

**A thesis submitted to the Department of Environmental Sciences and Policy of  
Central European University in part fulfillment of the  
Degree of Doctor of Philosophy**

**Multilevel governance of climate change action: a comparative case study of front-runner  
cities in the UK and Hungary**

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### ABSTRACT OF THE DISSERTATION submitted by:

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Cities are increasingly acknowledged as an appropriate governance level to tackle climate change. They are both causing as well as are affected by this global challenge. At the same time local authorities are imbedded into national and supranational institutional and policy contexts, which influence their ability to pursue climate targets at the municipal level. The thesis is an exploration of action against climate change in the urban context, from a multilevel governance perspective. It aims to uncover from a comparative viewpoint why cities, which often operate under resources constraints, engage in climate action and what are the steps of this process.

While sustainable and climate friendly cities in Western democracies have been analyzed extensively, transition country experiences received less attention. The thesis addresses this research gap by comparing the case of the UK, a Western democracy and Hungary, an economy in transition, within the context of the EU. Case studies were conducted in four, middle-sized, front-runner cities: Woking and Leicester in the UK, and Tatabánya and Nyíregyháza in Hungary. These cities were selected as case study sites based in their previous achievements in environmental, sustainable energy and climate action. The research built on qualitative methods, including semi-structured, in-depth interviews, and the analysis of policy and strategic documents. Through this approach a comparative assessment was carried out, uncovering similarities and differences between the UK and the Hungarian experience. In addition to analyzing the details of the emergence of climate action in cities, the study uncovered key drivers, co-benefits and barriers of climate policy at the local authority level. Relevance of the different modes of governing climate change at the local authority level was also compared in the two case study countries.

The evidence and analysis presented suggest that energy cost-saving related co-benefits were key drivers of local authority level climate action in both countries. At the same time the support of local political leaders committed to the climate change issue, their willingness to engage in innovative measures, as well as the presence of relevant expertise at the political and administrative levels of local authorities must be emphasized. EU membership played a crucial role through providing strategic guidance, regulation, financial incentives, and acknowledgement of the results of local authorities. This was especially relevant in Hungary, a country characterized by a relatively weak national climate policy framework. As for the modes of governing, the UK case study cities were at a more advanced stage in the self-governing of climate action at local authorities as organizations. At the Hungarian case study cities enabling was a key mode of governing climate action (especially in the field of residential energy efficiency, which was also supported by national financing programs). Based on the experience of case studies the thesis concludes by identifying elements of a multilevel climate policy framework ideal to support climate action in cities.

**Keywords:** climate change action at the local level, multilevel governance of climate change action, climate friendly cities, Hungary, UK.

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## **LIST OF ABBREVIATIONS**

AAU – Assigned Amount Unit

BERR - Department for Business, Enterprise and Regulatory Reform (UK)

CCC - Committee on Climate Change (UK)

CHP – Combined heat and power

CRC - Carbon Reduction Commitment Energy Efficiency Scheme (UK)

DCLG – Department for Communities and Local Government (UK)

DECC – Department of Energy and Climate Change (UK)

DEFRA - Department for Environment, Food and Rural Affairs (UK)

DG Climate Action - European Commission Directorate-General for Climate Action

DTI – Department of Trade and Industry (UK)

EC – European Commission

ECCP – European Climate Change Programme

EEA – European Environment Agency

EMRCCP - East Midlands Regional Climate Change Partnership (UK)

ENEREA –North Great Plain Regional Energy Agency (Nyíregyháza, Hungary)

EPBD - Energy Performance of Buildings Directive

ESCO – Energy service company

EST – Energy Saving Trust (UK)

EU – European Union

EU ETS – European Union Emission Trading System

GHG – greenhouse gas

GIS - Green Investment Scheme

HAS – Hungarian Academy of Sciences (HU)

HECA - Home Energy Conservation Act (UK)

HM Government – Her Majesty’s Government (UK)

HMSO – Her Majesty’s Stationary Office (UK)

ICLEI – International Council for Local Environmental Initiatives

IEA – International Energy Agency

IMF – International Monetary Fund

IESD - Institute of Energy and Sustainable Development

LA – local authority

LA 21 – Local Agenda 21

LGA – Local Government Association (UK)

LGID - Local Government Improvement and Development (UK)

MEW – Ministry of Environment and Water (HU)

NCCS - National Climate Change Strategy (HU)

NCSD – National Council for Sustainable Development (HU)

NGO – Non-governmental Organization

NI – National Indicator (UK)

NSSD - National Strategy for Sustainable Development (HU)

OECD – Organisation for Economic Co-operation and Development

PV - Photovoltaic

RCEP - Royal Commission on Environmental Pollution (UK)

RES – Renewable energy systems

UCLG – United Cities and Local Governments

UK – United Kingdom

UKCIP – United Kingdom Climate Impacts Programme

UK ETS – UK Emissions Trading Scheme

UNCED – United Nations Conference on Environment and Development

UNEP – United Nations Environment Programme

UNFCCC – United Nations Framework Convention on Climate Change

UN HABITAT – United Nations Human Settlements Programme

VAHAVA – Változás-Hatás-Válaszadás (Change-Impact-Response) National Climate Adaptation Strategy (HU)

VAT – Value Added Tax

WWF – World Wide Fund for Nature



## Chapter 1 INTRODUCTION

This thesis is an exploration of action against climate change in the urban context, from a multilevel governance perspective. Climate action is defined here as comprising both mitigation and adaptation related measures, as well as previous environmental initiatives at the case study cities. The main aim of the research is to uncover through a comparative perspective the motivations and sequence in which the elements of climate action emerge at the local authority level. At the same time it does not intend to assess all possible climate policy measures that can be taken by cities.

The geographic focus of the research is the UK, a Western democracy, and Hungary, a transition economy, both located within the supranational context of the EU. Climate action related policies were reviewed with the multilevel governance perspective of the analysis allowing for the observation of urban climate action within the context of national, supranational and international climate policy processes.<sup>1</sup>

Four, middle sized, front-runner cities (two in the UK and in Hungary respectively) were selected as case study sites. Through the analysis of these cases better understanding is acquired of the motivations of city governments to engage in climate action. Being a newly emerging policy area at the local authority level in both case study countries, climate action must compete for limited resources with existing service areas and tasks of local authorities. To incorporate this aspect the thesis

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<sup>1</sup> The review ended with March 2010.

focuses on local level climate policy, taking into account resource constraints. It explores how climate action has been integrated with existing functions of local authorities, and what solutions case study cities found to deal with resource constraints due to emerging climate action.

The comparative perspective of the research allows for the observation of local authorities facing relatively different resource allocations due to being imbedded in two different country contexts. Taking these considerations into account, the study uncovers reasons behind the emergence, ways of mainstreaming, drivers, co-benefits and barriers of climate policy at the local authority level. Furthermore, understanding can be deepened of the differences and similarities between multilevel governance of climate action in a relatively wealthier older and a relatively less well-off, new member state of the EU.

The target audience of the research includes policy makers from the local authority through the regional, national, EU to the international level. The results are also expected to be valuable for the work of national and transnational networks of sub-national governments for sustainable energy and climate action, environmental and climate policy oriented NGOs, as well as academia. Utility companies and private businesses might also benefit from the research results through identifying points where they can join and benefit from local climate action efforts.

The introductory chapter commences by outlining the background and rationale of the study. The research aim and the overarching research question are introduced,

followed by the explanation of the choice of countries forming the focus of the thesis.

The last section of the chapter outlines the structure of the dissertation.

## **1.1 Rationale of the study – why are cities important in climate change action?**

There is increasing evidence about the challenges that climate change is posing for the world. Warming of the climate system is unequivocal (IPCC 2007), significant harm from changing climatic conditions is already occurring, and further damages are a certainty (SEG 2007). In order to address this global challenge, the governments of most countries in the world joined the United Nations Framework Convention on Climate Change (UNFCCC). Furthermore, connections between the success of global carbon mitigation efforts and city level action to reduce greenhouse gas emissions are increasingly being recognized by research and policy communities (Dhakal and Shrestha 2010). It is also becoming increasingly clear that sub-national action plays a crucial role in delivering nation-state level commitments taken as part of the international climate treaty (Betsill and Bulkeley 2006). City authorities are recognized to be in a better position to deliver climate targets compared to national governments due to their ability to engage local stakeholders and to design locally tailored responses (Corfee-Morlot *et al.* 2009). Furthermore, with relevance to the EU context, the local is an appropriate level for addressing the challenges posed by climate change as it is in line with the subsidiarity principle put down in the 1992 Treaty of Maastricht. According to the principle of subsidiarity decisions should be made at the lowest level of authority, as close to the citizen as possible (EC 2007).

The reasons why urban areas are particularly relevant to climate change action are twofold. Firstly, while cities are the main location of social, economic and

technological development, they are increasingly contributing to and are affected by the impacts of climate change. In the 2008 World Energy Outlook (which devotes a whole chapter to the analysis of energy use in cities) the International Energy Agency estimated that urban primary energy use reached 67% of the world level in 2006 (IEA 2008). This means that in 2006 cities were already responsible for two-thirds of world primary energy consumption, which is expected to reach 73% by 2030 (IEA 2008). In addition to the increasing energy use of cities, the impacts of climate change may also be significant in urban locations (Corfee-Morlot *et al.* 2009). Dominant impacts that are expected to arise relate to flooding, water resource availability, energy demand, as well as public health issues due to heat extremes and ozone (Hunt and Watkiss, 2007). Settlements are already increasingly suffering from these and other impacts of climate change, especially in the global South (Hunt and Watkiss 2007).

Growing world and urban population levels constitute the second reason underlining the significance of climate change action in the urban context. Half of the world population already lives in urban areas, and the proportion of city dwellers is expected to reach 60% by 2030 (UN HABITAT 2009). This population growth is taking place in urban areas of different sizes and functions, ranging from global cities to small towns. This Ph.D. research focuses on middle sized cities, a scale of urban agglomeration recognized for its growing importance. Parallel to the formation of mega-cities, a boom is experienced in the formation of middle sized urban areas, particularly in Africa, Asia and Latin-America, continents where most of the urban population growth is taking place (Davis 2006). Urbanization is also expected to increase in the EU, from 73% in 2008 to 80% in 2030 (IEA 2008). Middle sized cities are important in terms of relative population levels in the two EU member states in

the focus of this research, the UK and Hungary. According to projections by the UN the proportion of urban population living in cities with less than 500,000 inhabitants will reach 65% in the UK, and 75% in Hungary in 2010 (United Nations 2008).

Lessons learned about the governance of climate change action in middle sized cities in the two case study countries are expected to prove useful for sub-national climate policy in other states in and outside of the EU, as well. The research can also form the basis of expanding the analysis to different socio-economic contexts and other geographical areas.

## 1.2 Research aim

The aim of this research is to contribute to the field of multilevel governance of climate action through providing new insight into the drivers and mainstreaming of climate policy at the local authority level. The motivation of cities (often operating under resource constraints) and steps taken by them to engage in the fight against climate change are to be uncovered. Mapping of actors at different governance levels contributing to local level climate action, as well as identifying the relative importance of modes of governing climate change in two different country contexts contribute to achieving the research aim.

In order to uncover these processes a comparative approach was taken during the research. Two countries were chosen as case study sites: the UK, a Western democracy considered as world leader in climate action, and Hungary, a transition economy where climate policy is relatively less emphasized on the national agenda. Both the UK and Hungary are EU member states, providing opportunity to observe two different cases in the same supranational context. Furthermore, through comparing the experience of cities operating within countries characterized by different national income levels, insight can be obtained about local level climate action under different degrees of resource constraints. (See section 1.3 for further discussion on the selection of these countries as case study locations).

Building on the outlined comparative approach, the thesis aims to answer the following overarching research question:

*Why do cities engage in climate change action, how does climate policy emerge and how is it governed at the local authority level?*

Focusing on two cities considered as front-runners in climate action in each of the two case study countries, issue areas were identified and analyzed in order to answer the overarching research question. These issue areas are the following: drivers and barriers of local authority level climate action; the influence of networks of local authorities and multilevel governance processes; similarities and differences between the UK and the Hungarian experience; and the relative importance of the modes of governing climate change at the local authority level.

Connected to these issue areas, the following five research sub-questions were formulated:

1. Which were the main drivers inducing the emergence and development of climate action at the case study cities?
2. Which main barriers did case study cities face when engaging in climate action?
3. How did national and supranational climate policy frameworks and national and transnational networks of sub-national governments influence climate action at case study cities?



4. What are the similarities and differences between the experience of case study cities in the UK and Hungary in local level climate action?
5. Based on the experience of the case study cities, what is the relative importance of different mechanisms for governing climate change at the local level?

The analysis and arguments supporting the answer to the research sub-questions and the overarching research question are developed in the following chapters of the dissertation. After introducing the design and the methods of the research, relevant literature and the vertical dimension of the multilevel governance context of local level climate action are reviewed. This is followed by the analysis of the experience of the case study cities in terms of emergence and mainstreaming of climate action. Building on this analysis comparison of the UK and the Hungarian cases are carried out, which further contributes to the basis for answering the research questions.

In the following section justification is provided for selecting the UK and Hungary as case study sites for the research.

### **1.3 Country focus – the UK and Hungary as research context**

Two countries, the UK and Hungary were selected as case study sites for the research. Several reasons form the basis of this choice. Some local authorities in these countries have already engaged in pursuing their own climate policy agendas. Furthermore, the UK and Hungary are similar in terms of the financial relation of local authorities to the central state: both countries are characterized by the relatively low level of sub-central government revenue and consequential dependence of local authorities on central government grants. The common EU context provides a further basis for the comparative analysis of climate policy in the UK and in Hungary.

Based on these similarities the emergence and factors driving climate action in front-runner cities in the two countries can be identified and comparatively analyzed. Furthermore, lessons learned at UK and Hungarian case study locations form the basis of policy recommendations to other local authorities in the case study and other countries. The comparative analysis also provides insight into the different circumstances faced by local climate policy in older and newer member states of the EU.

The two case study countries offer a different context for local level climate action. The UK is one of the seven major advanced economies in the world (the G7), as characterized by the International Monetary Fund (IMF) (IMF 2011). Furthermore, it is an international leader in climate change policy. By the adoption of the Climate Change Act in 2008 it has become the first country in the world to introduce a long-term legally binding framework to tackle the dangers of global climate change (DECC

2011a). Local authority level action features prominently in the UK climate policy framework. A system was established at the national level for the reporting of local authority level climate action indicators as part of a regulatory scheme requiring all local governments in the country to take action (DECC 2009). Furthermore, local authorities characterized by high levels of greenhouse gas emissions are required to participate in a market based energy efficiency improvement scheme (DECC 2011c).

The other case study country, Hungary is an emerging and developing economy according to the classification of the IMF (IMF 2011). No legally binding framework has yet been adopted at the national level to address the challenges posed by climate change. At the same time related sectoral support programs were initiated and steps were taken in order to develop a comprehensive national climate policy framework. Preceding and parallel to this, post-socialist industrial restructuring, as well as a national level support program for energy efficiency improvements in the residential buildings sector contributed to progress in climate change mitigation. Adaptation to climate change also received attention in the form of a program mobilizing the scientific community studying various aspects of climate change in the country. At the same time the role of local authorities has not been emphasized in any of the national climate policy processes.

The difference in national income levels of the two case study countries also translates to different levels of resource constraints faced by local authorities engaging in climate action. In a major advanced economy, such as the UK it can be expected that local authorities will benefit from relatively higher financial support from national sources. At the same time Hungary, parallel to the relatively lower

national income level, must also cope with the dilapidated infrastructure inherited from the socialist years. This provides both challenges and opportunities for climate action, through the potential for climate friendly modernization. EU membership also supports the utilization of these opportunities.

Furthermore, front-runner local authorities in the UK and Hungary joined transnational networks of sub-national governments for climate protection (including ICLEI's Cities for Climate Protection Campaign, Energie-Cités and Climate Alliance). Similar initiatives were also put in place at the national level. The Nottingham Declaration was set up in the UK in 2000. In the Declaration the signatory local authorities commit themselves to addressing both the causes and the consequences of climate change (EST 2011a). In Hungary participation in transnational networks is relatively lower. At the same time a national network for local level climate protection, the Association of Climate Friendly Settlements has been created. Therefore local authorities interested in climate action located in either case study country have the possibility to join and benefit from membership in both national and transnational networks of climate friendly cities.

Apart from climate action led by local authorities, further forms of area and settlement based sustainability initiatives have surfaced in both case study countries. At one of the Hungarian case study locations an idea has arisen to connect an EU co-financed awareness raising project on climate change with a civil initiative that aims to create an independent economic unit in the area around the city. The awareness raising model project involves the setting up of an area based voluntary carbon offset mechanism (Tatabánya City Council 2011). The parallel civil sector-led sustainability

initiative is based on national tradition and deep green values, focusing on the exclusive reliance on locally supplied food and other resources. The connection is established through the concept of introducing a local currency based on the voluntary carbon offset mechanism. At the same time the above outlined movement is a discrete example, and such initiatives are not yet widespread in Hungary.

In the UK local sustainability projects have been initiated both by the public and the civil sector. These include the Transition Towns movement and the Eco-towns Programme. Transition Towns is an international civil movement which aims to prepare communities for the dual challenge of climate change and peak oil, with the UK being the country hosting the highest number of Transition Towns projects (Transition Network 2011). As for public initiatives for sustainable local development, the Eco-towns Programme has been viewed as increasingly controversial in the UK. Eco-towns are envisaged to be zero-carbon communities, simultaneously taking on the challenge of climate change and answering the demand for affordable housing in England (BBC News 2009, Rydin 2010). According to the original plans ten schemes were to be implemented as part of the program, some of them on areas earmarked as open countryside. The heavily criticized scheme has been downscaled from the originally planned ten locations to four communities.

The above examples demonstrate the types of local and regional initiatives surfacing parallel to local authority led climate protection in Hungary and in the UK. After setting out the context of municipal climate change action in the two case study countries, the structure of the thesis is outlined in the following section.

## 1.4 Structure of the thesis

The thesis is structured in nine chapters.

Chapter 1 is an introduction to and an outline of the thesis. It sets out the rationale of the study, the research aim and research questions, as well as the context of the case study countries. It argues that the local scale is an appropriate level to address the challenges posed by climate change, as cities are increasingly inducing and are affected by this global phenomenon. The overarching research question concerns the motivation of cities often operating under resource constraints to engage in climate action, and the process of emergence. The introductory chapter describes the limitations of the study and is concluded by the outlining of the thesis structure.

Chapter 2 presents the theoretical background and methodological approach of the research. First, it outlines the two tier analytical framework based on the multilevel governance of climate change and the five modes of governing climate action in cities. Second, it discusses the utilization of in-depths case studies as a methodological approach. Characteristics of the case study cities are described and reasons are provided for choosing them as research sites. The chapter is concluded by an overview of the types of data sources used for the study.

In Chapter 3 the literature on multilevel governance of climate change and local level climate action is reviewed. The chapter has two main purposes: first to map the main theoretical issues and themes in the research area, as well as to uncover the main research gaps. Based on the literature the importance and characteristics of local level

climate action are identified. Accounts on the multilevel governance of climate policy are reviewed and the issues around city networks as a new sphere of authority in climate action are explored. Barriers, drivers and co-benefits of local level climate policy initiatives are identified. Literature on local level climate action in the UK and in Hungary are reviewed and evaluated. The last part of the chapter focuses on gaps identified in the literature, and how the research addresses selected gaps. The addressed gaps include the lack of comparative analysis of the experience of local level climate action in Western democracies and transition countries, and no multilevel governance perspective analysis of climate action at Hungarian local authorities.

Chapter 4 examines the vertical governance context of local authority level climate action in the UK and Hungary, the two case study countries. In the first section of the chapter international aspects of the multilevel governance of climate action are outlined, followed by an overview of the EU level climate policy framework. In the second part of the chapter national climate policy of the two case study countries is introduced. Furthermore, in order to understand the functioning of local authorities within the national frameworks, an overview is provided of the legislative context within which local authorities operate in the two case study countries. At the end of the country sub-chapters public and civil institutions and organizations playing a supporting role in local level climate action are introduced.

The subsequent two chapters (Chapters 5 and 6) focus on climate action at two UK and two Hungarian front-runner cities. The main objective of these chapters is to uncover the emergence of climate policy at the case study cities and to map

governance processes of climate action within local authorities and between governance levels. This objective is achieved through the application of the multilevel governance framework. Individual and organizational actors playing a role in the governance of climate policy are mapped and vertical and horizontal relationships between them are uncovered. The chapters are concluded by identifying the barriers, drivers and co-benefits of climate action, based on the experience of the four front-runner cities.

In Chapter 7 the mainstreaming of climate action at the UK and the Hungarian case study cities is analyzed. Climate policy instruments applied at these front-runners are classified according to the five modes of governing climate change action at the local authority level. These governance modes include self-governing, regulation, provision, enabling and partnership. While all five governance modes were utilized by the local authorities of the case study cities, the analysis indicates a preference for the self-governing, provision and enabling modes. The regulation and partnership approaches were also pursued by the case study cities in the UK and in Hungary, but comparatively to a lesser extent than the other three modes.

Chapter 8 brings into a comparative framework the UK and the Hungarian experience. The national climate policy contexts, the role of individual actors, the emergence and mainstreaming of local climate action, as well as vertical and horizontal coordination mechanisms are analyzed from a comparative perspective. It is argued that the experience of front-runner cities in the UK and Hungary with respect to the emergence of climate action is very similar. The main driver of local level climate action in front-runner cities in both countries has been the combination



of good leadership and political continuity at local authorities, and cost saving potential connected to co-benefits of sustainable energy policies. EU and national level funds played a more important role in the Hungarian case study cities, as they were affected to a greater extent by the lack of local funds. Drivers and barriers to local level climate change action are gathered based on the experience of the case study cities in the UK and in Hungary. The chapter is concluded by answering the overarching research question and the five sub-questions.

The work is concluded in the final chapter (Chapter 9) by summarizing theoretical as well as the empirical contributions of the research. Transferable lessons and recommendations are formulated, including best practice examples for governing climate action at the local level. Avenues for further research are identified.

## **Chapter 2 RESEARCH DESIGN AND METHODS**

After setting out the context and the aims of the research in the Introduction, in this chapter the analytical framework and the methodological approach are outlined. The theory of multilevel governance of climate action serves as the foundation of the research design. The second key element of the analytical framework is the five modes of governing climate action at the local level, as outlined by Bulkeley *et al.* (2009). In the followings sections of the chapter the research methodology is outlined. The choice of the case study approach as the main research strategy, and the case selection criteria are explained. Data collection techniques and data sources are introduced. The chapter is concluded by outlining the limitations of the study.

### **2.1 Analytical framework**

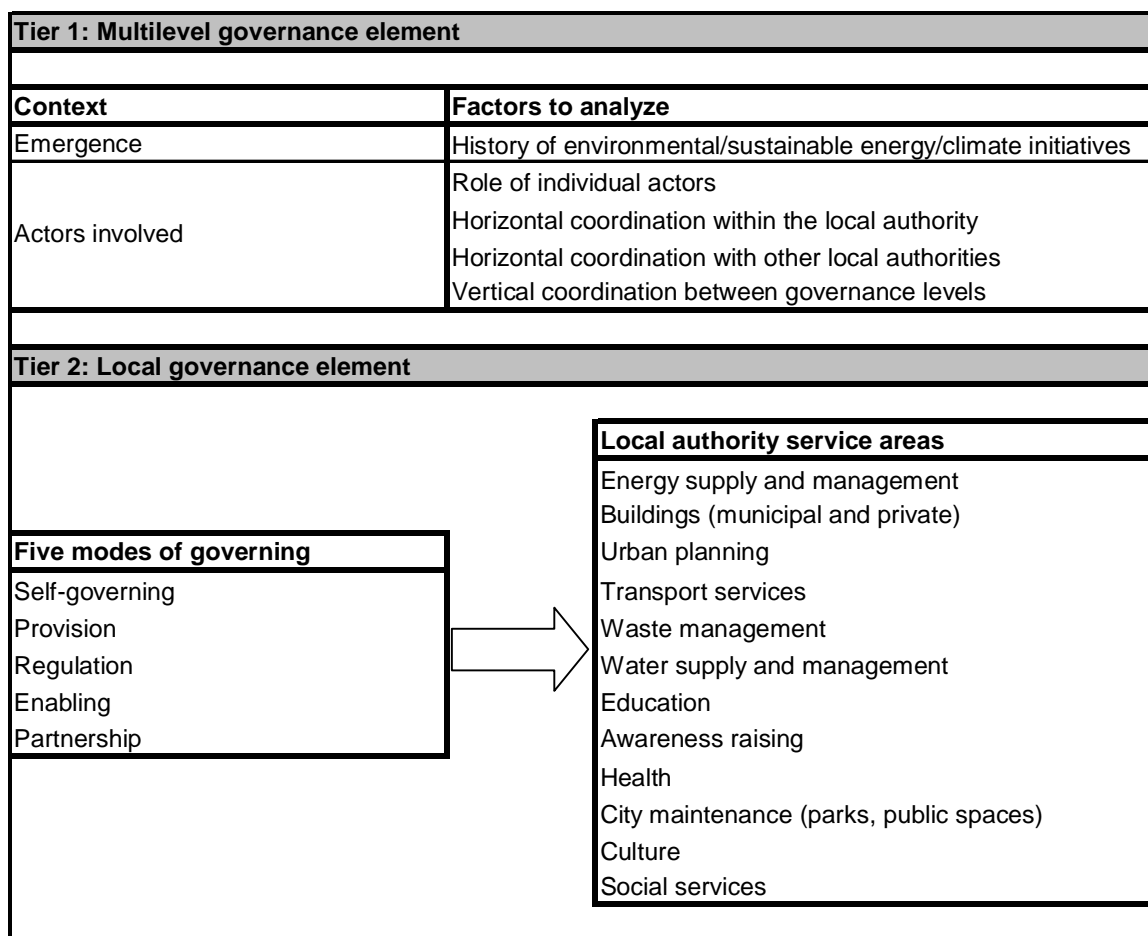
This section outlines the analytical framework of the research. An overview is provided of the two-tier structure of the research design, followed by the introduction of the details of each of the two tiers.

#### **2.1.1 Overview of the two-tier analytical framework**

The theory of the multilevel governance of climate change serves as the basis of the analytical framework, which rests on two tiers: a multilevel governance element and a local governance element (See Figure 1 for on overview). The multilevel governance element serves two purposes. From a historical perspective it contributes to mapping the background and emergence of climate change action at the case study local

authorities. Furthermore, actors and their vertical and horizontal interactions to influence local level climate action are analyzed through this lens. The second, local governance element of the analytical framework focuses on ways how local authorities have been addressing the challenges posed by climate change. The theoretical basis of the second tier is the five modes of governing climate action at the local authority level, as described by Bulkeley *et al.* (2009). Policies related to climate action in different local authority service areas are classified according to the five governance modes. Adaptation and mitigation related issues are addressed as part of both tiers.

The two-tier analytical framework also surfaces in the structure of the dissertation. In Chapter 4 an overview is provided of international, supranational and national policy processes influencing local authority level climate action, building on the first, multilevel governance element of the analytical framework. Chapters 5 and 6 are also built on the first tier, exploring the emergence and vertical and horizontal governance processes of climate change action in the UK and in Hungary, respectively. The analysis carried out in Chapter 7 is based on the second tier of the analytical framework, assessing the utilization of the five modes of governing climate action at the case study local authorities.



**Figure 1 Two-tier analytical framework**

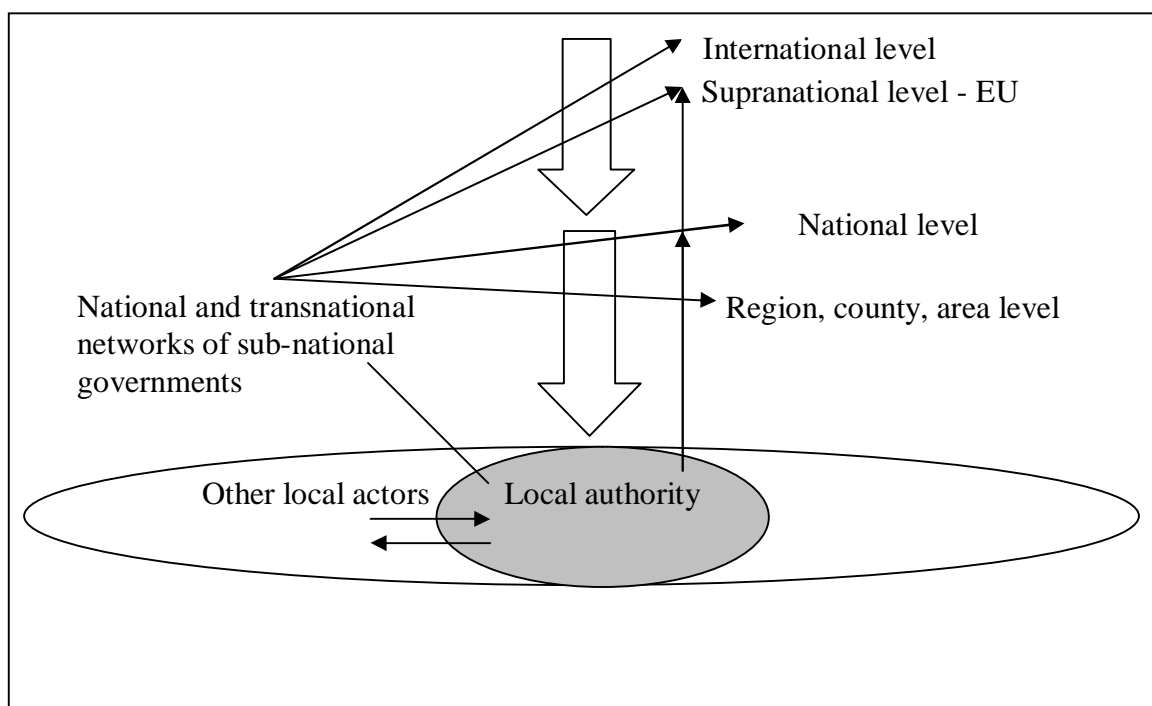
### 2.1.2 Multilevel governance element

The first tier of the analytical framework allows the analysis of local authority level climate action from a multilevel governance perspective. The governing of climate action is a multilevel and multi-actor process. It manifests through vertical coordination mechanisms between actors at different governance levels, and horizontal coordination mechanisms between actors located at the same governance level. Through the first, multilevel governance tier of the analytical framework the

emergence of local level climate action, as well as actors and their relationships are explored.

Figure 2 provides a graphic depiction of the multilevel governance context within which local authority level climate action takes place. International, supranational, and national policies play a downward, vertical influence over local level climate action, mainly through legislation, regulation and the provision of strategic direction. Local authorities (particularly front-runners) in return influence climate policy at higher governance levels through demonstrating best practice and what works on the ground. Furthermore, by joining national and transnational climate action networks of sub-national governments, cities can increase their lobbying power to influence policy processes at higher governance levels. Vertical coordination mechanisms between the municipality and other local stakeholders also play a key role in the success of local authority level climate action. The first tier of the theoretical framework thus helps to analyze these multilevel and multi-actor governance processes.

Furthermore, within the multilevel governance element of the analytical framework, the emergence and development of local level climate action are uncovered (in sections 5.1 and 6.1). As part of the analysis the antecedents and development of climate action in the case study cities are explored. Climate policy outputs, the integration of climate action with other local policies, and the implementation of climate strategies and action plans are assessed. Innovative measures utilized at the case study cities are explored, and connections to national level climate policy processes are pointed out. Projected next steps of climate action at the case study cities are also summarized.



**Figure 2 Context of local level climate action**

*Legend:*

*Narrow arrow – influence over the governance of climate action*

*Wide arrow – regulatory mechanisms*

*Narrow line – membership*

### **2.1.3 Local governance element**

The second tier of the analytical framework rests on the five modes of governing climate change action in cities. Bulkeley and Kern (2006) identify four modes of governing climate change at the local authority level. These include self-governing, provision, regulation and enabling. In addition to these, Bulkeley *et al.* (2009) introduce partnership as a fifth mode. Using the framework resting on the five governance modes, local authority policies that contribute to addressing the challenges posed by climate change can be classified and compared.

Self-governing, the first mode of governing climate change is related to the ability of municipal governments to carry out their own operations in a climate friendly manner. Self-governance enables local authorities to reduce their greenhouse gas emissions and simultaneously increase resilience to the impacts of climate change at the organizational level.

The second governance mode, provision reflects the ability of municipal governments to deliver services and resources within their jurisdictions that allow other stakeholders to engage in effective climate change action. Provision can take place in the form of particular services and resources, such as climate friendly transport and energy infrastructure.

Regulation constitutes the third mode of governing climate change at the local authority level. It involves the implementation of national laws and regulations related to climate action, as well as the adoption of a stronger regulatory framework at the municipal level compared to the national one. During their assessment of policy instrument contributing to energy efficiency improvements in the buildings sector, Koeppel and Ürge-Vorsatz (2007) found regulation be a very effective governance mode, provided that there is enough administrative capacity for enforcement and the corruption level is low.

The fourth mode of governing climate action at the local authority level, enabling reflects the ability of local governments to motivate other stakeholders through

providing information, as well as recognition for their actions. This can also take the form of financial rewards, such as subsidies and tax incentives.

Partnerships formed between state and non-state actors constitute the fifth mode of governing climate change in cities. Activities and policy instruments applied as a result of partnerships include information provision and awareness raising, voluntary agreements and project implementation. In the UK partnerships between the council and other local stakeholders have become widespread as a result of national level policies promoting this approach. In Hungary initiatives to work in partnership in the local arena have just recently started to emerge in a spontaneous way, without explicit national support.

The above outlined five modes of governing climate change action at the local level are typically utilized in a parallel manner. This is in line with the finding of Koeppel and Ürge-Vorsatz (2007) who propose the coordinated use of policy instruments (reflecting different governance modes) in the form of policy packages, as this approach is more effective than the application of policies on an individual basis.



## **2.2 Methodological approach**

In this section the methodological approach of the research is outlined. As part of the empirical work carried out to answer the research question, four in-depth case studies were carried out. The choice of the case study method as the main research strategy is explained. Case selection criteria, main data sources and the interview process are also outlined in this section.

### **2.2.1 Case study method as research strategy**

The dissertation is based on qualitative methods, with the case study approach as the central research strategy. Utilization of the case study method leads to a full and rounded understanding of particular cases (de Vaus 2002). Yin (2003) describes case studies as the preferred research strategy when “how” and “why” type questions are asked, when contemporary phenomena in a real-life context are studied, and when the investigator has little control over events. As the research aims to acquire a round understanding of the reasons for the emergence, as well as ongoing governance processes of climate action in cities in different national contexts, furthermore the investigator has no control over events, the multiple case study approach was found to be the most suitable research strategy.

The unit of analysis of the research is the local authority and its jurisdiction. Four, in-depth case studies were conducted at cities considered as leaders in local level climate action in the UK and in Hungary. Comparative analysis of the cases in the two country contexts was carried out. The comparative case study approach has also been

utilized by other researchers focusing on environmental, planning, and sustainable energy policy issues in the urban context. For example Nava Escudero (1998) focusing on air quality-management in London and Mexico City, and Hammer (2006) focusing on renewable energy policy in London and New York used a similar methodological approach. Building on these examples the comparative case study approach was found to be a suitable strategy to explore urban climate action as part of this PhD research project.

### **2.2.2 Case selection criteria**

Four in-depth case studies were carried out as part of the research: two in the UK and two in Hungary (see the reasons for choosing these countries as the research context in section 1.3 in Chapter 1). Case study cities were selected based on theoretical sampling.

Two, middle sized cities were chosen as case study locations in the two case study countries, respectively. In the UK Woking and Leicester and in Hungary Tatabánya and Nyíregyháza were selected (for an overview of the characteristics of case study cities, see Appendix 2). Climate action related measures have already been initiated in all four cities. Furthermore, these cities are regarded as front-runners in climate and sustainable energy action in their respective country contexts (for an overview of results in climate action at the case study municipalities see Appendix 5). The case selection criteria included the existence of local climate change strategies and action plans, as well as sustainable energy programs and projects in the cities. Membership in national and transnational networks of sub-national governments focusing on

climate action, and awards received for local level climate and sustainable energy action initiatives were also among the case selection criteria (outlined in Table 1).

All case study cities are members of national and/or transnational networks of sub-national governments focusing on action against climate change and/or sustainable energy initiatives. Three of the four case study cities (Tatabánya, Woking and Leicester) explicitly engage in climate action, while the fourth city, Nyíregyháza does not define itself as a climate friendly locality. At the same time it was selected as a case study site because of its successful residential energy efficiency refurbishment programs. Climate action is explicitly pursued in the second Hungarian case study location, Tatabánya. The City Council developed a climate change strategy and a heat and UV Alert Plan, the latter of which received international recognition. As for the two case study cities in the UK, Woking and Leicester, both of them received national and international recognition for their local sustainable energy and climate action initiatives. They have climate change strategies and action plans in place, and sustainable energy installations operate within their jurisdictions. As climate policy related projects and programs operate within all four case study cities, they provide ideal location for the analysis of the emergence and governance of local level climate action.

**Table 1 Selection criteria by case study cities**

<b>Case selection criteria</b>	<b>Woking</b>	<b>Leicester</b>	<b>Tatabánya</b>	<b>Nyíregyháza</b>
<b>City network membership</b>	ICLEI, Nottingham Declaration	ICLEI, Energie Cités, Nottingham Declaration	ICLEI, Climate Friendly Settlements Program (HU)	Energie-Cités
<b>Climate Change Strategy</b>	Yes	Yes	Yes	No
<b>Climate action related projects, programs</b>	Sustainable energy installations, adaptation projects	Sustainable energy installations, Adaptation Action Plan	Heat and UV Alarm Plan, energy efficiency improvement programs	Energy efficiency improvement programs

### 2.2.3 Data collection techniques and data sources

Three main types of data collection techniques were utilized to obtain the information needed to answer the research question. These included in-depth interviews, participation at meetings and other events, and document analysis. (See Appendix 3 for an overview of interviews carried out and meetings and events attended.)

Semi-structured, in-depth interviews conducted with local authority officers and other stakeholders at the case study cities were a key pillar of the research. Informants were selected through purposeful sampling. Most of the chosen actors were actively involved in climate change action at the municipalities and their jurisdictions. In order to access further potential information rich actors, interviewees were asked to provide contacts (building on the snowball effect). The interview process involved using a previously prepared interview guide (see Appendix 1), which was developed based on the theoretical framework and themes identified in the literature review. As part of the semi-structured interviews opportunity was provided for the informants to talk freely

about topics they found important. This contributed to the identification of emerging themes.

