to develop specific policies and take particular actions to address impacts of climate change. The current policy frameworks are voluntary schemes and public agencies and local governments are only advised to follow the principles and targets set forth within these frameworks. Voluntary schemes may work well in some contexts, but they are not very appropriate for Turkey. "Name and shame" type policies or voluntary schemes do not perform well in Turkey. Binding legal frameworks at the national level, which are still missing, are required to enable local governments to take action. Furthermore, the role given to the Climate Change Department of the MoEU is only limited to coordination. During the interviews, the officials of the Climate Change Department pointed to the need for an institutional reform that would empower the department and move its role beyond coordination.

In Turkey, there are several institutions, one way or another, linked with climate adaptation policy. MoEU is the main coordinating agency of the climate policy. While AFAD is the sole authority responsible for risk management, State Hydraulic Works also have duties with regard to river basin and flood management. Municipal authorities are in charge of developing and implementing spatial plans at several scales ranging from neighborhood scale to metropolitan scales. On the other hand, there are designated zones in cities, which are not under control of municipal authorities but other central agencies. Mass Housing Administration (TOKI), for instance, carries out real estate and housing projects in many cities with little or no coordination with municipalities. Such a fragmented governance structure usually undermines the development and implementation of environmental policies. To avoid this, an effective coordination of actions and policies of different public agencies is required. Otherwise, as in the case of Turkey, repetition of efforts or contradictory actions may occur in the same locality as a result of institutional chaos.

## 4.2 ECONOMIC BARRIERS

Adaptation is a costly process, and in most cases, adaptation policies do not promise greater economic benefits. If economic benefits do occur, they may come in the long term. Therefore, local governments are usually in need of financial resources to develop and implement their adaptation policies at the outset. Such finance and funding opportunities are yet to be developed in Turkey. Central government provides no direct funds to local governments to be used for particular policy agendas like climate change adaptation.

The insufficiency of the financial resources for local governments is a major problem of local governance in Turkey. Municipalities are highly dependent on central government in terms of their revenues and

expenditures. The main source of income of local governments is the annual grants provided by the central government. Around 5 percent of the total national tax revenues are allocated to local governments based mainly on the population criteria. This usually runs against small and mid-size cities, especially where local needs are disproportionate with population size. For instance, small-size cities like Edirne and Bartın with a population around 150.000 inhabitants are located along rivers that frequently flood. Due to their limited population, financial capacities of these cities remain also limited, and needless to say, such small cities in Turkey cannot take the necessary actions and measures to reduce their vulnerability to climate change.

#### 4.3 TECHNICAL BARRIERS

The importance of technical knowledge and expertise in climate policy development is acknowledged in the literature (see section 1). Maybe the first step to technical capacity development at local level is to raise awareness of the key policy and decision-makers. There is an awareness problem among public officials, especially those at the local level in Turkey. Many city governments lack the institutional capacity to plan for and manage the future spatial development in their jurisdictions (Balaban, 2012a). Small and mid-size cities usually complain of a lack of in house expertise to deal with complicated issues of urban and environmental policy. The current staff, on the other hand, is not well-informed or well-aware of the key issues of the climate problem. Officials of the MoEU, who were interviewed in this research, confirmed the awareness problem among local officials and mentioned that they were planning for further efforts to enhance local institutional capacity and raise awareness of local officials. The local officials, who were interviewed, also confirmed the awareness problem. Furthermore, when it comes to climate change, most officials think that mitigation is the sole dimension of policymaking. Awareness among local policymakers and staff of the links between local environmental problems and climate change is still low.

