TR
MINISTRY OF ENVIRONMENT
AND URBANIZATION

RICARDO-AEA

Pilot project building capacity to prepare city-level climate change adaptation plans in Turkey

Final project report

Report for the UK Foreign and Commonwealth Office and the Ministry of Environment & Urbanization

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BURSA METROPOLITAN MUNICIPALITY

Bluecern
Process systems engineering and sustainability consulting

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Executive summary

Bursa Metropolitan Municipality is developing a city-level climate change adaptation plan which will help the city prepare for climate change.

Ricardo-AEA and Bluecern have provided capacity building training to the Municipality with the support of the Ministry for Environment and Urbanization through the UK Foreign and Commonwealth Office's Prosperity Fund.

This report sets out the aims and objectives of the pilot project and provides a summary of the findings and a roadmap for extending city-level adaptation planning to other cities across Turkey.

Ricardo-AEA is a global sustainability consultancy with expertise in energy and climate change have provided training and support to the Municipality - through workshops, on-going remote coaching and stakeholder engagement - that has helped build knowledge, skills and capability. This pilot project has been funded by the UK Foreign & Commonwealth Office (FCO) in Ankara. It has been delivered with the support of Bluecern, the local project partner who has co-ordinated and supported implementation.

Turkey's Ministry of Environment and Urbanization wants to help cities across Turkey to adapt to climate change. Bursa is pioneering city-level adaptation planning in Turkey and its experiences are being used to develop a Cities Adaptation Support Package (CASP) that will help guide other cities through the city-level climate change adaptation plan-making process.

Three workshops have been held in Bursa which has included training sessions on adaptation plan-making and methods of eliciting information and ideas have been demonstrated. A key component of the workshops was engagement with stakeholders from local and national government departments, building wider awareness and support for adaptation planning and exploring lessons from the pilot for national level planning and policy.

At the conclusion of the capacity building project, Bursa has developed a roadmap towards preparation of a climate change adaptation strategy and action plan that can be adopted and officially endorsed by the Council. Based upon Bursa's experiences and those of European cities, Ricardo-AEA has developed a Cities Adaptation Support Package and a set of recommendations for the Ministry of Environment and Urbanization to help other cities adapt to climate change.

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1 Introduction

Turkey faces a number of challenges as a result of climate change, including rising temperatures, more erratic rainfall, flooding, droughts and higher sea-levels. These threats could have a profound effect on Turkish society, its natural environment and economy.

In response to these challenges, the Government of Turkey has committed to a National Climate Change Adaptation Strategy and Action Plan. It recognises that cities will be crucial in helping the country adapt to climate change and is seeking to help Municipal Government develop their own adaptation strategies.

This objective of the project is to build capacity and provide support to Bursa Metropolitan Municipality as they develop their city-level climate change adaptation strategy and action plan. Bursa is the first Municipality in Turkey to begin the process of understanding their strategic risks and vulnerabilities to climate change and to develop a co-ordinated response. As a pilot city, the experience of its officials will be unique and of value to their peers across the country. The lessons learned are being used to develop a Cities Adaptation Support Package (CASP) that can guide other Municipalities through the city-level climate change adaptation plan-making process and a Roadmap towards a national urban adaptation programme for cities.

The project has been led by Ricardo-AEA with the support of Bluecern. Ricardo-AEA is a global sustainability consultancy with expertise in energy and climate change and is providing training and support to Bursa – through workshops, study visits, on-going remote coaching, stakeholder engagement and dissemination – that will help to build knowledge, skills and capability.

The project has been funded by the UK Foreign & Commonwealth Office (FCO) in Ankara through the Prosperity Fund.

The report is comprised of the following sections:

1.1 Project partners

Ricardo-AEA

Ricardo-AEA is a leading provider of analysis, advice, and data on economically sustainable solutions for the most pressing global energy and environmental challenges. Based in the UK, the company works closely with governments, cities and businesses around the world to help them prepare for the impacts of climate change.

The project team have extensive experience of supporting cities develop and implement their climate change adaptation strategies. On behalf of the European Commission, Ricardo-AEA has recently helped 21 cities develop their climate change adaptation strategies through research, training and consultancy support. This work has formed the basis of the European Commission's approach ahead for supporting the development of adaptation strategies in European cities. The project team have drawn upon this experience to ensure that Bursa benefits from European practice, providing tried and tested training to the Municipality.

Bluecern

Bluecern Process Systems Engineering and Sustainability Consulting, 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 Government of Turkey. Bluecern has a particular focus on energy and thermal energy systems, carbon footprint, life cycle assessment, costing for sustainability.

Bluecern initiated the project and has used its knowledge and experience of Turkey co-ordinate the project and support implementation.

Ministry of Environment and Urbanization

The Turkish Ministry of Environment and Urbanization has lead responsibility for the national adaptation strategy and has adopted an action plan which delegates responsibility to agencies and identifies key partners and targets for implementation. The strategy recognises the important role of local action in adaptation planning and City Municipalities are identified as key partner in delivering the national strategy. This pilot project with Bursa Metropolitan Municipality is seen as an opportunity to learn from European experiences of city-level adaptation planning and to develop an approach which can be replicated in other cities across Turkey.

The Ministry has given the project its full support and has been involved in planning the workshops and in generating awareness. It has also contributed to the development of the Cities Adaptation Support Package which will subsequently be disseminated by the Ministry to other Municipalities across Turkey.

Bursa Metropolitan Municipality

The city of Bursa is situated on the southern part of Marmara Region in Turkey and is one of the largest cities in Turkey. Bursa is a city of commerce and industry with competitive strength in automotive and machinery, furniture, textiles and food industries. The city is also at the centre of the countries Ottoman history and is a destination for its culture as well as its natural heritage.

The Municipality has become increasingly aware of the threat posed by climate change, with recent experience of damaging floods and landslides. Bursa is reliant upon snow-melt from nearby Mt Uludağ for its water supply. Rising temperatures, changing precipitation patterns and industrial water pollution are increasing the vulnerability of its water resources. The Municipality committed to preparing a climate change action plan to address these risks and was keen to gain support through the FCO Prosperity Fund.

Bursa's Division of Environmental Protection and Control has responsibility for developing the climate change action plan and were the key participants in the project. Other local government departments from Bursa and provincial agencies also participated in the project workshops.