The first actors approached and interviewed at the case study sites were climate change officers of local authorities (where there was a climate change officer). Further interviewees at local councils included environment, energy, planning and housing officers. The interview guide was most useful in the case of climate change officers because they had the best overview of climate action initiatives at the local authorities. Other officers gave valuable information about relevant sector specific projects and policy processes. Interviews with other stakeholders (both from within and outside the local council, from the public as well as the private sector) provided further information from various perspectives on the multilevel governance of climate action.

The interviews, with a few exceptions, were conducted on a face-to-face basis. Interview locations included formal settings, like offices and meeting rooms, as well as more informal spaces, such as coffee shops, city parks, houses of local residents and conference halls. Location had a significant impact on the style and depth of the interviews. Meeting rooms and private houses provided a more peaceful setting, with minimal distractions to the discussion. Public spaces, such as coffee houses and offices used by several people were characterized by more interference. Interviews conducted in these spaces were generally shorter with less issue areas covered. The three interviews conducted on the telephone brought positive results, with all previously planned issues addressed and new, emerging themes identified.

Meetings with the simultaneous participation of several stakeholders proved to be an efficient way to gather information. Attendance at conferences and workshops, as well as participation at meetings of climate change working groups and civil organizations provided the opportunity for participant observation and further data collection. I have also been able to join relevant mailing lists, which enabled the continuous monitoring of the development of climate action initiatives at the case study cities. Engaging in conversation with other participants at events and meeting attended served as a further valuable way for theme identification and information gathering.

Document analysis was the third main route of accessing data on climate action at the case study cities and countries. Strategic, legislative, program and policy documents, and web pages were reviewed to obtain information about governance modes, policy instruments and processes, as well as institutional structures. Further documents analyzed included policy studies, internal reports and budget documents of local municipalities, CVs of key stakeholders, press articles and speeches of local and national policy makers and politicians. Drawing on a combination of data sources including the above outlined documents, interviews and event records, information was gathered for analysis that contributed to answering the research question.

### **2.3 Limitations of the study**

While the qualitative approach and the case study method as central research strategy carry substantial benefits in terms of gaining a round understanding of the specific cases, these choices also result in several limitations. Critiques towards qualitative research and the case study approach center around the validity and reliability of results. The case study approach specifically has been subject to criticism in terms of rigor, generalizability, as well as lengthy output documents (Yin 2003).

The research design based on multiple case studies was chosen to address concerns about the external validity of results. At the same time triangulation of methods by a survey carried out among a representative sample of local authorities both in the UK and in Hungary would complement the current approach. This would insure better generalizability and transferability of results to a wider range of municipalities. Furthermore, the utilization of quantitative methods during the analysis of the survey results would complement the current qualitative study.

Reliability of the case study results is ensured through providing the list of documents reviewed, types of stakeholders interviewed and events attended, as well as explanation of the research design. These measures are intended to ensure that if the same research is conducted on repeated occasions the results will be in line with current findings.

## Summary

The double purpose of this chapter was to outline the research design and methodology. In the first part the two tier analytical framework of the research was introduced. Governance of action against global climate change is a multilevel and multi-actor process. Therefore the first tier of the analytical framework sets the multilevel governance context for analyzing the emergence of and vertical and horizontal coordination mechanisms affecting local authority level climate action. The second tier of the framework builds on the five modes of governing climate change, providing the basis for assessing and mapping local climate policy initiatives.

In the second part of the chapter the methodological approach of the research was introduced. Reasons were provided for choosing the case study approach as research strategy, including the characteristic of this method for delivering a full and rounded understanding of each case. The case selection criteria were introduced, including the existence of climate change policy related strategies, action plans, programs and projects, as well as the recognition of climate action achievements of the chosen local authorities. Data collection techniques and data sources were outlined, including semi-structured in-depth interviews, participation at meeting and events, and document analysis.

Methodological and practical limitations of the study were also accounted for. Methodological limitations (particularly related to the validity and reliability of findings) stem from the qualitative nature of the study, as well as from building on the case study method as central research strategy.



The following chapter provides a review of the literature on local authority level climate action, within the context of multilevel governance. The literature review contains further theoretical details related to the two tiers of the analytical framework outlined in this chapter.

### **Chapter 3 LITERATURE REVIEW: CLIMATE CHANGE ACTION AT THE LOCAL LEVEL, WITHIN THE CONTEXT OF MULTILEVEL GOVERNANCE**

Research on climate change action at the local authority level dates back to the mid-1990s (Bulkeley *et al.* 2009), therefore it is a relatively young area of investigation. It has developed parallel to the emergence of climate policy initiatives at the local level. The appearance of transnational networks of sub-national governments for sustainable energy and climate action attracted additional research interest. Furthermore, synergistic areas and overlaps between initiatives taking place at different levels of authority have also been deemed worthy of scientific exploration. Parallel to climate change increasingly becoming an area of complex interactions between different levels of government (Andonova *et al.* 2007), the multilevel governance framework emerged as a particularly suitable one for analyzing the occurring multi-scale and multi-actor processes (Bulkeley and Betsill 2005; Betsill and Bulkeley 2006; Bulkeley and Newell 2010).

Corresponding to policy developments in terms of geographical areas and sub-topics, research on multilevel governance of climate action has originally focused on industrialized countries and mitigation related issues (Betsill and Bulkeley 2007). Primarily the first-mover cities in the USA, Canada, Europe and Australia were the ones attracting research interest (Bulkeley *et al.* 2009). This led to a gap in knowledge on local climate action in other parts of the world, in non-front-runner municipalities, as well as in global and megacities, and adaptation related issues (Bulkeley *et al.* 2009). While in the beginning the academic debate focused on justifying the need for

local level climate action, more recently it has been expanding in the direction of exploring the multilevel nature of climate governance, the role of knowledge in local climate policy, and the gap between the rhetoric and reality of local climate action (Betsill and Bulkeley 2007).

In this chapter a literature review is carried out on climate change action at the local level and the interaction thereof with similar action at other levels of authority. The importance and characteristics of city level action are explored, followed by an overview of the literature on multilevel climate governance. Accounts on the emergence of a new sphere of authority in climate action (transnational networks of sub-national governments) are reviewed. Barriers and drivers, as well as co-benefits of climate policy in cities are identified, based on international experience. This is followed by a review of the work on climate change action at the local level in the two case study countries, the UK and Hungary. The chapter is concluded by distinguishing the gaps in the literature and by identifying the areas where the current Ph.D. research makes a unique contribution.

### **3.1 Governing climate change between different levels of authority**

Governance of climate change action takes place at different levels of authority simultaneously. The following sections provide an overview of the literature on the importance of municipal level climate action and the characteristics thereof. The relations between local climate action and policy processes at other governance levels are explored from a multilevel governance perspective. Networks and similar cooperative arrangements of sub-national governments are regarded as a new sphere of authority in the governing of climate change action. The last sub-section provides a summary of the literature on these types of initiatives.

#### **3.1.1 The importance and characteristics of local level climate action**

The importance of local level, grassroots action in reaching environmental goals has increasingly been acknowledged in policy making circles. The 1987 *Brundtland Report* (Our Common Future) already pointed to the challenges faced by cities and the role of local authorities in achieving sustainable development. High level international recognition of the need for local level action on sustainability first took place at the United Nations Conference on Environment and Development (UNCED, The Earth Summit) in 1992 in Rio, by acknowledging the role of local governments in delivering Agenda 21 (UNCED 1992). In 2009 the central theme of the Fifth Urban Research Symposium co-organized by UN HABITAT and the World Bank was the relevance of climate change in the urban context. Urban climate action related work is also ongoing at the OECD. This demonstrates the increasing recognition in

international policy making circles of the importance of local authority level action in tackling climate change.

While the importance of cities in climate and sustainable energy action is increasingly being recognized, research on how urban areas affect and are affected by climate change is still at an early stage. As for mitigation related issues, the analysis of urban energy policy has been described to be a relatively neglected policy field (Keirstead and Schulz 2010). Furthermore, the understanding of cross-scale linkages of the urban as a system is still at the stage of infancy (Dhakal and Betsill 2007). The assessment of emissions inventories also poses a range of methodological issues. According to the International Energy Agency, city level energy data is often not available, incomplete and difficult to compare, due to the lack of standard reporting methods (IEA 2008). Boundary issues concerning the allocation of emissions to certain urban areas pose further challenges (IEA 2008, Dodman 2009). Technical difficulties regarding the creation of greenhouse gas emission inventories of cities were recognized to include the “lack of full life-cycle perspective; problems with defining spatial and temporal context; and issues of assigning emissions by political jurisdictions” (Ramaswami *et al.* 2008 and Kennedy and Mohareb 2009 cited by Kennedy *et al.* 2010, p. 4848). Adaptation at the urban scale also emerged in the literature and on the agenda of international organizations, at the same time comprehensive analysis of the issue is yet to take place.

Parallel to the above outlined policy processes and arising methodological challenges various researchers in different parts of the world turned their attention to the governance of local level climate action (Collier 1997; DeAngelo and Harvey 1998;

Bulkeley and Betsill 2003; Bulkeley and Kern 2006; Holgate 2007; Parker and Rowlands 2007; Aall *et al.* 2007; Setzer 2009; Rydin 2010; etc.). In one of the earliest works on climate protection at the municipal level Collier (1997) analyzes local strategies within the EU context and finds positive instances of local action in member states (Germany, Italy, Spain, Sweden and the UK), even within an unsympathetic national and supranational policy context. In another early work DeAngelo and Harvey (1998) demonstrate by comparing experiences in Canada, the USA and Germany, how local authority level action to reduce greenhouse gas emissions can contribute to reaching national climate goals, despite limited legal capacity of city governments. Aall *et al.* (2007) also emphasize the importance of local authority level action in increasing the effectiveness of global climate policy. At the same time they point to the need for translating the problem of global climate change to make it more comprehensible to municipal stakeholders. Parallel to local authorities, other types of actors at the sub-national level have also been addressing the challenges posed by climate change. Knuth *et al.* (2007) demonstrate through the experience of a US university the significance and results of grassroots initiatives at a time of stalled national action.

In terms of the means through which climate change action can take place at the local authority level, Bulkeley and Kern (2006) identify four modes of governance utilized by cities. These are self-governing, provision, regulation and enabling. Schroeder and Bulkeley (2009) use this framework to compare the legal aspects of governing climate action in two global cities, London and Los Angeles. Bulkeley *et al.* (2009) also use this framework (with the addition of partnerships as a fifth mode of governance) to assess responses to climate change in cities in industrializing countries located in the

global South. (For further discussion on the modes of governing climate change in cities, please see Chapters 2 and 7).

### **3.1.2 Multilevel governance of climate policy**

Climate action in cities does not occur in isolation but takes place within the context of national and international climate policy (Bulkeley and Betsill 2003). The need to coordinate these initiatives through vertical and horizontal processes has been recognized and explored in the literature (Betsill and Bulkeley 2006; Monni and Raes 2008; Puppim de Oliveira 2009; Lidskog and Elander 2010; etc.) Several authors have found multilevel governance to be a suitable conceptual framework for the analysis of climate change action taking place between different spheres and levels of authority (Bulkeley and Betsill 2005; Gustavsson *et al.* 2006; Betsill and Bulkeley 2006; Setzer 2009; Corfee-Morlot *et al.* 2009; etc.). Furthermore, as Dhakal and Shrestha (2010) point out “city carbon management requires a thorough understanding of the urbanization and urban system dynamics at multiple scales (i.e. global, regional and local levels)” (Dhakal and Shrestha, p. 4754, 2010).

Furthermore, vertical coordination and cooperation between supranational, national and sub-national governments is increasingly being recognized as a success factor of climate policy implementation. The importance of top-down and bottom-up processes, as well as the role of cooperation has been extensively analyzed in the literature. Corfee-Morlot *et al.* (2009) identify three types of institutional models that guide policy action on climate change across governance levels. These are the nationally led top-down enabling frameworks, locally led or bottom-up action and

hybrid models that combine the features of both. The hybrid models are seen as the most promising as they enable the modification of the enabling frameworks based on lessons learnt at the local level.

With respect to bottom-up processes, Betsill and Bulkeley (2006) emphasize the role of sub-national action in reaching national level climate change commitments and point to the need for more explicit cooperation between governance levels. As for concrete examples, Parker and Rowlands (2007) demonstrate through the Canadian case how environmental responsibility shifted from the national to the local level in the case of a residential energy efficiency program. They also point out the importance of partnerships in this process. Peterson and Rose (2006) analyze the role of the state arena in climate and energy policy in the USA. They report greater congressional attention on lessons learned and commitments made by sub-federal actors. They find that states play an important role in reducing conflict between climate and energy policy.

As for simultaneously occurring top-down processes, Giddens (2009) points out that while local, regional and city leaders acting together can significantly influence central government policy, it is important for regulatory frameworks to be in place parallel to these bottom-up initiatives. This is in line with the opinion of Corfee-Morlot *et al.* (2009) who emphasize the enabling role of national governments in local level climate policy. Furthermore, Gustavsson *et al.* (2006) note the need to acknowledge the role of national programs in pushing forward climate policy among municipalities in general, and recognize the role of interplay between governance levels in this process. Aall *et al.* (2007) are on a similar opinion as they point out the



importance of strengthening national commitments in order to expand the participation of municipalities and to avoid making climate policy an action area of only a few front-runner cities.

The need for and benefits of multilevel governance and cooperation in climate action is reported by other authors based on research in different country contexts. In his analysis of the cases of Japan, Germany and Brazil, Puppim de Oliveira (2009) finds that cooperation between different governance levels is an important success factor of climate policy implementation. Furthermore, including different spheres and levels of authority makes climate governance more efficient and democratic (Lidskog and Elander 2010). Municipalities at the same time can multiply their influence through these horizontal and vertical relationships (Toly 2008). However, as Monni and Raes (2008) find in the case of the city of Helsinki within the Finnish and EU context, time is needed to develop coherence between policies pursued at different governance levels. They also point out that voluntary action to tackle climate change at the local level typically takes place in areas where co-benefits can be expected.

### **3.1.3 City networks – a new sphere of authority**

Networking among local authorities in the fields of environmental protection, sustainable development and climate change action has intensified both at the national and at the international level since the Rio de Janeiro Earth Summit in 1992<sup>2</sup>. Not only has the number of cities participating in networks increased but also has the

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<sup>2</sup> One of the first and largest transnational networks of sub-national governments for climate action, the Cities for Climate Protection Campaign of the International Council for Local Environmental Initiatives (ICLEI CCP) was initiated in 1993.

number of networks themselves. The emergence of city networks attracted the interest of researchers who began to analyze the role and functioning of this new type of actor in the governing of climate change in the transnational sphere.

Andonova *et al.* (2007) developed a typology for documenting the various forms of transnational governance of climate change action. They argue that members must purposefully be steered to act, for network led transnational governance to take place. In their framework they distinguish between private, public and hybrid types of transnational networks (constituting of various combinations of local authorities and other actors, such as private companies). The functional dimension of their analysis includes information sharing, capacity building and implementation, and rule setting as the three main areas of network based governance of climate action.

Other authors have specifically focused on networks constituting of cities, and their place in vertical and horizontal governance processes. Giddens (2009) observes that local, regional and city leaders acting together can strongly influence central government policy. City networks also provide local governments an opportunity to directly contribute to international climate policy processes by bypassing the nation state. The networking of cities thus represents a new sphere of authority in climate policy making (Bulkeley and Betsill 2005; Betsill and Bulkeley 2006). In line with this, Toly (2008) indicates the importance of networks in the pooling of global influence and highlights the role of cities in this process.

Examples of relevant initiatives both from the global South and from Western democracies have been documented in the literature. For example, Setzer (2009) gives

an account in the Brazilian context of how participation in transnational networks of sub-national governments has given an opportunity to city and state authorities, as well as key individuals at these government levels to engage in the broader international climate policy debate. In the Swedish context Gustavsson *et al.* (2006) point out how networks contribute to the efforts of organizations to bridge different levels of government and to override territorial borders. Also based on the Swedish experience, Granberg and Elander (2007) observe how the direct interaction of local and EU level actors, through the bypassing of national level institutions contributes to increasing the power of the EU.

Besides providing an opportunity to directly influence international climate policy processes through bypassing the nation state, further benefits of national and transnational networks of sub-national governments have been documented in the literature. The networks present an opportunity for inter-municipal dialogue (Toly 2008) and can contribute to removing local barriers from national and EU level policies (Monni and Reas 2008). Their capacity building, information and best practice disseminator, as well as experience exchanging role has been widely acknowledged (Davies 2005; Gustavsson *et al.* 2006; Granberg and Elander 2007; Holgate 2007; Bulkeley *et al.* 2009). Based on UK experience Wilson (2006) provides an account of the positive contribution of networking on integrating adaptation considerations into spatial plans. Furthermore, Gustavsson *et al.* (2006) gather the benefits of network membership through the experience of a Swedish city. These include becoming internationally renowned for achievements in climate change mitigation, better access to financial support, and new market contacts. As a reaction to the modest results of member cities in greenhouse gas emission reductions,

Lindseth (2004) concludes about the Cities for Climate Protection Campaign that the core concern of the network should be to find meaningful new ways to connect local and global climate action agendas.

## 3.2 Barriers, drivers and co-benefits of local level climate action

In the following section a summary is provided of barriers and drivers, as well as co-benefits of local level climate action, based on accounts in the literature.

### 3.2.1 Barriers

Climate change action at the local authority level can be obstructed by many barriers (for an overview, see Table 2). The literature contains various examples from around the world, mainly from Western democracies. Fewer accounts were found on the experiences of countries in transition, as well as on cases from the global South.

Barriers to climate action at the local level arise in different areas. One of the barrier groups concerns statutory tasks, functions and competencies of local authorities, and their ability to carry out climate action initiatives. Numerous accounts were found on the lack of statutory requirements and limited competencies posing a significant barrier to climate action at the local authority level (Betsill 2001; Bulkeley and Betsill 2003; Allman *et al.* 2004; Rezessy *et al.* 2006; Granberg and Elander 2007; Heinrichs *et al.* 2009). Furthermore, Rezessy *et al.* (2006) point out (with relevance to markets for energy efficiency products and services in Bulgaria, FYR Macedonia<sup>3</sup> and Hungary) how the vague definition of local authority tasks raises obstacles. Allman *et al.* (2004) (based on UK experience) draw attention to the problem posed by insufficient guidance from the national level. Unsympathetic national and supranational policy frameworks were also mentioned by others as significant barriers

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<sup>3</sup> Former Yugoslav Republic of Macedonia

(Collier 1997; Bulkeley *et al.* 2009). Furthermore, strong national control over resources - drawn attention to by Davies (2005) in the case of Ireland - in combination with an unsupportive national policy context can severely obstruct climate action at the local authority level. Liberalization, privatization and the resulting increase in the number of external service providers were also found to limit the power of local authorities in taking action against climate change (Bulkeley and Kern 2003; Holgate 2007).

Another group of barriers concerns funding for climate action at the local authority level. The lack of adequate, clear and long-term funding has been widely reported to be posing obstacles (Allman *et al.* 2004; Rezessy *et al.* 2006; Betsill and Bulkeley 2007; Csete 2007; Mosoniné *et al.* 2008; Bulkeley *et al.* 2009; Reeves 2010), along with the related problems of lacking capacity and personnel (Allman *et al.* 2004; Betsill 2001; Betsill and Bulkeley 2007; Holgate 2007). In the cases where funding is available, a further problem can arise due to insufficient monitoring of results as financing is usually focused on implementation (Allman *et al.* 2004). Specific accounts of funding related difficulties included uncertainty around the continuation of utility company financed energy efficiency programs in Canada (Parker and Rowlands 2007), and competitive national level funding requiring the provision of matching resources in Sweden (Granberg and Elander 2007).

Communicational barriers were also found to be impeding climate action at the local authority level. Some of these originate from the science-policy interface (Storbjörk 2007), while others take effect through limited awareness about local adaptation needs (Heinrichs *et al.* 2009). Low level of interest of residents in achieving deep emission

cuts, reported by Reeves (2010) can be included in the communicational barrier group. The municipal level knowledge base has also been reported to be endangered by communication gaps between national and local spheres of authority (Holgate 2007). Furthermore, the way in which the climate change issue has been framed at the local level proved to be a source of difficulty (Bulkeley and Betsill 2003; Betsill and Bulkeley 2007).

Conflicting objectives both at the municipal and at higher governance levels posed significant barriers to successful local level climate action. Obstacles mentioned in the literature include economic growth and other issues taking higher priority on the municipal agenda than climate protection (Bulkeley and Betsill 2003; Allman *et al.* 2004; Bulkeley *et al.* 2009). Conflicting aims of EU level climate and other, sector specific policies were also reported to be obstructing successful climate action at lower levels of governance (Gustavsson *et al.* 2006). Planning is a policy area where internal climate action efforts of cities conflicted with the wider economic context. For example Granberg and Elander (2007) report on efforts to reduce greenhouse gas emissions within the boundaries of a municipality being at odds with aims for a city to become a logistics center within Sweden. Furthermore, examples of contradictions were reported regarding objectives of EU and national renewable energy policies and project implementation at the local level (Söderholm *et al.* 2007; Monni and Raes 2008).

Several barriers originate from the general characteristics of democratic arrangements themselves. A revealing example is of the short-term election cycle being at odds with long-term requirements of climate change and sustainable development policy,

leading to short-termism in politics and planning (Michaelis 2003; Wilson 2006; Held and Hervey 2010). These conditions lie behind the often lacking political support and commitment of key local actors, lack of will to address emerging conflicts, and generally the missing of strong drive from the local authority (Bulkeley and Betsill 2003; Allman *et al.* 2004; Wilson 2006; Reeves 2010). These conditions can also lead to a piecemeal approach in addressing climate change at the city level [posing an obstacle in itself, see Bulkeley *et al.* (2009)].

Institutional barriers also form a distinct obstacle group to local level climate action. Fragmentation of climate change policy within local authorities is one of the key problems, which results from the incompatibility of the cross-cutting climate change issue with the institutional make-up of local authorities, amplified by lack of interdepartmental cooperation and the silo effect (*et al.* 2004; Storbjörk 2007; Holgate 2007).

Problems were reported regarding both vertical and horizontal aspects of the multilevel governance of climate change action. Obstacles of a vertical nature include the limited relevance of national climate action planning for local responses due to sectoral perspective and non-urban bias (Heinrichs *et al.* 2009), and the difficulties of coordinating a regional approach (Allman *et al.* 2004). Obstacles of a horizontal nature were reported in connection to the functioning of networks of sub-national governments, as well as regarding the insufficient participation in such networks. According to Davies (2005) it would be desirable if networks also encouraged smaller initiatives in more rural places, while Wilson (2006) points out the need for the



planning profession to engage in networks to enhance climate action related performance.

Accounts in the literature mention several other important barriers. These include local authorities active in climate action experiencing problems with engaging the wider community (Allman *et al.* 2004). Barriers arising in connection to initiatives to improve energy efficiency in the buildings sector have also been identified. These include split incentives, which can arise if ownership and operation of buildings are split (Rezessy *et al.* 2006; Reeves 2010), lack of accurate energy use data at the postcode level (Allman *et al.* 2004), and fear of employees of becoming redundant as a result of energy efficiency improvements at municipalities (Rezessy *et al.* 2006).

Finally, barriers with specific relevance to low income countries in the global South have been identified as well in the literature. These include confrontation with issues of poverty, unemployment, as well as conflict with traditional environmental concerns, such as air and water quality (Betsill and Bulkeley 2007). Furthermore, as Bulkeley *et al.* (2009) emphasize, low income countries are often characterized by minimal if any urban governance capacity, which poses serious difficulties for local level climate action.

**Table 2 Barriers to local authority level climate action**

<b>Barriers</b>	
Lack of statutory requirement for CC action by LAs, limited LA competencies	Betsill 2001; Bulkeley and Betsill 2003; Allman <i>et al.</i> 2004; Rezessy <i>et al.</i> 2006; Granberg and Elander 2007; Heinrichs <i>et al.</i> 2009
Vaguely defined LA tasks	Rezessy <i>et al.</i> 2006
Lack of appropriate guidance from the national government	Allman <i>et al.</i> 2004
Unsympathetic policy framework at national and/or EU level	Collier 1997; Bulkeley <i>et al.</i> 2009
Strong national control over resources	Davies 2005
Privatisation, liberalisation, external service providers	Bulkeley and Kern 2003; Holgate 2007
Lack of adequate, clear, long-term funding	Allman <i>et al.</i> 2004; Rezessy <i>et al.</i> 2006; Betsill and Bulkeley 2007; Csete 2007; Mosoniné <i>et al.</i> 2008; Bulkeley <i>et al.</i> 2009; Reeves 2010
Lack of capacity, personnel and resources	Allman <i>et al.</i> 2004; Betsill 2001; Betsill and Bulkeley 2007; Holgate 2007
Funding only focusing on implementation, not on monitoring	Allman <i>et al.</i> 2004
Uncertainty of funding for EE based on utility demand side management programs	Parker and Rowlands 2007
Competitive national level funding requiring the provision of matching resources	Granberg and Elander 2007
Barriers originating from the science-policy interface	Storbjörk 2007
Limited awareness, low level of interest from residents	Heinrichs <i>et al.</i> 2009; Reeves 2010
Communication gap between national and local spheres as a barrier to LA knowledge base	Holgate 2007
Framing of the CC issue locally	Bulkeley and Betsill 2003; Betsill and Bulkeley 2007
Conflicting aims of climate protection and economic growth, other issues taking higher priority	Bulkeley and Betsill 2003; Allman <i>et al.</i> 2004; Bulkeley <i>et al.</i> 2009
Conflicting goals between EU climate policy and other EU level policies	Gustavsson <i>et al.</i> 2006
Conflicting goals related to planning - wider economic context of the city	Granberg and Elander 2007
Conflict of interest between national energy policy and local implementation of RES-E projects	Söderholm <i>et al.</i> 2007; Monni and Raes 2008
Short-termism in politics and planning, short-term election cycle at odds with the long-term requirements of CC and SD policy	Michaelis 2003; Wilson 2006; Held and Hervey 2010
Lack of political support and commitment of key local actors, lack of will to address emerging conflicts, lack of strong drive from LA	Bulkeley and Betsill 2003; Allman <i>et al.</i> 2004; Wilson 2006; Reeves 2010
Only piecemeal efforts	Bulkeley <i>et al.</i> 2009
Institutional barriers, fragmentation of CC policy within LAs because of incompatibility between cross-cutting nature of CC and the institutional make up of LAs, lack of inter-departmental cooperation, silo effect	Allman <i>et al.</i> 2004; Storbjörk 2007; Holgate 2007
Problems with relevance of national climate action planning for local responses (because of sectoral perspective and non-urban bias)	Heinrichs <i>et al.</i> 2009
Difficulty in coordinating a regional approach	Allman <i>et al.</i> 2004
Networks not encouraging smaller initiatives in more rural places	Davies 2005
Lack of engagement of the planning profession with climate change networks	Wilson 2006
Problems in engaging the wider community	Allman <i>et al.</i> 2004
Split incentives	Reeves 2010
Ownership and operation of municipal buildings is not clear, or is split	Rezessy <i>et al.</i> 2006
Lack of accurate energy use data at the postcode level	Allman <i>et al.</i> 2004
Employee fear from becoming redundant as a result of EE improvements	Rezessy <i>et al.</i> 2006
In global South confrontation with issues of poverty, unemployment and traditional environmental concerns, including air and water quality	Betsill and Bulkeley 2007
In low income countries minimal if any urban governance capacity	Bulkeley <i>et al.</i> 2009

### 3.2.2 Drivers

Various conditions were identified in the literature as drivers of local authority level climate change action (see Table 3 for an overview). Some of these are the result of external circumstances, while some stem from the local context. Drivers can also take the form of demonstration effects, while organizational and policy integration efforts contribute to the success of local initiatives to tackle climate change.

As for external circumstantial factors, an enabling national policy context is regarded by Corfee-Morlot *et al.* (2009) as a key prerequisite of successful climate action at the local authority level. Access to financing and the availability of government grants (Rezessy *et al.* 2006; Heinrichs *et al.* 2009) as well as financial pressure induced energy savings (Bulkeley and Kern 2003) can also be regarded as drivers stemming from conditions external to the local authority. Furthermore, based on examples from the UK and Germany, Bulkeley and Kern (2003) point out how financial pressures have contributed to the emergence of partnerships to raise resources for climate action. Holgate (2007) provides an account of the case of Cape Town in South Africa where an unexpected energy crisis (as an external condition) combined with increased media attention contributed to the implementation of successful energy efficiency measures in the city. Also with reference to driving mitigation action, Rezessy *et al.* (2006) emphasize the role of greater decentralization in enhancing the ability of local authorities to participate in the market for energy services, based on the experience of Hungary, FYR Macedonia and Bulgaria.

The motivation to stand out on the global map as a leader in climate policy has also been inducing cities to take action (as pointed out by Lidskog and Elander 2010). As further evidence of the importance of demonstration effects, Lazarova (2002) finds, based on Bulgarian experience, that demonstrable results are often more important to municipal leaders and officers than explicit quantification and detailed cost-benefit analysis.

Favorable local conditions play an important role in the initiation of climate change action in cities. Strong local leadership (Heinrichs *et al.* 2009), individual initiatives and personal enthusiasm (especially at the early stages of climate action) (Gustavsson *et al.* 2006), as well as the presence of political champions (Bulkeley and Betsill 2003) were identified as key supporting factors. Furthermore, Takács-Sánta (in Antal Z. 2008, p. 166) particularly emphasizes the importance of a dedicated mayor and an active climate coordinator within the local authority. Clear awareness by local stakeholders of local vulnerabilities (Heinrichs *et al.* 2009), and a history of addressing environmental issues locally (Collier 1997) are also among key drivers that stem from the internal context.

Further, organizational supporting factors include interaction with external networks in order to establish confidence in priorities, and the setting up of a dedicated climate team, which plays a central role within the local government (Heinrichs *et al.* 2009). The importance of integrating local climate strategies with policies at other governance levels, with civil action and with sectoral policies has also been emphasized (Puppim de Oliveira 2009). Exploring the synergies between mitigation and adaptation (Puppim de Oliveira 2009), as well as making sure that adaptation

plans and already existing strategies support each other were identified as further drivers of the success of local level climate action (Heinrichs *et al.* 2009).

**Table 3 Drivers of local authority level climate action**

Drivers	
Enabling national policy context	Corfee-Morlot <i>et al.</i> 2009
Access to financing, government grants	Rezessy <i>et al.</i> 2006; Heinrichs <i>et al.</i> 2009
Unexpected energy crises combined with media attention	Holgate 2007
Financial pressure as an incentive for energy saving and for involving partners for capital and resource	Bulkeley and Kern 2006
Greater decentralization with clear ownership rights and adequate sources of revenue	Rezessy <i>et al.</i> 2006
Stand out on the global map; demonstration effects	Lidskog and Elander 2010; Lazarova 2002
Strong local leadership	Heinrichs <i>et al.</i> 2009
Individual initiatives and personal enthusiasm within the LA, especially during the early stage of policy formulation	Gustavsson <i>et al.</i> 2006
Presence of political champions	Bulkeley and Betsill 2003
Dedicated mayor and active climate coordinator within the LA	Takács-Sánta in Antal Z. (2008)
Clear awareness by local stakeholders of local vulnerability	Heinrichs <i>et al.</i> 2009
History of addressing environmental issues locally	Collier 1997
Interaction through external networks to establish confidence in priorities	Heinrichs <i>et al.</i> 2009
Dedicated climate teams working within a centralized office	Heinrichs <i>et al.</i> 2009
Adaptation plans and already existing strategies supporting each other	Heinrichs <i>et al.</i> 2009
Integration with sectoral policies, with policies at other levels of government and with civil society	Puppim de Oliveira 2009
Integration of mitigation and adaptation policy	Puppim de Oliveira 2009

### 3.2.3 Co-benefits

Intended and unintended side effects and secondary benefits of climate policies represent a distinct group of drivers of climate change action. Jochem and Madlener (2003) distinguish between co-benefits and ancillary benefits, the former representing monetized effects of mitigation policies that are taken into consideration, the latter indicating incidental effects that are not accounted for during decision making processes. These side effects of targeted policies can contribute to increasing the attractiveness of climate action.

As reflected by the chapter structure of the contribution of Working Group III of the Intergovernmental Panel on Climate Change (IPCC) to the Fourth Assessment Report (AR4) of the Panel, mitigation related co-benefits can arise in the energy supply, transport and transport infrastructure, residential and commercial buildings, industry, agriculture, forestry and waste management sectors (IPCC 2007a). These sectors are also relevant to municipal climate action. As for adaptation related co-benefits, according to the contribution of Working Group II of the IPCC to AR4, the literature on methodologies for adaptation related costs and benefits is still small. Adaptation costs are usually expressed in monetary terms, while benefits are expressed in terms of avoided climate impacts, either in a quantified or non-quantified manner (IPCC 2007b).

Co-benefits make an important contribution in motivating local authorities to pursue climate policies (see Table 4 for an overview of possible co-benefits). Based on the Finnish experience, bringing examples from energy conservation and biofuels for

transport, Monni and Raes (2008) point out that voluntary action against climate change is more likely in cities where co-benefits can be expected. Tackling climate change is often not the main driver behind climate action at the local authority level, and is only viewed as a positive by-product of related initiatives (Storbjörk 2007). Furthermore, Kousky and Schneider (2003) emphasize that not only the realized, but often the perceived co-benefits act as drivers of climate change action at the local level.

Co-benefits also play a role through helping local leaders to win public support for action against climate change. By identifying and publicizing the co-benefits of climate policies city leaders can localize a global issue and justify the need for spending public money (Kousky and Schneider 2003). At the same time, focusing on co-benefits and win-win solutions at the local level must not shift attention away from more profound regulatory and statutory changes that must be carried out at the national level (Bulkeley 2000).

Besides the potential for cost savings (for example in energy bills, and ongoing maintenance and future operating costs, as specified by Kousky and Schneider 2003; and Rezessy *et al.* 2006), the presence of further economic, social and environmental co-benefits was recorded in the literature. Economic co-benefits at the local level include positive employment impacts (Allman *et al.* 2004), promotion of industry, as well as innovation and new forms of cooperation (Kousky and Schneider 2003). The formation of new partnerships across government departments (Kousky and Schneider 2003) increases institutional efficiency and therefore can be favorable with respect to a range of issue areas. Reductions in emissions and noise (Kousky and

Schneider 2003) and improved quality of life (Allman *et al.* 2004; Kousky and Schneider 2003) are important environmental co-benefits of climate policy at the local level. The contribution of climate action to reducing fuel poverty (Kousky and Schneider 2003; Allman *et al.* 2004) is in line with social goals. Furthermore, sustainable development itself has been described by some authors as a co-benefit of climate change mitigation (Munashinge *et al.* 2003; Jochem and Madlener 2003).

**Table 4 Co-benefits of local authority level climate action**

Co-benefits	
Potential for cost savings (reducing energy bills, future operating costs and maintenance costs) and other realized or perceived co-benefits	Kousky and Schneider 2003; Rezessy <i>et al.</i> 2006
Positive impacts on employment	Allman <i>et al.</i> 2004
Promotion of industry	Kousky and Schneider 2003
Innovation and new forms of cooperation	Kousky and Schneider 2003
New partnerships across government departments	Kousky and Schneider 2003
Reductions in emissions and noise	Kousky and Schneider 2003
Improved quality of life, increased comfort and technical upgrade	Allman <i>et al.</i> 2004; Kousky and Schneider 2003; Rezessy <i>et al.</i> 2006
Reduction in fuel poverty	Kousky and Schneider 2003; Allman <i>et al.</i> 2004;
Sustainable development as a co-benefit of climate change mitigation	Munashinge <i>et al.</i> 2003; Jochem and Madlener 2003



### **3.3 Climate change action at the local authority level in the UK**

Local level climate change action in the UK has been analyzed in the literature from various perspectives. Characteristics of the multilevel governance of climate change action have been explored through city cases, while comparative country studies were also conducted involving UK localities. Furthermore, sectoral experiences relevant to climate action were demonstrated through UK examples. An overall assessment of local level climate action in England and Wales has also been found in the literature.

Several works focus on the multilevel governance of climate action and local level sustainability and climate policy in UK cities (Bulkeley and Betsill 2003; Bulkeley and Betsill 2005; Betsill and Bulkeley 2006; Rydin 2010). Among these accounts, Rydin (2010) provides a comprehensive framework for governing urban sustainability. She demonstrates how this is delivered in practice, supported by examples of policy approaches already applied in the UK. Bulkeley and Betsill, who have been publishing widely on the subject of local level climate action, often use UK examples. In one of their studies (Bulkeley and Betsill 2003) they focus on the cases of Newcastle upon Tyne, Cambridgeshire and Leicester (one of the case study cities of this research) to demonstrate the role of sub-national governments in addressing the challenges posed by climate change. The same authors use the example of development planning in Newcastle upon Tyne and transport planning in Cambridgeshire to explore the issues concerning the creation of sustainable cities (Bulkeley and Betsill 2005). Based on these cases they find that both the interpretation and implementation of sustainability at the urban level is shaped by forms of governance that stretch across geographical scales and levels of governance.

Furthermore, in one of their works they refer to the cases of Newcastle and Leicester as UK examples of city level climate action being ahead of national level initiatives (Betsill and Bulkeley 2006).

Governing climate change action in the UK has also been analyzed as part of country comparisons. One of the earliest works on climate protection at the local authority level by Collier (1997) assesses the situation in the EU, building on examples from the UK, as well as Germany, Italy, Spain and Sweden. Based on these experiences she finds that even though positive instances of climate action have existed in all of these countries, unsympathetic policy frameworks both at the EU and at the national level have been inhibiting the success of such initiatives (Collier 1997). Bulkeley and Kern (2005) also analyze governing of climate change at the local level from a comparative perspective, within the context of the EU, based on the experience of Germany and the UK. They identify several factors significantly influencing the success of local level climate action, including EU policies, financial crises and political challenges of implementation. Schroeder and Bulkeley (2009) put global cities at the focus of their UK and US based comparative analysis. They take the examples of London and Los Angeles to demonstrate the role of law in the governance of climate action at the urban scale. They find that legal frameworks at the national and state levels have somewhat determined limitations to climate action in these global cities (Schroeder and Bulkeley 2009).