#### 4.4. POLITICAL BARRIERS

Most progress in climate change mitigation and adaptation in Turkey is observed in small and mid-size cities (Gedikli & Balaban, 2014). Major metropolitan cities like Ankara and Istanbul are known for their reluctance to tackle the climate problem. The major reason for this is that Turkey's dominant economic growth paradigm has made a significant impact on urban development processes in major cities. Since the early 2000s, the major economic policy of the national government in Turkey has been to increase vitality in various sectors by means of domestic consumption. Economic activities that trigger consumption-led growth have been given high priority in the national government's economic programme. These activities include construction and real estate investments. Both sectors received intense support from the state in the recent decade to trigger consumption and economic growth in various sectors of the economy (Balaban, 2012b). Major metropolitan cities in the country have served, and are still serving, as major arenas of a construction-led economic growth paradigm.

This growth paradigm resulted in an irrational growth in building construction and large-scale infrastructure projects in major cities. Planning controls and development restrictions have been eased or removed to foster economic growth (Balaban, 2012b). The interviewees at central and local agencies mentioned that most of the urban development and regeneration projects that were developed in the recent decade are contradictory to climate change policy. Over the last decade, Turkey has seen investments in building and projects that run counter to climate change mitigation and adaptation. For instance, the current large-scale urban projects in Istanbul, including the third airport and the third bridge over the Bosphorus, are in clear contradiction to the climate change agenda, as they have already led to loss of forestland, wetlands and natural habitats in the northern part of the city. Likewise, in Ankara, the residential vacancy rate increased to 30% due to the construction of suburban housing projects, leading to huge patterns of urban sprawl.

The growth in building construction could have been an important opportunity to make cities more climate-resilient. As argued by Balaban and Puppim de Oliveira (2014), local governments can use urban regeneration projects as opportunities to develop climate-friendly quarters within existing built-up areas of cities. To do so, climate change concerns have to be incorporated into legal and policy frameworks that guide building construction and regeneration projects. In Turkey, only a few energy efficiency concerns are recently included in rules and regulation concerning building construction. The Urban Regeneration Act (Law No: 6306), which was enacted in May 2012, refers to disaster risk management but the guidelines set forth in the law to address disaster risks by means of urban regeneration projects are only limited to redevelopment of areas that are deemed "risky" or "unsafe". Definition of "disaster risk" in the law is reduced to earthquake risk, and climate and weather-related risks are ignored in risk definition. Climate change mitigation and adaptation is not mentioned anywhere in the law. Since its enactment, the academic community and NGOs criticized the Urban Regeneration Act based on the contradictions between the purposes and the practical outcomes of the law. Most critics argue that although the law enables national and local governments to develop regeneration projects over disaster-prone areas, the existing projects based on the law are predominantly profit-oriented real estate projects in attractive parts of cities. In a nutshell, Turkey has experienced a construction boom in the last decade, which provided an opportunity to make cities more climate-friendly, but that opportunity has been wasted mainly because climate change concerns have not been incorporated into urban redevelopment and building construction agenda.

Among the main political barriers in Turkey is the behavior of the general public with regard to environmental issues, climate change in particular. The awareness of the general public in Turkey of climate change is quite low (Balaban, 2012a). Citizens are not well-informed or well-educated about the reasons and outcomes of ongoing global warming and climate change. The officials in central and local agencies, who were interviewed in this research, pointed to the low awareness of the general public concerning climate change as a major problem in climate policymaking. Both the MoEU and municipalities give high priority to awareness-raising and aim to develop campaigns to raise awareness of especially the young age people.

On the other hand, even if people are informed, in most cases, they don't pay much attention to such long-term challenges as climate change. This is mainly because many urban residents are dealing with several urgent and short-term problems like unemployment, poverty, societal polarization, etc. Recently, the Turkish Statistical Institute announced that 22.4% of the households in Turkey live below the poverty line (TurkStat, 2014). Besides, as of March 2015, the official unemployment rate has been declared as 10.6% (TurkStat, 2015). Especially among young people (aged between 15 and 24 years), the unemployment rate goes up to almost 20% (TurkStat, 2015). Therefore, there is no substantial demand or push from society to force the public sector to address climate change.