UK Foreign & Commonwealth Office Prosperity Fund

The Foreign & Commonwealth Office launched the Prosperity Fund in April 2011. It is a Strategic Programme fund which promotes action on global issues in areas of strategic importance to the UK. Since its launch, the fund has supported almost 500 projects to tackle climate change, strengthen energy security and promote an open global economy in key emerging economies.

Turkey is one of the FCO's priority countries and is supporting projects in three key areas:

- Open Economy - Working for a transparent and strong rules-based international economic system.
- Energy Security & Efficiency - Working for resilient energy markets and better functioning of global energy markets.
- Climate Change - Helping to create a low carbon economy, and promoting science and innovation as solutions to global challenges.

The Prosperity Fund in Turkey is managed by the British Embassy, Ankara and expects funded projects to have the support of host governments. It aim is to support practical and high-impact projects that lead to transformative policy responses and actions that can be replicated and scaled-up to maximise impact.

1.2 Aims and objectives

The overall aim of the pilot project is to help Turkey improve its capacity to effectively implement its national adaptation plan and develop city-level adaptation strategies. To achieve this aim, the project had the following key objectives:

1. Build capacity to develop and implement a city-level climate change adaptation plan in Bursa Metropolitan Municipality.
2. Develop a Cities Adaptation Support Package (CASP) to guide other cities across Turkey in the development of climate change adaptation plans.
3. Assist the Ministry in developing a roadmap for continuing support for city-level adaptation planning, implementing Turkey's national climate change policy.

1.3 Project activities and outputs

The project comprised the following main tasks which respond to the pillars of capacity building, knowledge development and legacy. It approach was developed with the Ministry of Environment and Urbanization and the Municipality of Bursa.

- Initial Inception Meeting with Project Participants (August 2013)
- Baseline review of adaptation at the national level and in Bursa.

- Initial Workshop with Department of Environmental Control and Protection, Municipality of Bursa (Sept 2013) including:
  - Project presentation to key stakeholders
  - Training for practitioners in Bursa on adaptation planning
  - Baseline analysis review, climate risk and vulnerability screening, identification of priorities and initial action plan development.

- Remote Coaching to support Department of Environmental Control and Protection in achieving agreed actions (Sept-Nov 2013)

- Second workshop with Department of Environmental Control and Protection including key stakeholders in Bursa (Dec 2013)
  - Inclusive climate risk screening with wider stakeholders
  - Further training for participants
  - Identification of priority risks and adaptation options for further exploration

- Final Workshop in Bursa to agree next steps in development of final Climate Change Adaptation Action Plan by Municipality (Feb 2014)
- Design and development of Cities Adaptation Support Package (CASP) and Roadmap with Municipality and Ministry (Mar 2014)

- Final Report with Roadmap and CASP submitted to the Ministry of Environment and Urbanization (Mar 2014).

2 Policy review

A policy review was undertaken in order to understand the national adaptation context, and the local level of awareness of climate hazards; vulnerable systems and assets; and existing policy actions in Bursa.

Ricardo-AEA with local partner Bluecern identified a series of relevant questions and information required to assist in the collation of the policy review. Bluecern liaised with the Ministry of Environment and Urbanization and the Municipality of Bursa to provide an understanding of the current status of adaptation in Bursa at the city level and in Turkey at the national level.

The policy review is available in a separate document and is summarised below.

2.1 Climate threats and impacts expected for Turkey

Besides the long-term impacts of climate change, Turkey is a country that is currently struggling against the vulnerability of its water resources and coastal areas as well as trying to adapt its agricultural activities to the existing climatic conditions. Turkey could suffer some of the most significant impacts of climate change compared to other Mediterranean countries, since it is an agriculture country, its water resources are diminishing, and tourism makes an important contribution to the economy.

Turkey's First National Communication on Climate Change prepared in 2007, indicates the impacts of climate change in Turkey to be; increasing summer temperatures, decreasing winter precipitation in western provinces, loss of surface water, increased frequency of droughts, land degradation, coastal erosion and floods. A considerable part of the population in Turkey is concentrated in the coastal areas which are facing rising sea levels, salty water mixing with fresh water and more frequently observed meteorological hazards. In inland regions the pressures on natural resources have also been observed to increase also due to the impacts of climate change.

In recent years Turkey has faced a number of severe weather events, most notably:

- Low levels of winter snows in 2004, increasing mountain run-off and effecting water supplies in certain regions,
- A severe heat wave and drought in 2007 across the Marmara region that required the introduction of drought action plans and caused an increase in food prices across Turkey,
- A further heat wave in 2010 led to an increase in forest fires across Turkey.
- Severe floods in Northern Turkey due to extremely heavy rainfall over a short period of time in 2010, and repeated to a slightly lesser extent in other recent years.

Although the impacts of climate change in Turkey seem to pose a serious threat in the future, it is also envisaged that these impacts will bring with them some opportunities if planned for carefully.

Turkey became an official party to the United Nations Framework Convention on Climate Change (UNFCCC) which has been in force since 21 March 2004. Turkey recognises that the policies and measures implemented to combat climate change must be defined by its national context and skills.

The National Climate Change Adaptation Strategy and Action Plan are focused on five important fields which are supported by technical and scientific studies and participatory processes.

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

For more detail on these sector actions please see previous project reports.

2.2 Key national adaptation documents

A national level climate adaptation action plan has been submitted to the Ministry of Environment and Urban Planning and is awaiting approval. Cities have been asked to prepare individual adaptation action plans. There is currently no existing guidance or services for adaptation at the city level in Turkey.

Key documents include:

- Turkey's National Climate Change Adaptation Strategy and Action Plan http://www.csb.gov.tr/db/iklim/editordosya/Adaptation_Strategy.pdf
- Climate Change and Turkey Brochure http://www.csb.gov.tr/db/iklim/editordosya/BROSUR_ENG.pdf
- Climate Change Action Plan 2011 – 2023 for Turkey http://www.csb.gov.tr/db/iklim/editordosya/IDEP_ENG.pdf
- Climate Change Strategy 2010-2020 for Turkey http://www.csb.gov.tr/db/iklim/editordosya/IDES_ENG.pdf

Climate change is covered in the 9th Development Plan (2011) of Turkey and is indirectly touched upon in individual sectoral plans, though it has been recognised that these plans are not holistic or particularly detailed in regards to climate impacts and adaptation measures.