Research was also conducted on institutional, planning and sectoral issues relevant to climate action at the level of local authorities in the UK context. Demeritt and Langdon (2004) assess the performance of the UK Climate Impacts Programme

(UKCIP), which represents a national level institutional solution with the aim of supporting local authority level climate action. Based on a countrywide survey, the reception of and response by local governments to information disseminated as part of the Programme are assessed. The authors find that communication of locally relevant data on climate impacts will in itself not motivate appropriate action. In a further analysis on adaptation action Wilson (2006) investigates, also through survey based research, the spatial planning response at the local level. She finds that while flood risk is being recognized, the planning response to other aspects of climate change, such as biodiversity and water resources is not sufficient in the UK.

With relevance to climate change mitigation Devine-Wright (2005) investigates public beliefs about aspects of local renewable energy development (based on a public participation process in South Wales). He finds that although renewable energy installations have often proved controversial, adoption of a locally embedded development approach with participation of private and public stakeholders will increase their acceptance. Also with relevance to mitigation action at the local level Reeves (2010) explores the barriers of deep reductions in carbon emissions in existing social housing in the UK. He finds the lack of funds to be the most significant obstacle. The author also points to the need to demonstrate in long-term policies that the actions of householders and social landlords are part of a society-wide effort.

The above examples of studies focusing on sectoral mitigation and adaptation action in UK localities reflect ongoing policy processes and the societal response to these initiatives. Apart from the above analysis of institutional solutions and sectoral policies, an overall assessment of local level climate action was also carried out:

Allman *et al.* (2004), based on surveys conducted in 2000 and 2002, review the progress of local authorities in climate action in England in Wales. The assessment builds on local authority performance against the five-step methodology of the International Council for Local Environmental Initiatives (ICLEI). The authors conclude that apart from a few front-runners, most local authorities in England and Wales have not been making substantial progress. Since the carrying out of this study the stringency of the UK climate policy framework has increased. However, time is required for the new measures to take effect. Further similar research would be needed to assess the progress resulting from the new national policy stance.

The above literature review demonstrates that the closely related topics of local level climate change action and multilevel governance of climate policy in the UK have been explored from several angles. At the same time various research gaps emerged during the review. One of these gaps concerns the fact that accounts on local action primarily focus on front-runner cities, identifying barriers and success factors through their examples, leaving a gap in knowledge about ordinary municipalities. Furthermore, it would be desirable to conduct a follow-up assessment of overall performance regarding climate action among all local authorities in the UK. The national policy framework has strengthened significantly since the research carried out by Allman *et al.* (2004), presenting a considerably different policy landscape for front-runner and ordinary municipalities alike. The comprehensive work of Rydin (2010) on the governing of sustainable urban development is a new element in the literature. It provides guidance to policy practitioners and enables a thorough understanding of theoretical issues, supported by empirical examples from several governance levels in the UK.

### 3.4 Climate change action at the local authority level in Hungary

Parallel to the process of some settlements in Hungary embracing sustainability and climate action goals, research interest and support for local level climate action have also emerged in the country. The first related publications focused on putting sustainability on the local agenda and on the measurement of sustainability at the area level (Szlávik and Csete 2004, Szlávik 2005). In his book on sustainable environmental and resource management issues Szlávik (2005) also includes methodological advice on the implementation of sustainable local development.

In addition to literature review (Takács-Sánta 2008) and research articles (Csete 2007, Mosoniné *et al.* 2008, Szirmai *et al.* 2008) in the Journal “Climate-21 Booklets”<sup>4</sup>, the first comprehensive work on local level climate action in Hungary (in Hungarian language) was published in 2008 (Antal Z. ed. 2008). The book introduces the theoretical background of local level climate action, and provides an overview of international experience and literature, as well as accounts of local level climate action initiatives in Hungary. Furthermore, practical advice is given to practitioners who aim to implement similar climate programs at their localities. The concept of climate friendly settlements is introduced in the book, which also provides an overview of relevant international initiatives and networks of local authorities cooperating to achieve sustainability and climate action goals.

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<sup>4</sup> Related to the VAHAVA project focusing on adaptation to climate change in Hungary, the Climate-21 Booklets (Klíma-21 Füzetek) Journal was launched. The journal focuses on issues related to climate change, encompassing a wide range of disciplines.

Antal Z. (2008) presents the case of the UK as a front-runner in climate action in the international arena. Furthermore, the cases of cities considered as leaders in climate action in the UK are introduced (including that of Woking and Leicester, both cities chosen as case study sites for this research). Of the detailed Hungarian city cases included in the book, the analysis of climate action in Tatabánya is also part of the focus of this research. While the above mentioned accounts describe the climate action related achievements of these front-runner cities, the current research project takes further steps by conducting an analysis of horizontal and vertical governance processes from a multilevel governance perspective. It also assesses climate action initiatives in the case study cities according to the five modes of governing climate change at the local level (based on the framework developed by Bulkeley *et al.* 2009).

As for other publications in Hungarian on local level climate change action, Takács-Sánta (2008) reviews international literature on climate friendly settlements, while Csete (2007) and Szirmai *et al.* (2008) introduce case studies conducted in different parts of the country<sup>5</sup>. Mosoniné *et al.* (2008) assess the attitude of the 23 city authorities with county rights and the capital city, Budapest with relevance to climate change action. They use internet and document based content analysis and network analysis. Therefore the literature contains both detailed cased studies, as well as a countrywide assessment (at least of the largest cities) of climate change action at the local level. At the same time there is space to conduct further detailed case studies in medium sized cities, as those of Csete (2007) focus on small settlements, and that of Szirmai *et al.* (2008) on the capital city. Furthermore, there is still need to conduct a

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<sup>5</sup> The studies of Csete (2007) and Takács-Sánta (2008) were also included in the book edited by Antal Z. (2008).

survey of the attitude of all local authorities in Hungary towards climate change action.

As for the case study accounts, Csete (2007) examines the relationship between climate change and the sustainability of settlements and focuses on a particularly vulnerable area in Hungary. She identifies barriers to sustainability and climate change action at the local level that are particularly relevant in the Hungarian context. These include the lack of social cohesion and the unresolved Roma issue in the case study area, as well as more general problems stemming from the settlement structure of the country<sup>6</sup>. At the same time she finds that local authorities see themselves as the responsible actors for climate protection, although cooperation with the Disaster Prevention and Civic Protection authorities is emphasized as well. Csete (2007) also points out the role of co-benefits in convincing local stakeholders to engage in adaptation action. Both Takács- Sánta (2008) and Csete (2007) emphasize that local level climate action has been neglected at the national policy level in the Hungarian context, and advise that this situation should change.

In their study providing a more general assessment of climate action among Hungarian cities serving as administrative centers, Mosoniné *et al.* (2008) find that only two of the 24 observed cases engaged in activities that can directly be described as climate policy initiatives. These cities, Tatabánya and Nyíregyháza, are also case study sites of this research. Mosoniné *et al.* (2008) emphasize the generally difficult financial circumstances of Hungarian cities. This leads them to identify the need for

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<sup>6</sup> The settlement structure in Hungary is characterized by a large number of local authorities (3200) with a high proportion of small and micro settlements (villages and farms).

targeted financial support in order to engage local authorities in climate action. The authors also emphasize that it is necessary to raise awareness among citizens about locally implemented measures that also contribute to tackling climate change.

In terms of further accounts on local level climate action in Hungary, Szirmai *et al.* (2008), who study the spatial impacts of climate change on the society of Budapest, find that poorer inhabitants of the city are in a relatively worse situation in terms of adaptation options. They also find that poorer people perceive the issues of climate change as more serious than do wealthier inhabitants. As for international studies on local climate issues, Rezessy *et al.* (2006) include the Hungarian case in their review of the factors that influence municipal involvement in the markets for energy services and energy efficient equipment. They find that in Hungary the Energy Service Company (ESCO) sector is very well developed compared to other countries in transition, especially with relevance to the municipal level.

Based on the above, the Hungarian literature on local level climate action on the one hand provides an overview of international experiences, and based on both foreign and Hungarian examples presents practical advice to stakeholders on the implementation of successful local climate programs. Case studies were conducted focusing on an individual region and on the capital city and an overview was carried out on climate action initiatives in Hungarian cities serving as administrative centers of the regions where they are located. Furthermore (in the international literature), the case of Hungary was included in a comparative analysis of countries in transition, focusing on municipal involvement in the market for energy services. At the same time, while studies of local and area level climate action were conducted, in the



Hungarian context no comprehensive analysis has been carried out on the governing of climate change action from a multilevel governance perspective. This research aims to contribute to filling this gap.

### 3.5 Gaps in the literature

The above literature review helped identify gaps in the literature both in terms of multilevel governance of climate action generally, as well as in terms of research on local level climate action specifically in the UK and in Hungary.

In terms of the international literature on multilevel governance of climate action, several research gaps were identified. Mitigation of climate change received comparatively more attention than vulnerabilities, impacts of and adaptation to climate change (Betsill and Bulkeley 2007, Granberg and Elander 2007). Furthermore, while most of the relevant studies focus on Western democracies, literature on the experience of the global South is relatively scarce (Betsill and Bulkeley 2007). Moreover, no study was found in the international literature on multilevel governance of climate change action in transition economies. The study conducted by Rezessy *et al.* (2006) is an exception, although it has a narrower focus on the mitigation related issue of municipal involvement in markets for energy services and energy efficient equipment. The case study countries include Hungary and two South-Eastern European states (Bulgaria and the FYR Macedonia). While local authorities in transition countries are generally in a relatively better situation than those located in the global South, they usually face greater resource constraints than those located in Western democracies. Therefore their case deserves further exploration and comparison to other country groups.

Apart from these issues, Betsill and Bulkeley (2007) also point out that there is a shortage of community-based action research that could contribute to achieving social

change. Furthermore, lack of sufficient data inhibits the assessment of results of local authority level climate action. This way it is difficult to assess the relationship between the rhetoric on and the achieved results with respect to climate action at the local level.

Gaps were also present in the literature specifically focusing on climate action in the two case study countries. In the UK context several studies were found on multilevel governance of climate change action. At the same time, various research gaps were identified. These include the lack of accounts on the situation in ordinary cities (those not acting as front-runners in climate action), as well as lack of survey based analysis on the current stance of and attitudes towards climate action at all UK local authorities. In the case of Hungary there is a general shortage of literature on multilevel governance of climate action, both in terms of detailed case studies, as well as in terms of overall assessment of the situation of local authorities in the country. More research and analysis would be needed both on front-runners and ordinary municipalities, encompassing mitigation and adaptation related issues.

After the identification of the above gaps in the literature, the research aims to address these through analyzing local level climate action from a multilevel governance perspective. A comparative approach is utilized, addressing the research gap regarding the experience of transition countries, and the lack of comparative analysis of the experience of Western democracies and transition economies.

The research focuses on middle-sized, front-runner cities, the type of cases which have already been analyzed in the literature. At the same time this approach is

necessary especially in the Hungarian context, as here most cities do not engage in any kind of climate action whatsoever. At the same time the chosen case study cities, which can be characterized as middle-sized provide space for analyzing the relevant processes. One of them, Nyíregyháza does not explicitly engage in climate action, therefore it provides an opportunity to gain insight into the attitude of ordinary municipalities as well.

Moreover, the research adds to the so far scarce body of literature on climate action at the local authority level in Hungary, enhanced by a comparative, multilevel governance perspective. As the research encompasses both mitigation and adaptation related issues, it contributes to filling the knowledge gap on the multilevel governance of adaptation action. In addition to the confirmation of drivers, co-benefits and barriers of local level climate policy already reported in the literature, there is opportunity for the identification of further factors through the experience of the case study cities.

Therefore the research addresses at least five gaps identified through the literature review, while making a theoretical contribution in the field of multilevel governance of climate change action.

## Summary

In this chapter a review was carried out of the literature on multilevel governance of climate change action. Research interest has increasingly been focusing on the importance and characteristics of these multilevel and multi-actor processes, as well as on the role of city networks as a new sphere of authority in delivering climate action goals. In the past decade a substantial amount of literature has accumulated on multilevel governance of climate action in Western democracies. Furthermore, the role of local authority networks as a new type of actor in international climate policy is increasingly being explored by the research community. In the case study countries literature on local level climate action in the UK was found to be more extensive than in the case of Hungary. Through accounts of individual city cases numerous barriers, drivers, success factors and co-benefits of local level climate action were identified.

At the same time, based on the literature review, several un- or not sufficiently explored areas were detected. In connection to this, the dissertation attempts to address the following research gaps: There is general shortage in the international literature of detailed accounts on governance of climate action at the local authority level in transition countries, including Hungary. Comparative accounts of local level climate action are also lacking with respect to economies in transition and Western democracies. Therefore the dissertation addresses the shortage of analysis conducted from a multilevel governance perspective in the Hungarian context, supplemented by a transition country-Western democracy comparative approach. The research also contributes to deepening the understanding of the governing of climate action at the UK case study cities. In addition to the ones already reported in the literature, further

barriers, drivers and co-benefits to local level climate action are identified through the research.

In the following chapter the international and national governance context of local level climate action in the UK and in Hungary is explored.

## **Chapter 4 MULTILEVEL GOVERNANCE CONTEXT OF LOCAL LEVEL**

### **CLIMATE ACTION IN THE UK AND HUNGARY<sup>7</sup>**

Climate change action in cities affects and is affected by policies at higher governance levels. Simultaneous top-down and bottom-up multilevel governance processes shape climate action both at the Hungarian and the UK case study cities. These two-way processes can occur through vertical coordination between actors at different governance levels. Processes of horizontal coordination between government departments and actors in the private and civil sector, as well as between local authorities also play a role. In this chapter the multilevel governance framework is utilized as a lens to explore vertical and horizontal cooperation occurring between the international and supranational, the national and the local level.

Both case study countries established individual domestic climate policy targets and ratified the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) at the international level. They are also both members of the European Union. Therefore they must transpose and implement EU directives and are influenced by international commitments made by the community as a whole. At the same time, while both Hungary and the UK operate in the same supranational context, the relative importance of the climate change issue in the domestic policy arena of the two countries differs considerably. While the UK positioned itself as a global leader in the fight against climate change, climate action is not among national policy

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<sup>7</sup> This chapter reflects the governance and policy context in March 2010 at the international and EU level, as well as in both case study countries.

priorities in Hungary. This also leads to a different national policy context for local authorities that engage in climate action within the two countries.

In this chapter the international, EU and the national policy contexts for local authority level climate action are introduced in the UK<sup>8</sup> and in Hungary respectively. In the first section of the chapter the international context of climate action is outlined, followed by an overview of the EU level climate policy framework, within which the two case study countries operate. Overarching national climate policy frameworks, as well as legislation on local governance in the UK and Hungary are introduced. The country sub-chapters are concluded with an overview of public and civil organizations at the national level influencing climate policy development and implementation at local authorities.

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<sup>8</sup> The United Kingdom is a unitary state consisting of four countries: England, Northern Ireland, Scotland and Wales. Both of the UK case study cities are located in England. In this dissertation the national or country level policy framework always refers to the United Kingdom as a unitary state, unless otherwise specified.



## 4.1 International context

Local governments pursuing climate change action must operate in a regional, national and a wider international context. This section introduces the main international policy processes and institutions that influence and are in turn influenced by climate action at the local level.

Tackling climate change is a global challenge, therefore it requires global cooperation to achieve a solution. The United Nations Framework Convention on Climate Change (UNFCCC) represents the international framework for intergovernmental effort to address the challenges posed by climate change (UNFCCC 2011a). The Convention entered into force in 1994. The Kyoto Protocol of the Convention (adopted in 1997) includes binding targets for developed countries to stabilize their greenhouse gas emissions, while the UNFCCC only encourages them to do so. At the same time it does not require developing countries to control emissions. While the UNFCCC as a framework convention enjoys near universal membership with 192 signatories, only 37 industrialized states and the EU ratified the Kyoto Protocol. The Protocol could only enter into force in 2005 after ratification by the Russian Federation, which ensured that at least 55% of global greenhouse gas emissions were covered (UNFCCC 2011b). At the same time the United States, the largest emitter among developed countries has not ratified the Protocol, questioning its environmental integrity based on the fact that it does not include developing country emissions (for example China, which has now overtaken the USA in terms of emission of greenhouse gases).

The first commitment period of the Kyoto Protocol started in 2008 and lasts until 2012. Negotiations about the second commitment period and the Post-Kyoto framework are underway, but no legally binding future framework has been adopted by the end of 2009, when the Copenhagen Climate Conference (COP15) took place. The Copenhagen Accord adopted at the conference demonstrates a willingness to move forward, and includes an intention to specify quantified numerical targets for developed countries and nationally appropriate mitigation actions for developing countries (Copenhagen Accord 2009). At the same time the politically sensitive decisions about specific details on what these targets should be remained open and are still to be negotiated after Copenhagen.

Slow progress in international negotiations regarding control of national greenhouse gas emission reductions and adaptation draws the attention to the role of sub-national action in tackling climate change. Front-runner cities have often been setting more ambitious climate targets than national governments. Therefore cities taking individual action against climate change play an important role in reaching national climate policy goals. As members of transnational networks of sub-national governments, they have also been pushing for stronger international climate commitments. For example ICLEI, United Cities and Local Governments (UCLG), as well as the C40 network have been active in international negotiations parallel to demonstrating best practice at the local level (UCLG 2009). Progress in international negotiations would also make it easier for cities comprising the membership of these networks to reach and set even more ambitious local climate targets.

The importance of climate action at the city level is also increasingly being recognized by international institutions. The climate change issue is getting higher on the agenda of development organizations like the OECD, the World Bank and specialized UN agencies. For example in the 2010 World Development Report of the World Bank, which every year concentrates on a specific aspect of development was titled “Development and Climate Change” (World Bank 2010). Furthermore, the 2008 World Energy Outlook of the International Energy Agency devoted a whole chapter to the assessment of energy use in cities (IEA 2008). Reports published, conferences organized and new research units set up demonstrate that the World Bank, along with OECD and specialized UN agencies like UN HABITAT and UNEP recognize the strong connections between the urban development and climate change agendas (World Bank 2011, OECD 2011, UN HABITAT 2011, UNEP 2011). Apart from the mentioned international development organizations, the EU has also put climate change high on the community political agenda, and recognized the role of local governments in tackling the challenge.

The following section introduces the climate policy stance of the European Community, which provides the framework for sub-national climate action within the borders of the Union.

## **4.2 EU context**

### **4.2.1 EU level action**

The European Union regards climate action as a top priority and positions itself as a leader in international climate policy (DG Climate Action 2011a). Since both Hungary and the UK are EU member states, their national level actions are strongly influenced by the internal policy stance taken by the Community as a whole. In 2002 the EU (then consisting of only 15 member states), by ratifying the legally binding Kyoto Protocol of the UNFCCC committed itself to cut emissions in the time period between 2008-2012 8% below 1990 levels (DG Climate Action 2011b). Subsequent, more ambitious commitments of the EU secured its role as a leading actor in the global fight against climate change. As part of the climate action and energy package (also referred to as the 20-20-20 package) that was adopted in December 2008, the Community committed itself to a 20% reduction of greenhouse gas emissions on 1990 levels by 2020, regardless of the actions of other countries. Furthermore it also announced willingness to increase emission reductions to 30% in case of a satisfactory global climate agreement. In order to achieve these commitments further objectives were set out regarding energy efficiency (20% reduction in energy consumption), renewable energy (increase of the market share to 20%) and bio- and other renewable fuels in transport (increase the share to 10% in each member state) (EC 2010).

Apart from commitments made in the last couple of years, the EU has been engaging in climate action since 1991. This is the year when the first Community strategy was

issued with the aim of limiting carbon dioxide emissions and improving energy efficiency. The European Climate Change Programme (ECCP) was launched in 2000 and serves as the main instrument to discuss and prepare the development of EU climate policy (DG Climate Action 2011c).

Commitments made by the EU as part of the Kyoto Protocol in 1997 and in the 20-20-20 package in 2008 raised issues of burden sharing between member states. Within the 27 countries today comprising the EU an east-west divide developed between old and new member states regarding the contribution of individual countries to Community level climate targets. In 2009 a decision on effort sharing (Decision No. 406/2009/EC) was made that specifies the contribution of member states according to relative wealth (in GDP/capita) to greenhouse gas emission reductions by 2020 on 2005 levels in the non-EU ETS sectors (buildings, transport, agriculture and waste). According to the Effort Sharing Decision Hungary can increase combined emissions originating from relevant sectors by 10%, while the UK must decrease emissions by 16% (The European Parliament and the Council of the European Union 2009). At the same time not only reductions, but also limits on emissions require an effort, therefore both countries need to take action to achieve their respective targets. This in turn influences national level climate policy processes, reflecting the effects of EU membership.

An important component of Community level climate policy is the EU Emission Trading System (EU ETS), launched in 2005 (DG Climate Action 2011d). As part of the EU ETS key emitting sectors were identified, including the energy industry, ferrous metals production, cement and lime, ceramics and bricks, and pulp and paper.

Emissions allowances were distributed to companies in these energy intensive industries through national allocation plans. The EU ETS is currently operating in the second phase. It builds on the experience of and has been improved compared to the first phase. The EU ETS, as the longest operational greenhouse gas emission trading program serves as an example for emissions trading schemes operating at the international level and in other parts of the world. The second phase of the ECCP (in addition to the EU ETS) also deals with issues related to aviation, carbon dioxide and cars, carbon capture and storage and adaptation to climate change. As mentioned before, greenhouse gas emissions from non-EU ETS sectors (buildings, transport, agriculture and waste) are included in the Community level Effort Sharing Decision.

Parallel to the above mentioned commitments and measures that are mainly focusing on the mitigation of climate change, the EU also lays emphasis on adaptation and supports member states in achieving their related goals. Apart from the White Paper on adapting to climate change (EC 2009) that aims to build a framework for action on the Community level, the European Commission also provides guidance for adaptation at the regional level. In this way it does not only recognize the region as an appropriate level to deal with the challenges posed by climate change, but also provides practical advice on how this should take place by the way of designing Regional Adaptation Strategies (Ribeiro *et al.* 2009). EU financing and co-financing is available for adaptation related projects, for example through LIFE, the instrument supporting environmental and nature conservation measures within the Community and neighboring regions (EC 2011a).

Climate action in EU member states is influenced by financing received from the Structural Funds and the Cohesion Fund. The three objectives of the European Funds for the 2007-2013 programming period include convergence, regional competitiveness and employment, as well as European territorial cooperation (Energie-Cités 2007). The funding structure allows for the least developed regions of the community to benefit the most. While the main objectives of cohesion policy are set out at the Community level, national authorities determine the actual structure of and priorities regarding the utilization of the funds. Therefore, even if the Community level policy stance supports climate and sustainable energy action, different national priorities can reduce the actual financing available for these areas. At the same time several examples exist of Structural Funds contributing to climate action at the settlement level: projects have been implemented with the financial support of the EU in the field of modernizing district heating systems, utilization of renewable energy technologies and development of biogas plants (Energie-Cités 2007). At the same time stronger supranational guidance and regulation would be necessary to ensure a higher level of integration between Community level climate policy and the allocation of European Funds by the national authorities. With relevance to city level climate action, in 2006 the EU Commission published a Communication on cohesion policy and cities. In the Communication the role of local authorities in sustainable development is emphasized, including the promotion of energy efficiency and sustainable energy (EC 2006).

#### **4.2.2 Country, region and city level climate action within the EU**

Different EU member states take a different stance towards climate action. Some old member states, like the UK and Sweden put climate change policy at the top of their political agenda. In these countries governments are supported by relatively strong public opinion in tackling climate change, while some new as well as old member states are comparatively lagging behind. Some members have even been opposing ambitious Community level climate policy initiatives [for example Poland in the case of auctioning emissions permits as part of the EU ETS (see Baczynska and Doyle 2008)].

As for actual performance in terms of greenhouse gas emission reductions, there are significant differences between the EU-15 (old member states) and the EU-12 (new member states). New members (with the exception of Slovenia) were well below their Kyoto targets by 2006 (EEA 2009). Post-socialist industrial restructuring was a major contributor to these results. By the same year the EU-15 as a group achieved about third of the reductions needed to reach their Kyoto commitments, furthermore, since 2000 emission trends were similar in the EU-15 and the EU-12 (EEA 2009). New member states are characterized by a lower level of economic development than old member states. At the same time they will soon also have to make a larger effort to reduce greenhouse gas emissions, as all EU members will be required to enhance their efforts to reach Community level climate policy targets.

Some cities and regions have been active in setting and pursuing their individual climate policy targets. The European Commission recognizes the importance of these



initiatives and supports cities and regions in taking action against climate change. The Commission set up the Covenant of Mayors Office, which facilitates sharing of best practice, and provides tools for monitoring and evaluation as well as technical and promotional support. Signatories of the Covenant formally commit to going beyond the EU target of 20% in greenhouse gas emission reductions by 2020 (EC 2011b). The Office also helps city governments to gain access to funding for their projects related to climate change action through the European Investment Bank and the Intelligent Energy Europe program. The Covenant of Mayors is only one among the several transnational networks of sub-national governments that EU cities can join. The Energie-Cités network, which comprises 1000 European local authorities, is another example (Energie-Cités 2011). Apart from the initiatives focusing exclusively on Europe, cities can also join national and worldwide networks of sub-national governments to support local level climate action.

After the overview of the EU level framework influencing local level climate action, in the next section national policy contexts faced by case study cities are introduced.

### 4.3 National contexts

The national policy framework sets the context for regional and local level climate action. In case it provides high level of independence over a broad range of issues, it leads to more freedom in addressing the challenges posed by climate change at the regional and local authority level. At the same time these sub-national efforts also feed back and contribute to reaching national climate targets.

The overarching climate policy framework of a country therefore significantly influences sub-national climate action. At the same time national climate policy must be integrated with other sector specific policies to be effective. With relevance to this the OECD (in the context of development assistance) calls for the use of a “climate lens”, meaning a systematic, integrated and comprehensive approach to achieve policy coherence across sectoral and cross-sectoral policy areas (Corfee-Morlot *et al.* 2009). A comprehensive and systematic approach at the national level creates a supportive context for local climate policy, as well. Furthermore, it is important to understand the local governance structure in general, and framework conditions influencing the functioning of local authorities to understand the governance processes of climate action at the local level.

In the following sections an overview is provided of the national policy context of multilevel governance of climate action in the UK and in Hungary. International commitments and details of overarching domestic climate policy frameworks are introduced, as well as the legislative context of local governance in the two countries.

The country sub-chapters are concluded by an overview of key national institutions, public sector and civil organizations influencing domestic climate action.

#### **4.3.1 UK – national policy context and institutions**

The UK, as the first country in the world to introduce a long-term, legally binding framework to tackle the dangers of climate change, is front-runner in domestic climate policy (DECC 2011a). Furthermore, the domestic policy framework and related institutional structure encourage and support local authorities in carrying out climate action related measures in areas of their jurisdictions.

The following sections outline international and domestic climate policy commitments and the overarching national climate policy framework in the UK (for a list of documents, strategies, programs and legislation included in the overview, see Table 5). The context of local governance in the country is also introduced. The sub-chapter is concluded by an overview of public institutions and civil organizations supporting local level climate action in the UK.

**Table 5 Climate policy related documents, strategies, programs and legislation in the UK**

<b>Document/Strategy/Program/Legislation</b>	<b>Year</b>
RCEP 22nd Report: Energy - The Changing Climate	2000
UK Climate Change Programme I	2000
Energy White Paper: Our energy future - creating a low carbon economy	2003
Sustainable Development Strategy: Securing the Future	2005
UK Climate Change Programme II	2006
Climate Change and Sustainable Energy Act	2006
Energy White Paper: Meeting the energy challenge	2007
Energy Measures Report	2007
Climate Change Act	2008
Adapting to Climate Change Programme	2008-2011
Strategy for Climate and Energy: UK Low Carbon Transition Plan	2009

Sources: RCEP (2000), DECC (2011b), DTI (2003), HM Government (2005), HM Government (2006), HM Government (2007a), BERR (2007), HM Government (2008a), HM Government (2008b), HM Government (2009).

#### ***4.3.1.1 International commitments***

Under the Kyoto Protocol of the UNFCCC the UK committed itself to reduce greenhouse gas emissions by 12.5% below base year levels in the first commitment period between 2008 and 2012 (DEFRA 2006). As reported in the UK's Fourth National Communication under the UNFCCC (DEFRA 2006) emissions were already 14.6% below base year levels in 2004. Therefore the UK is well on track to meet the commitments it made under the Kyoto Protocol. Emission reductions were mainly driven by the restructuring of the energy supply industry, improvements in energy

efficiency and energy intensity, as well as pollution control measures in the industrial sector (DEFRA 2006).

As part of the EU effort sharing agreement, the UK has also committed itself to cut greenhouse gas emissions by 16% by 2020, on 2005 levels (European Parliament and European Council 2009). Since these commitments were made at the international level to the UNFCCC and at the supranational level to the EU, the UK has set more ambitious domestic emission reduction targets.

#### ***4.3.1.2 Overarching strategies and policies***

In terms of climate action commitments, policies and measures on the domestic front, the UK was the first country in the world to introduce a long-term, legally binding national framework to tackle climate change (DECC 2011a). Stringent domestic targets were developed through several steps represented by reports on energy and climate change action in the country, as well as strategic and policy documents.

The first step towards the establishment of stringent domestic climate action was the adoption of a 20% carbon dioxide emission reduction target on 1990 levels by 2010 as part of the UK Climate Change Programme in 2000 (DECC 2011b). It was supported by the 22<sup>nd</sup> report of the Royal Commission on Environmental Pollution (RCEP) published in 2000, entitled “Energy – The Changing Climate”. In the report RCEP recommended that carbon dioxide emissions resulting from the combustion of fossil fuels should be reduced in the UK by 60% until 2050 (RCEP 2000). It also outlined recommendations on how to achieve this by transforming the way energy is used.

The Government responded to the recommendations by publishing the Energy White Paper, entitled “Our energy future – creating a low carbon economy”, in 2003. The Energy White Paper set the long-term goal of reducing carbon dioxide emissions by 60% by 2050, requiring for real progress to be made already by 2020 (DTI 2003). In 2006 the second phase of the UK Climate Change Programme adopted further policies and priorities for climate action.

Parallel to the development of climate policies and strategies the UK Government has also been addressing the issue of sustainable development. The sustainable development strategy, entitled “Securing the Future” was launched in 2005 (HM Government 2005). Climate change is one of the four priority areas of the strategy, representing the integration of the sustainable development and climate action agendas in the UK. As a further step, the Climate Change and Sustainable Energy Act adopted in 2006 introduced the obligation for the Government to regularly report to Parliament on greenhouse gas emissions, and furthermore required action to be taken to reduce these emissions (HM Government 2006).

The adoption of legally binding national legislation to tackle climate change took place in 2008 by putting in place the Climate Change Act (HM Government 2008a). As part of the Act an even more ambitious long-term target was adopted than the one recommended by the RCEP in 2000. The legally binding target to reduce greenhouse gas emission by 2050 was set at 80% below 1990 levels, with an interim target of 34% by 2020. The two key aims of the Climate Change Act are to improve carbon management and help the transition to the low-carbon economy, as well as to

demonstrate the international leadership of the UK in climate action. As a key provision of the Act a carbon budgeting system was set up, which caps emissions over five-year periods. The Committee on Climate Change (CCC) has been put in place as an independent, expert body that advises Government on the level of carbon budgets and where cost-effective savings can be made. The CCC also has an Adaptation Sub-Committee. Furthermore, the CCC advises Government on the appropriate balance between domestic, European and international action in order to meet commitments.

As for policies on adaptation, the Environment Agency has had an organizational Climate Change Adaptation Strategy since 2005, which was extended in 2008 (Environment Agency 2008). A framework for action has also been put in place by DEFRA in the form of the Adapting to Climate Change Programme with phase one running from 2008 to 2011 (HM Government 2008b). According to provisions of the Programme government departments have to produce Adaptation Plans to demonstrate how they assess and manage climate change risks in their respective sectors.

Several policy measures were put in place to help deliver ambitious domestic climate policy targets as part of the 2008 Climate Change Act. These include the requirement for the Government to regularly report to Parliament on policies related to meeting the carbon budget, limits on international carbon credits, and the introduction of domestic emission trading schemes (HM Government 2008a). The first such scheme, the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme is already under development. As part of fulfilling the requirements of the 2008 Climate Change Act the national strategy for climate and energy, the UK Low Carbon Transition Plan was

published in 2009 (HM Government 2009). Furthermore, climate action related indicators were introduced into the system of National Indicators (NIs) that form the basis of the performance framework of local governments in England (HM Government 2008c).

Several schemes exist at the national level in the UK acting as market based mechanisms for climate action. These include the climate change levy, the climate change agreements and the UK Emission Trading Scheme (UK ETS). The climate change levy is a tax on the use of energy in industry, commerce and the public sector. Climate change agreements provide an 80% discount on the levy for those who implement challenging energy efficiency and greenhouse gas reduction targets. Furthermore, the UK ETS, a voluntary greenhouse gas emission trading scheme has been set up as the first domestic, economy-wide such system in the world. The first phase operated between 2002 and 2006. Afterwards the scheme continued as part of the climate change agreements. Large energy intensive businesses in the UK fall under the EU Emission Trading System (DEFRA 2006).

Even though ambitious domestic medium- and long-term targets to tackle climate change were adopted in the UK, the Government admitted that the first short-term carbon reduction target of 20% will be missed in 2010 (while not endangering international commitments) (Jowit 2009). The CCC stated in its 2009 progress report to Parliament (CCC 2009) that reduction achieved between 2003 and 2007 was lower than that required in the next carbon budgets. Therefore a step-change is essential. Furthermore the recession of 2008 was found to have a profound impact, likely being the pure reason for meeting the first carbon budget. In order to ease the meeting of



later budgets, the CCC advised continuing action despite recession related greenhouse gas emission reductions in the first budgeting period. The areas where this action should take place were specified as the electricity and carbon markets, residential energy efficiency and supporting the penetration of electric cars (CCC 2009).

#### ***4.3.1.3 Context of local governance in the UK***

The UK has a complex local governance structure, involving a mixture of one-tier and two-tier systems. Wales, Scotland and Northern Ireland operate as devolved administrations, with their own Parliaments and Assemblies, while England is directly governed by the national level UK administration and is subdivided into 9 regions (Directgov 2011a). Below the regional level and excluding London, England has two different patterns of local government models in use (Directgov 2011b).

The one-tier model is based on a system of unitary authorities (introduced in 1990). Large towns and cities are typically governed by them. Unitary authorities are responsible for all local government tasks and deliver services in the areas of education, transport, social services, housing, cultural services, environmental services, planning and development and central and other services. In practice, most unitary authorities in England are not entirely unitary, as they often run some services on a joint basis with other authorities. These typically include policing, fire services, and sometimes waste disposal and public transport. The two-tier model consists of county and district councils, with county councils covering most public services, and district councils being responsible for more localized tasks, including council housing, leisure and recreation facilities, local planning, recycling and trash collection

(Directgov 2011b). (For an overview of services delivered by different types of local authorities in England, see Appendix 4.)

The two UK case study cities, Leicester and Woking are both located in England. Leicester City Council is a unitary authority and is therefore responsible for all local government tasks (except for those tasks described above as delivered on a joint basis). Woking Borough Council is a district council representing the second tier in the two-tier model of local governance in England. It operates within Surrey County Council, which represents the first tier. (DCLG 2009)

Local governments are financed by task specific and general grants from central government, as well as local council tax and business rates (a property tax on businesses) (Directgov 2011c). In 2007-2008 on average 61% of gross income of English local authorities came from the central state (DCLG 2009). Therefore, while local authorities have their own income, they are still highly reliant on central sources of funding. Furthermore, local authorities in England must operate according to Local Area Agreements. The Agreements are made between the central government and the local area (consisting of the local authority and key strategic partners) for a period of three years (DCLG 2010a).

Further reflecting the changing role of local governments, a proliferation of partnerships and collaborative mechanisms between various stakeholders has taken place within the already highly fragmented governance structure. The increasing role of external stakeholders also carries implications for the governance of climate action at the local level. Reduction of greenhouse gas emissions originating from local

authorities as organizations due to the outsourcing of activities to external actors demonstrates the importance of this. The emissions still exist but become external to the local authority, which can only indirectly influence them. In accordance with this Bulkeley and Kern (2006) point out that local authorities have been losing their importance as service providers, taking on more of an enabling role. At the same time they emphasize that this enabling role is not to be understood in minimalist terms, but rather as a proactive way of identifying and meeting community needs.

The significance of local authority level climate action has been recognized in the UK and support mechanisms were put in place as part of the national climate change and energy policy framework. The 2003 Energy White Paper urged local authorities to promote energy efficiency and to include energy issues among strategic priorities by integrating them in Community Plans and Housing Strategies (DTI 2003). Integration of climate action into local authority activities continued as part of the 2007 Energy White Paper, requiring the implementation of specific policies and measures, as well as creating a regulatory framework for local climate action (HM Government 2007a). As part of complying with the Climate Change and Sustainable Energy Act of 2006 (HM Government 2006) the Energy Measures Report containing further, local authority specific energy policy guidance was published in 2007 (BERR 2007). The Energy Measures Report set out measures that local authorities can utilize in the fight against climate change and required that when exercising any of their functions they have regard to the report. At the same time it was not expected from local authorities to incur additional costs while implementing the advice in the report.

A further step towards the integration of climate action into activities of local authorities in the UK took place with the inclusion of climate change related indicators within the system of national indicators (NIs). Performance management of local authorities by the central government in England takes place through the set of 198 national indicators encompassing a range of local authority functions and competencies (HM Government 2007b). Climate change related indicators include those on CO<sub>2</sub> reduction from local authority operations (including transport and stationary sources), per capita CO<sub>2</sub> emissions in the local authority area, tackling fuel poverty and adapting to climate change. The delivery of these indicators is supported by local authority level emission statistics provided by the Department of Energy and Climate Change (DECC 2009).

Large local authorities will be urged to reduce greenhouse gas emissions originating from their operations by involving them in the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme, a market based mechanism. The CRC is a mandatory cap and trade scheme targeted at non-energy intensive public and private sector organizations. Local authorities whose half hourly electricity consumption is greater than 6,000MWh per year also fall under the scheme, which will start with a three year introductory phase from April 2010 (DECC 2011c). As part of the scheme local authorities need to measure their energy use, report to Government, and pay for the resulting greenhouse gas emissions. The CRC is connected to NI 185 regarding stationary sources of emissions, including schools and other buildings assets, street lighting and outsourced services (Lincolnshire County Council 2009).