## 5 CONCLUDING REMARKS

Turkey will be seriously affected by the impacts of climate change. As a highly urbanized country, cities are at most risk from climate change in Turkey. Climate change adaptation has to be a major policy goal for both national and local governments. Despite the importance of adaptation for Turkey, progress towards the adoption of climate change adaptation goals and strategies is very limited. Although key policy documents have been developed and enacted by the national government, practical outcomes at the local level are yet to come. Local governments face various barriers, which prevent them to develop a systemic approach to climate change adaptation by mainstreaming adaptation into key sectors of urban development.

Most of the barriers observed in the Turkish case are in line with the international experience. Turkish local governments suffer from insufficient human, technical and financial resources to develop systemic and structural responses to climate change impacts. Furthermore, there are no binding regulations and

guidelines that force municipalities to mainstream climate change concerns into existing policy frameworks on risk management and urban planning. Lack of awareness is another main barrier in the Turkish local context. Awareness problem has two dimensions; one is the awareness problem among public officials and the other among the general public. People give more priority to economic and social problems they face, such as unemployment, poverty and social polarization, than climate change vulnerability. Last but not the least, the recent construction boom in Turkey, which resulted in massive urban (re)development and renewal projects in many cities, has turned into a wasted opportunity, as climate change concerns had almost no impact on these projects. When the growing attention on low-carbon city and green building concepts at the international level is considered, the last point could be regarded as a barrier specific to the Turkish case.

A series of reforms by the central government are required in order to overcome the barriers to climate change adaptation in the Turkish local context. First of all, a strong political will should be in place at the national level. Policy and decision-makers should give a high priority to climate change adaptation in their agenda. Following the generation of a strong political will and commitment, binding regulations should be enacted with the aim of strengthening the links between climate policy and other policy fields like disaster risk management, urban planning, housing construction, etc. For instance, climate change adaptation goals and strategies should be incorporated into Urban Development Act and its associated ordinances.

City governments usually follow each other and tend to copy or transfer interesting projects in their jurisdictions. This tendency could be used as an opportunity to widespread climate change adaptation initiatives among cities. For instance, the Japanese government has introduced a national programme named "Environmental Model Cities" so as to reward cities, which take innovative actions or measures for environmental protection (Takemoto, 2011). The rewarding of forerunners as "model towns" is assumed to encourage other cities, where there is limited progress in addressing environmental challenges. Such a programme could be introduced by the MoEU in Turkey, where good reputation usually motivates city governments.

Furthermore, strong links should be set between policymakers and research community. There are examples of collaboration between universities and local governments in Turkey. However, it is mostly the large metropolitan cities that collaborate with the academic community, not the small and mid-size cities that suffer from insufficient technical resources. The gap between policymakers in small and mid-size cities and the researchers needs to be bridged by means of partnerships between universities and municipalities. Such partnerships can also create significant opportunities to raise awareness and understanding of local officials of climate change issues. There are not serious obstacles to prevent such partnerships in Turkey. What is required is the mechanisms and funds that will encourage cities and universities to collaborate. The policy implications mentioned here should be turned into well-designed and sound policies. To do so, further research is required.

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## AUTHORS' PROFILES

### Osman Balaban

Associate professor of urban planning at the Middle East Technical University (METU) in Ankara, Turkey. He earned his Ph.D. from the same university in 2008. Between 2009 and 2012, he worked as a postdoctoral researcher at United Nations University-Institute of Advanced Studies (UNU-IAS) in Yokohama, Japan. His research and teaching interests include urban politics, environmental politics, climate policy and low-carbon urbanism. He has published several papers in peer-reviewed journals and edited books.

### Meltem Şenol Balaban

Assistant professor of urban planning at the Middle East Technical University (METU) in Ankara, Turkey. She earned Ph.D. degrees from the Middle East Technical University (Urban Planning, 2009) and from Tokyo University (Urban Engineering, 2012). Her research and teaching activities focus on urban planning and disaster risk mitigation and management.