There is no legal framework as yet that includes climate adaptation, though as part of the National Climate Change Adaptation Action Plan a stocktaking analysis will be done to assess this more fully and identify where this can be changed.

2.3 Climate services, climate projections and observations data available for Turkey

Turkey started working on regional climate projections to set the basis for impact assessment and adaptation efforts for climate change in 2005. Turkey's First National Communication further accelerated these efforts that are mainly carried out by the ITU Eurasia Institute of Earth Sciences.

A number of climate studies of Turkey at the national level have been conducted in recent years, including:

- The IPCC A2 Scenario for the Western Mediterranean region
- Studies of precipitation levels across by Önol and Semazzi, 2009 and sensitivity simulations by Bozkurt and Sen, 2011.
- Detailed regional projections have been developed by the Istanbul Technical University and by the UN Joint Programme on Enhancing the Capacity of Turkey to Adapt to Climate Change.

Currently no assessments have been carried out at the local level.

2.4 Key national adaptation actors & research projects

The Ministry of Environment and Urban Planning is ultimately responsible for co-ordinating the development and implementation of national adaptation policy. Institutionally, Ministry of Environment and Urbanization was appointed as national focal point for training and raising awareness on climate change as foreseen by article 6 of the UNFCCC.

Other key departments include:

- Disaster and Emergency Management Presidency
- Ministry of Energy and Natural Resources
- Ministry of Food, Agriculture and Livestock
- Ministry of Forestry and Water Affairs

Other stakeholders involved include local universities and research organisations such as TUBITAK Marmara Research Centre. International Finance Institutions such as the EIB, EBRD and the World Bank have started to develop a range of adaptation-focussed initiatives for Turkey.

One of the most important activities carried out during the preparation of National Climate Change Adaption Strategy is Community Based Adaption to Climate Change in the Seyhan River Basin Grants Programme.

Key priorities for the National Climate Change Adaptation Strategy ahead include:

- The introduction of enhanced planning practices
- New research and data systems
- New infrastructure and restrictions
- New technology
- Awareness raising and training
- Early warning systems
- Insurance and precautionary plans
- Emergency planning

Bursa adaptation baseline

Bursa is situated on the southern part of Marmara Region in Turkey. With a total population of 2,652,126 (2011) over an area of 10.9 km2, Bursa covers a length of 135 km of Marmara's coastline.

A leading city as a destination of migration and high population growth, Bursa is known for its green identity thanks to natural riches. Bursa is both an industrial city with its competitive power particularly in automotive and machinery, furniture, textiles and food industries, and a city of commerce due to its location on the junction of land and marine routes.

While Bursa has a mild climate overall, there are climatic variations in the region. In the Bursa province itself, winters generally feature plenty of precipitation, and summers have some precipitation that precludes drought.

Mountains cover about 35% and plains 17% of the terrain in the province. Bursa province boasts 2.23% of the entire forest coverage of Turkey. The topography in the province features compartmented lowlands and mountains. The major lowlands include Lakes Iznik and Uluabat and plains of Yenisehir, Bursa and Inegöl. Mount Uludag, 2,543m in height, is an important source of water for Bursa.

2.4.1 Local governance

In the present state, Bursa Metropolitan Municipality is in charge of 7 districts. Other 10 districts within the boundaries of Bursa district are under the charge of the Special Provincial Administration affiliated with the Governorship of Bursa.

However, the newly enacted Law No. 6360 on Metropolitan Municipality augments the powers of metropolitan municipalities and all districts are entrusted to the metropolitan municipalities. Municipalities will have more responsibility in rural development as well. The new law will go into force upon the elections in 2014. For example, the Municipality will become responsible for the agricultural communities on the outskirts of Bursa, including the management of its water supplies.

The Mayor of Bursa Metropolitan Municipality is also the President of the Union of Marmara Municipalities and the Turkish Healthy Cities Association, with responsibilities including sharing knowledge, providing training and co-ordinating the activities of the municipalities in a number of key areas and efforts to join the EU.

For Bursa, three new main development axes have been identified as priorities for the Bursa, Bilecik Eskişehir Region Plan 2014-2023:

- High competitiveness in the International Area
- Human Development and Social Inclusion
- Balanced spatial development and sustainable environment – including the development of an adaptation strategy and action plan

These priority areas will influence planning and decision making within the city ahead, and will inform the selection of projects the municipality will pursue.

2.4.2 Key city vulnerabilities

No adequate Bursa-wide study has been conducted on the vulnerability to climate change. However priority issues have been identified as:

- Water resources from Mount Uludag have been recognised as vulnerable to climate change. Most of the city's water is provided by melt water from Uludag, and a decrease in winter snowfall and increased run-off will put significant pressure on local industry and communities.
- Many highly specialised plants and crops are grown around Uludag such as mulberry trees and chestnut trees which the local economy depends upon. These are highly sensitive to temperature changes and a decrease in their numbers has already been noticed.
- Groundwater supplies are increasingly threatened due to growing demand from industry and pollution of water sources by the local economy.

Local nature parks and lakes are already suffering a loss of biodiversity and this is set to continue. Local fishing communities have dwindled as a result.

2.4.3 Impact of extreme events

Bursa has started to experience increasingly erratic weather patterns and extreme weather events, a few examples of which are described below.

Reduction in winter snowfall level (increasingly regular)

Mount Uludağ is a particularly important tourist destination for skiing and winter sports, as well as providing much of the city's water supply through snowmelt. In recent years there have been a number of occasions (including the winter of 2013-2014) where snowfall has been extremely low, threatening water supplies and the local tourism industry,

A union formed by hotel operators attempted to precipitate artificial snow that purchased a snowing machine in order to prevent adverse effects of the paucity of snow in 2001 at Mount Uludağ, an important winter tourism resort. However this was not particularly successful.

Severe Drought (2007)

Turkey experienced a severe drought in 2007 which also affected Bursa, badly affecting the rural areas which were most affected by the drought, leading to increases in prices of vegetables and fruits.