Apart from the above described policies to tackle climate change at the local level, the Energy White Paper 2007 sets out measures directed at the public sector, which also affect local authorities. These measures include energy efficiency standards for the public procurement of products and services, and Government funding made conditional on energy efficiency standards during the building of all new social housing. Furthermore, public buildings larger than 1,000m<sup>2</sup> have to display a certificate showing the energy rating of the building, and list measures that can help further improve their energy performance (HM Government. 2007a). This is in line with the implementation of the EPBD (Energy Performance of Buildings Directive). A revolving fund has also been set up to support energy efficiency investments in public sector buildings (DEFRA 2006), which local authorities can benefit from.

Mechanisms through which local authorities can commit to climate action and be rewarded for results in such action were also initiated at the national level in the UK. These include the Nottingham Declaration and elements of the Beacon Council Scheme. Through signing the Nottingham Declaration (launched in 2000) local authorities make a voluntary pledge to their communities about systematically addressing the causes of climate change and preparing for expected impacts. The Declaration has so far been signed by more than 300 English Councils (EST 2011a). As for recognition of the achievement of front-runner cities the Beacon Council Scheme was set up in 1999 (DCLG 2010b). The Scheme identifies excellence in local government activity areas and helps disseminate best practice of front-runners. As proposed in the 2003 Energy White Paper (DTI 2003) sustainable energy and climate change related themes have been included in the Beacon Council Scheme.

The above mechanisms and policy processes demonstrate the numerous ways how the role of local authorities in climate action is acknowledged and supported in the UK. Although the effects of many of these mechanisms are yet to be evaluated, they can be regarded as best practice and utilized as a model by other countries.

#### ***4.3.1.4 Public institutions***

Several public institutions were set up in the UK with the primary mandate to tackle the challenges posed by climate change. These include government departments, advisory bodies and institutions supporting climate policy implementation.

According to the provisions of the 2008 Climate Change Act, the Committee on Climate Change (CCC) was created as an independent expert body setting and monitoring carbon budgets and advising Government on how to achieve these targets (DECC 2011a). Furthermore, the Department of Energy and Climate Change (DECC) was established in 2008 as the focal point for energy and climate change mitigation policy at central government level (DECC 2011d). Issues related to adaptation to climate change are coordinated by the Department of Environment, Food and Rural Affairs (DEFRA 2011a). At the same time adaptation is also addressed in a horizontal manner, requiring all government departments to produce Adaptation Plans (DEFRA 2011b). Apart from the work of DECC and DEFRA, as well as interdepartmental coordination, the Department for Communities and Local Government (DCLG) also plays a key role in shaping climate action at the local authority level through publishing Planning Policy Statements on how to tackle climate change (DEFRA 2011c). The key scientific body advising Government on environmental and climate

change related issues is the Royal Commission on Environmental Pollution (RCEP 2011).

Apart from the ones mentioned above, other specialized institutions have also been set up that provide practical support for climate change action in the UK (EST 2011b). These institutions include the Energy Saving Trust (EST), the Carbon Trust and the UK Climate Impacts Programme (UKCIP). In order to provide advice on sustainable energy solutions two different institutions were set up, focusing on different stakeholders. The activities of the Carbon Trust, an independent company, are targeted at businesses and the public sector in the area of commercialization of low carbon technologies (The Carbon Trust 2011). The EST provides sustainable energy technology related advice, information and support to the public, to local authorities and housing associations. It operates advice centers throughout the country and implements government funded energy efficiency support programs (EST 2011c). The UK Climate Impacts Programme is responsible for providing information to organizations about the impacts of climate change and guidance on ways to adapt to it (UKCIP 2011). The Environment Agency is also involved in the implementation of climate policy. It works with emergency services, supports planning with regard to flood risk, administers the EU Emissions Trading System in England, and assesses how local authorities implement adaptation related performance criteria (Environment Agency 2011).

Other organizations, which do not specifically focus on tackling climate change, also provide support or influence how local authorities deliver their climate action related obligations. These organizations include Local Government Improvement and

Development (LGID) and the Local Government Association (LGA). LGID facilitates the sharing of best practice between local authorities (LGID 2011), while LGA provides collective representation for local authorities (LGA 2011). The Audit Commission plays a role through evaluating local authority performance against the set of 198 National Indicators, as well as by providing advice, information and best practice case studies on improving delivery against these indicators (Audit Commission 2011).

#### ***4.3.1.5 Civil and private organizations***

Organizations in the civil and private sectors also play a key role in facilitating action against climate change in the UK. The civil sector has been influencing national level climate policy formulation and implementation, as well as local authority level environmental and climate change action. Environmental NGOs (WWF, Friends of the Earth) and charities (the Charity of the Prince of Wales) are playing an important role through campaigning and working directly with local authorities. WWF supports local governments on climate change, energy and ecological issues (WWF 2011). Representing early action, Friends of the Earth published an Environmental Charter for local governments already in 1989 advocating local authority level environmental policy (Friends of the Earth 1989). The Accounting for Sustainability Project of the Charity of the Prince of Wales also influenced climate action at the local authority level through a Connected Reporting Framework with guidance on how to embed sustainability into decision making processes (The Prince's Charities 2011).



Advocacy organizations and alliances for climate action have been set up in specific sectors. These include National Energy Action, the leading fuel poverty charity focusing on energy efficiency of low income households (National Energy Action 2011), and the Existing Homes Alliance focusing on delivering energy efficiency targets in the existing buildings sector (Existing Homes Alliance 2011). Furthermore, Housing Associations, representing the institutional form responsible for social housing provision in the UK have also been key players in the implementation of sustainable energy policies at the local level (Directgov 2011d).

In the next sub-chapter an overview is provided of the national policy context and institutional structure supporting the multilevel governance of climate action in Hungary.

#### **4.3.2 Hungary – national policy context and institutions**

Climate policy is present on the national political agenda in Hungary, at the same time it is not a central issue. Strategies, programs and policies have been initiated at the national level in order to tackle climate change. At the same time, as it is stated in the centralized in-depth review of the Fourth National Communication of Hungary to the UNFCCC with respect to mitigation, “very often climate change mitigation is not the primary objective for a policy or measure, but rather a secondary benefit, which is, nevertheless, expected and assessed” (UNFCCC 2006, p. 6). Since the Fourth National Communication was submitted to the UNFCCC in 2006, more direct action was initiated in the field of adaptation and mitigation as well. This section will provide an overview of these domestic climate policy processes.

The following sections outline international and domestic climate policy commitments, the overarching national climate policy framework, and other legislation relevant to local level climate action in Hungary (for a list of documents, strategies, programs and legislation included in the overview, see Table 6). The context of local governance in the country is also introduced. The section is concluded by an overview of public institutions and civil organizations supporting local level climate action in Hungary.

**Table 6 Documents, strategies, programs and legislation relevant to climate action in Hungary**

Document/Program/Legislation	Year
1990. LXV. Act on Local Governments	1990
National Environmental Protection Program	2003-2008
National Strategy for Sustainable Development	2007
National Climate Change Strategy	2008-2025
VAHAVA (Change-Impact-Response)	2003-2009

Sources: Parliament of the Republic of Hungary (1990), MEW (2004), Government of the Republic of Hungary (2007), MEW (2008), MEW and HAS (2005).

#### ***4.3.2.1 International commitments***

Hungary made commitments at the international level to control greenhouse gas emissions by ratifying the Kyoto Protocol of the UNFCCC in 2002 (UNFCCC 2006). The country committed itself to reduce greenhouse gas emissions by 6% compared to the average of the years between 1985 and 1987, between 2008 and 2012 (UNFCCC 2006). Since the level of CO<sub>2</sub> emissions in the 1985-87 base period were higher than in 1990 (the base year that generally applies to other countries), the adoption of the earlier period as basis resulted in a lower emission reduction commitment than if 1990 emissions were used as a reference. In recent years greenhouse gas emissions in Hungary were stagnating and following a slightly increasing trend, mainly due to expansion in the transport sector (UNFCCC 2008). As for effort sharing within the EU, Hungary committed itself to limit greenhouse gas emissions growth to 10% by 2020 compared to 2005 levels in non-EU ETS sectors (European Parliament and

European Council 2009). This commitment in effect means that additional measures will have to be put in place in order to reach the effort sharing target.

Negotiating the earlier time period as opposed to the general base year under the Kyoto Protocol contributed to Hungary possessing a surplus of saleable Assigned Amount Units (AAUs). Through the sale of these emission quotas Hungary, as well as other transition countries can generate revenue. At the same time measures had to be developed in order to green these “hot air” quotas. The Green Investment Scheme, a pioneer programmatic measure focusing on the buildings sector ensures that the received money is spent in a way that results in measureable and verifiable greenhouse gas emission reductions (Ürge-Vorsatz and Novikova 2006).

#### ***4.3.2.2 Overarching strategies and policies***

Overarching climate action related policy processes have already generated some strategic and program documents in Hungary. The strategic document specifically focusing on climate policy, the National Climate Change Strategy (NCCS) for the years 2008-2025 was adopted in 2008 (MEW 2008). The NCCS is to be reviewed by the Hungarian Government two years after adoption and every five years thereafter. Furthermore, it is to be supported by the National Climate Change Program containing a two year action plan. The Hungarian climate strategy touches upon both mitigation and adaptation related aspects of climate action. Hungarian greenhouse gas emission reduction targets are specified as ranges in two separate scenarios. If the EU adopts a 20% greenhouse gas emission reduction target by 2020 compared to 1990, Hungary would reduce its emission by 16-25%, while if the EU target is 30%,

Hungary would reduce its emissions by 27-34% by 2020 on 1990 levels (MEW 2008).

Preceding the development of the NCCS a three year project led by the Hungarian Academy of Sciences was completed on adaptation to climate change in the Hungarian context. The VAHAVA (Change-Impact-Response) project was carried out between 2003 and 2006 (MEW and HAS 2005). Apart from serving as scientific background for the adaptation section of the NCCS, another outcome of the VAHAVA project has been the organization and mobilization of the Hungarian scientific community involved in climate change research. Through VAHAVA a network of experts has been organized who can support the further development and implementation of climate strategies and action plans in Hungary.

The adoption of a Framework Law for Climate Protection has also been initiated in Hungary (NCSD 2009). The draft of the Framework Law for Climate Protection was submitted to Parliament for approval in February 2010 at the request of almost 500 (mostly environmental, social and rural development NGOs) (HVG 2010). However, the law was not approved by Parliament and the process has to be initiated again after parliamentary elections take place in 2010. Even if a Framework Law for Climate Protection is successfully adopted in Hungary, effectiveness of such a law is going to depend on whether systematic implementation and sector specific integration is achieved.

Apart from strategies and laws specifically focusing on climate change action, in 2007 the National Strategy for Sustainable Development (NSSD) has been adopted

(Government of the Republic of Hungary 2007). The fight against climate change (encompassing both mitigation and adaptation related issues) is among the eleven priority areas of the NSSD. Another document with a wider environmental focus, the National Environmental Protection Program 2003-2008 (amended in 2009) also touches upon climate change and the environmental state of cities (MEW 2004).

As demonstrated by the above overview several strategic documents were developed in Hungary to facilitate national level sustainable development and climate action. At the same time it would be necessary to strengthen these policy processes by action plans containing legally binding, measurable targets and timetables. Clarifying and acknowledging the key role that local authorities play in delivering national level climate policy targets would also be necessary in Hungary.

#### ***4.3.2.3 Context of local governance in Hungary***

Municipal governance in Hungary takes place through a two-tier system. It consists of settlement (village, city, capital city, capital city district) and county level municipalities<sup>9</sup>. Both settlement and county level municipalities are local level, however they are responsible for different tasks. Their relationship is of a horizontal nature. In addition to the settlement and county level, the category “city with county rights” also exists in Hungary. This means that the city council, in addition to settlement level tasks, has to carry out county tasks within the boundaries of the municipality. At the same time it has to coordinate with the relevant county council on the fulfillment of these tasks. Both of the Hungarian case study cities (Nyíregyháza

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<sup>9</sup> There are 3152 settlements in Hungary (Central Statistics Office 2011). A large proportion of these is characterized by very small size.

and Tatabánya) are cities with county rights, and therefore qualify as large local authorities in the Hungarian context.

As defined by the 1990. LXV. Act on Local Governments (Parliament of the Republic of Hungary 1990) (Local Government Act from here onwards), settlement level municipalities in Hungary have to carry out a range of mandatory and voluntary tasks. The tasks of settlement municipalities include local development planning, local structural planning, protection of the built and natural environment, housing policy, collection and drainage of rainwater, sewage collection and disposal, maintenance of the public cemetery, maintenance of public roads and public premises, local public transport, street cleaning; provision of fire brigades, and provision of public order; contribution to local energy supply service; contribution to creation of local jobs; provision of preschool, elementary school, health, basic social, and child and youth services; provision of public space; advocating local scientific, cultural and sport activities; ensuring the rights of national and ethnic minorities; and assisting healthy lifestyles.

The Local Government Act lists the mandatory tasks that the municipal government of every settlement is obliged to carry out. These include the provision of healthy drinking water, pre-school education, elementary school education, basic health and social services, and public lighting; maintenance of public roads and the public cemetery; and ensuring the rights of national and ethnic minorities. The tasks of county municipalities include education, healthcare, social care and cultural and nature protection, as well as area level planning. Many of the county level tasks

involve coordination of activities carried out by settlement municipalities in order to ensure sufficient service provision for the whole county area.

In addition to the mandatory tasks, the Local Government Act allows settlement municipalities to carry out additional, voluntary tasks. Some of the mandatory and voluntary tasks concern the local authority as an organization. Others cover service provision in the area of the jurisdiction, in this way influencing the behavior of local citizens. Municipalities are allowed to specify and carry out voluntary tasks according to the needs of the inhabitants, and according to the availability of financial resources. This also carries implications for local level sustainable development and climate action. Therefore, while it is not a statutory requirement of Hungarian local authorities to engage in activities that contribute to tackling climate change, they are allowed to do so.

At the same time local authority financing strongly influences the ability of municipalities to cover mandatory expenses and to engage in voluntary tasks. The system of local public finances and the relationship between central and local governments in terms of the division of tasks has been a cause of significant tensions in Hungary. After the post-socialist transition, with the adoption of the Local Government Act in 1990, large-scale decentralization of service delivery has been achieved (compared to the earlier strongly centralized system). At the same time the decentralization of tasks was not followed by comparable decentralization of financing (Vigvári 2002). While local authorities raise some of their own income (through the local business tax, motor vehicle tax, council tax, duties, a pre-determined proportion of the environmental and heritage protection fines, etc.), a



large share is allocated from the central budget (through a proportion of the centrally collected personal income tax, normative grant and support schemes, etc.), as normative grants.

The strong reliance on funds controlled and allocated by the central government is a key source of economic uncertainty for Hungarian local authorities. The problem is twofold. On the one hand it is caused by the chosen techniques of central government support, on the other hand by the unpredictability and frequent modification of levels of support (Vigvári 2002). The deficiencies of the system are well-known and several reform proposals have already been put forward. At the same time the modification of the Local Government Act is a politically challenging issue requiring high level of consensus. To increase efficiency, in 2007 the Ministry of Local Government and Rural Development (among other measures) promoted the strengthening of area level partnerships for service delivery, through the cooperation of local authorities located in the same area (Ministry of Local Government and Area Development 2007). This practice also has implications for climate action, which in many respects can be more effectively delivered on an area (such as catchment area of a river) based approach than solely within the boundaries of one settlement. At the same time the strengthening of area based cooperative arrangements is yet to take place, both in terms of assigned tasks and financing.

As for the role of local authorities in national efforts to tackle climate change, both the VAHAVA summery document and the National Climate Change Strategy mention the importance of local action (MEW and HAS 2005, MEW 2008). At the same time the role of local authorities is not emphasized and no comprehensive policy

mechanism is in place to ensure the cooperation of local and central government in tackling the challenges posed by climate challenge. Some municipalities voluntarily choose to take action in climate action related areas.

While comprehensive climate policy at the local level does not receive extra funding from the national government, some issue areas have benefited from central government and EU financing. A large-scale national support program has contributed to improving the energy efficiency of the residential building stock in many local authorities. EU funds supported local level climate change action mostly through large-scale projects in waste and wastewater management. At the same time the co-financing requirement of EU projects poses a significant challenge for financially constrained (mainly smaller) local authorities.

As mentioned above, energy efficiency support programs initiated at the national level, often implemented with the participation of local authorities, play an important role in climate action in Hungary. Building on the existing program structure, the Climate Friendly Home Program started in 2009, which also includes an element focusing on public buildings (MEW 2009). An important feature of the Climate Friendly Home Program compared to previous national support programs is that it requires greenhouse gas emission reductions to take place as a result of the refurbishments, and provides incentives for complex measures that lead to larger improvements in energy efficiency. The use of renewable energy sources is also supported by the program. While national policies explicitly addressing climate change tended to neglect the role of local authorities, the above energy efficiency support programs acknowledge their role in implementation. It would be highly

advisable to strengthen the role of local authorities in the overarching national climate policy framework as well.

In the following sections public and civil institutions playing a supporting role in local level climate action are identified in the Hungarian context.

#### ***4.3.2.4 Public institutions***

Various national (including scientific) organizations influence local level climate action in Hungary. Some public sector organizations have been playing a leadership role in the development and implementation of climate change policy in Hungary. The National Council for Sustainable Development and the Office of the Parliamentary Commissioner for Future Generations have both been at the forefront of action to tackle climate change.

The National Council for Sustainable Development was set up in 2008 and represents a wide range of stakeholders, including the government, civil and religious organizations, academia, political parties, local authorities and business councils (NCSD 2011). The Council put forward the proposal for the Framework Law for Climate Protection to the Hungarian Parliament in February 2009. Furthermore, the National Council for Sustainable Development also initiated the development of sustainable development strategies and action plans among a selected group of local municipalities (Personal communication with Dr. Barbara Botos, 11<sup>th</sup> May 2009). These can later serve as models for other settlements.

The other public sector organization playing a leadership role in climate action at the national level in Hungary is the Office of the Parliamentary Commissioner for Future Generations. The Office was launched in 2008 as an institution comprising scientists and lawyers with the aim of investigating citizen complaints and developing initiatives in the fields of environmental policy and sustainable development (Office of the Parliamentary Commissioner for Future Generations 2011). In terms of influencing climate policy, the Office has been involved in the development of the National Climate Change Strategy. It has also played a role in the implementation of the Green Investment Scheme for energy efficiency improvements in the existing buildings sector, through demanding environmental as well as financial additionality (Office of the Parliamentary Commissioner for Future Generations 2009).

At the national government level primarily the Ministry of Environment and Water, the Ministry of Transport, Communication and Energy, and the Ministry of Local Government have been involved in the development and implementation of climate action related strategies, policies and programs.

As for scientific expertise, the Hungarian Academy of Sciences is the public institution at the national level providing information and advice for government on the expected impacts of climate change and modes of mitigation and adaptation in Hungary. The VAHAVA project on impacts of and adaptation to climate change was led by the Academy of Sciences (HAS 2011), and later served as an important basis for the development of the National Climate Change Strategy.

It is important not only to keep but also to strengthen public institutions that support national as well as local level climate action in Hungary.

#### ***4.3.2.5 Civil organizations***

Several civil organizations support national and at the local level climate action in the Hungarian context. NGOs acting as watchdogs over the development and implementation national environmental and climate strategies and policies include Protect the Future (Védegylet), Energy Club (Energia Klub), the Association of Hungarian Environmentalists (MTVSZ/Friends of the Earth Hungary), WWF Hungary and Greenpeace Hungary (Védegylet 2011a, Energia Klub 2011a, Friends of the Earth Hungary 2011, WWF Hungary 2011, Greenpeace Hungary 2011). These organizations have also initiated programs to support local authorities in sustainable energy and climate change action, for example the Solar Crown Championship and award ran by Energy Club (Energia Klub 2011b) and the Transition Towns initiative of Protect the Future (Védegylet 2011b).

Civil organizations that specifically focus on supporting local authorities in climate and sustainable energy action have also been established in Hungary. These include the Association of Climate Friendly Settlements, which is supported by the Hungarian Academy of Sciences (Association of Climate Friendly Settlements 2011). The aim of the Association is to develop scientifically founded local climate strategies and action plans, and to organize cooperation between local authorities in Hungary that want to engage in climate action. Other civil initiatives with the specific aim to support sustainable energy and climate policy implementation in Hungary at the local level

include the Association of Energy Efficient Local Authorities (Association of Energy Efficient Local Authorities 2011) and the Hungarian Climate Protection Association (Hungarian Climate Protection Association 2011).

NGOs with a general environmental, as well as those with a specific climate action mandate are playing a crucial role in filling the gaps of national climate policy in Hungary.

## Summary

This chapter provided an overview of international and national policy frameworks influencing local authority level climate action. The most important overarching international, supranational and domestic strategies, policies and legislation were reviewed in the two case study countries.

As for international treaties, both the UK and Hungary made commitments to act against climate change by ratifying the Kyoto Protocol of the UNFCCC. Furthermore, as member states they have to transpose directives of the EU. In both countries EU membership supported domestic climate policy development and implementation through legislation, strategic direction as well as project funding.

While national strategies for climate action were adopted in both countries, development of the supporting legislative framework and policy implementation are at different stages. The UK was the first country in the world to adopt ambitious, legally binding medium- and long-term domestic climate policy targets. In terms of institutional structure to deliver these targets, a separate government department dedicated to the mitigation of climate change (DECC) was created. Furthermore, an independent body, the Committee on Climate Change (CCC) was set up with the purpose of developing carbon budgets and advising the government on how to reach them. Adaptation action has also been institutionalized in the UK. Furthermore, mechanisms were put in place for interdepartmental coordination of climate action at the national level, contributing to the integration of climate change with other policy areas. The role of local authorities in climate action is acknowledged and supported.

The outlined strategic and policy framework indicates that climate action is high on the domestic agenda in the UK. The country also promotes the strengthening of the international climate treaty.

Adoption of legally binding climate legislation with medium- and long-term targets has also been initiated in Hungary at the national level. However the proposed climate law has not been accepted by Parliament before the general elections in 2010. Relative to the UK, Hungary is at a much less developed stage in terms of setting up an overarching national climate policy framework and institutional structure. At the same time progress was achieved in some sectors. For example in the field of energy efficiency implementation of a countrywide support program for residential building refurbishments is ongoing. The support program has been connected to emissions trading under the Kyoto Protocol, through the Green Investment Scheme. As for institutional development, the establishment of the Office of the Parliamentary Commissioner for Future Generations contributes to strengthening climate action in Hungary. With a mandate to ensure environmental integrity of legislation in a wide range of policy fields, the Commissioner has already taken a stance and defended climate action related considerations.

The extent of national recognition of the importance of local authority level climate action is different in the UK and Hungary. The strategic role of regional and local governments in meeting national climate policy targets is acknowledged in the UK. Local authority level climate action is supported through regulation, guidance, and financial incentives. Furthermore, indicators on progress regarding the implementation of climate targets are included in the performance assessment



framework under which local authorities operate. In contrast to the UK approach, in Hungary the role of local authorities in reaching climate policy targets is less emphasized. Although mentioned in the national climate strategy, local authority level climate action is not supported by a consistent policy framework. Information provision, regulatory and financial incentives are lacking. Therefore, it would be desirable to recognize the importance of and support local authority level climate action in Hungary. This would also contribute to setting and reaching more ambitious domestic climate policy targets.

In the following chapters analysis of local level climate action at the UK and the Hungarian case study cities is carried out from a multilevel governance perspective.

## **Chapter 5 LOCAL LEVEL CLIMATE CHANGE ACTION AT TWO UK**

### **CITIES**

In this chapter local level climate change action in the UK is explored from a multilevel governance perspective, through the example of two city cases. Woking and Leicester were chosen as case study locations because they are regarded both at the UK and at the international level as front-runners in local sustainable energy and climate action (for background information and characteristics of the two case study cities, see Appendix 2). From the end of the 1980s and the beginning of the 1990s onwards both cities pursued environmental policies and implemented sustainable energy projects at their own initiative, in the absence of statutory requirement for them to do so. Therefore the cases of Woking and Leicester provide space to analyze how local authorities become front-runners in climate action based on internal motivations. Their experience also demonstrates the channels through which local climate action mutually interacted with county, regional, national and supranational climate policy initiatives.

The fact that these cities are located in the UK, a country which set ambitious national climate policy targets, makes their cases particularly interesting. In the 1990s, when the councils of Woking and Leicester started to engage in environmental and sustainable energy action the national level policy framework in these fields was less developed. Later, when the UK government decided to take a leadership role in climate change policy, the two front-runner cities already had a substantial amount of best practice accumulated, which was ready to be used at other localities. At the same

time, parallel to the country context gradually becoming supportive of local level climate action, front-runner cities were setting more and more ambitious targets. In this way the experience of front-runner cities continues to influence the development of the country level context and vice versa.

The chapter begins with an overview of the emergence and development of local level climate change action in Woking and Leicester. The role of individual and organizational actors is explored, including the mapping of horizontal and vertical coordination mechanisms at the local, as well as between governance levels. At the end of the chapter barriers and motivating factors, drivers and co-benefits of climate action are identified and summarized, based on the experience of the two UK case study cities.

## **5.1 Emergence and development of local level climate action**

The following sections outline the process through which sustainable energy and climate action emerged and developed at the UK case study cities. An account is provided of the antecedents, outputs, integration, and implementation of climate policy at the two case study locations. Innovative measures and connections to national level climate policy processes are identified. The last sub-sections outline the next steps in the continuation and an overview of the development of climate action initiatives at case study local authorities in the UK context.

### **5.1.1 Antecedents and development**

Climate action had similar antecedents in Woking and Leicester, at the same time differences exist between the routes taken by the two cities. While environmental protection was an important predecessor of climate action in Leicester, a similarly strong environmental movement was not present in Woking. Explicit climate action was preceded by sustainable energy policies in both case study cities. The local authorities engaged in comprehensive sustainable energy action from the early 1990s onwards, without statutory requirement for them to do so. Furthermore, sustainable development at the local level was also promoted in both cities through establishing Local Agenda 21 processes.

In Leicester environmental protection and awareness raising programs preceded local authority level climate action. Furthermore, small-scale sustainable energy projects were already implemented in the city in the 1970s and 1980s. Leicester was the first

to become Environment City in Britain in 1990 and developed the first sustainable energy strategy and action plan in 1994 (Leicester Partnership and Leicester Environment Partnership 2003). Woking however was primarily engaged in sustainable energy action, with no similarly acknowledged previous local environmental initiatives. A corporate Energy Efficiency Strategy has been adopted in 1990 in Woking, and the first CHP system was implemented in the borough in 1992. Based on the outlined policy processes, both UK case study cities expanded the focus of their earlier environmental protection and sustainable energy initiatives to comprehensive climate action after the turn of the millennium.

An important difference in the development of climate change action in the two cities is that Woking has been successful in switching from small-scale to large-scale sustainable energy projects. The establishment of a local authority owned energy service company, Thamesway was an important contributing factor to this success. Sustainable energy projects within as well as outside the jurisdiction of Woking Borough Council are developed and run by Thamesway. The ESCO incorporates technical and costumer relations expertise, and provides energy services without the direct use of council capacities. The need to set up an ESCO to run sustainable energy projects has also been recognized in Leicester. However for political reasons this aim has not been achieved. In connection to this, opportunities to implement smaller scale renewable energy projects were missed. At the same time the City Council remains committed to the Climate Change Strategy, which can potentially lead to a switch to large-scale projects. This expectation is supported by the exploration of possibilities for installing wind turbines in the city.

Building on their earlier achievements in the sustainable energy field, both case study cities expanded their climate policy initiatives by including vulnerability reduction and adaptation considerations in their climate change strategies and action plans. Concrete adaptation related measures included comprehensive pond restoration involving rainwater harvesting in Woking, and a detailed assessment of the impacts of previous extreme weather events on council operations and arising extra costs in Leicester. (See Figure 3 for an overview of the emergence and development of climate change action at the two UK case study cities.)

#### ***5.1.1.1 Woking***

The emergence of climate action in Woking did not involve a similarly strong environmental movement as in Leicester. It was based on sustainable energy projects initiated by the Council. The main driver behind sustainable energy projects was the potential for energy cost savings in municipal operations. The finance officer and the energy officer were the main policy brokers in this process. Through the potential for cost savings sustainable energy projects also won the support of local politicians. From the 1990s onwards several small-scale and later larger scale green energy projects were implemented in Woking, making the Borough Council a model and expert in sustainable community energy system development.

The establishment of a local energy service company supported expanding the utilization of sustainable energy technologies in the borough. Initiatives included several CHP projects (including a fuel cell CHP plant), thermal storage, absorption cooling, renewable energy systems (among them off-grid photovoltaic installations),

energy and water efficiency measures and a private wire electricity distribution system. As a result the public sector housing stock of Woking became the most energy efficient in the UK. Measures were implemented by the Council to support fuel poor households, which included the provision of local grants in addition to funding from national sources (for examples of climate action related projects and programs in Woking, see Table 7). Furthermore, to facilitate more widespread community engagement in climate action, a walk-in energy advice center was set up in the town center (Actio2n Woking 2011) (see Illustration 1).

**Illustration 1 Actio2n Woking energy advice office in the town center**



### ***5.1.1.2 Leicester***

In Leicester environmental action was initiated by a local NGO, originally to protect forest habitats and biodiversity within the city (including parks as well as brown field sites). An Ecology Strategy was developed based on the Leicester Habitat Survey undertaken in the mid-1980s. Raising awareness among the public about the importance of biodiversity was a key element of the strategy. As local environmental initiatives were progressing in the city, individuals behind the environmental work started to look for official recognition and possibilities for funding to enable the continuation of this work. Their efforts contributed to the establishment of the national level Environment City prize. Based on the earlier achievements Leicester was the first city to win the prize in Britain.

Parallel to environmental action, initiatives in the field of sustainable energy also date back to the 1970s in Leicester. Implemented measures included the building of low-energy houses, incorporation of passive solar heating, and in the 1980s gaining national leadership position in the development of CHP. Non-energy benefits of energy efficiency and renewable energy policies were the drivers of these initiatives. Energy efficiency improvements were implemented in the public sector housing stock. Furthermore, to enhance community involvement in the deployment of sustainable efficiency initiatives, advice centers were set up. (For examples of climate action related projects and programs in Leicester, see Table 7)

As for strategic documents related to climate action, Leicester City Council produced the first Energy Action Plan in 1990 and adopted the Energy Strategy in 1994. The



city participated in the Councils for Climate Protection Programme, which was initiated by the UK government in September 2000. The program aimed to produce a framework for local authorities to reduce their greenhouse gas emissions, based on the experience of the 24 participating local authorities. In connection to involvement in this program, and based on the earlier sustainable energy and climate action initiatives Leicester City Council published a comprehensive Climate Change Strategy in October 2003 (Leicester Partnership and Leicester Environment Partnership 2003).

**Table 7 Examples of climate change mitigation related projects and programs in Woking and Leicester**

<b>Woking</b>
Woking Park swimming pool and leisure complex fuel cell CHP system
Woking Town Centre sustainable community energy system - with CHP, thermal storage, absorption cooling
Brockhill - integrated CHP with PV
Private wire residential CHP and RES for local authority sheltered housing
Water efficiency measures
Thamesway Condensing Boiler Scheme - PPP with British Gas
Grants for fuel poor households
Action Woking - walk-in energy advice center
<b>Leicester</b>
Leicester City Council - DH and CHP
Public sector housing energy efficiency improvements
Home Energy Efficiency Scheme
Council Housing Renewal Offices - advice and information
Energy Efficiency Advice Centre

Sources: Woking Borough Council (2008), Actio2n Woking (2011), Leicester Partnership and Leicester Environment Partnership (2003).

### 5.1.2 Climate policy outputs

After a decade of engagement in sustainable energy action, Woking and Leicester adopted comprehensive climate change strategies in 2002 and 2003, respectively. Both councils set ambitious climate policy targets, aiming to override national and international ones. Furthermore, in connection to moving from sustainable energy to climate action the focus of energy efficiency policies shifted from kWhs of energy saved to reduction in emitted tonnes of CO<sub>2</sub>. Adaptation measures have also been incorporated into the climate change strategies. Action plans with time-bound targets and distribution of tasks to organizational units and officers were adopted. Outreach to community groups, including civil and religious organizations was initiated. As for strategic processes, the review and further development of the climate change strategy has taken place in Woking in 2008, while Leicester adopted a detailed Adaptation Action Plan in the same year.

Existing leadership in sustainable energy and environmental action preceded the adoption of climate change strategies in the two UK case study cities. The climate strategy documents reflect these antecedents. They incorporate the experiences of previous sustainable energy action. Furthermore, both climate strategies include mitigation and adaptation related measures, and introduce the scientific background of climate change.

At the same time the strategic documents of the two cities are structured differently. The updated Woking Climate Change Strategy is organized around ten key themes. Within each of the themes case studies of projects, as well as a theme-specific action

plan are outlined. Taking a different approach, the Leicester Climate Change Strategy sets out an overall aim, based upon which objectives are derived. These form a framework for the development of a separate action plan. The strategic aim encompasses three main issue areas, including reducing greenhouse gas emissions, adapting to climate change and community engagement. The Leicester Climate Change Strategy touches upon the scientific background of climate science, the overall policy context, previous climate change achievements of the city organized by sectors, and future action necessary to achieve the strategic aim. A separate Adaptation Action Plan has also been developed in Leicester. It is divided into three action areas, including flash flooding, summer heat waves and prolonged periods of increased average temperatures, as well as reduced summer water availability.

As demonstrated by the above outlined strategies and action plans constituting the outputs of municipal climate action, both UK case study cities have taken efforts to address this global issue at the local level. In the following section the integration of climate action with other local policies is explored.

### **5.1.3 Climate policy integration**

Parallel to the adoption of climate change strategies, it is also crucial for them to be integrated with local strategies and policies in other sectors. Mechanisms for climate change policy integration have been put in place at both UK case study cities. These efforts reflect the commitment of Leicester City Council and Woking Borough Council to keep climate action high on the municipal agenda. Sustainability and climate action considerations are present in several policy fields and documents in

Leicester. Woking has taken a further step though raising the issue of sustainability to be an overarching strategic theme at the council, and put mechanisms in place to ensure this.

In the case of Leicester climate action related themes were integrated into the overarching, long-term, 25 year core community strategy, “One Leicester”. One of the seven priority action areas, “reducing our carbon footprint” is directly connected to climate action. The area incorporates measures related to domestic and business energy efficiency, zero carbon buildings, renewable energy and improved travel planning. Another priority action area, “planning for people not cars” (including the creation of walking and cycling networks and greening of the city) is also strongly connected to tackling climate change.

In addition to the overarching “One Leicester” document, strategies in different sectors are also connected to local climate policy. For example the Leicester Environment Strategy supports the use of renewable energy. Furthermore, the Climate Change Strategy and Action Plan are linked to the Corporate Plan of the Council, as well as other planning documents (Local Development Framework, Local Transport Plan). The need for policy integration is also addressed in the Leicester Climate Change Strategy document, acknowledging that environmental considerations have not always been fully taken into account (based on the experience of the first Sustainable Energy Strategy adopted in 1994).

Integrating climate change action and sustainability commitments into other council policies and general operations has also been emphasized in Woking. The Council as

a corporation is committed to working towards sustainability, which is included among cross cutting local issues. Policies and procedures have been developed to achieve the integration of sustainability, including climate action considerations. As part of the corporate strategy sixteen sustainability themes were identified, which council members and officers have to take into account. Furthermore, a sustainability impact assessment procedure was developed, which insures that council operations and projects are in line with the declared sustainability criteria. These mechanisms ensure that sustainability and climate action considerations are integrated into all activities of Woking Borough Council. In addition to this, the local climate change strategy is updated on a regular basis.

At the institutional level officer positions were created at both case study local authorities to support climate policy implementation. Climate change and sustainability officers are responsible for a range of tasks. These include climate strategy and action plan development and implementation, overall management and coordination of climate action related issues within the council, as well as outreach to local community groups and businesses. Besides dedicated climate change officer positions, the UK case study authorities also set up environment teams and specialized energy agencies.

#### **5.1.4 Implementation of climate strategies**

Implementation of strategies and monitoring of results are the crucial further steps towards successful climate action. Both Leicester and Woking have put monitoring and reporting mechanisms in place to ensure the implementation of climate policy. In

Leicester this has been achieved by the adoption of the European Eco-Management and Audit Scheme (EMAS) in 1999 (at the time connected to environmental and sustainable energy policy initiatives that preceded climate action). EMAS helps the Council to manage and improve environmental performance as an organization. Environmental Statements are produced every year and are checked by an independent verifier to ensure compliance with EMAS standards.

In terms of organizational processes ensuring implementation of the Leicester Climate Change Strategy, delivery groups have been set up for housing, transport, and for action at the council as an organization. Partners in the delivery groups include council departments, as well as external actors. Synergies between climate change mitigation and adaptation are recognized and both mitigation and adaptation related objectives are included among the tasks of the delivery groups. The groups have to publish reports on progress achieved.

Woking has taken a different approach to climate change policy implementation. The Climate Change Strategy already includes the Action Plan according to key themes. There are three elements of sustainability policy implementation. These include publishing of the Annual Sustainability Report and the Annual Service and Performance Plan which include more than seventy sustainability indicators. The Council's service plans and planned projects are screened by carrying out Sustainability Impact Assessments. These three elements ensure the implementation and monitoring of sustainability, including integration of climate change action considerations into local strategies, policies and projects.

At the organizational level a cross-party Climate Change Working Group has also been set up in Woking, as it was recognized that high-level buy in of all political parties is crucial for successful climate action. The group meets four times a year to monitor the progress in climate policy implementation.

The above outlined mechanisms demonstrate how Woking and Leicester facilitated the integration and implementation of climate action at the local level. In the next section innovative measures supporting climate policy implementation at the two UK case study municipalities are outlined.

#### **5.1.5 Innovative measures**

The two UK case study cities are recognized for their pioneering sustainable energy and climate policy initiatives. While pursuing their climate policy targets they have implemented innovative measures that can serve as best practice for other localities in the UK as well as abroad. The above outlined mechanisms for the integration of climate policy at local authorities as organizations are a particular area of best practice. Several innovations have also surfaced connected to removing financial barriers to climate policy implementation, as well as related to enabling climate action among local citizens, and private and public institutions.

In terms of financing local climate action, the setting up of an energy efficiency recycling fund was an important milestone of sustainable energy action in Woking. As part of this financing mechanism savings achieved by energy and water efficiency measures are put into a capital fund. This provides funding for new projects each year.

A further innovative measure contributing to the expansion of sustainable energy action in Woking was the establishment of the Thameswey energy service company. In principle it is an arms-length company owned by Woking Borough Council. It enables engagement in large-scale projects, also outside the jurisdiction of the local authority, while minimizing associated business risks. Through the energy service company Woking Borough Council can thus financially benefit from disseminating locally developed best practice.