In this context, the Bursa Drought Action Plan was prepared under the leadership of Governorship of Bursa with participation from relevant organizations. The plan put in place measures for the prevention of illegal water use, water conservation, inter-agency coordination and efficiency issues in the agricultural sector. The plan was created with the participation on a number of Municipality departments, provincial directorates, universities and trade organisations.

Flooding (2010)

In October 2010, Bursa experienced the disaster of flood. Many **homes** and businesses were flooded. Many people were adversely affected due to the surge of streams, and blockage of rain drains on streets and avenues. Since then, the Municipality has started to plan more actively for flood events in the city.

2.4.4 Key adaptation actors in Bursa

City adaptation policies are being developed under the coordination of Bursa Metropolitan Municipality, specifically the Division of Environmental Protection and Control with the support of relevant departments.

These include:

- Division of Land and Urban Development
- Division of Urban Aesthetics
- Division of Transport
- General Directorate of BUSKI (Bursa Water and Sewer Administration)

Other stakeholders involved in the process include:

- Local district municipalities
- Regional Directorate of Forestry
- Provincial Directorate of Land and Urban Development
- Uludag University, Department of Environmental Engineering
- DSI (State Hydraulic Works) Directorate of 1st Region
- Bursa Meteorology Directorate
- Provincial Directorate of National Education
- Provincial Directorate of Health
- Chambers of Agriculture
- TMMOB Chambers of Profession
- Provincial Directorate of Food, Agriculture and Livestock
- Bursa Citizens' Assembly
- Energy Efficiency Association

Bursa Metropolitan Municipality intends to prepare a climate change action plan as a performance indicator for the year 2013 for the strategic goal identified under the Focus 12 improving environmental health services in the strategic plan prepared in line with the vision of *"Bursa, meriting the title of a European city"*.

3 Training and capacity building

This section provides a summary of the training and capacity building activities undertaken through the project and provides a summary of the underpinning principles and resources used. It includes an initial comparison with city-level adaptation planning practice and policy context in Europe.

More information about the adaptation plan making process and guidance for cities in Turkey can be found in the Cities Adaptation Support Package project output.

3.1 The adaptation plan-making process

There are many well regarded approaches to planning for urban climate change adaptation. The majority follow an established process and are generally complementary rather than competing. In this project, the European Environment Agency's 6-step Adaptation Support Tool (AST) has been used as a framework for the training materials and workshops.

The project team has experience of using the AST and contributed to its development and dissemination on behalf of the European Environment Agency. The 6-steps are:

1. Getting started
2. Assessing risks and vulnerability to climate change
3. Identifying adaptation options
4. Assessing adaptation options
5. Implementation
6. Monitoring and evaluation

The AST process has been tailored to the Turkish context for the pilot project and has been modified in response to suggestions made by the Municipality's adaptation team. Each step involved a number of exercises that help to identify and think through the issues with stakeholders. The exercises were also used stimulate discussion at stakeholder events.

The AST process is aligned with a number of European information resources and tools that can continue to support the development of urban strategies in Turkey. More information on the AST can be found on the Climate-ADAPT portal[1].

3.2 EU cities project

Ricardo-AEA led a project to provide adaptation capacity building and assistance to 21 European cities in 2012-13. The lessons learnt from that project have been used to inform the approach taken to training and capacity building in the Bursa pilot project.

The European Commission's DG Climate Action is responsible for ensuring that the climate change is integrated into European policies and also facilitates adaptation to reduce the European Union's vulnerability to the impacts of climate change.

[1] Climate-ADAPT platform: http://climate-adapt.eea.europa.eu/web/guest/adaptation-support-tool/step-1

The aim of this project was to provide capacity building and assistance for European cities in developing and implementing an adaptation strategy by raising awareness throughout Europe on the importance of preparing for climate change in cities, exchanging knowledge and good practices, and developing tools and guidance for cities on adaptation. 21 cities were involved in the project, as peers, trainees and adaptation pilots (see map below) setting an example for the majority of the other cities in EU-27. A web-based platform provides a focal point for information exchange and access to the tools developed for the project.

The project was undertaken by a consortium which was led by Ricardo-AEA and included ICLEI, the University of Manchester, Adelphi, Arcadis and Alexander Ballard Ltd.

This project also provided the Commission with a synthesis of current knowledge on impacts and vulnerabilities at city level, the state of play on adaptation across European cities and capacities to respond. This confirmed an emerging understanding of the capacity[2] of European cities to develop adaptation strategies:

- Adaptive capacity comprises several components (e.g. knowledge, equity, access to technology and infrastructure; economic resources and effective institutions) which need to be supported through longer-term development of structural conditions. Short-term promotion of coping capacity measures in response to specific risks will also be required.

[2] Capacity or adaptive capacity: The potential of an individual, system or organisation to design and implement effective adaptation strategies to adjust to information about potential or actual climate variability and extreme weather, to moderate potential damages, to take advantage of opportunities, or to cope with the consequences of climate change. Adaptive capacity is an important prerequisite to city stakeholders planning for climate change and undertaking adaptation.

- Current adaptive capacity appears to vary, both within and between countries. While some components of adaptive capacity are dependent on national or regional circumstances, there are other components which relate more uniquely to individual cities.
- Some geographical trends indicate that cities in northern and western Europe are characterised by higher levels of some factors that may be expected to support a higher level of adaptive capacity (including education, access to knowledge and technology, effectiveness of the government, and economic resources) than cities in the east or south.
- The differences between European cities present an excellent opportunity for exchange of experiences and peer-learning. However, this needs to be undertaken in the context of the level of development of specific cities, and it should not be assumed that geographical proximity is sufficient to drive learning strategies.

3.2.1 Comparison with EU adaptation planning

The European Union's Strategy for Adaptation to Climate Change expects Member States to prepare National Adaptation Strategies voluntarily. 15 EU Member States have adopted a national adaptation strategy to date with others in preparation[3]. Some EU Member States have also developed sector-specific plans, such as plans to cope with heat waves and droughts, but only a minority have carried out a comprehensive vulnerability assessment to underpin policy. Monitoring and evaluation is at a particularly early stage with frameworks and indicators emerging in leading nations[4]. Turkey has adopted a National Adaptation Strategy and Action Plan. It asks cities to prepare their own strategy to prepare for the impacts of climate change. Turkey's adopted national plan creates a stronger framework for adaptation in cities then in some European countries. However, encouragement, support and resource can be necessary if broader engagement and planning is to be achieved.

The EU's Strategy for Adaptation to Climate Change recognises the important role of cities in building resilience to climate change and has increased city-level capacity through Ricardo-AEA's Adaptation Strategies for European Cities programme. Many major cities have independently developed plans outside of this programme. Small and medium cities are less likely to have an adaptation plan, particularly where national frameworks and support are absent.

The city of Bursa is moving ahead with the development of its climate adaptation strategy and action plan and is in a position to share its experiences with other municipalities. As with European cities, the capacity of staff and the existence of a clear mandate are likely to be a common barrier to adaptation planning in Turkey. In this context, Bursa can be regarded as being in a strong position relative to many European cities.

[3] See http://climate-adapt.eea.europa.eu/web/guest/adaptation-strategies
[4] EU Adaptation Strategy 2013 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:DKEY=725522:EN:NOT

3.3 Training and Capacity Building Workshops

Three training and capacity building workshops have been held in Bursa which has addressed key adaptation concepts, adaptation planning methods, and techniques for eliciting information from shareholders. A key component of the workshops was engagement with stakeholders from local and national government departments, building support for adaptation planning and exploring lessons from the pilot for national level planning and policy.

The workshops were primarily aimed at the Department of Environmental Protection and Control within the Municipality of Bursa, which is responsible for the development of the city's adaptation strategy, as well as representatives from the Ministry of Environment and Urbanization and Ministry of Forestry and Water Affairs.

Individual workshop reports are available separately which detail the agendas, activities and stakeholders.

3.4 First workshop

The first workshop was held In Bursa in August 2013. Activities included engagement with stakeholders, training and capacity building on adaptation planning, undertaking a baseline analysis and establishing a work plan of activities to progress.

The main aim of the workshop was to help the municipality develop a better understanding of its current and future risks from climate change and how to develop an appropriate adaptation strategy. It was also an opportunity for the Ministry to better understand the challenges of developing an adaptation strategy at the city level and what support they may need to provide in the future.

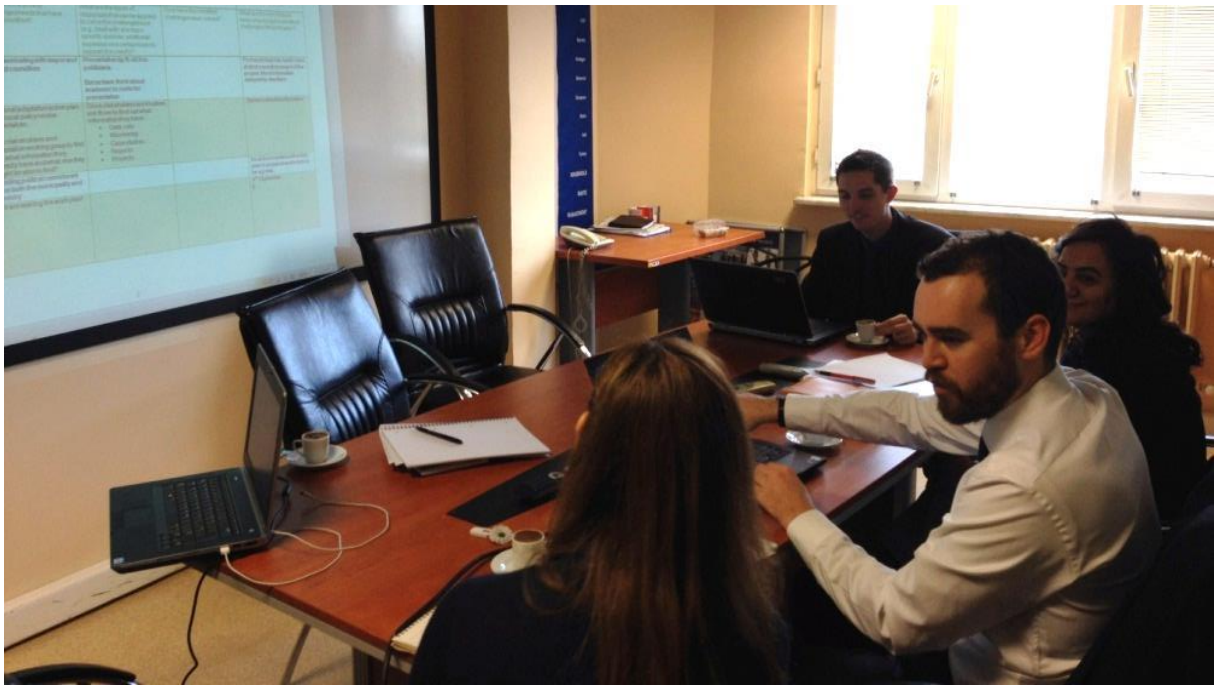

Figure 1: Raphael Sibille taking participants through the project exercises

Over the course of the workshop, the project team took the Municipality and Ministry staff through:

1. An initial review of Bursa's current understanding of potential climate impacts and levels of preparedness.
2. A series of exercises to identify and prioritise key climate impacts, vulnerabilities and risks, as well as key stakeholders to engage and gaps in information that needed to be addressed.
3. The next steps in the adaptation process and agreeing activities to undertake in preparation for the next workshop.

Figure 2: Attendees at the first workshop in Bursa, August 2013.

A stakeholder workshop was also held with representatives from different departments within the Municipality as well as from neighbouring districts to increase awareness of the project and build their support for it.

3.5 Second workshop

The second workshop was held in Bursa 3rd - 5th December and completed the AST training and provided support to the Municipality in the development of the strategy.

Since the first workshop, the Municipality staff had made good progress in developing strategy and engaging others. The core adaptation team in the Department of Environmental Protection and Control had further developed a good understanding of the risks facing Bursa, the stakeholders they need to engage to address these risks and have started to do so. The second workshop helped to support their work by providing further useful information and catalysing conversations with other stakeholders in the municipality and national government.

The second workshop also included presentations on examples of adaptation measures that are being implemented in other counties and debate as to whether they could be adopted in Bursa to address the priority risks, including surface water management. The project team was accompanied by specialist water management consultant Aaron Burton (Ricardo-AEA) and experts from the Ministry of Forestry and Water Affairs who held a number of presentations and discussions with the Municipality of catchment and neighbourhood-scale approaches to water management in the city.