Best practice has also surfaced in the field of awareness raising and enabling measures, which help local citizens, businesses and public organizations to engage in climate action. Demonstration houses showing the use of sustainable energy solutions in a domestic setting have been created both in Woking and in Leicester. Furthermore, energy advice centers operate in both case study cities, providing information about sustainable energy solutions that can be utilized in homes and work places. A database of local installers of sustainable energy solutions has also been set up as part of the Actio<sub>2</sub>n Woking advice service, to enable the expansion of these technologies in the jurisdiction of the municipality. Other services provided by the Actio<sub>2</sub>n Woking office (see Illustration 1) include one to one consultations on energy savings, and advice on the financing of sustainable energy refurbishments. In addition to this, the energy, energy cost and greenhouse gas emission reduction potential of sustainable energy measures is also demonstrated in the case of various appliances.



### **5.1.6 Connection to national level climate policy processes**

Climate action at front-runner cities also influenced national level climate policy in the UK. The experience of Woking and Leicester demonstrated what is possible to achieve in climate action at the city level, and provided best practice for other authorities in the country and abroad. Furthermore, the role of local level climate action in delivering national climate policy targets has been recognized. Local best practice has been disseminated by national institutions (for example the Audit Commission), and the experience of front-runner cities contributed to developing the national level climate policy framework in the UK.

Sustainable energy and climate action related achievements of the two case study cities were acknowledged by prizes received from both the national and the international level. These include Leicester receiving the European Sustainable City Award in 1996 and both cities receiving the UK Beacon Council Status in various sustainable energy and climate action related themes. Woking (being the first local authority to do so) has also received the Queen's Award for Enterprise: Sustainable Development in 2001 for achievements in the field of energy services. These awards contributed to sustainable energy and climate change action becoming an important defining feature of both UK case study cities.

### **5.1.7 Next steps**

The strengthening of the national climate policy framework in the UK is a favorable development also for the two front-runner case study cities. It provides a regulatory push (through the introduction of climate action related National Indicators) for the

continuation of local climate policy, as well as rewards for already achieved results (for example through exemptions from the Carbon Reduction Commitment). While the two case study cities are facing challenges in delivering some of their ambitious climate targets, they are also benefiting from additional funding provided by the strengthened national climate policy framework. At the same time this funding is not necessarily on the scale to enable implementation of their more ambitious projects. Therefore the strengthening of innovative financing measures and incorporation of private funding sources may be necessary.

Since the 1990s councils of both case study cities have shown achievements at the corporate level in terms of energy cost savings and greenhouse gas emission reductions. However, results in reducing city-wide emissions have been more ambiguous. For example in the case of Leicester, between 1990 and 2006 the estimated CO<sub>2</sub> emissions of the Council were well within the target trajectory, while those of Leicester as a whole were not on track to meeting the target (Leicester City Council 2007b). Efforts to engage citizens as well as the local business community have been initiated in both Woking and Leicester to help reduce city-wide emissions. At the same time effects of these measures are still to be seen.

#### **5.1.8 Overview of the development of local climate action**

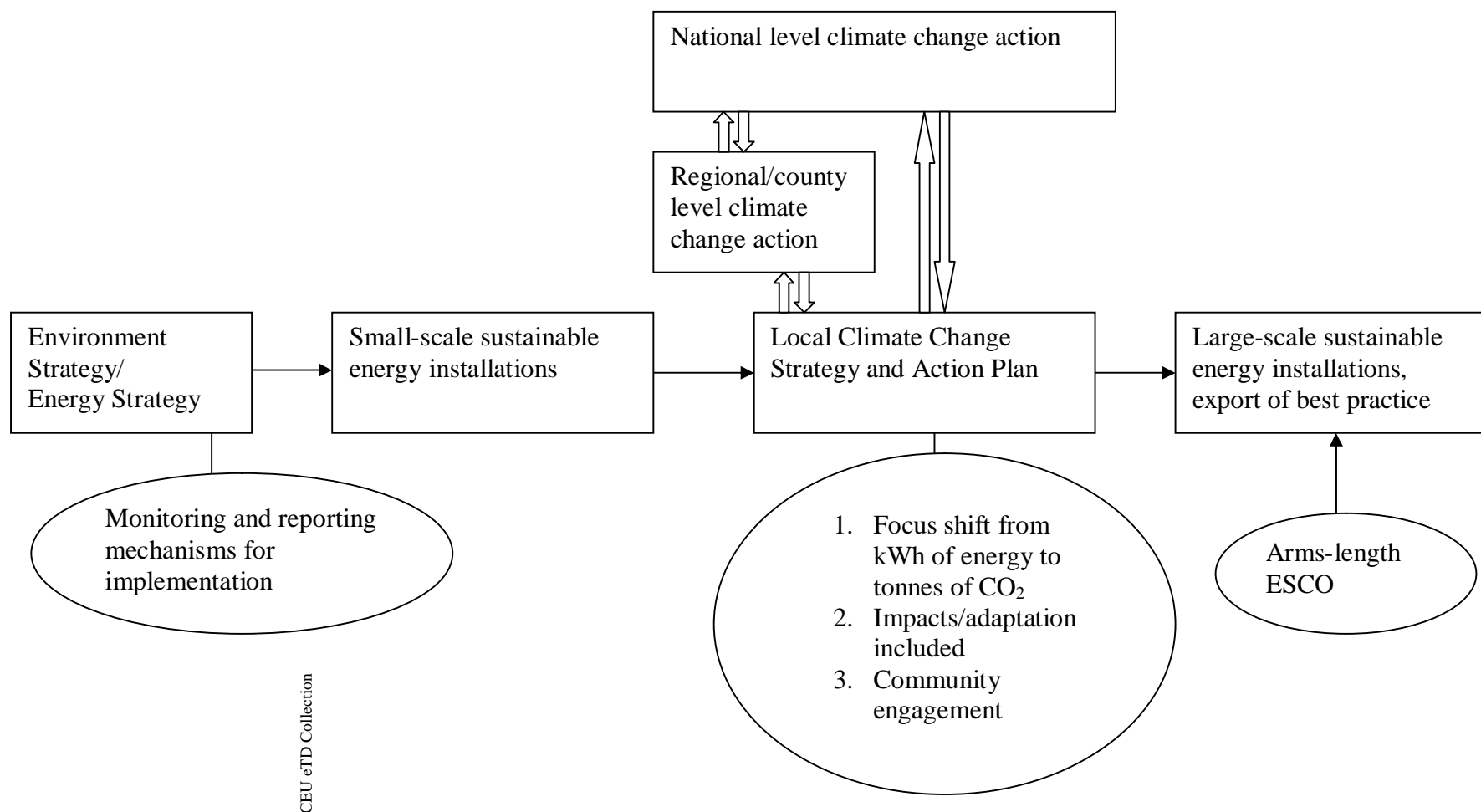
In this section the emergence and the development of climate change action at the two UK case study cities has been explored (Figure 3). Both cities accumulated best practice and became front-runners in implementing sustainable energy solutions from the early 1990s onwards. Based on local achievements in environmental and

sustainable energy action, comprehensive climate change strategies incorporating both mitigation and adaptation related measures were adopted in 2002 and 2003 (in Woking and Leicester, respectively). Parallel to this, a focus shift occurred compared to earlier sustainable energy strategies from kWhs saved to achieved reductions in greenhouse gas emissions. Integration of climate change policy with the overarching strategies of the cities, as well as consideration of climate action in other sectors took place at both local authorities. Monitoring and reporting mechanisms that insure implementation have also been put in place.

Furthermore, Woking has been successful in making the switch to large-scale sustainable energy projects and reaping the benefits of disseminating best practice outside of its jurisdictions through the establishment of an arms-length energy service company. In Leicester the possibility for large-scale projects has been explored but such projects have not yet been implemented. Attempts to set up a local ESCO have not been successful so far. Both in Woking as well as in Leicester results have been achieved in terms of greenhouse gas emission reductions at the councils as organizations. At the same time there is a need for city-wide expansion of mitigation and adaptation action at both localities.

In the next section the role of individual and organizational actors in shaping local level climate change action is explored based on the experience of the two UK front-runner cities.

**Figure 3 Emergence and development of local authority level climate change action – the UK experience**



## 5.2 Actors involved

Individuals and organizations that they operate in are facilitators of climate change action at the local authority, as well as at other governance levels. In this sub-chapter key individual and organizational actors influencing local level climate change action are identified in the UK context, and their vertical and horizontal relationships are mapped (for a graphic overview of actors and their relationships see Figure 4).

### 5.2.1 Role of individual actors

The experience of both UK case studies demonstrates that committed individuals working within as well as outside local authorities played a crucial role in putting environmental, sustainable energy and climate change action on the municipal agenda. The policy advocacy carried out by local authority officers and NGO representatives was key in establishing support of politicians for these issues. By demonstrating the viability of workable yet innovative solutions, they contributed to building political commitment at the local level. Furthermore, the role of individual actors working within or outside the local authority is not only important in putting climate change action on the municipal agenda, but also in keeping it there. Continuous commitment of local authority officers has been an important factor in setting and reaching ambitious sustainable energy and climate policy targets in both UK case study cities. In addition to this, officers committed to the fight against climate change did not only play a key role through convincing politicians to engage in such action, but also through facilitating policy integration within the organization through motivating colleagues.

Examples from the experience of Woking and Leicester demonstrate how these processes took place. The fact that sustainable energy policies in Woking were initiated by council officers proves the importance of personal commitment of individuals within local authorities. Furthermore, it is important to point out, that officers and NGO representatives promoting sustainable energy solutions and environmental initiatives at the two case study cities had professional background and expertise in relevant fields: engineering and biology. In Leicester, in addition to council officers, the leader of a local NGO has been at the forefront of the promotion of environmental action. Sustainable energy policy was later built on the already established environmental leadership position of the city. Energy cost reduction considerations played a key role. In the case of Woking Borough Council the finance and energy officers were the key promoters of sustainable energy solutions. The two officers have been successful in winning political support for sustainable energy action mainly through highlighting the achievable long-term financial gains. The combination of their expertise in engineering and finance was crucial in the creation of an innovative proposal of local sustainable energy solutions.

Although politicians were not the main initiators, winning their support was a key element in establishing climate change action in the two UK case study cities. As Woking and Leicester became front-runners in sustainable energy action, local politicians involved in the process also benefited through being associated with initiatives recognized as successful. As described by Allan Jones, former Energy Services Manager at Woking Borough Council, “the projects result in good publicity and all politicians like that” (Muir 2005). Furthermore, politicians’ “willingness to go

where no one has gone before” has been described as a key factor in the success of sustainable energy projects in Woking (interview with the Managing Director of Climate South East, 28 October 2008). In addition to the support of individual politicians, political continuity also played a key role in keeping climate change action at the forefront of the municipal agenda.

Officers leading climate action initiatives of local authorities can influence national climate policy through providing policy advice from their original positions, or through joining national institutions. In the case of Woking the Energy Services Manager facilitated dissemination of best practice from the local to the national level through devoting 15% of working time to coordination with government agencies. This has contributed to the development of the national level climate change agenda. Later the same Energy Services Manager was appointed as chief development officer at the London Climate Change Agency, being “brought in to 'do a Woking' in London” (Muir 2005). This represents a feedback loop in the governance of climate action from a small local authority to a global city, through transferring the expertise of an individual actor.

These examples demonstrate how ideas, expertise and personal commitment of individuals shaped climate change action at the case study local authorities in the UK, through exporting best practice to other cities. Council officers, politicians and other local stakeholders play a key role as policy brokers. At the same time individual actors operate within organizations, which influence and are influenced by municipal authorities.

In the following section horizontal coordination mechanisms between local authorities and other organizations active within their jurisdictions are explored in the UK context.

### **5.2.2 Horizontal coordination with local organizations**

The experience of the UK case study cities demonstrates that some organizations within the jurisdiction of local authorities are key partners in climate action, while others require reach-out activities to ensure their engagement. While there were examples in both cities for the former type of actor, most local organizations belonged to the latter group. The councils of both Woking and Leicester recognized the need for winning support for their climate action initiatives from local organizations in the civil and private sectors. They put mechanisms in place to ensure this, including advice provision on how to cut greenhouse gas emissions at the organizational level, participation in climate strategy development, and partnership approaches. This section provides an overview on how these horizontal coordination processes took place.

Woking and Leicester utilized similar measures to engage the local business community in climate action. This included initiating cooperation with organizations representing the interests of local businesses. Woking Borough Council approached Surrey County Council, Business Link Surrey, the Woking Chamber of Trade and Commerce as well as the Woking Asian Business Forum (representing the businesses of citizens from an Asian background) to reach out to their members in order to engage them in climate change action. Assistance was also provided to businesses on



an individual basis. The Sustainable Business Service of Business Link Surrey provides practical support on putting sustainability on the agendas of private sector organizations. Furthermore, Leicester City Council developed a step by step guide for businesses to reduce their carbon footprints. A climate change officer position was created at the local authority to offer support for organizations in creating their individual climate change action plans. Businesses were also encouraged to adopt environmental management systems (following the example of the city council). Furthermore, in the case of Woking the work of the climate change officer involved a strong outreach and cooperation element.

The recognition of the need to cooperate with and engage the local business and civil sector in climate action is reflected in the strategic documents of the two UK case study cities. The second version of the Woking Climate Change Strategy (2008) includes among its ten key themes “Working with Business” and “Community and Residents”. Parallel to this the Climate Change Strategy of Leicester (2003) describes the consultation process that took place with the involvement of the local business and civil sectors. Participation in strategy development allows local stakeholders to shape city level climate change action according to their own needs, which in turn can make them more motivated to contribute through their own efforts.

More intensive involvement in policy development and implementation is represented by the partnership approach. Working in partnerships with public, business, as well as voluntary and community sector organizations became common practice in local governance in the UK during the 1980s and 1990s. The driving force behind this process was the requirement for local governments to work with the private and

voluntary sectors in order to benefit from central regeneration budgets. Besides urban regeneration, the policy fields of local economic development and sustainable development were also characterized by this approach (Darlow and Newby, 1997).

The two UK case study cities provide examples for working in partnerships in the fields of environmental and climate change action. The partnership approach was used in Leicester already in the 1990s and contributed to the municipality becoming the first Environment City in Britain. Later the Leicester Climate Change Strategy document was produced by the Leicester Partnership and one of its six delivery partnerships, the Leicester Environment Partnership. The strategy itself was written by researchers from the local university, assisted by a group of officers from the City Council, while partner organizations also had a chance to influence the strategic document. Similarly, Woking Borough Council coordinated climate action initiatives with local organizations. A partnership was set up between the Borough Council, the County Council, business representation organizations, and the Woking Local Agenda 21 Group. Furthermore the Climate South East partnership was created with the aim of tackling the causes and effects of climate change in the South East England region. Partnerships therefore ensure the involvement of key organizations in policy making and delivery of targets. At the same time in the UK the proliferation of partnerships was reported as a contributor to the hollowing out of this approach (Nicholls 2009, Personal communication). This suggests that partnerships are only useful as far as they facilitate substantive participation, as opposed to being an artificial frame set up as a reaction to funding requirements.

Some organizations were especially active in shaping local level climate change action at the UK case study cities. The most active partners in the case of Leicester included the Institute of Energy and Sustainable Development (IESD) of De Montfort University and the Groundwork NGO, and in Woking the Local Agenda 21 Group. These organizations were involved in the development and the implementation of climate change strategies and action plans in the two case study cities. The Leicester Climate Change Strategy was written by the researchers of IESD in cooperation with officers of the city council. IESD continuously supports the local authority in climate change action through research and consultancy services. It has also delivered consultancy services in the field of climate action to central and regional government bodies, other cities, and international city networks (IESD 2011). Furthermore, the NGO Groundwork was playing a key role from the beginnings in local level environmental and sustainable energy action in Leicester. As for implementation of practical measures, it now facilitates the installment of photovoltaic and solar thermal installations on domestic housing. Both Groundwork in Leicester and the Woking Local Agenda 21 group engage in awareness raising activities. These include the operation of environmental show homes, as well as the dissemination of information to residents at awareness raising meetings and events.

Other organizations were also important during the implementation of local climate action initiatives in the UK. Housing associations were key partners of local authorities in the energy efficient refurbishment of the residential housing stock, while the cooperation of energy utility companies was also crucial in reducing city-wide greenhouse gas emissions (for example through supporting the use of small-scale CHP and other sustainable energy solutions). Religious organizations were recognized

by the councils of the case study cities as playing a key role in awareness raising for climate action. Cooperation was initiated with them in both localities. Companies promoting energy efficiency and renewable energy solutions also cooperated with local authorities in the implementation of specific projects, but not all of them became long-term strategic partners in climate change action. As the use of sustainable energy solutions becomes more widespread among citizens, the role of companies with relevant expertise is expected to increase.

This section provided an overview of horizontal cooperation arrangements in the field of climate action between local authorities of the two UK case study cities and other organizations in the areas of their jurisdictions. Governance mechanisms, such as participation in strategy development and partnership approaches were utilized. Climate officer positions were created to establish continuous cooperation with and support climate action among local business and civil sector organizations. Entities, such as university research centers, NGOs and housing associations that were key partners in the development and implementation of climate action at the two case study cities were identified. At the same time cooperation of local authorities with other organizations does not stop at the borders of their jurisdictions.

In the following sections horizontal relationships between the case study cities and other local authorities, as well as vertical relationships between them and organizations at other governance levels are explored in the UK context.

### **5.2.3 Horizontal coordination between local authorities**

Horizontal coordination between local authorities in the field of sustainable energy and climate action took place in four main forms in the UK. These included the cooperation of cities as members of transnational networks of sub-national governments, national government-led coordination mechanisms, study visits to front-runner cities by representatives of domestic and foreign local authorities, as well as technology transfer.

The first form of horizontal cooperation between cities is represented by local authorities joining transnational networks of sub-national governments for sustainable energy and climate action. Cities can benefit in various ways by joining such networks. On the one hand they gain access to best practice and knowledge transfer from other network members, on the other hand membership provides opportunity to receive recognition for local achievements. Furthermore, it also contributes to increasing the lobbying power of individual cities when they intend to influence national and international climate policy processes.

Both UK case study cities were members of climate action networks of sub-national governments. By joining the ICLEI Cities for Climate Protection (ICLEI CCP) campaign they benefited from gaining access to CCP methodology and software for the modeling of local CO<sub>2</sub> emissions (before such methodologies were made available by the UK government). Furthermore, Leicester joined the Covenant of Mayors of the European Commission (EC 2011b), and the Energie-Cités network (Energie-Cités 2011). Leicester City Council also served as vice president of the Board of the latter

organization. By providing the possibility for member cities to participate in the governance of climate action networks, and by creating reward mechanisms recognizing the achievements of local authorities, network membership contributed to the strengthening of climate action at the local level. Furthermore, participation in the networks supported the establishment of a positive, environment friendly city image.

In the UK mechanisms were also initiated from the national level to establish cooperation between cities and to disseminate best practice in the field of sustainable energy and climate action. These included the setting up of the Nottingham Declaration and the UK Councils for Climate Protection campaign (UK CCP). Through signing the Nottingham Declaration council leaders had the opportunity to formally declare their climate change action commitments to their citizens. Both Woking Borough Council and Leicester City Council signed this voluntary statement. The Nottingham Declaration also includes commitment to cooperation with other local authorities in the field of climate action through local and regional networks. For example in the East Midlands region of England, where cooperative arrangements for climate action were established between regional, county and local actors, all local authorities signed the Nottingham Declaration. This in turn contributed to reinforcing already existing cooperation processes. Furthermore, as already mentioned the national government initiated the UK Councils for Climate Protection campaign (UK CCP). This was a pilot project with the aim to disseminate best practice accumulated at the participating 24 local authorities in England and Wales. Leicester, being already established as a leader in environmental and sustainable energy initiatives was among the front-runner municipalities selected as participants of the pilot project. Such national recognition serves as a supporting factor for local climate action.

Best practice was also shared between local authorities through officer visits to front-runner cities. The achievements of Woking in particular attracted substantial attention. Before the initiation of national level policies to spread climate action among all local authorities in the UK, most visits to the sustainable energy installations of Woking took place by representatives of municipalities from abroad. The achievements of Woking were well known worldwide, as a result of its membership in the ICLEI CCP network. Later on, when national regulation requiring climate action at the local authority level was put in place, representatives of other local authorities in the UK also approached front-runners to learn about best practice. National level initiatives, like the Nottingham Declaration, the Beacon Scheme and the Environment City prize contributed to raising awareness by acknowledging local climate action achievements. As a reaction to the increased attention Woking Borough Council organized study tours of its sustainable energy installations. This involved presentations by climate change officers, and visits to the actual locations of the sustainable energy installations. In addition to the technical characteristics, participants also had an opportunity to learn about the institutional solutions utilized for the facilitation of sustainable energy action in Woking borough.

In addition to the mechanisms described above, the experience of Woking provided a further example of horizontal coordination between cities, in the field of climate action. This involved technology transfer regarding sustainable energy solutions to other localities. An arms-length ESCO (Thameswey) was set up by Woking Borough Council to provide professional and managerial capacity to carry out sustainable energy projects. This institutional structure allowed the council to make longer term

commitments outside its jurisdiction. Less direct involvement of the local authority also ensured that decisions about projects were less affected by the political cycle. Based on this approach, Thameswey is leading the implementation of a large-scale sustainable energy project at the city of Milton Keynes. The project is based on similar technologies that were earlier utilized in Woking. This form of best practice dissemination therefore demonstrates how horizontal coordination of climate change action takes place through technology transfer to other localities.

In the ways described above horizontal coordination mechanisms between local authorities played a crucial role in spreading climate change action related best practice in the UK. These mechanisms included cities joining transnational networks of sub-national governments, national government-led initiatives, organized visits to front-runner cities from within the country or from abroad, as well as technology transfer between cities.

Apart from horizontal coordination within the boundaries of city jurisdictions and between different local authorities, vertical coordination between different governance levels is also a factor influencing climate action at the local level. In the following section vertical coordination mechanisms are explored in the UK context.

#### **5.2.4 Vertical coordination between governance levels**

Coordination with actors at higher governance levels shaped climate change action at the UK case study cities in several ways. These included regulatory, funding, knowledge transfer, technical support and partnership mechanisms from the EU,



through the national, regional, down to the county level. In this section vertical coordination mechanisms impacting sustainable energy and climate action at the UK case study cities are explored.

#### ***5.2.4.1 Supranational influences***

EU membership of the UK influenced climate action in Woking and Leicester in several ways. These included regulatory mechanisms, access to EU certified environmental audit mechanisms, and availability of project financing.

The EU positions itself as a leader in climate action at the international level. In line with this stance it provides a supportive regulatory context for climate policy in member states through relevant directives and regulatory instruments. Furthermore, the EU recognizes the role of sub-national climate action in reaching national and supranational climate targets. This is reflected by the setting up of the Covenant of Mayors. By joining the Covenant, signatory cities, like Leicester commit themselves to go beyond the objectives of EU policy in terms of reduction in CO<sub>2</sub> emissions. This is to be achieved through enhanced energy efficiency and cleaner energy production and use. Joining of the EU level Covenant of Mayors supports local councils in the setting of ambitious climate policy targets for their jurisdictions, strengthens the credibility of these commitments, and provides international visibility of results.

Among other supporting mechanisms an EU certified environmental audit system, the Eco-Management and Audit Scheme (EMAS) must be mentioned. The application of this system in Leicester contributed to the verification of local results at the early

stages of climate action, when similar mechanisms (National Indicators for climate action and the relevant methodologies) have not yet been developed at the national level. EMAS enabled Leicester City Council to evaluate, report and improve its environmental performance according to an existing and internationally accepted methodology.

Furthermore, through EU membership of the UK, local authorities could benefit from additional funding for climate action related projects and programs. EU structural funds supported regional and local initiatives. For example in South East England projects related to spatial planning for adaptation were implemented with EU co-financing (ESPACE - European Spatial Planning Adopting to Climate Events, BRANCH – Biodiversity Spatial Planning Climate Change) (ESPACE 2011, BRANCH 2011). Furthermore, in the case of Leicester funding for the co-financing of innovative demonstration projects to tackle urban problems contributed to the implementation of energy efficiency, eco-management and clean technology projects, as well as environmental audits (Leicester Partnership and Leicester Environment Partnership 2003).

#### ***5.2.4.2 National level mechanisms***

Authorities and other stakeholders on the national level influenced climate action at the UK case study cities in the following ways: vertical coordination mechanisms included national regulation requiring climate action at the local authority level, specialized institutions and funding mechanisms supporting such action, as well as

scientific and technical support from public and civil organizations at the national level.

The UK was the first country in the world to introduce a long-term, legally binding policy framework to tackle climate change (DECC 2011a). The Energy and Climate Change Acts adopted in 2008 set out the regulatory instruments and institutional structure for climate action. Furthermore, the role of sub-national governments in achieving national level climate targets was acknowledged, and mechanisms were put in place to encourage and support their performance. This carried implications for front-runner cities, and ordinary municipalities alike.

In order to assess local authority performance, the system of National Indicators (NIs) is used in the UK. The set of 198 NIs covers services delivered by municipalities alone and in partnership with other organizations. In connection to the 2008 Climate Change Act climate action related indicators were included in the system of National Indicators. To allow performance assessment against NIs the Department for Energy and Climate Change collects and publishes local authority level greenhouse gas emission statistics. As a further provision of the 2008 Climate Change Act, the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme was set up. The CRC is a cap-and-trade scheme involving local authorities with relatively large energy consumption (total half hourly electricity bills of approximately £500,000 per year). This will lead to both financial and administrative implications for municipalities. As results will be publicly available, local authorities performing well in the scheme will benefit from their leadership position.

Several institutions were created at the national level in the UK to support local authorities in adhering to climate action related regulations. These institutions include the Energy Saving Trust (EST), the Carbon Trust and the UK Climate Impacts Programme (UKCIP). The EST advises local authorities and households on energy efficiency related issues. In the case of Woking the EST also provided support during the incorporation of the Thamesway ESCO. Parallel to services to local authorities, the EST also operates advice centers on a regional basis, throughout the UK. In some cases the advice centers are operated by private companies (for example Hestia in the East Midlands, where Leicester is located). While advice to households is one of the primary focus areas of the EST, the Carbon Trust only works with organizations. It assists local authorities and businesses in calculating their carbon footprints and in developing their carbon reduction plans. Furthermore, the UK Climate Impacts Programme (UKCIP) was initiated in 1997 to assist adaptation efforts of local authorities. The UKCIP provides freely available tools and services for organizations (including municipalities), helps them assess vulnerabilities and prepare adaptation action plans. UKCIP tools are not always adopted directly. For example in Leicester a separate tool was developed deemed more suitable for local use.

Funding programs were also put in place by the UK government to support sustainable energy action at the local authority level. These included the Warm Front scheme and the Salix financing scheme. The Warm Front scheme assists fuel poor households in implementing energy efficiency measures. The scheme thus indirectly supports local authorities in reaching their energy efficiency related commitments at the community level. Furthermore, the Salix financing scheme was put in place with the aim to support energy efficiency investments of public sector bodies. Salix

enables local authorities to gain access to interest-free loans. The loans can be repaid from savings achieved through improvements in energy efficiency.

National scientific institutions as well as NGOs and charities with a wider environmental mandate influenced climate action in the UK case study cities. The Royal Commission on Environmental Pollution (RCEP) played a particularly important role through providing scientific backing for local mitigation targets. Both Woking and Leicester set their carbon emission reduction goals based on the 60% target specified by RCEP for the whole of the UK. This took place at the time when emissions targets have not yet been specified for the national level by the central government. Furthermore, the Leicester Climate Change Strategy refers to emission reduction goals suggested by the Friends of the Earth Environmental Charter for Local Government. In the case of Woking the Accounting for Sustainability Project of the Prince of Wales also played a role. The Connected Reporting Framework developed by the organization was used by the Borough Council for the monitoring of sustainability indicators. The above organizations assisted climate action at front-runner cities at a time where comparable guidance and technical support mechanisms were not yet available from the national government.

A further example was found that represents the influence of a national level institution on local level climate action. English Heritage, the organization responsible for the protection of the historic environment in England is the case in point. The institution publishes guidance on climate change and the historic environment, and launched an information program on how climate change will impact homes of traditional construction. It offers solutions and advice to households and all levels of

government. English Heritage also gathers evidence of energy efficiency of historic homes. Through these measures it fulfills its mandate of protecting historical buildings, gathers traditional best practice, and by offering advice it contributes to local level climate action.

By proving which solutions are viable on the local level, the two UK front-runner case study cities also influenced the development of the climate change policy framework at the national level. Apart from initiating sustainable energy and climate change action earlier than the central government, both Woking and Leicester set more ambitious targets than national ones. Front-runner cities also provide best practice on how climate change action targets can be reached. They can serve as locations for central government initiated pilot programs and demonstrate what measures and solutions work at the local level. For example Leicester was one of the cities participating in the Councils for Climate Protection (UK CCP) pilot campaign initiated by the Improvement and Development Agency (IDEA). The campaign was later expanded by the Carbon Trust to other local authorities. Another example of local best practice dissemination and influence on national level policy making is the Audit Commission communicating the case of Woking as best practice in reducing citywide carbon footprints. Networking of officers of front-runner local authorities at central government departments also influences national level policy making.

#### ***5.2.4.3 Regional and county level partnerships***

The two UK case study cities also engaged in vertical coordination mechanisms with organizations at the regional and county level. Partnership arrangements for climate

action involving different governance levels were established with the participation of quasi autonomous government bodies, central government units, county and local authorities, as well as private actors.

Both case study cities participated in climate action partnerships involving regional government bodies. Some of these institutions were quasi autonomous organizations, while others were direct representations of the central government at the regional level. Leicester City Council coordinated with the East Midlands Regional Assembly, a quango<sup>10</sup>. As part of this work the East Midlands Sustainable Development Round Table was set up and a Climate Change Impact Study was developed. Furthermore, the Government Office for the East Midlands (representing the central government at the regional level) also participated in climate action, as part of the East Midlands Regional Climate Change Partnership (EMRCCP). The EMRCCP developed a Programme of Action incorporating both mitigation and adaptation related measures (EMRCCP 2009). Furthermore, a regional adaptation adviser position was created to facilitate implementation of the action plan in the East Midlands. Regional government offices can also support local level climate action through territorial planning. Connected to the case of Woking the Government Office for the South East engaged in the development of the South East Plan. This is a regional planning framework that integrates the requirements of sustainable development and supports planning for renewable energy sources in the region.

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<sup>10</sup> In the UK a range of quangos, quasi autonomous national government organisations exist that were created by devolving central government power to the sub-national level.

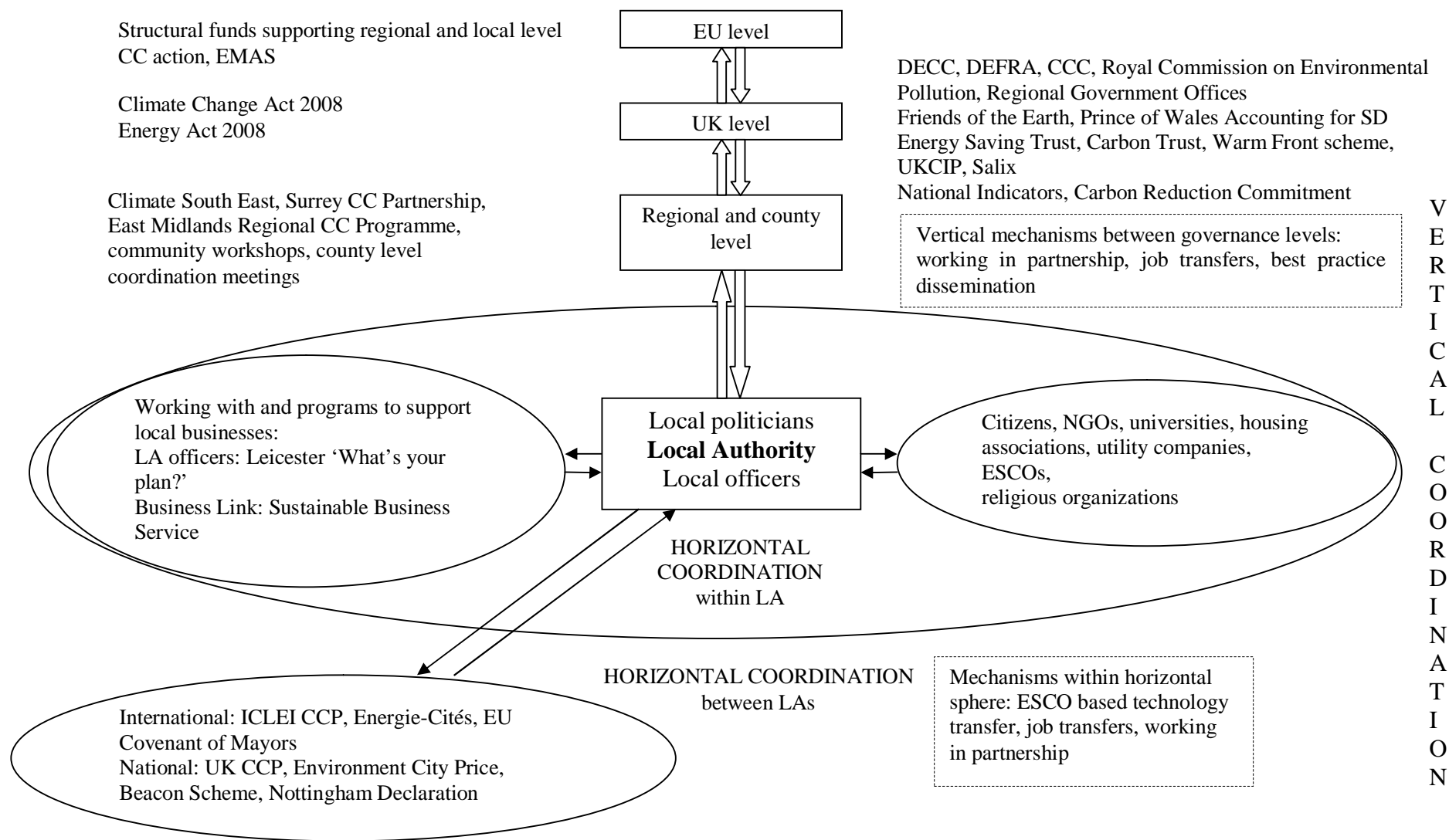
The case of Woking provided further examples of regional cooperation and partnership for climate action. An important element of these cooperative arrangements was that the borough benefited from county- and region-wide adaptation initiatives (a field relatively less developed within the jurisdiction), while provided best practice in sustainable energy action (the field in which it is front-runner). One of these cooperative initiatives, Climate South East was set up in 1998 as one of the first regional partnerships for climate action in the UK. The aim of the organization is to optimize capacities through regional cooperation mainly in the field of adaptation (Climate South East 2011). Therefore regional adaptation activities complement mitigation initiatives at the local authority level. Climate South East started as a cooperation of mostly public sector organizations in the region that had sustainability officers. Membership later expanded to include the private and voluntary sectors. Funding is ensured by membership fee and private sponsors.

Cooperative arrangements were also established at the county level, at both case study locations. Woking Borough Council is involved in the Surrey Climate Change Partnership (Surrey Climate Change Partnership 2011), which is an officer group that meets every three months to discuss climate action initiatives of local authorities in the county. Similarly, in Leicestershire regular meetings are held to discuss the development of climate action. Representatives of municipal authorities as well as of the county council participate at the meetings. These forms of coordination are partially driven by regulatory pressures (delivering NIs), as well as the incentive to apply on a cooperative basis for government financing (energy efficiency funds for public bodies). Through the above described partnerships and coordination mechanisms regional and county level climate action is enhanced. This takes place by



sharing information, experience and best practice, as well as through the optimization of capacities.

As the discussion above indicates, local level climate action is influenced by numerous actors and their diverse vertical and horizontal relationships. At the same time several drivers and barriers determine the success of climate policy initiatives. In the next section drivers and barriers of local level climate action are explored in more detail in the UK context.



**Figure 4 Actors and relationships in local authority level climate action in the UK**

### **5.3 Drivers and barriers**

Factors influencing local level climate change action can be divided into two groups, depending on the ability of local authorities to exert control over them. The first group can be characterized as contextual, circumstantial, external, which the local authority in the short and medium term has to accept as given. The second group of factors is internal that local authorities can influence by their direct decisions. External and internal factors can be supporting, acting as drivers of local level climate action, or pose obstacles and act as barriers to it. In the following sections barriers and drivers of local level climate action are explored in the UK context, through the experience of the two case study cities (for an overview see Table 8).

#### **5.3.1 Barriers at the local level**

In the process of becoming front-runners in climate change action, the two UK case study cities had to overcome external and internal barriers. A group of external barriers stemmed from the central government level, taking the form of lacking statutory requirements and the lack of sufficient funding. When environmental and sustainable energy action was first initiated in Woking and Leicester in the early 1990s, there was no external, statutory requirement for local authorities to engage in such action. The Home Energy Conservation Act (HECA) (HM Government 1995) put in place in 1995 represents a case when national regulation, potentially influencing local level climate action exists but is not strong enough and is not supported by funding. HECA placed a

reporting requirement on local authorities with housing responsibilities. They had to report on effective and cost-effective measures for greenhouse gas emission reductions through energy efficiency in their housing stock. At the same time HECA did not require the identified measures to be implemented, nor did it provide new sources of funding to support these measures. Therefore the combined barrier of not sufficiently strong regulation and lack of funding resulted in limited results. Front-runner authorities that were already engaging in sustainable energy action benefited from having regulation put in place, at the same time would have been able to do more if it was backed by more funding.

Lack of commitment and guidance from the national government has been a further significant barrier to climate action becoming widespread among local authorities. This contextual barrier was removed in 2008 by the adoption of binding greenhouse gas emission reduction targets on the country level, in form of the Climate Change Act (HM Government 2008a). The inclusion of climate change mitigation and adaptation related elements into the system of National Indicators (HM Government 2008c) facilitated the contribution of local authorities to the achievement of country level climate change targets. Putting a regulatory framework in place at the national level made engaging in climate action easier for front-runner local authorities as well as inducing such action in localities that earlier had no intention to do so. At the same time lack of sufficient funding from higher governance levels still acts as a barrier. In the case of Woking the level of central government funds available has been characterized as enough for building capacities but not enough for starting projects (Lowe 2008, Personal communication). In

addition to this, although ambitious residential energy efficiency targets were set at the country level, incentive programs to support the achievement of these targets are still not in place. The need to increase financial support from the central government level for local implementation of residential energy efficiency improvements has also been recognized by the UK Secretary of State for Energy and Climate Change (Milliband 2009).

Apart from the above outlined earlier absence of statutory requirements and still existing funding related barriers, further contextual factors stemming from both the central and local government level have been identified through the experience of the UK case study cities. Central government policies involving privatization of the energy supply industry proved to be a significant barrier to the citywide expansion of CHP in Leicester. The obstacle to CHP expansion occurred through drastically falling energy prices due to the introduction of competition, therefore further reductions achievable through CHP were crowded out. Further local contextual barriers affecting adaptation action identified by environmental officers in the city included the lack of awareness about climate change and about the urgency of action required to tackle it, information gaps and system complexity, uncertainty, and skepticism. In the case of mitigation action in Woking the technical nature of the implemented sustainable energy measures acted as a contextual barrier through the difficulty of communicating the importance of these measures to citizens and even to local politicians (Audit Commission 2007).

Apart from external ones, barriers of a local, internal nature were identified through the experience of Woking and Leicester. Not enough happening and not fast enough was a general concern articulated regarding environmental and climate change action in Leicester (Nicholls 2009, Personal communication). This leads to the problem of discrepancy occurring between rhetoric and practice. While on the rhetorical level local politicians support climate change policy and action plans are developed, officers have been concerned about delays in the implementation of painful measures. Lack of long term outlook of politicians is a barrier that for example contributed to the cancellation of CHP projects in Leicester. Delays in policy implementation can lead to the demoralization of earlier enthusiastic officers, which acts as a further internal barrier to local level climate action.

External barriers, such as at the global credit crises that started in 2008 often influence local level, internal decision making about the implementation of commitments to tackle climate change. This demonstrates how the simultaneous occurrence and interaction of external and internal barriers can inhibit local level climate change action.

Concentrating only on the short term is an internal barrier that was identified in the experience of both UK case study cities. Short term planning was recognized as a barrier to adaptation in Leicester, while in Woking investment into further, large-scale sustainable energy projects was obstructed by the attitude of local politicians thinking in terms of the four year election cycle. In Leicester conflicting priorities across

departments and the possible conflict with the mitigation agenda was identified as further internal barrier affecting adaptation action.

These are the ways how external and internal barriers, as well as their interactions posed substantial obstacles to climate change action in front-runner cities in the UK. Some of the external barriers, including the absence of statutory requirements were already removed, at the same time new ones, such as the global credit crises that started in 2008 became the source or further difficulties. External barriers interact with internal ones, which in turn can lead to delays in climate change policy implementation and disillusionment of officers who were earlier the driving force behind the process.

While barriers pose obstacles to climate action, several drivers exist that help to overcome them. In the following section drivers and co-benefits of local level climate change action are explored through the experience of the two UK case study cities.

### **5.3.2 Drivers, co-benefits and factors making front-runner cities**

Both Woking and Leicester have a long history of engaging in environmental, sustainable energy and climate change action. Therefore their cases provide an opportunity to identify drivers, motivating factors and co-benefits of such action. Some of these factors are of contextual, circumstantial nature, while others are internal as they are the result of choices taken by local decision makers (see Table 8).

Internal, local drivers emerged in various forms at the UK case study cities. In Woking the even distribution of representatives of the governing party and the opposition in the local assembly was a factor that supported climate change action in the borough. High-level political buy-in to sustainable energy and later climate change action was a further internal driver making Woking a front-runner. Political leadership was indispensable in order to take risks and be ambitious in decision making. The long term prevalence of this situation provided the political continuity that is necessary for the successful implementation of climate change policies and targets. Local politicians were willing to support the innovative measures that have not been tried before at other localities. Setting up an ESCO (Thameswey) owned by Woking Borough Council, and establishing a revolving fund to finance sustainable energy investments were the two most important innovative measures that enabled successful local level sustainable energy initiatives. The presence of dedicated officers with relevant expertise in the fields of finance and engineering proved to be a further internal supporting factor at the outset of climate change action.

The similarity of the cases of Leicester and Woking is that they both benefited from the external factor of an enabling national policy framework for sustainable energy action. They also both had the internal factor of dedicated officers and other individuals driving climate change action. At the same time the above outlined long prevalence of a favorable political situation and willingness of local politicians to engage in innovative projects helped Woking to make a step further. The Borough Council engaged in large-



scale sustainable energy projects within its jurisdiction, whereas in Leicester only small-scale CHP projects have been implemented, which have not been expanded citywide.

Both UK case study cities benefited from measures that ensure continuity of climate change action. In accordance with this, mechanisms to monitor progress were implemented at both localities. Establishing interdepartmental cooperation, bringing together different kinds of expertise within the councils and addressing environmental issues corporately were important success factors. Adopting a climate change strategy also proved to be an important contributor to the continuity of climate change action, through specifying targets and tasks. The hiring of officers with the sole responsibility of developing and implementing climate change strategies and action plans was a success factor both in Woking and in Leicester. Climate change officers play an important role in climate action related networking within the council as well as with other organizations on the regional, national and international level. Reaching out to citizens, businesses and civil organizations in the jurisdictions of the respective local authorities is also among their tasks.

A further factor that contributed to the continued development of climate action both in Woking and in Leicester was the receiving of awards and recognition of results already achieved. Reaping the benefits of leading by example supported political commitment for continued implementation of climate policy. Establishing high level of community engagement is the final most important factor ensuring continuity, at the same time it is a target in itself that has to be achieved even in front-runner cities.

Establishing strong partnerships and coordination of climate change action with organizations at other governance levels featured as a supporting factor in the UK case study cities. In Woking coordination within the regional Climate South East partnership ensures efficient use of finite resources. The partnership focuses on adaptation to climate change, while utilizing the mitigation related best practice of the Borough Council. The two entities mutually benefit from cooperation. Woking provides expertise regarding innovative measures in sustainable energy, while it benefits from streamlining its adaptation related activities with regional ones. In the East Midlands region, where Leicester is located, the East Midlands Regional Climate Change Partnership has been set up. The partnership acts as a driver for local level action through facilitating learning exchanges between regional partners, supporting councils in meeting their adaptation commitments, for example through channeling national level financing (from DEFRA) that supports local level adaptation.

Drivers of local level climate change action can emerge through the realization of co-benefits of these policies. The presence of co-benefits has been recognized in both UK case study cities. Energy cost reductions occurring as a financial co-benefit of sustainable energy action were from the beginning a key driver of climate change action in Woking and Leicester. Further adaptation related co-benefits recognized by Leicester City Council are also economic in nature. As preparing for climate change impacts is significantly cheaper than the cost of damage caused, early adaptation action has been identified by the Council as leading to financial benefits. Other co-benefits of adaptation,

including minimization of threats to ecosystems, human health and infrastructure were also mentioned. Additional economic co-benefits include competitive advantage in the utilization of sustainable energy technologies, and over non-adapters, as well as the possibility of entering into new markets by benefiting from the first mover advantage (as articulated for example in the case of green roofs). The existence of economic and competitive advantage related to co-benefits was also recognized in Woking, for example with respect to the utilization of best-practice in the implementation of large-scale sustainable energy projects. The local ESCO began to expand its operations to other cities, this way spreading best practice solutions and at the same time channeling back the generated profits to Woking Borough Council.

To summarize, external and internal drivers, as well as co-benefits contributed to Woking and Leicester becoming front-runners in local level climate change action in the UK and at the international level. The role of the enabling country level energy policy framework, favorable local political circumstances and political continuity, as well as the presence of dedicated officers should be emphasized. Additional internal drivers included political decisions to support innovative measures and making the switch to large-scale sustainable energy projects in Woking. Implementation and continuity of climate change action was ensured in both UK case study cities by establishing interdepartmental cooperation and hiring officers specifically to carry out climate change action related tasks. Cooperation with regional institutions for the efficient use of finite resources, as well as receiving recognition in the form of awards from the central government also proved to be important supporting factors. Co-benefits of climate change action were at

the same time key drivers. The realization of energy cost reduction was the most important factor that acted as both co-benefit and driver of climate change action in the UK case study cities. Early adaptation related cost reductions were identified as a financial co-benefit, as well as contribution to economic development thorough benefiting from the first mover advantage.

These drivers and co-benefits identified through the experience of front-runner case study cities in the UK can contribute to developing successful climate action in other cities in the UK and abroad.

**Table 8 Barriers and drivers of local authority level climate action in the UK – summary**

<b>Barriers</b>
Discrepancy between rhetoric and practical action
Election cycle obstacle to long-term climate change action
Demoralisation of officers as a result of delays in implementation
Conflicting priorities of LA departments
Conflict between mitigation and adaptation
Lack of statutory requirement
Lack of sufficient funding from central government
Lack of commitment and guidance from central government
Privatisation of energy supply industry
Global credit crises
Difficulty in communicating technical details
Lack of awareness
Lack of urgent action
Complex systems
Uncertainty and gaps in knowledge
Climate scepticism
<b>Drivers/Success factors/Co-benefits</b>
High-level local political buy in to RES projects
Dedicated officers with relevant expertise
Climate change officers hired
Interdepartmental cooperation - bringing in different kinds of expertise
Adoption of climate change strategy
LA working in partnership with other stakeholders
Establishing a high level of community engagement
Energy cost reductions
Realization that preparation is cheaper than paying for CC impacts
Realizing the threat of climate change impacts to ecosystems, human health and infrastructure
Competitive advantage over non-adapters
First mover advantage in RES technologies - profit from selling best practice
Enabling national level policy framework
Existence of award schemes
Political context - even distribution of political parties in local assembly
Continuity in local politics

*White: internal/local factors*

*Light grey: external/contextual factors*

*Dark grey: both*

Sources: Interviews, Woking Borough Council (2008), Leicester Partnership and Leicester Environment Partnership (2003).

## Summary

In this chapter climate change action at two UK case study cities, Woking and Leicester was analyzed from a multilevel governance perspective. The emergence and development of climate policy initiatives in the context of the two local authorities were explored and compared. Horizontal and vertical relationships between actors within and outside the jurisdictions of the municipalities were mapped. Furthermore, barriers and drivers of local level climate action were summarized.

Both Woking and Leicester became front-runners in climate policy based on the continuation of successful environmental and sustainable energy action from the 1990s onwards. A decade later climate change strategies and action plans incorporating both mitigation and adaptation related measures were adopted at both case study municipalities. Climate change considerations were integrated into overarching city strategies as well as sector specific activities. Furthermore, monitoring and reporting mechanisms were put in place. The development of sustainable energy action took a slightly different route in the two case study cities. While in Leicester small-scale sustainable energy projects have not yet been followed by large-scale installations, Woking successfully switched to larger initiatives. Furthermore, best practice developed at the borough was utilized at other locations through the establishment of an arms-length ESCO for running sustainable energy projects. The local authorities of Woking and Leicester were both successful in achieving greenhouse gas emission reductions at the

organizational level. The next step in the development of climate action at both municipalities should be the improvement of results at the community level.

Individuals played a key role in establishing climate action at the UK case study cities. The expertise, innovative ideas and personal commitment of local authority officers and NGO representatives acting as policy brokers contributed to winning the support of council politicians. The latter also enjoyed the political benefits of the positive image obtained by cities engaging in climate action. Therefore the role of individual policy brokers must be emphasized because their commitment and expertise were one of the key driving forces behind environmental, sustainable energy and climate policy initiatives at the UK case study cities.

The case study local authorities engaged in horizontal coordination with public, private and civil institutional actors within their jurisdictions. Some organizations were key partners in climate action, while others required outreach activities to ensure their participation. While there were examples in both cities for the former type of actor, most local organizations belonged to the latter group. The UK case study municipalities utilized several mechanisms to engage other local organizations in climate action. These included the initiation of cooperation with businesses councils, and provision of practical support in putting sustainability on organizational agendas. Furthermore, local stakeholders were consulted during the development of climate change strategies. Partnerships were initiated to ensure the involvement of public, private and civil organizations in climate policy making and delivery. Some organizations were especially

active in shaping climate change action at the UK case study cities. These included a research center at a local university providing consultancy services for climate policy, and a local NGO operating a demonstration home. Housing associations and religious organizations were also important stakeholders in local climate action at the UK case study cities.

Horizontal coordination between local authorities in the field of sustainable energy and climate action took place in four main forms in the UK. These included the cooperation of cities as members of transnational networks of sub-national governments, national government-led coordination mechanisms (for example the Nottingham Declaration and the UK Councils for Climate Protection campaign), study visits to front-runner cities by representatives of domestic and foreign local authorities, as well as technology transfer. Local authorities benefited in various ways from engaging in such horizontal cooperation mechanisms. These benefits included access to best practice, software and methodologies, creation of a positive city image, as well as increased lobbying power.

The case study local authorities engaged in vertical coordination for climate action with organizations at the supranational, national, regional and county level. This involved regulatory, funding, knowledge transfer, technical support and partnership mechanisms. The UK as an EU member state is influenced by community level climate policy. Furthermore, case study cities benefited from EU funding sources for climate action related projects. Vertical coordination with the national level involved regulation requiring climate action at local authorities, specialized institutions and funding



mechanisms supporting such action, as well as scientific and technical support from public and civil organizations. Partnership arrangements involving different governance levels were established with the participation of quasi autonomous government bodies, central government units at the regional level, county and local authorities, as well as private actors. These forms of coordination were driven by regulatory pressures (delivering NIs), incentives to apply on a cooperative basis for government financing (energy efficiency funds for public bodies), and the need for efficient use of resources through better coordination of regional action.

Climate action at the two UK case study cities was supported by various drivers and motivating factors, at the same time barriers were also present. Some barriers were external and contextual in nature, while others were more directly connected to internal council decision making. External, contextual barriers included the absence of statutory requirements in the early stages, lack of commitment and sufficient funding from the central government and the global credit crises affecting local authorities. Internal barriers included discrepancies between rhetoric and action at the local authority regarding climate action, the effects of the election cycle and lack of long term outlook of politicians, conflicting priorities of departments, and demoralization of officers in case of delays in policy implementation.

Drivers of climate action were also a combination of external and internal factors. Cost reduction considerations were the main driving force behind sustainable energy action in Woking and Leicester. While (as an internal factor) committed individuals acted as

policy brokers, general public opinion was not among the primary drivers in the emergence of climate action. Becoming front-runners in the utilization of sustainable energy was the predecessor of explicit climate policy in both cities. Other drivers were the national policy framework that enabled local level sustainable energy projects, as well as high level political buy-in, interdepartmental cooperation, creation of climate change strategies and hiring of climate change officers. The realization of co-benefits, such as first mover advantage in sustainable energy technologies and the realization that preparative measures are cheaper than paying for impacts of climate change also supported climate action in the UK case study cities.

In the following chapter local level climate action is explored in the transition country context through the analysis of two Hungarian cases. The climate change policy framework in Hungary is at a less developed stage than in the UK. At the same time both countries operate within the EU context. Therefore analysis of the multilevel governance of climate action in Hungary provides opportunity for comparison of two different country approaches, within the same supranational context.

## **Chapter 6   LOCAL LEVEL CLIMATE CHANGE ACTION AT TWO HUNGARIAN CITIES**

In this chapter climate change action at two, middle-sized Hungarian cities is analyzed from a multilevel governance perspective. The cities of Tatabánya and Nyíregyháza were selected as case study sites based on their previous achievements in sustainable energy and climate policy (for background information and further characteristics of the case study cities, see Appendix 2). Through their examples the emergence, vertical and horizontal governance processes, as well as the drivers and barriers of local authority level climate action were explored in the Hungarian context.

Climate action surfaced differently on the agendas of the two case study localities. Tatabánya was the first city in Hungary to adopt a climate change strategy, while Nyíregyháza established itself as a front-runner in energy efficiency improvement programs. The municipality of Tatabánya actively engages in environmental and climate policy, and positioned itself as a leader in local level climate action in the Hungarian context. This included the implementation of an environmental education program, as well as the development of a local climate change strategy, and a heat and UV Alert Plan. In contrast to this, climate action as an independent policy issue does not surface explicitly on the political agenda of the municipality of Nyíregyháza. At the same time, the local authority established itself as a leader in sustainable energy action. Early modernization of the district heating infrastructure and widespread participation in

residential energy efficiency improvement programs were the main climate action related achievements of the city. Furthermore, climate action and sustainable energy initiatives of Tatabánya and Nyíregyháza took place within a relatively weak national climate policy framework. Therefore the experience and best practice gathered at these two front-runner cities can serve as valuable input for the development of a multilevel framework for governing climate change action in Hungary.

The chapter begins with an overview of the emergence and development of local level climate change action in Tatabánya and Nyíregyháza. The roles of individual and organizational actors are explored and horizontal and vertical coordination mechanisms are mapped at the local, as well as between governance levels. In the third section of the chapter barriers and motivating factors, drivers and co-benefits of climate action are identified and summarized, based on the experience of the two Hungarian case study cities.

## **6.1 Emergence and development of local level climate action**

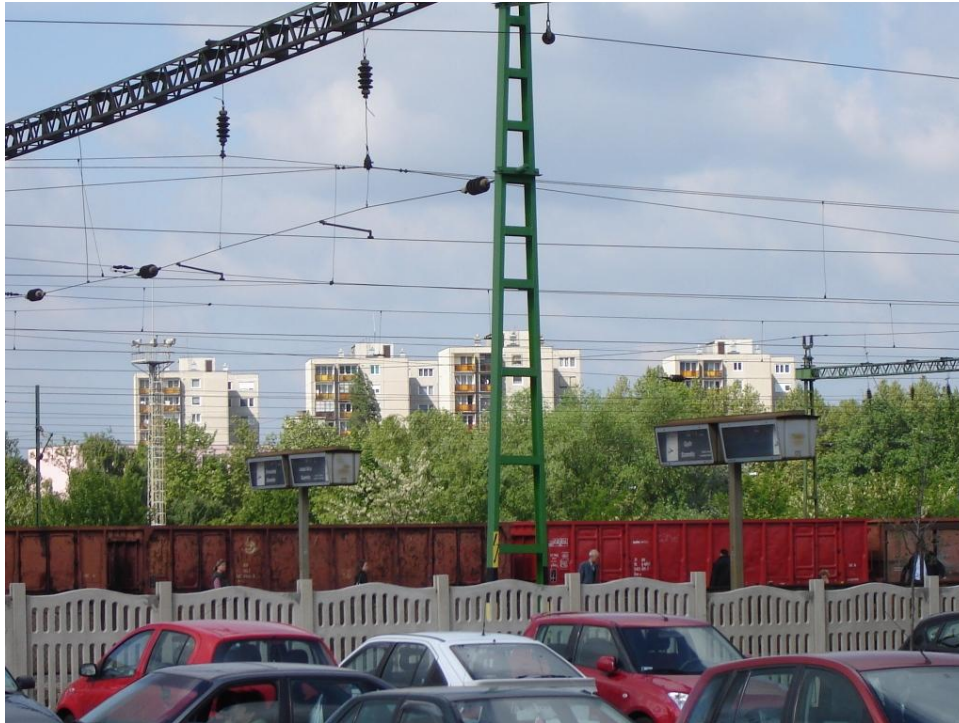
The following sections outline the process through which sustainable energy and climate action emerged and developed at the Hungarian case study cities. An account is provided of the antecedents, outputs, integration, and implementation of climate policy at the two case study cities. Innovative measures and connections to national level climate policy processes are identified. The last sub-sections outline the next steps in the continuation of and an overview of the development of local climate action initiatives at the case study local authorities in the Hungarian context.

### **6.1.1 Antecedents and development**

Climate change as a separate policy issue arose only a few years ago in Hungary. Environmental protection and sustainability are still relatively low on the political agenda both at the national, as well as at the local government level. The country is heavily influenced by the socialist legacy from an economic, environmental, and social perspective. Post-socialist economic restructuring resulted in the fall of heavy industries and reorientation towards manufacturing and services. The urban form has also been influenced by policies during socialist years. Especially former industrial centers are characterized by a large proportion of buildings built with pre-fabrication technology (panel blocks, see Illustration 2), which are typically supplied by district heating. In many places, including the case study cities, energy supply, buildings, and transport infrastructures were in need of modernization after the post-socialist transition (As

demonstrated by examples from Tatabánya in Illustrations 2, 3 and 4, while Illustration 5 is an example of recent modernization of the transport services infrastructure in the same city). As for the societal effects of the socialist legacy environmental awareness of the public is relatively low compared to Western democracies. In connection to this, the experience of the general public in influencing environmental decision making through civil and grassroots action is relatively limited, although improving.

Unlike some older member states of the EU, Hungary does not have a strong tradition in sustainable development initiatives and Local Agenda 21 programs, which could form the basis of local authority level climate policy. In the two case study cities climate change as a policy issue was preceded by action in separate sectors, including building energy efficiency, environmental protection and public health concerns. National support programs for residential energy efficiency improvements form an important element of and are antecedent to comprehensive climate action at the local authority level. Smaller scale national programs have also been addressing energy efficiency issues in public buildings. In addition to participation in the national programs, some municipalities, including the case study cities, Nyíregyháza and Tatabánya, also initiated smaller scale energy efficiency programs for modernization of the local residential building stock. At the same time the initiation of energy efficiency support programs does not necessarily translate to comprehensive climate change action. The different approach to climate policy of the two Hungarian case study local authorities demonstrates this.



**Illustration 2 Central railway station in Tatabánya, with socialist style panel blocks in the background (both in need of modernization)**



**Illustration 3 The closed Bánhida power station in Tatabánya**



**Illustration 4 Shopping area in need of modernization, forming part of the central railway station in Tatabánya**



**Illustration 5 Modern shopping mall and bus terminal building next to the central railway station in Tatabánya**



#### **6.1.1.1 Nyíregyháza**

The case of Nyíregyháza is considered as a success in the utilization of sustainable energy solutions. At the same time the city did not take the next step to comprehensive climate action. It does not have a sustainable energy strategy nor a climate change strategy and does not address adaptation concerns.

The main motivation behind sustainable energy action in the city was to improve the dilapidated state of the district heating infrastructure and the residential building stock (especially panel buildings) after the post-socialist transition. Local energy efficiency programs focused on the single measures of heating system modernization on the consumer, as well as on the supplier side. Therefore, reducing greenhouse gas emissions, which are likely to have occurred as a co-benefit of energy efficiency improvements, have not been the primary aim of the policy. Nyíregyháza has also achieved wide participation in national energy efficiency support programs. The favorable performance in national programs is likely to be connected to the success of earlier local initiatives.

A further area where the city has achieved climate action related results is the development of large-scale wastewater treatment and biogas plants. These projects have been made possible through co-financing from EU funds after Hungary joined the European Community in 2004. EU funds have also played a role in smaller scale projects in Nyíregyháza. For example they contributed to the utilization of renewable energy technologies during the refurbishment of a local school. Building on local best practice Nyíregyháza has also been active in organizing sustainable energy action at the regional

level through the establishment of a regional energy agency. (For examples of climate action related projects and programs in Nyíregyháza see Table 9.)

#### **6.1.1.2 Tatabánya**

Tatabánya was one the main centers of heavy industry in socialist Hungary. Therefore the city had to cope with the environmental pollution resulting from industrial activities. Connected to efforts to shed the image of being a center of polluting industry the local authority engaged in environmental awareness raising and education programs. Later, as a next step the city positioned itself as a leader in climate action in Hungary. As part of these efforts climate change has been put on the local authority agenda as an independent policy issue. This made Tatabánya the first middle sized city in Hungary that serves as administrative center for the respective region to explicitly engage in climate policy (for examples of climate action related projects and programs in Tatabánya, see Table 9).

Environmental awareness raising and education measures were the antecedents of comprehensive climate policy in Tatabánya. Since 2004 work has been ongoing to establish an environmental education program. The program was adopted by the General Assembly of the city in March 2005. The main rationale behind this initiative was to achieve higher environmental awareness among children, and through them reach out to parents and the adult population in general. As part of awareness raising efforts related to environmental and climate change concerns several conferences and regular awareness raising events are organized. These include the annual car free day and the open doors

event series. As part of the latter, local businesses and utility companies provide insight for the public into their operations and environmental initiatives.

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In addition to concerns about environmental pollution, public health and fuel poverty issues also acted as drivers behind climate action in the city. To address these concerns earlier initiatives related to climate policy included local support programs for residential energy efficiency improvements. Tatabánya has also participated in national energy efficiency support programs for the modernization of residential buildings. At the same time participation in these programs was not as widespread as in the other case study city. Public health concerns were driving the development of a local action plan for dealing with heat waves. The action plan was created in cooperation with the county level disaster prevention agency. As for newer initiatives related to local climate action, efforts to attract green industries to Tatabánya is also in line with the orientation towards environmental protection in the city.

**Table 9 Examples of climate action related projects and programs in Tatabánya and Nyíregyháza**

<b>Tatabánya</b>
Environmental education program
Annual car free day event
Annual open doors event series with the participation of local businesses and utility companies
Grants and preferential loans for residential energy efficiency refurbishments
Cooperation with disaster prevention agency to develop action plan for heatwaves
<b>Nyíregyháza</b>
Comprehensive heating infrastructure modernisation program, including the consumer and the supplier side
Utilisation of renewable energy technologies (solar collectors and wood pellet based heating) at a local school
Wastewater treatment plant including utilisation of biogas
Establishment of a regional energy agency

Sources: Nagy (2008), Botos, Juhász and Oláh (2009), NYÍRTÁVHŐ (2010)

### **6.1.2 Climate policy outputs**

As of the two Hungarian case study cities only Tatabánya engages explicitly in climate action, climate policy outputs in terms of strategic documents have only been produced here. Parallel to this, although sustainable energy initiatives and energy efficiency support programs feature prominently on the local agenda of Nyíregyháza, no comprehensive strategy or action plan has been adopted in these fields.

In 2007 Tatabánya was the first city in Hungary to launch a separate Climate Change Strategy. As the next step in local climate policy making, a Heat and UV Alert Plan was adopted in January 2008. Building on earlier initiatives, education and awareness raising programs also feature strongly in the Climate Change Strategy and the Heat and UV Alert Plan. At the same time the Climate Strategy is not supported by a detailed action plan with measurable, time-bound targets. In connection to this no monitoring and no external verification mechanisms have been implemented.

Therefore there is a need to strengthen the strategic aspects of climate change and sustainable energy action at both Hungarian case study cities. The development of comprehensive strategies supported by numerical, time-bound targets, as well as monitoring and verification of results would enhance the credibility of climate change and sustainable energy action at these front-runner local authorities. Establishment of stronger strategic direction would make local decision makers more accountable and would make it possible to better assess the outcomes of local climate action.

### **6.1.3 Climate policy integration**

At the Hungarian case study cities efforts to integrate climate policy have mainly taken the form of hiring additional officers at the municipalities. Local authorities of a similar size usually employ a lower number of environment officers. General tasks of environmental personnel already result in a substantial workload. If sustainable energy

and climate change issues are to be simultaneously addressed, additional capacity is required.

While additional officer positions have been created at both Hungarian case study cities, no institutional processes were put in place to ensure the integration of climate and sustainable energy issues with other policy areas. Furthermore, energy and climate change officers report to councilors and interact with other council departments, but these cooperation mechanisms are not institutionalized. These weaknesses of climate policy integration are also connected to the lack of comprehensive climate change action plans at the case study cities.

At Tatabánya City Council climate change, energy and environmental issues are separately dealt with by dedicated full-time personnel. The climate change officer is responsible for the strategic task of environmental and climate change related education and awareness raising, the energy officer develops the energy and energy efficiency strategy of the city, while the environment officer covers environmental issues more generally. An additional officer assists citizens in preparing applications for national and local building energy efficiency programs. Therefore the council has responded to the increasing workload related to sustainable energy and climate action by increasing the number of personnel. At the same time it would be desirable to involve climate policy considerations into the work of officers at other departments as well.

In terms of personnel, a similar approach was taken in Nyíregyháza. At the start of the district heating modernization program an energy officer was hired to assist citizen participation. Later, when Nyíregyháza joined the Energie-Cités network the energy officer became responsible for issues related to the network, including the running of energy efficiency campaigns. Similar to Tatabánya, in Nyíregyháza there is also an officer responsible for coordinating citizen applications for energy efficiency refurbishment programs. At the same time the work of these officers is not integrated with the activities of other departments at the local authority.

The development of detailed climate and sustainable energy action plans and related institutional processes at the Hungarian case study cities would ensure better integration of these initiatives with other policy areas of local importance. Furthermore, apart from the work of officers focusing in climate, energy and environmental issues, climate action considerations should also be integrated in the tasks of officers in working other authority service areas. Climate policy does not feature as a central issue in the strategic development plans of the two Hungarian case study cities. By formalizing and integrating climate and sustainable energy action, the results can be improved in these policy areas, while connections and co-benefits with other sectors can also be better utilized.

#### **6.1.4 Implementation of climate strategies**

Neither of the Hungarian case study cities have a detailed climate change and sustainable energy action plan. This poses obstacles to the assessment of the level of implementation

of climate policy at these local authorities. Therefore projects and programs related to climate action have been used as a proxy for the assessment of climate policy implementation. The hiring of climate policy officers as well as changes in budget allocations and related conflicts have also been used as indicators of climate action related policy implementation at the Hungarian case study cities.

Two types of climate action related interventions have taken place in Tatabánya and Nyíregyháza. Relatively cheaper measures, such as environmental education and awareness raising programs and the hiring of additional officers did not cause significant conflicts and changes in local authority finances. At the same time other, costlier measures, including the purchase or improvement of critical infrastructure required strong leadership to push through the local council. Interventions belonging to the second group included provision of funding for energy efficiency improvement programs in residential and public buildings, as well as the purchase and modernization of energy supply infrastructure.

The case of Tatabánya demonstrates these processes. At the local authority climate policy itself did not result in major conflicts. A separate line is devoted to climate action objectives in the local authority budget. The wage costs of the climate change officer were originally covered by environmental fines paid by the local power plant to the municipality. As the power plant changed fuel from coal to less environmentally harmful natural gas, the paid environmental fines were significantly reduced. Parallel to this development Hungary joined the EU and became eligible for structural and cohesion



funds. Engagement in EU projects and programs now contributes to the covering of additional wage costs related to climate action at the local authority. This again reduced the likeliness of climate policy related resource reallocations and conflicts. At the same time climate action related projects requiring larger investments, such as the energy efficiency refurbishment of residential and public buildings have been suffering from lack of sufficient resources and conflict with other projects.

The experience of the two Hungarian case study cities reflects that individual programs and projects related to climate action have been implemented, and some of these programs are also planned to be continued. Local authority personnel have been hired to facilitate climate and sustainable energy action. Energy supply infrastructure and energy utility companies have been purchased (or are currently in the process of being purchased) by the respective local authorities. At the same time it would be desirable to connect these separate measures as part of an action plan, which would enable the utilization of synergies between separate measures as part of more comprehensive climate policy approach. This would also enable to put in place accountability mechanisms in case measures are not implemented as promised.

#### **6.1.5 Innovative measures**

Several innovative solutions have been utilized by the two Hungarian case study local authorities to implement their climate change and sustainable energy policies. Gaining majority ownership in the local district heating company has been a particularly

important measure in both cities. While Nyíregyháza City Council gained ownership early on, right after the post-socialist transition, Tatabánya has only recently been able to acquire full control of the local energy supply infrastructure. The results that Nyíregyháza has been able to achieve in the modernization of district heating both on the consumer and on the supplier side as a result of having full control over the utility company also served as a basis for later energy efficiency measures. EU funds supporting the use of renewable energy sources have also been utilized in the city through the local authority owned district heating company. In Tatabánya positive results are also expected to take place now that a similar, favorable ownership structure has been established.

A further innovative measure utilized in Tatabánya involved the setting up of a local climate action NGO with the support of the local authority. This measure contributed to increasing the capacity to communicate with the general public about climate action related issues. It also established an informal sphere for coordination with stakeholders playing a key role in climate action, including the water utility company, education institutions, the disaster prevention agency, and other local NGOs supporting sustainable energy use in the city, as representatives of these organizations are members of the climate action NGO.

#### **6.1.6 Connection to national level climate policy processes**

The emergence of climate change as a separate policy field took place parallel to each other at the national and local level in Hungary. In 2007 the Climate Strategy of

Tatabánya was adopted a few days earlier than the Hungarian National Climate Change Strategy. The two strategies were developed independent of each other. The national strategy mentions the importance of local level climate action, at the same time in practice little coordination has taken place.

Some EU co-financed programs have lately emerged as drivers of coordination between national and local level climate policy processes, as they require the inclusion of climate change and sustainable development considerations. Front-runner cities can provide examples of best practice in these areas. As a result both national authorities and representatives of other municipalities have shown interest in the experience of Tatabánya.

In terms of other policy areas connected to climate action, energy efficiency policy is a field where some level of coordination has been achieved between the national and the local level. National level support programs for residential energy efficiency improvements have been implemented with the co-financing and administrative assistance of both case study local authorities. Nyíregyháza has achieved particularly high level of participation in the national program. In the field of adaptation, flood prevention and management is an area where the coordination of national and local level authorities is necessary. At the same time this was not a critical issue at the two Hungarian case study cities.

### **6.1.7 Next steps**

The transparency, visibility, effectiveness and credibility of climate and sustainable energy initiatives could be improved at both case study cities by adopting a stronger strategic approach. Policies in separate sectors should be coordinated taking into account climate action considerations, and institutional processes should be implemented to ensure coordination between local authority departments. Detailed action plans with measurable, time-bound targets would contribute to the better integration of climate action with other municipal initiatives and policies in key local sectors. Operation of the local authorities as organizations should be reviewed and improved along the lines of climate and sustainable energy action considerations.

Avenues for the continuation of climate and sustainable energy action in Tatabánya and Nyíregyháza include efforts to attract green industries, as well as EU funding for renewable energy and waste and wastewater management projects. Accumulated best practice serves as the basis of these initiatives. The two front-runner cities are well positioned within the Hungarian context to benefit from the position that they have so far achieved.

### **6.1.8 Overview of the development of local climate action**

In this section the emergence and development of climate change action has been explored at the two Hungarian case study cities (see Figure 5 for and overview). Based on the experience of Tatabánya and Nyíregyháza climate change at first does not emerge as

a separate policy issue on the municipal agenda. Environmental, public health and fuel poverty concerns were identified as the main predecessors of explicit climate action in the Hungarian context. Factors stemming from the socialist past influenced emerging local climate action, including dilapidated infrastructure, relatively low environmental awareness, and relatively little experience in grassroots and civil action among the population.

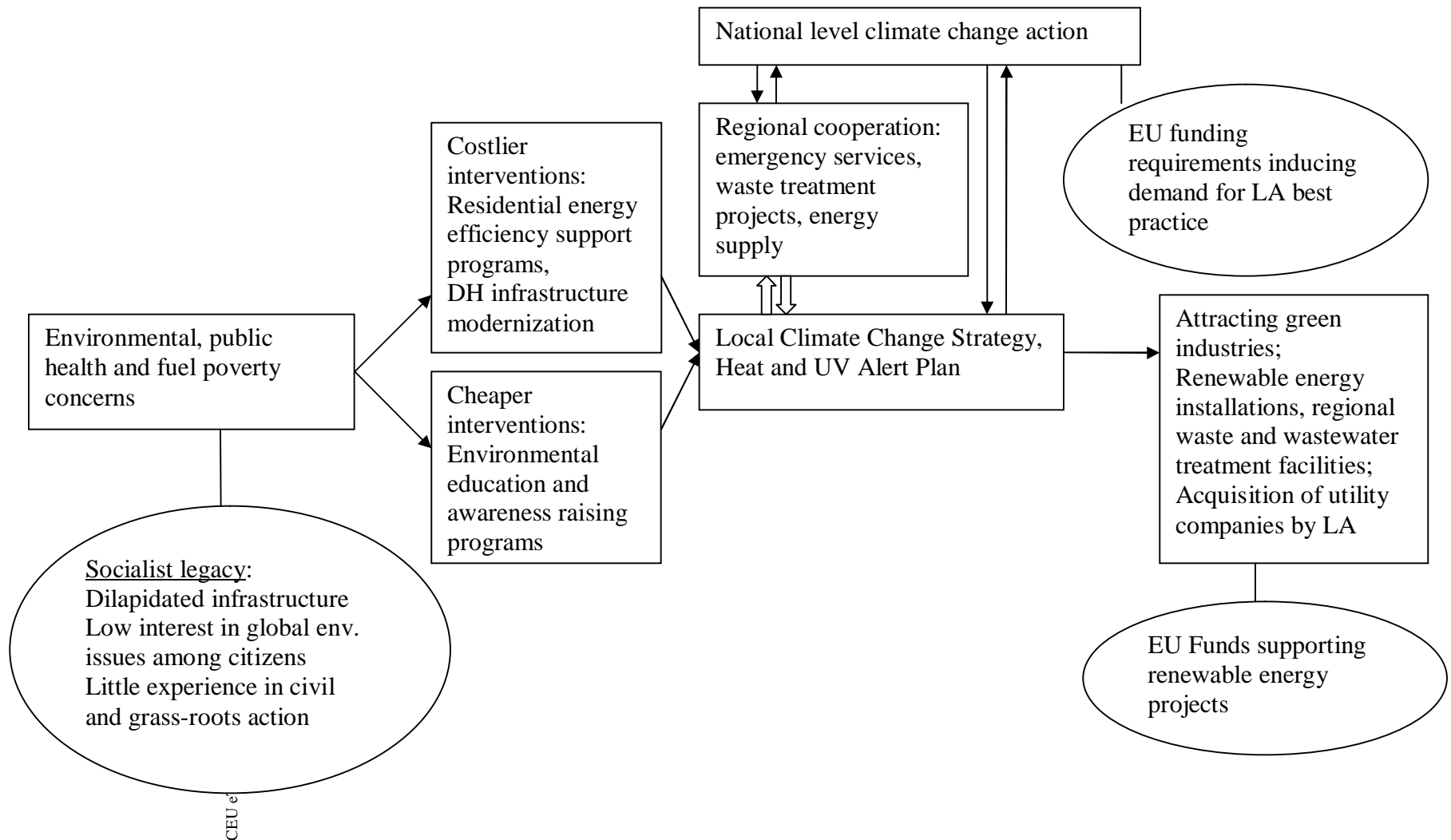
Two types of climate action related interventions were identified at the case study locations. Relatively cheaper measures, such as environmental education and awareness raising programs did not cause significant changes in finances, nor conflicts at the local authorities. Infrastructure related interventions, such as building energy efficiency refurbishment support programs and district heating infrastructure modernization required stronger leadership within the local councils, as these types of projects brought stronger cost implications.