The workshop also included a discussion on climate finance options for cities such as Bursa to identify what sources of funding they could pursue, depending upon the projects they wish to develop.

Figure 3: Aaron Burton Presenting on Water Management

The workshop also included an interactive session with stakeholders from across Bursa to participate in an initial identification and prioritisation of risks for the strategy and building their support for continuing involvement in the process in future.

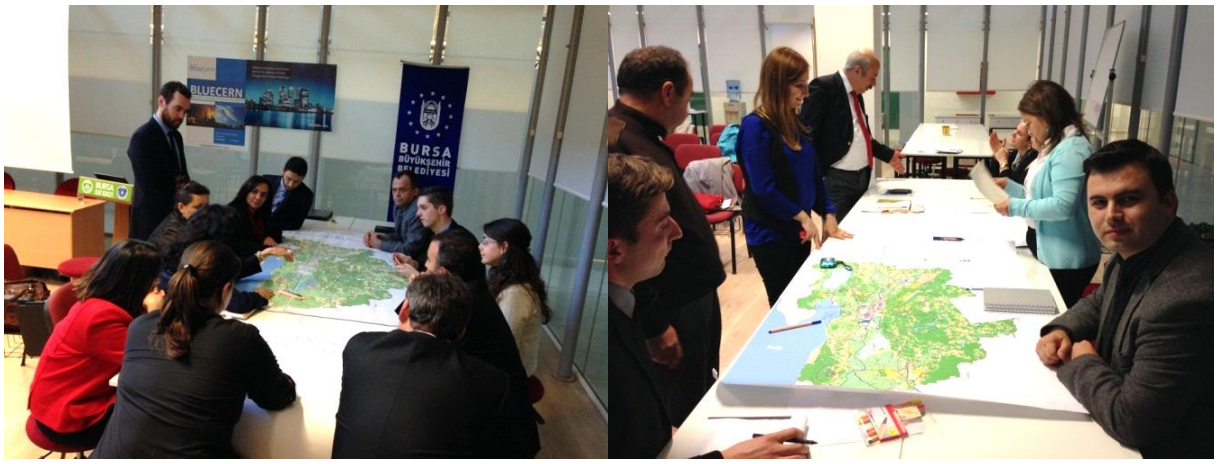

Figure 4: Risk mapping exercise with stakeholders

3.6 Final workshop

The final workshop was held in February 2014 in Bursa with subsequent meetings in Ankara to share the project outputs with national-level decision-makers and to discuss how the Ministry of Environment and Urbanization could continue to support for city-level adaptation planning.

The focus on the final workshop was to review and reflect on the progress Bursa has made, to finalise a roadmap towards adoption of the plan, and to share the projects successes and lessons with a broad range stakeholders; including neighbouring municipalities, local and provincial officials and Ministry representatives.

The project team had a separate meeting and discussion with the Ministry of Environment and Urbanization to discuss the future of city-level climate change adaptation in Turkey and future project possibilities. It also included a general review of the project by the Ministry and a discussion about the final design of the CASP and roadmap.

For a full description of the workshops, please see the individual project workshop reports.

4 Stakeholder events

An important aim of the project was to engage municipal and national government stakeholders in the process of developing the strategy. This was felt to be essential for the success of the development of Bursa's adaptation strategy as well as encouraging other cities to start developing their own strategies.

4.1 Stakeholder Engagement Activities

A stakeholder workshop event was held on 4th December and on the 18th of February to present the project along with its aims and objectives.

Figure 5: Izzet Ceren (Bluecern) and Raphael Sibille (Ricardo-AEA)

Attendees were given an opportunity to share their views and observations. The discussion has been used to shape the design and content of a Cities Adaptation Support Package (CASP) that will guide other cities through the City-Level Climate Change Adaptation Plan-making process and the roadmap.

Figure 6: Attendees at the stakeholder event during the second Bursa workshop

In addition to the project team, the first stakeholder events were attended by representatives from different departments within the Municipality of Bursa, neighbouring city councils, ministers and their staff. A private reception in the evening also included a number of local and national journalists from who provided press coverage of the project.

Figure 7: Evening reception

Figure 8: Stakeholders and the project team at the second stakeholder workshop

The final workshop provided the opportunity for the municipality staff to present the work they had done in developing an adaptation strategy with stakeholders across Bursa as well as neighbouring municipalities. It also provided an opportunity for the Ministry of Environment and Urbanization and the Ministry of Forestry and Water Affairs to present on their respective work and take questions from the audience.

Figure 9: Final workshop stakeholders and project team

Through the conversations with stakeholders across the municipality it became apparent that other departments and teams have also started to look at climate impact risks in their areas of interest. Now that they are aware of the project, there are good opportunities for them to work together in a co-ordinated manner.

During the final workshop, the project team had the opportunity to meet with senior officials from across the Ministry to discuss the project and its implications for Turkey's strategy on climate change adaptation ahead.

Figure 10: Izzet Ceren (Bluecern) meeting with Prof. Dr. Mustafa Ozturk, The Secretary of Environmental and Urbanisation Ministry and Professor Prof. Dr Nuri Uslu President of the Association of Turkish World MPs and Deputy Secretary of the Union of Turkish MPs

4.2 Media Engagement

The workshop and associated events in Bursa attracted attention from both local and national media which will support increased awareness of climate change adaptation activities, as well the project team and the FCO's Prosperity Fund. This includes:

- A selection of Turkish language media reports :
- http://www.haberler.com/iklim-degisikliginin-turkiye-nin-su-kaynaklarina-5420541-haberi/
- http://suyonetimi.ormansu.gov.tr/anasayfa/resimlihaber/13-12-11/%C4%B0KL%C4%B0M_UYUM_STRATEJ%C4%B0LER%C4%B0N%C4%B0N_GEL%C4%B0%C5%9ET%C4%B0R%C4%B0LMES%C4%B0_%C4%B0%C3%87%C4%B0N_KURUMSAL_VE_TEKN%C4%B0K_KAPAS%C4%B0TEN%C4%B0N_ARTTIRILMASI_PROJES%C4%B0N%C4%B0N_2_%C3%87ALI%C5%9ETAYI_D%C3%9CZENLEND%C4%B0.aspx?sflang=tr

- Bursa Metropolitan Municipality website press release http://www.bursa.bel.tr/gundem-iklim-uyum-stratejileri/haber/15412/

- Ricardo-AEA newsroom press release (which was accompanied by a series of tweets from @Ricardo_AEA) http://www.ricardo-aea.com/cms/project-to-help-turkey-adapt-to-climate-change-underway-2/

Figure 11: Samples of media coverage following the 1st workshop

Ricardo-AEA and Bluecern also presented to the business community in Bursa and the Anatolian region at an event kindly hosted by Bursa Ticaret ve Sanayi Odasi (BTSO) on the project and wider sustainability issues such as water management and energy use. The event was covered nationally by the Hurriyet Economy Newspaper.