While in Tatabánya environmental awareness raising measures were the key starting element of local climate action, in Nyíregyháza energy efficiency improvement programs were emphasized. The latter city so far did not expand sustainable energy initiatives to wider climate action. Tatabánya at the same time developed a local climate strategy and an adaptation related Heat and UV Alert Plan. Avenues for the continuation of sustainable energy action in Nyíregyháza and climate action in Tatabánya include efforts to attract green industries and EU funding for renewable energy projects based on already accumulated local best practice. Interaction with regional actors in climate action related

topics, including disaster risk prevention, waste management and sustainable energy was present in both cities. At the same time information exchange between local and national actors regarding sustainable energy and climate action has so far been limited. EU membership played an influencing role in this through increasing demand for local sustainability and climate action best practice as part of funding application requirements.

While both of the case study cities have achieved results in sustainable energy and climate action, stronger integration of these policies with other municipal activities would increase their effectiveness.

**Figure 5 Emergence and development of local authority level climate change action – the Hungarian experience**



## **6.2 Actors involved**

Individual and organizational actors influence local authority initiatives to tackle climate change. Relationships between the municipality and other actors can be of vertical or horizontal nature within the multilevel governance framework. In this sub-chapter a review is provided of individual and organizational actors, and their vertical and horizontal coordination mechanisms influencing local level climate action in the Hungarian context (for an overview of actors and their relationships see Figure 6).

### **6.2.1 Role of individual actors**

Committed individuals were key facilitators of local level climate action at the Hungarian case study cities. In this section, based on the experience of Tatabánya and Nyíregyháza the types of actors driving local climate action, as well as the processes through which they exercise their influence are identified.

At both Hungarian case study cities environmental, sustainable energy and climate action was initially induced by local politicians at the highest level of authority. A parallel can be detected between the professional backgrounds of the political leaders acting as policy brokers and the nature of the first actions taken. In Tatabánya where the mayor was from a professional background in education and social work the initial emphasis was on the environmental education program. In Nyíregyháza, through the efforts and advocacy of a leading politician with background in engineering the first initiatives focused on



modernization of the district heating infrastructure. At the same time in Nyíregyháza environmental education programs played a less important role. In Tatabánya the need for improving the district heating infrastructure and the building stock was also prevalent, and efforts were initiated at the local authority to engage in modernization. At the same time while smaller scale support programs were initiated, energy efficiency did not get on the top of the municipal agenda as early as in Nyíregyháza, due to a lack of sufficient political support.

The above processes demonstrate how political leaders with expertise in specific issue areas contributed to setting different priorities in the early stages of environmental and climate action at the Hungarian case study cities. At the same time political continuity also played a key role in the long term success of these policy initiatives. In both of Hungarian case study cities key political supporters of sustainable energy and climate change action were members of the city leadership since 1990, the year of the first local election after the post-socialist transition. This provided the desired political continuity, even if the composition of the city assemblies changed from one election to the next.

Local politicians can also personally benefit by establishing leadership in a specific policy field in the cities they govern. By obtaining a positive reputation at the city level, politicians of front-runner cities can become champions of the respective issue areas at the national level. The Hungarian case serves as an example for this process. On the national political level mayors of the two case study cities became issue leaders and influenced the areas in which their cities were front-runners (climate change policy,

energy policy, housing policy). Furthermore, in the case of Tatabánya the former mayor later took a key position in the field of energy policy in the national government. This way experiences and best practice from the local level can influence national level policy design, creating a vertical, bottom-up feedback mechanism.

Politicians driving environmental, sustainable energy and climate action also facilitated the hiring of new personnel responsible for these priority areas. In Tatabánya an officer was hired for the strategic task of developing and carrying out the environmental education program. Later an additional officer was recruited to oversee the implementation of the climate change strategy. The professional background of the officers in environmental engineering and doctorate in biology reflects the expertise needed to carry out these specialized tasks. Furthermore, both in Tatabánya and Nyíregyháza separate positions were created to assist the running of the residential building refurbishment programs and for the overseeing of energy and housing policy implementation. The energy officers came from a background in engineering and architecture.

Apart from possessing relevant professional skills, the personal commitment of officers played a key role in influencing the institutional culture of local authorities as organizations. An example of this is represented by Tatabánya climate officers developing energy saving advice for the local authority offices. Furthermore, the presenting of innovative environmental and climate change programs to local council

members who are not particularly focused on these issues also requires substantial personal commitment from officers responsible for these areas.

Public opinion only indirectly influenced climate action at the Hungarian case study cities. The reasons for this are twofold: as demonstrated by the 2008 special Eurobarometer survey on the environment, Hungarian citizens are less concerned about global environmental problems and the concerns of future generations, yet are more interested in nature protection and pleasant landscapes (EC 2008). Furthermore, being a transition economy with a relatively weak tradition in public participation, emerging grassroots initiatives are still weak compared to Western European democracies. At the same time public opinion played an indirect influence on climate action through national and local governments supporting energy efficiency refurbishments as a reaction to public concerns about energy cost increases. In both case study cities a large proportion of residential buildings is connected to district heating, and inhabitants are sensitive to energy price fluctuations. In Nyíregyháza public opinion in favor of lower heating prices (along the presence of engineers among the political leaders of the city) contributed to the early modernization of the district heating system and widespread energy efficiency refurbishments throughout the city. Reductions in district heating prices contribute to winning (or not losing) votes in both case study cities. Therefore, in the Hungarian case study cities public opinion mainly influenced climate action through inducing energy efficiency improvement programs.

To summarize the discussion about the role of individual actors in local level climate action at the Hungarian case study cities, the significance of the initial push by leading politicians must be emphasized. Furthermore, personal commitment and expertise of local politicians and local authority officers proved to be a factor of key importance. In connection to this, based on local best practice, politicians were successful in establishing themselves as issue leaders in sustainable energy and climate action at the national level. However, direct public pressure to address global environmental and sustainability issues is relatively low in Hungary. At the same time through the demand for energy efficiency refurbishment programs public opinion indirectly contributed to climate action at the case study cities.

In the following section horizontal coordination mechanisms with local actors are explored in the Hungarian context.

### **6.2.2 Horizontal coordination with local organizations**

Based on the experience of the two case study cities, local organizations influencing and cooperating with municipalities in the field of climate action were identified in the Hungarian context. NGOs, private businesses, district heating companies, education institutions and the civil protection agency surfaced as key stakeholders interacting with city authorities in climate action related initiatives. Furthermore, public transport companies, hospitals, religious organizations emerged as additional stakeholders with whom cooperative arrangements could be strengthened.

Civil organizations were important partners of the two Hungarian case study authorities in implementing sustainable energy and climate action initiatives. In Tatabánya the Climate Circle NGO was established by the local authority to support municipal climate policy. Members of the NGO are employees and therefore act as informal representatives of local organizations, such as utility companies, education institutions, the civil protection agency, as well as of the local authority itself. This way the meetings serve as informal forums for discussing local climate action initiatives between these organizations. Furthermore, the Tatabánya Climate Circle plays an important supporting role in climate action related awareness raising and information dissemination. Another civil organization, the county level representation of the Federation of Technical and Scientific Societies is also an important stakeholder in climate action in Tatabánya, coordinating activities with the local authority. The Federation offers advice and expertise in applications for residential energy efficiency refurbishment programs. Similar to the case of Tatabánya, in Nyíregyháza local environmental NGOs are active in sustainable energy and climate action related awareness raising activities. At the same time cooperation is weaker and is not actively driven by the local authority.

Climate action also contributed to the development of the local private sector at the Hungarian case study cities, where several businesses emerged as important stakeholders complementing the efforts of local authorities. In Tatabánya a private real estate company was a key partner in the initiation of an Innovation Center for green industries. The planned Center is an incubation house which aims to attract and support small enterprises

active in green industries. This contributes to achieving the longer term aim of reorienting the local economy towards green sectors. Furthermore, at both case study cities a wide range of individual entrepreneurs and SMEs assisted the implementation of residential energy efficiency refurbishment programs. Some entrepreneurs were active in the refurbishment work itself. Other companies provided condominium management services and technical and administrative support in applications for energy efficiency funds. The case of Nyíregyháza offers a further example of climate action related local business development. Private companies played and continue to play an important role in designing and carrying out large-scale, EU co-financed projects in waste and sewage disposal (complemented by renewable energy generation) in the city and the surrounding region. The interest of these newly emerging green industries is the continuation and strengthening of local authority level climate action at the case study cities, in order to benefit from the already achieved leadership position and competitive advantage.

Furthermore, the experience of the Hungarian case study cities demonstrates how cooperation with local district heating companies influenced results in residential energy efficiency improvement. In Nyíregyháza the district heating company was acquired by the local authority already in 1992. Apart from district heating provision it operates as a more comprehensive energy service company. It engages in energy efficiency related awareness raising activities and also provides technical assistance and advice (for example through the availability of an infra-red camera to assess building insulation and heat loss). It is also active in the implementation of RES projects. Furthermore, local authority ownership enabled early implementation of the NYITÁS (Opening) district

heating modernization program. NYITÁS was recognized as best practice and received the national district heating Innovation Price. In contrast to the case of Nyíregyháza, in Tatabánya difficulties were experienced by the local authority in acquiring majority ownership in the energy supply infrastructure. This contributed to the relatively lower success of energy efficiency improvement programs in the city. Recent acquisition by the climate action oriented local authority of majority ownership is expected to bring substantial improvements in company operation and in the process of district heating modernization.

The local authorities of the Hungarian case study cities also engaged in horizontal coordination for climate action with education institutions within their jurisdictions. In Tatabánya the local government cooperated with education institutions from nursery school to college level. A multi-year Environmental Education Program was carried out to increase environmental awareness of children from nursery school through elementary to high school level. The program intended to reach out to the adult population by engaging children in more environmentally friendly behavior. A new officer position was created at the local authority to run the initiative. Furthermore, the municipalities of both Tatabánya and Nyíregyháza engage in climate action related cooperation with higher education institutions. Tatabánya City Council supports the initiative of the local college to become a green college and eventually a green university. This will be achieved through changes in operations and curriculum. In the currently business education oriented institution new programs will be initiated in green engineering and greening of the public sector. Through this transformation the college will also support the process of

the green industry becoming an additional pillar of the local economy. As for Nyíregyháza, the local college plays a role in climate change action by hosting the newly founded regional energy agency. Here the outreach to schools regarding energy efficiency mainly took place as part of the Display campaign of the Energie-Cités network.

Apart from the organizations mentioned above, the local authority of Tatabánya also engaged in horizontal cooperation with other local actors. The county level civil protection agency was a key partner in adaptation related awareness raising and planning. Hospitals and religious organizations were also approached by the council as possible partners during the expansion of local climate action. Local businesses, including the public transport and water utility company participated in the annual “Open Doors” event series, and other environmental and education initiatives of the city. Furthermore, Tatabánya initiated environmental programs targeting the corporate social responsibility needs of local companies (for example waste collection with the participation of company representatives). These cooperative arrangements can later be developed into more comprehensive climate action outreach programs.

The above examples demonstrate how vertical coordination mechanisms between local organizations shaped climate action at the Hungarian case study cities. In the next section vertical coordination taking place between local authorities will be explored in the Hungarian context.



### **6.2.3 Horizontal coordination between local authorities**

The two Hungarian case study cities both engaged in horizontal coordination with other local authorities in the field of sustainable energy and climate action through membership in national and transnational networks of sub-national governments.

Tatabánya and Nyíregyháza joined different international networks. Tatabánya is member of ICLEI Local Governments for Sustainability, while building on the successes of residential energy efficiency improvement programs Nyíregyháza joined Energie-Cités. The latter is a network of European local authorities aiming to promote sustainable energy solutions at the local level. Tatabánya also joined a national networking initiative for sub-national climate action, the Hungarian Association of Climate Friendly Settlements. The city is a founding member and also cooperates with the Research Center for Sociology of the Hungarian Academy of Sciences, the host of the Association. This relationship has been particularly important during the development of the climate change strategy of Tatabánya.

The Hungarian case study authorities benefited from network membership in various ways. They participated in programs, received additional professional support, shared best practice and gained recognition for local achievements. Being members of city networks for sustainable energy and climate action also contributes to building an environment friendly city image. In these ways horizontal coordination through national

and transnational networks of sub-national governments played an important supporting role in climate action at the Hungarian case study cities.

In the following section vertical coordination mechanisms are explored in the Hungarian context.

#### **6.2.4 Vertical coordination between governance levels**

Local governments operate in a regional, national, supranational and international context. Therefore vertical coordination with institutions at other governance levels influences local level climate action. The experience of the Hungarian case study cities showed that vertical coordination mechanisms with the international level played a crucial role in the continuation of residential energy efficiency support programs. Financial and technical assistance connected to EU membership was key in the waste and wastewater management sector, as well as in the foundation of a regional energy agency. Coordination with regional level offices of national authorities also supported local level climate policy, as demonstrated by the example of the Tatabánya Heat and UV Alert Plan.

The Green Investment Scheme (GIS) represents vertical coordination with the international level influencing local climate action at the Hungarian case study cities. The GIS is financing mechanism connected to sales of emission rights under the Kyoto Protocol (Sharmina, Ürge-Vorsatz and Feiler 2008). It played a key role in the

continuation of earlier national residential energy efficiency support programs, in which both case study cities participated. Apart from ensuring the continuation of financing, the GIS also contributed to strengthening the environmental integrity of earlier programs through introducing stronger monitoring and verification requirements and the use of renewable energy sources. Therefore the vertical coordination mechanism connected to the international climate treaty supported climate action at the Hungarian case study local authorities.

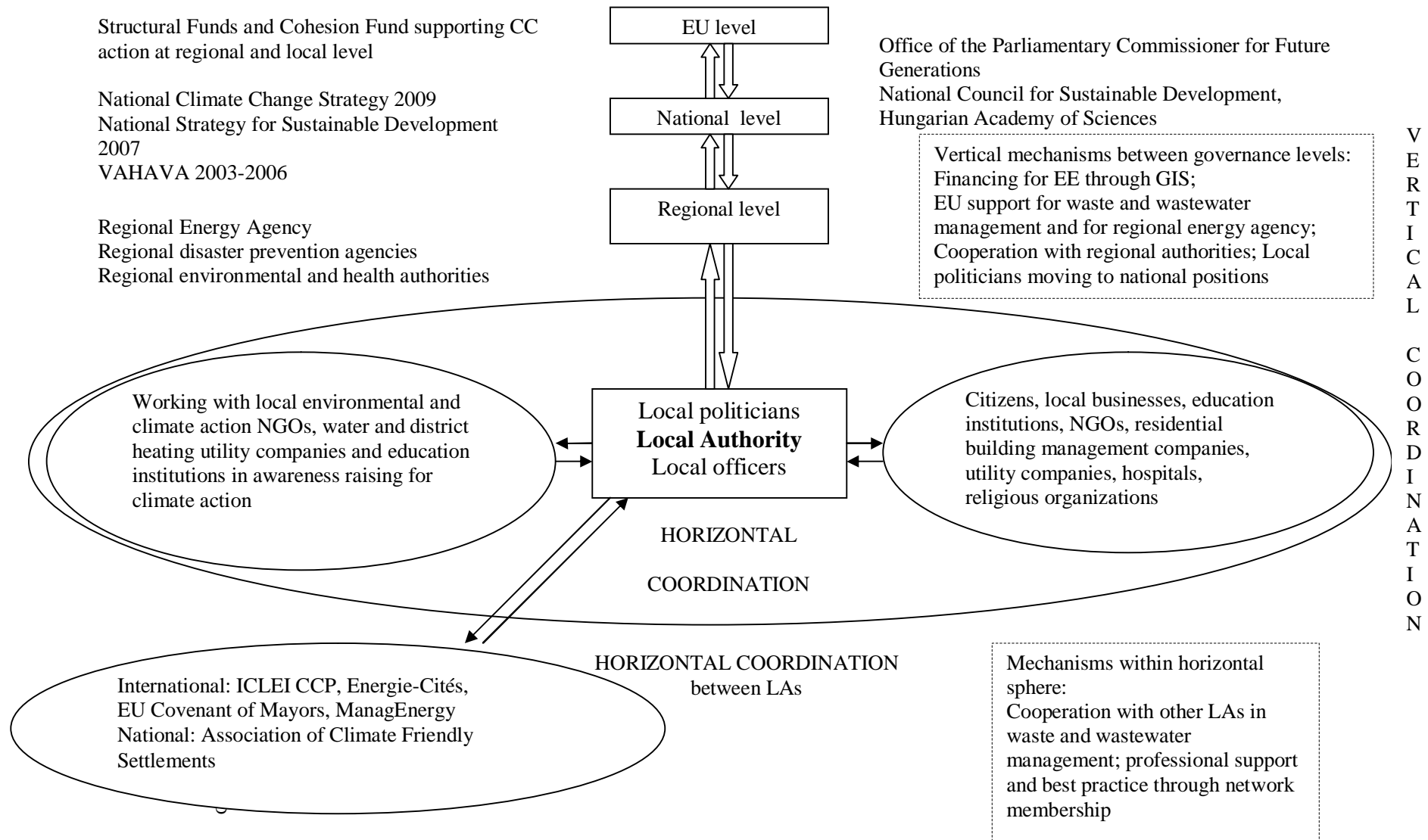
Waste and wastewater management is an area where supranational coordination mechanisms involving regulatory pressure and financial support from the EU influenced local level climate action in Hungary. EU membership drove investments in these sectors through relevant directives and co-financing from Structural Funds. Development of new and modernized waste and wastewater treatment facilities and the re-cultivation of old waste collection sites took place involving both Hungarian case study cities. Furthermore, due to economies of scale these projects were carried out in regional and county level cooperation with the participation of Tatabánya and Nyíregyháza. Therefore the waste and wastewater management sectors represent an example of simultaneous horizontal and vertical coordination for climate action and addressing environmental problems at the sub-national level.

Sustainable energy action in the Nyíregyháza region represents a further example of simultaneous horizontal and vertical coordination for local level climate action. The ENEREA Észak-Alföld Regional Energy Agency was established with the support of the

EU with the main aim of promoting energy efficiency and sustainable energy sources in the Nyíregyháza region. ENEREA is a member of ManagEnergy, the network of European energy agencies, which insures cooperation and the sharing of best practice among members (EC 2011c). Stakeholders involved in the regional energy agency include the local and county authorities, private and civil organizations, regional development council, and the local higher education institution. This EU induced cooperation can be an important contributor to putting climate action explicitly on the municipal agenda, as it provides networking space for actors already involved in waste and wastewater management, energy efficiency and environmental initiatives in the city.

Vertical coordination between local authorities and regional institutions is often compulsory, for example with regional environmental protection agencies, and health authorities. The case of Tatabánya provides an example of going beyond compulsory collaboration in climate action. Increasing cooperation with the regional environment protection agency and with the regional disaster prevention agency contributed to the success of the EU award winning local Heat and UV Alert Plan. Increased cooperation took place by the regional environment protection agency providing data on company emission levels, and by enhanced awareness raising efforts in coordination with the disaster prevention agency. These cooperative initiatives can be the foundation of a more comprehensive regional partnership effort for climate action in Tatabánya and the surrounding region.

The above outlined mechanisms involving the Green Investment Scheme, regional cooperation in waste and wastewater management, foundation of a regional energy agency, and joint efforts in local climate action plan development demonstrate how vertical coordination processes support municipal climate action in the EU member, transition country context. In the following section barriers, drivers and motivating factors of local level climate action are explored, based on the experiences of the Hungarian case study cities.



**Figure 6 Actors and relationships in local authority level climate action in Hungary**

## **6.3 Drivers and barriers**

City governments engaging in climate change action operate in a wider national and international context. They are confronted by several internal, external and mixed barriers (those which are interconnected) in setting and reaching targets to tackle climate change. At the same time several drivers and motivating factors encourage them to engage in climate change policies and they often enjoy co-benefits of such initiatives. This section explores general barriers of climate change action at the local level experienced in Hungary. Furthermore, drivers of local level climate change action and factors that characterize cities regarded as Hungarian front-runners are summarized.

### **6.3.1 Barriers at the local level**

Local level climate change action faces several obstacles in Hungary. Some of these originate at the national level, while others result from specific circumstances in individual cities. An overarching difficulty faced by local level climate change action originates in lack of financing both on the national and local level. Financial difficulties faced by the national government trickle down to local authorities for example in the form of delays in financing of state co-financed building refurbishment programs. Constraints also arise through the financial implications of opposing sectoral investment needs. Climate change action this way becomes one among the conflicting issue areas including cultural and recreational investments. This means for example that energy efficiency improvement needs compete for example against city

investments to put up statues, as well as building swimming pools and other sport facilities.

Financial constraints are closely connected to ownership issues of public companies and institutions operating in the jurisdictions of local authorities. Underinvestment in state owned companies makes it difficult for local authorities to commit to ambitious climate change targets. Lack of funds in public transport companies owned by the state negatively affects local level greenhouse gas emission reduction initiatives in the transport sector. For example the climate aware Tatabánya local authority cannot influence sufficiently the operations of the state owned local public transport company. The case of the hospital in Tatabánya provides another example. The local authority proposed working in partnership to improve services and efficiency of the county authority operated local hospital, however the proposition was declined. At the same time the district heating company was purchased by the local authority of Tatabánya. This carries positive implications for climate change action as city leaders are committed to modernization of the obsolete district heating system and improvement of company services.

Financial and ownership related constraints are not the only barriers affecting local level climate change action in the Hungarian case study cities. Political conflicts and disillusionment of voters in politics proved to be relevant barriers as well. As a result of political opposition city leaders had to abolish plans to improve the bicycling infrastructure in Tatabánya. Low levels of voter turnout at the local elections was a very likely contributor to the civil organization supporting residential building refurbishments not receiving mandate to be members in the local assembly. This in



turn resulted in lower lobbying power within the assembly for residential energy efficiency project financing. Furthermore, the lack of technical expertise among local politicians can act as an additional political barrier to local level climate change action. The experience of the two Hungarian case study cities provides a contrast in this respect. In one of the cities the presence of an engineer in the political leadership strongly contributed to addressing primary and secondary district heating infrastructure modernization early on. In the other city the politician coming from an architectural background did not get in the city assembly after the local elections. The earlier very active Housing Committee was soon abolished because of lack of sufficient expertise and commitment from politician to keep the issue on the agenda.

Local authorities are also constrained by the overall context within which they operate. Barriers of external or contextual nature are particularly difficult to abolish, while local authorities have more means to remove internal barriers. Socio-economic circumstances are one of the external barriers that require substantial time to change. The global credit crisis represents an external economic influence which posed a barrier to local development along the lines of climate change action. The experience of one of the Hungarian case study cities demonstrates this. As a result of the credit crunch a company producing solar panels decided to postpone planned investments in Tatabánya. The delay of the solar panel company investment also hinders the process of developing green industries as a supplementary economic pillar for the city.

Local social circumstances can also act as contextual barriers of effective climate change action. The socialist inheritance of Hungary is the case in point. Hungarian society is characterized by relatively low levels of environmental awareness, and

expanding consumer culture, which proves to be a substantial contextual barrier for local level climate change action. Slowly increasing income levels and availability of product supply after the scarcity experienced during socialist times result in high propensity to consume among citizens. The socialist inheritance is also the cause of unfamiliarity of the population with civil society action, both in terms of participation, as well as in terms of benefiting from such action. The perceived low success of energy efficiency related information programs ran by both the local authority and an NGO in Nyíregyháza demonstrate this.

Urban planning characteristics and already existing infrastructure constitute further contextual barriers that local authorities engaging in climate change action must face. The case of Tatabánya provides a good example of this. Being a long city with several sub-centers, efficient public transport faces difficulties, which hinders transport related greenhouse gas emission reductions. External and fixed barriers are especially problematic as the local authority is unable to significantly alter these circumstances and has no choice but to work under the above conditions.

In this section general barriers of external/contextual and of internal nature to local level climate change action were summarized. Local authorities do not have direct influence over external barriers therefore these are more problematic to deal with. External barriers identified based on the experience of Hungarian case study cities are financial constraints both at the state and at the local municipal level, the credit crises affecting investment decisions of local private companies, unfavorable urban planning characteristics, and unfavorable socio-economic context resulting from the socialist past (including expanding consumer culture, low environmental awareness and

relatively limited experience in grassroots action). Internal barriers that are more specific to individual local authorities and upon which they have more direct influence include need for politicians with expertise in climate change action related fields, dealing with political conflict, and the need to mobilize voters.

### **6.3.2 Drivers, co-benefits and factors making front-runners**

Drivers of local level climate change policy can be sector specific, closely connected to the removal of barriers, and to the co-benefits of sectoral policies. At the same time several drivers exist, that support local level climate change action in a general way.

An example for a sector specific barrier, the removal of an external, transport related obstacle took place in Nyíregyháza through the completion of the motorway. The city earlier experienced strong transit traffic. The completed motorway channels transit traffic around the city, thereby reducing transport related emissions occurring inside the jurisdiction of the local authority.

Operating in a supportive national context was a driver in the initial stages of energy efficiency programs in Nyíregyháza, as the first freely elected national government supported these measures.

An example of a more general driver of local contextual nature involves political processes and voting behavior. Climate change action initiatives that increase the popularity of local politicians and bring votes at the elections are more likely to be pursued. An example of this process is the influence on citizen voting behavior of

reductions in energy costs which occur due to energy efficiency programs initiated by the local authority. This acts as an important political driver for local level climate change action.

Intended or unintended co-benefits of local policies that primarily aim to tackle climate change can contribute to their acceptance. The Climate Strategy of Tatabánya names several co-benefits of future or already initiated climate policies. Some of these are a result of changes in the economic structure of the city. As a former heavy industry center, Tatabánya was a host to several power plants and polluting industries. As a result of industrial restructuring heavy industrial activity subsided, with consequent closing of coal burning power plants. At the same time remaining power stations also switched to burning natural gas. As a consequence greenhouse gas emission reductions took place, with related co-benefits of reduction in air pollution and consequent health benefits. Further climate change mitigation co-benefits that are mentioned in the strategy include higher level of autonomy and energy security. These are expected to result from the intended increase in renewable energy generation and energy efficiency measures. Reduction in fuel poverty also belongs to the group of sustainable energy solution related co-benefits. Measures to adapt to climate change bring further co-benefits. The strategy mentions the synergies between preparation to heat waves and dealing with days with high UV levels. Common co-benefits of mitigation and adaptation measures include creating a legacy of leadership for the city in climate change action, including good opportunity for city marketing, as well as strengthening of the city community around the climate change issue.

Drivers of Hungarian case study cities becoming front-runners in climate change action were mainly personal and financial factors. At a later stage receiving acknowledgement in the form of prizes also played an important role. Personal commitment and the availability of funding for initiatives were identified as main drivers of climate change action in Tatabánya and Nyíregyháza. The personal commitment of mayors and other leading politicians has been crucial. Dedicating sources of funding for energy efficiency and environmental education programs has depended on political decisions. At the same time the availability of external funding in the form of EU calls for proposals has also been crucial. In the case of Tatabánya the wage cost of the climate change officer was earlier financed by the pollution fine money paid by the local power station. As the power station switched to less polluting fuels, this source of funding has disappeared. At the same time with EU accession more EU funds became available. Participation in EU tenders currently plays an important role in the continuation of climate change action in the city.

Furthermore the experience of the Hungarian case study cities showed that once a city has engaged in climate change action receiving external acknowledgement became an important motivating factor. Though receiving prizes (for the Heat and UV Alert Plan Tatabánya and for district heating innovations in Nyíregyháza) the creation of climate change action related positive city image arose as an important co-benefit.

Personal commitment, availability of funding and acknowledgement of actions can therefore be identified as the three key factors that made the Hungarian case study cities front-runners in climate change action.

**Table 10 Barriers and drivers of local authority level climate action in Hungary – summary**

<b>Barriers</b>
Political conflict within local council
Disillusionment of local voters
Lack of expertise in CC action relevant fields among local politicians
Local utility company control not in LA's hands
Local level financial constraints, conflicting local investment needs
Financial constraints of national government
Global credit crisis
Urban planning characteristics
Socialist legacy: expanding consumer culture, low level of interest in global environmental issues, limited experience with grass-roots action
<b>Drivers/Success factors/Co-benefits</b>
Personal commitment of LA politicians and officers
Supportive national policy framework
Aknowledgement and prizes available
Presence of co-benefits
Availability of funding

*White: internal/local factors*

*Grey: external/contextual factors*

*Dark grey: both*

Sources: Interviews

## Summary

Climate action induced by environmental, public health and fuel poverty concerns developed in distinctive ways at the two Hungarian case study cities. In Tatabánya a multi-year environmental education program preceded local level climate policy. Climate action was later explicitly put on the municipal agenda by adopting the Settlement Climate Strategy and the Heat and UV Alert Plan. At the same time Nyíregyháza did not engage explicitly in climate action. While the results of district heating modernization and residential energy efficiency programs led to a leadership position in sustainable energy policy, efforts to improve energy efficiency were not expanded further into comprehensive climate action, and adaptation concerns were not addressed.

Furthermore, while several projects relevant for climate policy were completed at the two case study locations, there is space for deeper integration and expansion of climate and sustainable energy action in Tatabánya and Nyíregyháza. More comprehensive climate action would enable better utilization of already accumulated best practice, and the strengthening of environmental integrity of the programs. It would also contribute to attracting green industries to the cities and EU and national funds for the expansion of sustainable energy and climate protection initiatives. Further steps in climate action, including stronger policy integration, the development of comprehensive climate and sustainable energy action plans, as well as the setting of ambitious targets are yet to take place at both case study municipalities.

The Hungarian cases demonstrated that committed individuals are a key driving force behind local authority level climate action. In the case of Tatabánya and Nyíregyháza the efforts of leading local politicians were crucial in putting and keeping sustainable energy and climate action on the municipal agenda. They also created officer positions at the local authority to provide professional expertise within the organization in developing and implementing sustainable energy and climate policy. Furthermore, based on local best practice, politicians were successful in establishing themselves as issue leaders in sustainable energy and climate action at the national level. However, while individuals played a key role, direct public pressure to address global environmental and sustainability issues is relatively low in Hungary. At the same time through the demand for energy efficiency refurbishment programs public opinion indirectly supported climate action at the case study cities.

Horizontal coordination mechanisms within the local authority, as well as between local authorities also played a role. NGOs, private businesses, district heating companies and education institutions surfaced as key stakeholders supporting city councils in climate action related initiatives at the Hungarian case study localities. Furthermore, public transport companies, hospitals, religious organizations emerged as additional stakeholders with whom cooperative arrangements could be strengthened. The Hungarian case study authorities engaged in horizontal coordination through joining transnational and national networks of sub-national governments for sustainable energy and climate action. They benefited from network membership through participation in programs, receiving additional professional support, sharing best practice and gaining recognition for local climate action



achievements. Being members of city networks also contributed to building an environment friendly city image.

Vertical coordination mechanisms between local authorities and actors at other governance levels also influenced climate action at the Hungarian case study cities. These mechanisms included the Green Investment Scheme as an international financing source for residential energy efficiency improvements; EU regulation and funding induced regional cooperation in waste and wastewater management; EU supported establishment of a regional energy agency; and joint efforts in local climate action plan development with specialized (environmental, health, disaster prevention) authorities at the regional level. These examples demonstrate how vertical coordination processes enabled local level climate action in the EU member, transition country context.

While several drivers of local level climate action were identified through the experience of the Hungarian cases, substantial barriers were also present (for an overview of barriers and drivers, see Table 10). Some of these drivers and barriers are internal, while some are of an external, contextual nature. Local authorities do not have direct influence over external barriers, therefore these are more problematic to deal with. The presence of drivers and co-benefits contributes to the removal of barriers. External barriers identified based on the experience of Hungarian case study cities include financial constraints both at the state and at the municipal level, the credit crises affecting investment decisions of local private companies, unfavorable urban planning characteristics, and unsupportive socio-economic context connected to the socialist past (including expanding consumer culture, relatively low concern about

global environmental threats and limited experience with grassroots action). Internal barriers upon which individual local authorities have more direct influence include the limited number of politicians and officers with expertise in climate action related fields, problems of dealing with internal political conflict, and the need to mobilize voters. Drivers of local level climate action in Hungary included the allowing national policy context in some related fields (as demonstrated by early action in district heating modernization in Nyíregyháza) and the presence of co-benefits in the residential energy efficiency field. Personal commitment, availability of external funding sources for residential energy efficiency improvement and acknowledgement of actions were identified as three key factors that made the Hungarian case study cities front-runners in climate action.

In the following chapter the governing of climate action in the UK and the Hungarian case study cities is analyzed according to the five modes of governance outlined by Bulkeley *et al.* (2009).

## **Chapter 7   MAINSTREAMING CLIMATE ACTION AT THE CITY LEVEL IN THE UK AND HUNGARY**

Local authorities fulfill tasks according to their powers, functions and competencies. In the process of carrying out assigned and voluntary tasks they interact with a range of stakeholders within their jurisdictions, and with actors at other governance levels. As outlined in previous chapters national level frameworks create the context within which local authorities design their own policies to tackle climate change. International and supranational climate policy processes also play an important role, as well as membership in transnational networks of sub-national government pursuing climate action. After setting up the multilevel governance context of local authority level climate action in Chapter 4, and outlining the emergence and actors of local climate policy processes in the UK and Hungary (in Chapters 5 and 6 respectively), this chapter focuses on how climate policy has been mainstreamed into the operations of local authorities at the four case study cities.

Mainstreaming climate action can take place in various forms. Bulkeley and Kern (2006) identify self-governing, provision, authority (regulation) and enabling as the four main modes of governing climate action at the local authority level. To this, Bulkeley *et al.* (2009) add partnership as the fifth main governance mode. *Self-governing* refers to the capacity of local authorities to govern their own operations; *provision* involves the local authority delivering services and resources; *regulation* reflects the regulatory powers of local authorities; *enabling* is the capacity of city

councils to influence actions of other actors (through financial incentives, awareness raising and recognition of achievements); while the local authority can also work in *partnership* with other stakeholders through voluntary agreements and project implementation (Bulkeley *et al.* 2009).

Measures implemented in local authority service areas (as described in Chapter 2 in the second tier of the analytical framework) are classified according to the five modes of governing climate change in cities (see Appendix 6 for an overview). Policy instruments included in the analysis were gathered through review of climate change and environmental strategies and action plans of case study cities, as well as interviews with council officers and participant observation at meetings and conferences. The analysis includes measures that are specifically addressed to tackle climate change (as specified in climate change strategies and action plans), and measures that are not addressed as such but contribute to increasing resilience or reducing greenhouse gas emissions. Some instruments (for example cooperation in the field of education) can be associated with more than one way of addressing climate change at the local level and are therefore included at several governance modes.

In the following sections mainstreaming of climate action based on the experience of the four case study cities is outlined according to the five modes of governance.

## 7.1 Self-governing

Self-governing of climate action refers to the capacity of local authorities to manage their own operations. This section focuses on measures undertaken by councils of case study cities that contribute to tackling climate change at local authorities as organizations. Measures taken into account included those implemented in council buildings (civic offices, schools, social housing) and council managed property (such as parks and public spaces), as well as those regarding organizational processes within councils. Intended measures as outlined in climate change strategies were also included in the analysis in some cases, to demonstrate the awareness of local councils of actions they must take at the organizational level and as leaders of communities.

The implementation of mitigation related measures at the organizational level was widespread among case study cities. These measures included the use of sustainable energy technologies for the energy supply of council buildings and services, energy and water efficiency surveys and measures, staff transport plans, as well as climate neutral development guidance. Adaptation related self-governing has also been observed at the councils. Organizational measures to address adaptation needs included planting trees and assessing subsidence risk in council parks and property, flood management measures, assessing adaptation risk at new investments, and establishing a connection between a council organized adaptation conference and a local cultural event.

As the development and implementation of mitigation and adaptation related measures represents new tasks and responsibilities at local authorities, the

appointment of climate change and energy officers is an indicator of addressing these issues at the organizational level. Three of the case study cities had both climate change officers and energy officers, while Nyíregyháza, the city that did not engage explicitly in climate action, only had an energy officer. These officers also played an important role though raising awareness among fellow staff and acting as agents who integrate climate change and sustainable energy considerations into council operations.

In terms of policy integration at the organization level the UK case study cities were at an advanced stage in the self-governing of climate action. Several factors exist that contributed to this. One reason is the longer history of sustainable energy and climate policy at the case study cities in the UK. Sustainable energy action already started in these cities in the early 1990s, which has been reframed and expanded into more comprehensive climate action. During this process there was more time to develop the internal institutional structure, and to accumulate human resources and expertise to integrate climate change considerations into council operations.

While the council of one of the Hungarian case study cities, Nyíregyháza has also been implementing residential energy efficiency policies from the early 1990s and accumulated expertise in the field, the reframing of energy efficiency policy to climate change action did not take place in the city. This is most likely due to the lack of policy brokers for climate action to facilitate the shift. In Nyíregyháza the implemented organizational measures were more sporadic than systematic. They included energy efficiency improvements in street lighting and in lighting systems of council buildings, as well as the EU co-financed heating system modernization

implemented at a local school, which also incorporated RES. At the same time adaptation considerations were not taken into account.

Another reason for Hungarian case study cities being less active in self-governing climate action can be connected to financing related difficulties. While both UK case study cities refurbished and opened exemplar houses to demonstrate renewable energy and energy efficiency technologies, Tatabánya has not been able to find the financing sources to refurbish a building for demonstration purposes. Financial difficulties also surfaced in the context of covering the salary of council staff focusing on climate and sustainable energy issues. In the case of Tatabánya the wage of the climate change officer has originally been covered from air pollution fines paid by the local power plant to the council. However, as the power plant switched from coal to natural gas fuel, pollution decreased and the amount of fine money paid into the council environmental fund has also been significantly reduced.<sup>11</sup> Therefore other ways (such as applying for EU projects) had to be explored to cover the wages of officers dealing with climate change issues.

Energy efficiency improvement of public lighting has also been postponed as a result of the reduction of pollution fine related funding and tenders requiring council co-financing. Other, non-climate action related projects enjoying priority and depleting available funding sources also had an impact on self-governing climate change action at the Hungarian case study cities. For example in Tatabánya while financing sources have been devoted to reconstructing the local theatre and swimming pool, these

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<sup>11</sup> From HUF 135 million (EUR 511,000) in 2003 to HUF 720,000 (EUR 2,724) in 2008 (exchange rate on March 15<sup>th</sup> 2010, EUR 1 = HUF 264).

projects did not include renewable energy and energy efficiency elements, most likely as it would have increased initial, up-front investment costs. On the positive side there are plans to utilize renewable energy sources for pool heating in the future based on the shift towards sustainable energy services at the newly acquired local heat power plant.