Btso Yönetim Kurulu Üyesi Şakir Umutkan Açıklaması

03 Aralık 2013 15:57

BTSO tarafından düzenlenen "Yenilinebilir Enerji, Enerji Verimliliği ve Atık Yönetimi" toplantısı İngiliz Ricardo-AEA ve Bluecern Enerji ve Çevre Danışmanlığı temsilcilerinin katılımlarıyla gerçekleştirildi.
Enerji ve çevrenin birbirini...

1 Gecede Sivilcelerinizin Gitmesine Yardımcı Tek Formül!
'Acilen İngilizce Öğrenmem Gerekiyor.' Diyenler Buraya Tıkla

Bu konuda haber almak ister misiniz?

BTSO tarafından düzenlenen "Yenilinebilir Enerji, Enerji Verimliliği ve Atık Yönetimi" toplantısı İngiliz Ricardo-AEA ve Bluecern Enerji ve Çevre Danışmanlığı temsilcilerinin katılımlarıyla gerçekleştirildi.

Enerji ve çevrenin birbirini tamamlayan iki unsur olarak ele alındığı toplantıda açılış konuşmasını Bursa Ticaret Ve Sanayi Odası Yönetim Kurulu Üyesi Şakir Umutkan yaptı. Umutkan, teknolojinin hızla yaygınlaştığı ve geliştiği milenyum devri içinde,

Figure 12: Hurriyet Economy Newspaper Coverage of BTSO event

For a full description of the stakeholder events, please see the individual project workshop reports.

5 The Cities Adaptation Support Package

The Cities Adaptation Support Package is a guide to the climate change adaptation plan-making process for Municipalities in Turkey. It provides links to useful tools, supporting literature, case studies and practical exercises. It was developed by Ricardo-AEA in participation with the project partners. The purpose, design and content were elaborated through discussions with the Municipality and the respective ministries.

The Cities Adaptation Support Package has three parts:

Part 1	Climate change and Turkey: A summary of climate change projections and impacts, and the national policy context
Part 2	Adaptation plan-making guide: A step-by-step process for preparing a city-level adaptation plan
Part 3	Exercise instructions: Practical activities that can help you explore climate change issues within the Municipality and with stakeholder

The Cities Adaptation Support Package uses the European Environment Agency's 6-step Adaptation Support Tool (AST) as a framework.

Its 6-step plan-making process is:

1. Getting started
2. Assessing risks and vulnerability to climate change
3. Identifying adaptation options
4. Assessing adaptation options
5. Implementation
6. Monitoring and evaluation

The AST process has been tailored to the Turkish context for the pilot project and has been modified in response to suggestions made by Bursa Metropolitan Municipality. Each step involved a number of exercises that help to identify and think through the issues. The exercises can also be used to stimulate discussion at stakeholder events.

The AST process is aligned with a number of European information resources and tools that can continue to support the development of urban strategies in Turkey.

The Cities Adaptation Support Package will be accessible via the Ministry of Environment and Urbanization.

6 Conclusions and recommendations

The overall aim of the pilot project is to help Turkey improve its capacity to effectively implement its national adaptation plan and develop city-level adaptation strategies. To achieve this aim, the project had the following key objectives:

1. Build capacity to develop and implement a city-level climate change adaptation plan in Bursa Metropolitan Municipality.
2. Develop a Cities Adaptation Support Package (CASP) to guide other cities across Turkey in the development of climate change adaptation plans.
3. Assist the Ministry in developing a roadmap for continuing support for city-level adaptation planning, implementing Turkey's national climate change policy.

A summary of the findings and recommendation related to each objective is presented below.

6.1 Building Capacity to develop and implement a city-level climate change adaptation plan in Bursa

Over the course of the project, experts from Ricardo-AEA provided capacity building and training to key staff within the Municipality of Bursa on the adaptation plan-making process and the use of supporting tools. The responsible officers within the Department of Environmental Protection and Control, including Yıldız Cindoruk and Hatice Unlu in particular have increased confidence in their abilities and have greater awareness of adaptation practice internationally and have used it to identify the steps that need to be taken ahead.

The capacity building training has resulted in the following outcomes:

1. A clear mandate from the current Mayor to develop a city-level adaptation plan.
2. Establishment of a core adaptation team and wider adaptation working group comprising colleagues from other departments within the Municipality and strategic partner organisations.
3. Initial identification and prioritisation of climate impacts and risks to Bursa as well as vulnerable systems and assets. It is a basis for undertaking targeted adaptation options appraisal and stakeholder consultation in developing its adaptation strategy.
4. Engagement with internal and external stakeholders and decision-makers on climate change adaptation. It has raised awareness of the need to adapt and has communicated the short and long-run benefits. An understanding of the role that different stakeholders have in the development of the strategy and the importance of building and maintaining broad support.
5. Preparation of a roadmap towards the development of a comprehensive and robust adaptation strategy and action plan and an agreed programme of future activities.

Adaptation is a relatively new concept and agreed practices are still evolving. Bursa is a pioneer of urban adaptation planning in Turkey and while it has not yet prepared or adopted its plan, it can consider itself well placed to reduce its vulnerability to climate change relative to many of its peers in Europe. Undoubtedly, Bursa will encounter challenges to its plans and will need on-going support at the local and national level to succeed. The lessons for other cities that have been learned through the pilot project will be included in the CASP.

6.2 Develop a CASP to guide other cities across Turkey in the development of climate change adaptation plans

The immediate legacy of the Bursa pilot project will be a Cities Adaptation Support Package, a practical guide for cities in Turkey to follow when developing their adaptation action plans and strategies. It brings together a description of the adaptation plan-making process and key activities; links to tools, resources and case studies; and draws upon the experiences of Bursa and lessons from the project.

The CASP will be disseminated to other Municipalities and will be made available by the Ministry of Environment and Urbanizatoin. The contents of the guide have been set out in Section 5 above.

6.3 Assist the Ministry in developing a roadmap for continuing support for city-level adaptation planning, implementing Turkey's national climate change policy

The Ministry of Environment and Urbanization have been involved throughout the pilot project. Representatives have attended each of the capacity building workshops and have presented at the stakeholder events. As a result, the Ministry is better positioned to support adaptation planning at the city-level and has an appreciation of the challenges and resource constraints that will need to be overcome during the development phase and implementation.

Some of the key lessons learned through the pilot project are set out below and can help inform the Ministries approach to adaptation planning at the city-level:

- Increasing climate resilience can provide a wide range of social, economic and environmental benefits to Bursa and other cities across Turkey, including:
    - Resilient and reliable infrastructure that can support the private sector and attract new investment
    - Reducing the impact of natural hazards and increasing the speed of recovery
    - Protecting Bursa's identify as a beautiful green city and safeguarding tourism in and around the city
    - Improving the health and wellbeing of citizens
    - Attracting inward investment and green economic growth
- The preparation and adoption of a climate change adaptation plan is an important basis for local action. A clear adaptation plan that identifies the risks, options and the measures that are being taken is an effective way to reduce vulnerability and climate proof development.
- Effective city-level adaptation planning requires political support and commitment at all levels, from municipality departments through to mayoral offices and central government. Increased awareness of the benefits of adaptation planning within government and a robust national adaptation framework can contribute towards the establishment of a supportive policy environment at the city-level.

- Adaptation is an emerging area of research and much can be gained by sharing experiences between countries and cities. Turkey can continue to learn from the experiences of leading European countries and international practice. In turn the experiences of the Ministry and leading cities like Bursa can help promote adaptation planning and climate change action in the policy and practitioner community in neighbouring countries and throughout the Turkic world.
- While the focus of the pilot project has been the preparation of adaptation plans, the implementation of proposed measures will require additional support and resources. International donor organisations active in Turkey are seeking viable opportunities to support adaptation measures and could be help finance delivery. Climate finance offers an opportunity to manage vulnerability while maintaining the current policy focus on economic and social development.

6.4 Recommendations

The pilot project has created a strong foundation for Turkey's future work to increase the resilience of cities to climate change. The project has attracted considerable interest and support from within the municipality, central government and international organisations. This momentum should be maintained. Below are recommendations for activities that would continue to drive city-level adaptation planning in Turkey.

6.4.1 Capacity building

Capacity building within Municipalities should be a priority and would continue to support city-level adaptation planning. Different options for building the pilot project into a wider national programme for adaptation in cities was discussed with the Ministry and could be progressed in a number of ways:

- Adaptation training to cities across Turkey: The pilot project has demonstrated how knowledge and capacity can be significantly increased through training support. This can be leveraged where a number of cities are exchanging knowledge and sharing experiences through peer networks. A programme of training could be developed, in-line with the EU Cities Adaptation project hat increases capacity and creates a community of practice that has the potential to become far more effective and influential.
- Continuing support for the pilot in Bursa: The preparation and implementation of adaptation plans typically takes several years. The current pilot project in Bursa is short term and therefore will not able to provide continuing support throughout the process. A longer term programme of support it may be useful to increase its scale to include the implementation of the strategy and monitoring/evaluating it over time. This would allow Bursa to become a more impressive pilot project for Turkey with greater impact.
- Adaptation support at a water-catchment level: Similarly, adaptation training and support could be used to develop adaptation strategies for a water-catchment area as a whole (which would include cities, towns and villages that were within the same catchment area). An advantage of this approach would be that it would make it easier to co-ordinate water management over large areas and would also aid Turkey in meeting EU regulations on water management as part of the country's accession to the EU. This could be integrated with an ecosystems-led approach.

- Knowledge exchange with countries leading adaptation policy and practice: The UK is a leader in environmental policy and practice and a UK knowledge transfer visit could be used to share this experience. This would allow climate change officials to learn directly from the experience of their counterparts in the UK at the national and local level, allowing them the opportunity to get external advice and guidance on the development of their own policies and practices. This could also act to strengthen professional, cultural and economic ties between the UK and Turkey.

In addition, it is recommended that practitioners within the Ministry and Municipalities engage with existing knowledge networks on climate change adaptation, including the European Environment Agency's Climate-ADAPT platform, of which Turkey is a member country. This can also be used to promote Turkey's work internationally.

6.4.2 National-level measure

A robust national adaptation framework can help create a supportive policy environment at the city-level. Below are a number of recommendations for national-level activities which would respond to issues that have been identified in Bursa and are likely to be shared by other cities:

- A review of policy options for incentivising city-level adaptation planning. It is considered unlikely that city administrations will initiate the process independently and without support. Mandatory requirements or a voluntary approach that uses incentives or gives an opportunity to promote its environmental credentials and preparedness for climate change could potentially be used to drive adoption.
- The development of a national adaptation M&E system which integrates national and provincial information with the Municipality-level would help to build the evidence base for adaptation planning; it could support actions at the local level; track contributions to national resilience goals and allow comparisons between cities.
- Collecting relevant climate data and assessing its fitness for use in M&E of adaptation was highlighted as a key challenge by Bursa. A scoping study to review data available for cities in developing adaptation indicators could be used to inform bottom-up city driven M&E but would also support the development of a national adaptation M&E framework.
- International donor funding for adaptation is growing in scale but can be difficult to access without the appropriate expertise and a suitable pipeline of projects and initiatives requiring funding. This issue is particularly acute at the city level. Support for cities to increase their climate finance readiness, potentially improving access to national and international funding to implement adaptation measures included in plans.
- The experiences of Bursa and Turkey can be an example for Turkic and other neighbouring countries. This could help position Turkey as a leader in climate change. Turkey could extend adaptation knowledge networks and information sharing platforms to other countries and could provide policy and practical advice, potentially using this pilot project as a model.

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