External sources of funding and innovative financing mechanisms were utilized at one of the UK case study cities to overcome similar problems. In Woking the Leisure Centre and Pool reconstruction project was carried out with the use of various modern sustainable energy technologies (including solar thermal; PV; and hydrogen fuel cell combined with CHP for electricity, heating and cooling, also connected to the district heating network). While the council provided some of the financing for the project, substantial external support was secured both in terms of funding and technology (the fuel cell technology was provided by the US Department of Defense). The innovative measure of establishing a council owned arms-length company to manage sustainable energy projects and secure the financing for them has been a key factor in the success of Woking. Setting up the Thamesway ESCO also enabled the council to export sustainable energy related expertise to other cities in the UK, generating further profits.

While more mitigation related actions were implemented, three of the case study cities have also been active in integrating adaptation considerations into council operations, forming a part of self-governing climate action. At the same time they have also been cooperating with regional organizations including disaster relief agencies in the field of adaptation (see more on this in Chapters 5 and 6, and in section 7.5 on



partnerships). The strategic climate policy documents of Leicester, Woking and Tatabánya all include adaptation measures. The most comprehensive approach was adopted by Leicester City Council, in form of an Adaptation Action Plan. The council also developed a Local Climate Impact Programme, including the creation of an Adaptation Risk Register of weather events that had an impact on service provision in the past. Woking Borough Council also implemented adaptation related measures. These included a Strategic Flood Risk Assessment and flood storage measures during the Woking park pond restoration project. Climate change related consideration were taken into account during the planning of outdoor play facilities for children.

Of the two Hungarian case study cities only Tatabánya addressed explicitly the issue of climate change adaptation. A local Heat and UV Alert Plan was developed and integrated into council practices. The Climate Change Strategy also mentions heat waves, forest fires and extreme amounts of rainfall as impacts that the local authority must prepare for. The need for specific measures, such as water efficiency and tree planting are also included. Providing the capacity to accommodate refugees in the event of extreme flooding in other parts of the country has also been included among adaptation related tasks of the council.

For an overview of measures representing self-governing of climate action at case study local authorities, see Appendix 6.

## 7.2 Provision

Local authorities (among other measures) can influence climate action in the areas of their jurisdictions through delivering services and resources in a climate friendly manner. In these cases governing climate change takes place through service provision by the local authority to the community.<sup>12</sup> At the same time local authorities often do not own the utility companies that are responsible for service delivery in the areas of their jurisdictions. In these cases councils can only influence service provision indirectly to ensure that it is conducted in a climate friendly manner. In order to increase council influence over the provision of local services several case study authorities have made efforts to acquire majority ownership in local utility companies.

Based on the experience of the four case study cities governing through provision mainly occurred in the field of mitigation. It was carried out through services provided by utility companies fully or partly owned by the local authorities, as well as through modernization of transport infrastructures. Adaptation related provision activities of city councils were more limited and involved flood prevention in vulnerable areas, as well as efforts to reduce extreme weather event related damages through rainwater management.

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<sup>12</sup> Some of the measures classified as belonging to provision overlap with those discussed under self-governance. While the measures belonging to self-governance are primarily targeted at the local authority as an organisation, similar measures under provision are targeted at the community as a whole.

Energy service management was an area where governing climate change action through provision took place in both the UK and the Hungarian case study cities. In the UK cases local authority managed CHP and renewable energy systems contributed to supplying heat and electricity to the community. This, apart from reducing greenhouse gas emissions from council operations also had a considerable demonstration effect (for example the PV canopy outside Woking railway station, as shown in Illustration 6). Small-scale district heating systems were also developed in Woking and Leicester, with assessment of possibilities for their expansion.



**Illustration 6 PV canopy outside Woking railway station**

Furthermore, Woking has been successful in making the switch from small-scale to larger scale projects, enabling the council to provide more energy services based on

sustainable sources. A private wire system was developed in the borough enabling the council to sell green electricity directly to the consumers without having to connect to the national grid. A key success factor was the establishment of a council owned energy service company, Thameswey. This ESCO has also been involved in the development of local energy efficiency support programs. Furthermore, in a public private partnership with British Gas Woking Borough Council facilitated the replacement of conventional boilers with efficient condensing devices.

The feasibility of larger scale renewable energy installations (a wind farm) has also been assessed in Leicester, where so far only smaller scale CHP and renewable energy systems were utilized. Overall, in both UK case study cities results were achieved through innovative measures in the provision of sustainable energy services to communities. There are plans for further expansion of these activities.

Provision of sustainable energy services at the two Hungarian case study municipalities was largely influenced by the existence of citywide district heating systems. A large proportion of residential housing (mainly buildings constructed using industrial technology from the 1960s to the 1980s) at the case study cities is connected to local district heating infrastructures. At the same time these systems were functioning inefficiently due to their obsolete state. While Nyíregyháza was successful in modernizing a large proportion of the district heating infrastructure, in Tatabánya the improvements on a similar scale are yet to take place.

Nyíregyháza City Council purchased the local district heating company after the post-socialist transition, in the early 1990s. This provided the basis for energy efficiency

improvement programs at the local authority, both in public and residential buildings. An innovative support program was initiated by the local authority for the modernization of the district heating infrastructure on the consumer side, while improvements on the supplier side were also carried out. As demonstrated by the case of Nyíregyháza, EU funds played a role in these modernization processes. The district heating company in Nyíregyháza carried out the heating system and energy efficiency modernization of a local school switching the energy supply to RES (pellets and wood chips as well as solar water heaters), as part of an EU co-financed project. In terms of other sustainable energy related improvements, city level energy service provision in Nyíregyháza was transformed through the installation of a large-scale CHP system at the local (privately owned) power plant.

Tatabánya City Council also intends to modernize the local district heating system. In order to be able to do this the council recently gained majority ownership in the local heat power plant, and also owns the local district heating company. These arrangements enable the council to influence infrastructure modernization and to install sustainable energy systems for energy service provision in the city. Significant reductions in greenhouse gas emissions already took place in Tatabánya as a result of closing one of the local coal fired power stations (which is not owned by the local authority). The fuel of the heat power plant was also switched from coal to natural gas, and large-scale CHP was installed. Possibilities for expanding the provision of green electricity in the city are also being explored, including a feasibility study on options for wind energy installations.

Provision as a way of governing climate action in relation to the transport sector

occurred through the development of the cycling infrastructure (or plans thereof) in the case study cities. In Woking and Leicester measures were already implemented through the establishment of bicycle tracks and storage facilities. Other transport related service improvements included real-time bus information systems and park and ride schemes in the UK case study cities. Building a new central bus station in Tatabánya contributed to rationalizing the public transport system of the city. It serves as an example of improved provision through a larger scale investment. At the same time the modernization of the obsolete railway station and the much needed establishment of direct access routes between transport hubs and the neighboring housing estates is yet to take place. The reason behind the delays of these necessary improvements is the lack of sufficient funding sources. Furthermore as Tatabánya City Council does not own the local public transport company, it could not play significant influence over the quality of the vehicle fleet nor over the creation of timetables, which were often found inadequate by the service users.

Improvement in the provision of waste and wastewater management services (including climate action considerations) was made possible by the availability of EU cohesion funds at the Hungarian case study cities. Large-scale, EU co-financed waste and wastewater management projects were implemented in the city of Nyíregyháza and the surrounding region. This included the utilization of biogas and modern recycling systems. Services for selective waste collection at individual houses are also advanced in the city. Tatabánya has also been active in exploring the possibilities for EU co-financed waste management projects. While modernization of wastewater treatment facilities has taken place, there is space for improvement in recycling and

selective waste collection services. Both of the UK case study cities have advanced recycling and selective waste management facilities and services.

Awareness raising related service provision by the local authority has been identified in the case of Tatabánya. With support from the EU the city has developed a voluntary carbon offset system thorough which local individuals and businesses can demonstrate environmental leadership (Tatabánya City Council 2011). They can offset their greenhouse gas emissions by purchasing climate tickets from the local authority. The council acts as an intermediary, establishing the connection between the regional carbon reduction projects and the voluntary financing mechanism.

For an overview of measures representing provision as a mode of governing climate action at case study local authorities, see Appendix 6.

### 7.3 Regulation

Regulation as a mode of governing climate action at the city level is represented by local authorities exercising their regulatory powers. This section provides an overview of regulatory measures found in climate change strategies and action plans of the case study cities that are intended to go beyond national regulations. Regulation as a mode of governing climate action has been a relatively less pronounced approach compared to other modes. While national level regulatory instruments and EU directives are being implemented by local authorities in both the UK and Hungarian case study cities, only few examples were found of individual regulatory action by city councils. These actions took place in the related areas of urban planning and building design. At the same time local authorities play a key role in the implementation of EU directives and national policies, even if they do not intend to go beyond the measures specified in them.

All three case study cities that explicitly engaged in climate action have been active in strengthening (or planning on strengthening) regulations for new buildings, as well as for refurbishment of large existing buildings. The Leicester Climate Change Action Plan contains regulations for new buildings to be zero carbon by 2013, compared to national plans that require the strengthening to take place by 2016. For new housing development on land sold by the council stronger energy efficiency standards are required than national ones. Woking also aimed to achieve advanced energy efficiency levels for new developments, based on performance relative to the Code for Sustainable Homes. Furthermore, a software was developed to support implementation of renewable energy solutions in the borough. In Tatabánya



regulations are planned to be modified to include the exploration of possibilities for sustainable energy solutions in new buildings and during the refurbishment of existing large buildings. Therefore in this Hungarian case study city the regulation concerns information provision, without requirement for actual implementation of the measures.

Urban plans at the local level are developed and implemented within and according to national spatial development frameworks. Local authorities can go beyond national policies by requiring stronger measures in order to let planning applications pass. They can also take the softer approach represented by the requirement for an assessment of possible measures without making implementation compulsory, or provide information about favored technologies. Both of the two UK case study cities developed supplementary planning documents that contribute to local climate action. These guidance documents concentrate on resource conservation measures, climate adaptation considerations and sustainable construction methods. Information about inclusion of these measures is required as part of planning applications.

In the transport sector one example was found among case study cities in the field of governing climate action through regulation: Woking has been planning to implement improved standards by 2010/2011 for taxi and private vehicles operating within the borough.

For an overview of measures representing local regulation in governing climate change action at case study authorities, see Appendix 6.

## 7.4 Enabling

Enabling is the form of governing climate change action that involves local authorities influencing the actions of other actors. This can take place through the provision of financial incentives, information, awards and recognition for climate action related achievements (Bulkeley *et al.* 2009). All four case study cities have been active in implementing measures in a range of sectors to enable stakeholders in as well as outside of their jurisdictions to engage in climate change action.

Local authorities have taken various measures to enable other stakeholders to engage in climate action in the buildings sector. Exemplar flats were developed by both UK case study authorities to demonstrate to citizens how water and energy efficiency measures can be implemented in buildings. Advice programs on technical aspects and funding opportunities were also initiated both in Woking and in Leicester. While one of the Hungarian case study cities, Tatabánya intended to develop a demonstration project in the form of an exemplar building, lack of funding proved to be an obstacle to implementation.

All four case study cities provided funding in some form for energy efficient refurbishment of residential buildings. Furthermore, Tatabánya City Council ran a (not yet fully completed) program for the removal of carcinogenic asbestos from buildings built with industrial technology. In Nyíregyháza the “Opening” support program achieved high participation rates and has contributed to modernization of

80%<sup>13</sup> of the building stock supplied by district heating, in the first ten years of the program. The success of the local program for heating system modernization also contributed to high participation rates in the state, local authority and flat owner co-financed national level refurbishment program. Loan and support schemes for insulation and other energy efficiency measures were also ran by the councils of the two UK case study cities. In Woking households affected by fuel poverty benefited from enhanced support. Social considerations and means testing also played a role in some of the Hungarian programs.

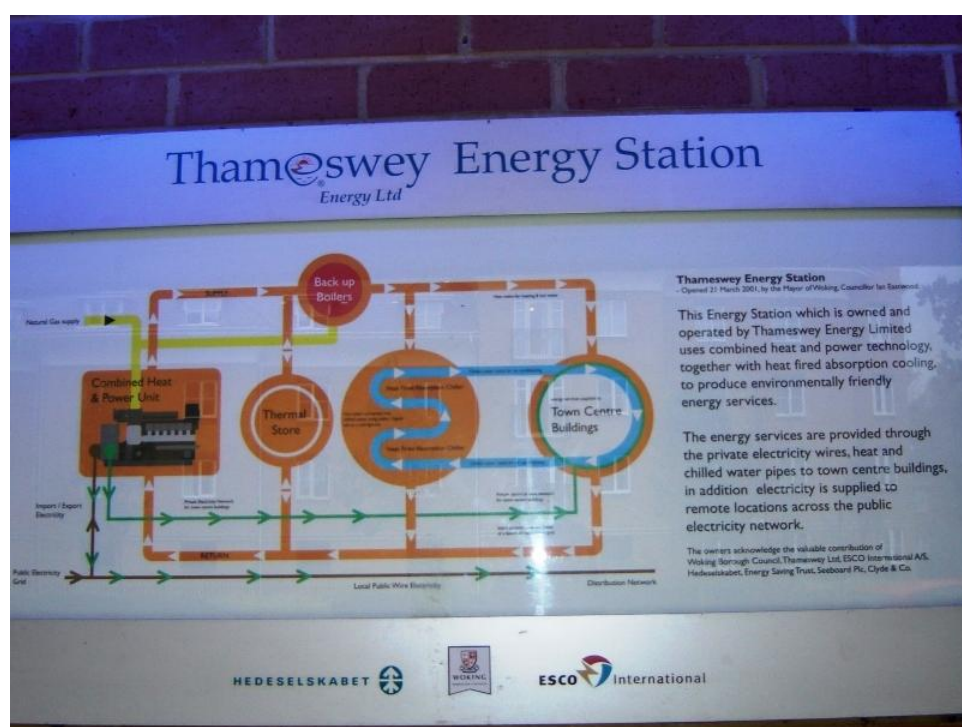
In the field of transport services only the two UK case study authorities engaged in governance through enabling. This took place in the form of assistance and encouragement in the development of travel plans for schools, universities and businesses, and communication about smarter travel choices. In the field of waste management, support was provided for setting up home composting devices in Woking and Nyíregyháza.

All case study local authorities have been running education and awareness raising campaigns in order to motivate local stakeholders to engage in climate change action. The enabling approach taken in Tatabánya involved raising awareness about climate change among school children and through them reaching out to the adult population. To reach this goal a five year Environmental Education Action Plan was implemented in the city, which involved climate change action related competitions in schools and citywide awareness raising events. Local civic organizations and private companies have also cooperated with the council through the “Open Doors” event series, which

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<sup>13</sup> Calculation based on data from Nagy (2008).

involved school group visits to the premises of organizations to learn about their environmental and other activities. In Nyíregyháza the “Display Campaign” helped to raise awareness about the importance of energy efficiency among school teachers and pupils. In Woking information tables were installed about sustainable energy projects throughout the city (see Illustration 7 for an example). Guided tours of the sustainable energy installations are also available. Furthermore, climate change and sustainable energy related achievements and best practice of Woking and Leicester were disseminated through the national Beacon Council Scheme in the UK.



**Illustration 7 Information on the functioning of CHP energy station outside the town center car park (in which the energy station is located)**

The two UK case study cities have been active in engaging local businesses in climate change action. Woking Council organized a series of breakfast meetings and an

exhibition about what businesses can do to tackle climate change. Leicester has also been actively reaching out to businesses. Climate change officers have been consulting individual private companies and helping them to create tailor-made climate change action plans.

One of the Hungarian case study cities, Tatabánya has engaged in governing through enabling in the field of health policy. The council developed and is implementing a Heat and UV Alert Plan in cooperation with local hospitals, health authorities and the disaster relief agency. The plan also received international recognition.

For an overview of measures representing enabling as a form of governing climate change action at case study local authorities, see Annex 6.

## 7.5 Partnership

Local authorities working in partnership with other stakeholders constitutes the fifth mode of governing climate change action in cities, as defined by Bulkeley *et al.* (2009). Cooperating with other public, as well as with private and civil actors at the local, county and regional level was an approach frequently utilized by councils when engaging in climate change action within their jurisdictions. The partnership approach was also utilized as part of carrying out environmental projects and programs.

In the UK from the 1980s and 1990s onwards government funding for urban regeneration projects (through City Challenge and the Single Regeneration Budget) was conditional on the establishment of local partnerships between organizations in the public, as well as the private and voluntary sectors (Darlow and Newby 1997). Furthermore, non-statutory Local Strategic Partnerships are also formed in England to provide a single overarching coordination framework (DCLG 2009b). The range of issues for which a partnership approach is required has been expanded to include local economic and sustainable development (Darlow and Newby 1997), as well as increasing energy efficiency and the reduction of fuel poverty [in the form of the Community Energy Saving Programme (DECC 2011e)]. At the same time as partnership working has increasingly become a basis of government funding, the effectiveness of these partnerships was questioned more and more. In accordance with this, based on the experience of Leicester, Darlow and Newby (1997) call for more quality partnerships focusing on specific issues, and a more organic approach that also encompasses wider community participation.

While in Hungary there is no national requirement for councils to establish partnerships for addressing local issues, there have been examples in the case study cities of local authority cooperation with other local as well as regional and national actors to implement climate change action related initiatives. These cooperative arrangements were issue specific and grew organically, without national requirement for them to take place.

Councils of both the UK and the Hungarian case study cities established partnerships with national institutions and local organizations to develop and implement sustainable energy and climate change strategies and action plans within their jurisdictions. For example the Climate Change Strategy of Tatabánya was written in cooperation between the city council and a unit of the Hungarian Academy of Sciences, while the development of the Leicester Climate change Strategy was led by researchers from the local DeMontfort University (with the support of council officers). The strategy development process was initiated by Leicester Partnership and Leicester Environment Partnership.

Local councils of UK and Hungarian case study cities have engaged in partnerships at the regional and county level to implement climate change mitigation related initiatives in a range of sectors. Cooperation to acquire funding for regionally relevant renewable energy projects and energy efficiency improvements occurred in both countries. Tatabánya City Council has been involved in the implementation of a regional sustainable energy and energy efficiency model program, while Nyíregyháza County Council is a founding member of the regional energy agency. Leicester City

Council cooperated with other councils at the regional and county level to acquire national funding for energy efficiency improvements in public buildings. With the participation of Woking Borough Council partnerships have been set up to reduce light pollution and to improve the cycling infrastructure in Surrey county. Woking also cooperated with other councils to reduce fuel poverty. Waste and wastewater management was another sector characterized by high potential for regional cooperation, with both case study countries providing examples.

Cooperative arrangements helped local authorities implement measures related to mitigation of climate change as well as environmental protection within their jurisdictions. In both of the Hungarian case study cities authorities cooperated with local NGOs to tackle the problem of illegal waste dumping. For this purpose “waste commandos” were organized with the participation of private citizens, NGOs, as well as the local authority and police. Furthermore, the council in Tatabánya also worked in close cooperation with a local scientific organization, which provides citizens with technical and administrative help in the preparation of applications for energy efficiency support programs. Woking Borough Council engaged in a partnership with British Gas with the aim to improve energy efficiency at local households. As part of the support scheme devices with low energy efficiency rating were replaced by more efficient condensing boilers.

Local authorities have also engaged in cooperation with education institutions in both case study countries. Several information and demonstration programs related to climate change action were carried out in local schools at the case study cities. For example Tatabánya City Council, in cooperation with the local disaster relief agency



was involved in the organization of a summer camp for school children, which focused on the prevention of and dealing with disasters. In Leicester one of the local universities, which was also involved in the development and monitoring of the local Climate Change Strategy and Action Plan, started a Master's program on climate change and sustainable development related issues. This contributed to the supply of local expertise for the development and implementation of climate action related policies in the city.

Local councils cooperated and consulted with other local organizations in both the UK and the Hungarian case study cities during the implementation of their climate change policies. The cases of Woking, Leicester and Tatabánya provide examples of cooperation with local companies in climate action related initiatives. Woking Borough Council initiated dialogue with local businesses regarding climate action through cooperation with Business Link Surrey, the Chamber of Trade and Commerce and the Asian Business Forum. Leicester City Council has also been reaching out to local businesses to encourage their engagement in climate action through the "Climate Change: What's Your Plan?" program. In Tatabánya local companies as part of their corporate social responsibility activities were participating in environmental and climate action programs organized by the council. Local authorities of case study cities that explicitly engaged in climate action (Woking, Leicester and Tatabánya) have also initiated dialogue with local civil and religious groups to be able to reach the wider population.

Adaptation to climate change has been addressed in the form of local and regional partnerships in both case study countries. The best practice and innovative approach

of Woking Borough Council also benefited regional cooperation in the field of adaptation within the Climate South East partnership. Public organizations were also brought together to address adaptation related issues at the local and regional level in Tatabánya. The Heat and UV Alert Plan was developed and implemented by the city council in partnership with several regional and local specialized agencies responsible for health and disaster relief issues. Regional cooperation for biodiversity conservation, flood management as well as fire protection has also taken place in Woking and Leicester.

For an overview of partnerships related to climate change action initiatives implemented at case study cities see Appendix 6.

## Summary

In this chapter mainstreaming of climate action at the four case study cities was summarized based on the five governance modes described by Bulkeley *et al.* (2009). These include self-governing, provision, regulation, enabling and partnership. The analysis was carried out focusing on specific sectors and local authority activity areas relevant to climate change action. Examples of climate policy measures were found at the case study cities with relevance to all five governance modes.<sup>14</sup> Mainstreaming of climate action took place in a similar manner at the case study locations (especially at those cities that explicitly engaged in such action). This indicates that front-runners both in the UK and in Hungary faced similar types of challenges and opportunities in governing climate action.

Self-governance as a mode of governing climate action provides the possibility for local authorities to reduce their operational costs and to avoid future costs through vulnerability reduction. It is a governance approach applied by all four case study authorities, across various sectors. As part of self-governing climate action several measures were implemented at council offices, local authority owned and operated schools and social housing, as well as in the management of local parks and public spaces. As the two cities in the UK have a longer history in sustainable energy and climate action they were at a more advanced stage in terms of systematically

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<sup>14</sup> Some measures could be classified as belonging to several governance modes at the same time. For example the Tatabánya Heat and UV Alert Plan represented enabling as well as partnership because it supported community action while being developed and implemented by the council in cooperation with other local stakeholders.

integrating related consideration into their operations. Climate and energy officers played a key role at all four case study authorities in integrating climate friendly measures into the operations of local councils. At the same time Hungarian authorities often lacked the seed funding needed for initial investment into climate policy measures in order to improve their operations. National funding sources for energy efficiency improvements in public institutions contributed to overcoming this problem in both case study countries (Salix funding in Leicester and “Light of our eyes program” in Tatabánya). The availability of EU co-financing also induced project implementation in council operated buildings (for example in the case of Nyíregyháza where RES and energy efficiency modernization at a local school was carried out with financial support from the EU). Local authorities have also engaged in self-governance in the field of adaptation. The most systematic approach was applied in Leicester, which included the development of and Adaptation Risk Register.

Provision as a mode of governing climate action has also been widely applied in the case study cities. It contributed to citizen engagement, mainly through climate friendly utility services. In the field of energy provision large- and small-scale sustainable energy projects were implemented in the case study countries. In the two Hungarian cities large-scale CHP was utilized in local power plants, while the two cities in the UK provided examples of micro-generation based on smaller CHP installations. In Woking and Leicester, the two front-runner cities in the UK relatively more progress has been made in terms of integrating renewable energy systems into local energy provision. Feasibility studies for expanding RES were carried out in all case study cities. District heating systems were also present at all four locations. District heating infrastructures in the Hungarian case study cities are large-scale and

were in need of modernization, along with the buildings connected to them. This provided an ideal chance for reducing greenhouse gas emissions through modernization and energy efficiency support programs in the buildings sector. Local authority ownership and influence over the operation of utility companies and infrastructures in the energy, waste and wastewater management as well as the public transport sectors was a key factor in providing services in a climate friendly manner in both countries. Large-scale projects for the modernization of waste and wastewater management infrastructures contributed to better service provision in these fields, including better recycling facilities and sustainable energy generation through biogas plants. In Hungary the availability of EU funds supported this process. In adaptation related service provision, mostly flood protection measures and improved rainwater drainage were implemented by the case study authorities.

Local regulations going beyond national ones were a less pronounced mode of governing climate action in the four case study cities. At the same time local authorities play a key role in ensuring compliance with EU directives and national regulatory instruments in the area of their jurisdictions. According to climate change strategies and action plans several regulatory instruments that intended to go beyond national ones were in the development stage at case study local authorities. Buildings and urban planning were the two sectors where authorities were already exercising their regulatory powers. Some of these regulations required planning applications to contain information about climate change mitigation and adaptation measures to be implemented as part of projects (in Woking), as well as requirements for the use of sustainable energy technologies as part of developments on land newly sold by the council (in Leicester). Other instruments, such as sustainable procurement regulations

of local authorities have simultaneously contributed to self-governance of climate action.

Enabling as a mode of governing was an approach widely applied at the front-runner local authorities. Education programs focusing on climate action were carried out in schools at the three case study cities that explicitly engaged in climate action. Awareness raising activities and advice provision took place through the development of exemplar buildings, organization of events focusing on climate change and other environmental topics, as well as updates on project implementation on public notice boards, in local publications and on council websites. As Nyíregyháza mainly engaged in the implementation of energy efficiency projects, climate action related information provision in this city focused on the efficient use of energy. The councils of Woking and Leicester have also been actively reaching out to the local business community, providing information and assistance in carrying out climate action related measures at these organizations. The UK case study cities were generally at a more advanced stage of institutionalizing enabling through detailed advice provision on how community members can contribute to fighting climate change.

Enabling has also taken place through local authority financial support for the implementation of measures mostly in the field of greenhouse gas emission reductions. Local authority financed and co-financed residential energy efficiency support programs played an important role in the Hungarian case study cities. In Nyíregyháza widespread participation was achieved, making the city a countrywide success story in terms of residential energy efficiency improvements. The UK case study cities also initiated residential energy efficiency support programs, mostly

focusing on fuel poor households. At the same time there is need for expansion of these programs to reach ambitious national targets for mitigation in the residential buildings sector. In the field of adaptation related enabling Tatabánya achieved international recognition for the local Heat and UV Alert Plan, which prepares the community to react in a systematic way to the impacts of climate change.

Climate action related measures and projects were often developed and implemented through the city council working in partnership with other local and regional actors. Partnership was therefore a relatively important form of governing climate action, which occurred in all four case study cities. The partnership approach in the UK was further supported by a national policy framework encouraging cooperation between local authorities and other local actors, with project funding often made conditional on demonstration of cooperative arrangements. The experience of Hungarian case study cities also provided examples of councils cooperating with stakeholders from the public, the civil and private sectors to implement climate action related initiatives at the regional and local level. In Hungary these arrangements developed in a spontaneous manner, focusing on specific projects, as opposed to the national policy induced partnership approach applied in the UK. At the same time the UK case study cities also provided examples of organically developing, project focused cooperative arrangements (for example in the case of Leicester where the city council cooperated with the county level health authority and voluntary agencies to identify vulnerable households).

Measures in the case study cities were usually applied simultaneously, in the form of policy packages, representing different governance approaches. The first governance

mode, self-governance involves more the actions of local authorities as organizations. Others, including regulation, provision and partnership are relevant both to councils as organizations and to members of the community, while enabling mostly focuses on community engagement. Therefore the simultaneous application of the five governance approaches contributes most to the mainstreaming of climate action in cities, by reaching and engaging the largest number and type of stakeholders.

In the following chapter comparisons are drawn between the experience of UK and Hungarian case study cities based on the analysis carried out in this and previous chapters.



## **Chapter 8 COMPARISON OF THE UK AND HUNGARIAN CASES**

Based on the analysis carried out in the previous sections, this chapter focuses on the evaluation and the comparison of the UK and Hungarian cases. Furthermore, the overarching research question set out at the beginning of the dissertation is answered.

In the beginning of the chapter the UK and the Hungarian national climate policy contexts are compared and assessed. In the following section the emergence of climate action at the case study cities is compared within the two different national climate policy frameworks. Similarities and differences of vertical and horizontal coordination processes are explored from a multilevel governance perspective. Furthermore, details of the mainstreaming of climate policy at local authorities are compared in the two country contexts. Barriers and drivers experienced by front-runner case study cities are summarized.

Based on the above and previous sections the chapter is concluded by answering the initial research question on key factors driving cities to engage in climate action, and on the connections between local, national and supranational climate policy processes.

## 8.1 Strong vs. weak national climate policy context

Local level climate action takes place within a national context. When it is supported by a strong climate policy context at the national level, it has a better chance to be successful. This also has implications for front-runner cities in the two case study countries. The relative importance attributed to climate change action is considerably different in the UK and Hungary (see Table 11 for a comparison). The UK positioned itself as an international leader in climate policy and adopted legally binding, ambitious domestic climate action targets in 2008. At the same time, climate action is lower on the national agenda in Hungary, where the proposed climate law has not been approved by Parliament by the beginning of 2010.

In the UK the legally binding climate law provides the framework for national and local level climate action. In connection to the 2008 Climate Change Act institutions have been created to support climate action in the country. Separate government ministries were set up, dedicated to tackling mitigation and adaptation related aspects of climate change. An independent body advising government on progress towards climate policy targets has also been created. Mechanisms were put in place to ensure that other government departments also assess climate change risks related to their policy area. Strategies and action plans were developed to deliver national climate policy targets. Several policy instruments were put in place or are under development for engaging domestic stakeholders to take part in climate action. These instruments include the climate change levy, and a domestic emission trading scheme. Renewable energy generation (including micro-generation) and energy efficiency improvements are also supported, at the same time scaling up of efforts would be needed to reach

targets in these areas. In order to ensure reaching ambitious domestic climate targets an independent body has been set up to speed planning permissions for nationally significant infrastructure projects, including nuclear power plants, as well as large-scale RES and CCS installations. After the 2010 general elections, with the change of government administration, this commission has been abolished. This is an favorable development in terms of climate action.

Local authorities in the UK are also affected by the above described climate policy processes. Their role in delivering domestic climate targets is acknowledged and supported in national climate change legislation. Furthermore, climate action related indicators have been included in the general assessment framework for local authorities, this way expanding climate action from front-runner authorities to local governments in general. Detailed planning guidance is provided for local authorities to implement sustainable development and climate policy instruments as well as measures in related sectors. National research institutions also supported climate action by developing the scientific backing to national and local initiatives. Furthermore, institutions were set up at the national level providing practical advice to local authorities on the development and implementation of climate change strategies and action plans.

As opposed to the advanced national climate policy framework in the UK, the situation in Hungary is radically different. While a national climate change strategy was adopted by the Parliament, legally binding climate legislation has not been approved by the beginning of 2010. Climate policy is divided between different government departments, including those responsible for economic and environmental

issues. Energy issues also belong to the ministry dealing with economic matters. Therefore no specialized government unit has yet been created in Hungary to deal with climate change in a comprehensive way, supported by sufficient human resources and funding.

These institutional arrangements indicate that climate policy is not high on the government agenda in Hungary. Results in climate change action have often only been arising as a secondary benefit of other policies (as mentioned with relevance to results in mitigation in Hungary's Fourth National Communication to the UNFCCC, 2006). At the same time climate considerations are increasingly being included in sectoral policies and programs. For example national support programs originally initiated to improve residential energy efficiency have been modified (parallel to the shift of the financing to revenue from AAU sales) to improve results in terms of greenhouse gas emission reductions. Furthermore, support for renewable energy has been included in the refurbishment programs, and a feed-in tariff for renewable energy is in place in the country. Gradual removal of barriers to accessing the national electricity grid by RES installations is under way. However, there is considerable space for expansion and coordination of climate action related policy areas in Hungary.

As the above indicate, in Hungary the institutionalization of climate policy and integration of climate action is at a much less developed stage than in the UK. At the same time some institutions exist, that support climate change action and fill in gaps in the government structure in this regard. An example of this is the Office of the Ombudsman for Future Generations, which was set up to focus on sustainable

development issues. Within its wider mandate, the Ombudsman has also been successful in supporting climate change action by contributing to relevant legal debates. The Hungarian Academy of Sciences (HAS) has also been active in building the climate change related knowledge base. Furthermore, a working group of the HAS specifically focuses on supporting local authority level climate action. At the same time in national strategies the role of local authorities in delivering climate targets, although mentioned, is not emphasized.

Both the UK and the Hungarian governments are facing increasing fiscal pressures due to the effects of the 2008 global credit crises. Despite the efforts to develop a domestic climate policy framework, the UK has been facing difficulties in meeting its first short-term domestic carbon reduction target (which has not yet been legally binding) in 2010. It is yet to be seen how the development and implementation of climate policy in the two case study countries will be affected by fiscal pressures in the medium and long term both at the national and at the local level.

**Table 11 Comparison of the national climate policy context in the UK and Hungary**

	<b>UK</b>	<b>HU</b>
National CC Strategy	yes	yes
CC Framework Law	yes	no
National institutions supporting CC/SD policy	yes - DECC, DEFRA, CCC	yes - Ombudsman for Future Generations
CC policy integration	higher	lower
Coordination between government departments for CC action	mechanisms in place	no specific coordination mechanism
Role of LAs in national CC policy implementation acknowledged	yes	yes, to a lesser extent
Acknowledgment mechanism for best practice LAs in place at national level	yes	no
Performance framework put in place to assess LA level CC action	yes	no
LA level emission statistics collected at the national level	yes	no
Funding programs for CC action in related sectors	yes	yes
National scientific institutions supporting CC action	yes	yes
National institutions set up to support local level CC strategy and action plan development	yes: EST and UKCIP	no separate institutions set up, but sub-unit of Hungarian Academy of Science provides support and advice

Source: Own compilation based on previous chapters.

## **8.2 Emergence and further development of local level climate action**

Emergence of climate change policy took place in all four case study cities in the absence of statutory requirement for them to engage in such action. Environmental and sustainable energy initiatives preceded climate change action in all four cities. Reducing greenhouse gas emissions originating from the jurisdiction of the authorities and adapting to the effects of climate change were only later included among local strategic goals. Strong local environmental initiatives and achieving the status of first Environment City in the UK were the initial steps on the way to comprehensive climate change action in Leicester. In Woking cost saving potential was the driver behind sustainable energy projects that preceded systematic climate action in the borough. The situation at the Hungarian local authorities was similar. In Tatabánya climate change action was connected to the need for energy cost reductions and public health concerns. As opposed to the other three case study cities Nyíregyháza, while being successful in pursuing energy efficiency policies, did not expand sustainable energy initiatives to comprehensive climate change action.

The role of individuals acting as issue champions and policy brokers has been key at all four case study cities. Local authority officers and politicians with relevant expertise and willingness to try innovative approaches have been the driving force behind sustainable energy initiatives and later comprehensive climate change action. Therefore public pressure has not been the main force behind climate policy initiatives in the case study cities, neither in the UK nor in Hungary. Co-benefits

arising in the form of energy cost reductions have been key factors during the emergence of climate action in all four cities. National level energy efficiency support programs and the availability of the EU funds for infrastructure investments have also been crucial drivers at the two Hungarian case study authorities. At the same time high level political support at the cities has been crucial in ensuring participation in these programs and in applying for external funding to implement projects that contribute to tackling climate change. The joining of transnational networks of sub-national governments supported the emergence of climate change action in all four case study cities by providing acknowledgement of results as well as expertise and best practice during the development of strategies and policies.

All four case study cities have already shown results and demonstrated best practice in climate change and sustainable energy action. Building on these achievements they continue their climate policy initiatives. Woking and Leicester for example have set more ambitious climate targets than national ones. Both cities are planning to further expand the use of sustainable energy sources within their jurisdictions. Woking has already been successful in switching to larger scale projects and exporting best practice to other local authorities in the sustainable energy field. Tatabánya and Nyíregyháza are also utilizing the advantages they have achieved as early movers in sustainable energy and climate action. All case study cities are well positioned to benefit from national and EU co-financing for local investments that contribute to tackling climate change.



### 8.3 Individual actors and the wider public

The presence of committed individuals was a key supporting factor of climate change action both at the UK and Hungarian case study cities. At the same time the type of actors driving climate policy initiatives was different at case study cities in the two countries. In the UK climate action was driven by officers in the local administration and by leaders of local environmental NGOs. These individuals with relevant expertise and professional backgrounds in engineering, natural sciences and finance won over the political leadership of cities with their innovative proposals. They demonstrated the reductions in operational costs achievable by sustainable energy initiatives, and the benefits of positive city image due to environmental action. At the Hungarian case study cities not local authority officers and NGO leaders, but politicians were the main initiators of climate action. In Nyíregyháza, a local politician with professional background in engineering was a key promoter of the modernization of the local district heating infrastructure. At the same time in Tatabánya, where the mayor from a background in teaching and social work the first initiatives were in the field of environmental education.

Individuals playing a leading role in climate action at the city level contributed to transferring best practice to national institutions and to other local authorities. These feedback loops were operating in both case study countries. In the UK, in Woking the local authority officer playing a key role in establishing the borough as a center of excellence in the application of sustainable energy solutions later took on a similar role in London. In the case of Tatabánya, in Hungary, the mayor who put climate policy on the political agenda later became a state secretary responsible for energy

issues at the national government level. These placements contributed to the transfer of best practice developed in middle sized cities to be utilized at higher governance levels, as well as in other localities (including London, a city of global importance).

While individuals in the local administrations and in political positions were identified as main drivers of climate action at all of the case study municipalities, public pressure as a driver of environmental and later climate action was only detectable in the case of Leicester. In this city an NGO was the main driver of establishing the locality as an environment city. In Woking, while environmental groups are also present, strong public pressure was not reported as a key motivating force behind local sustainable energy and climate action. Similarly, at the Hungarian case study cities public pressure was not reported to be a driver of climate action at the local authority level. This may be due to two main reasons: in Hungary, being a transition economy there is no strong tradition of grassroots public action. Furthermore, as a recent Eurobarometer survey has shown (European Commission 2008), Hungarians are more concerned about nature protection and green and pleasant landscapes, than global environmental problems. At the same time public pressure to keep household energy costs low indirectly contributed to driving local climate action by increasing the demand for energy efficiency support measures in both Hungarian case study cities.

## 8.4 Vertical and horizontal coordination

In this section vertical and horizontal coordination mechanisms influencing climate change action at the UK and Hungarian case study cities are compared. Vertical coordination takes place through interaction between local authorities and organizations at higher governance levels. Horizontal coordination occurs between the local authority and other organizations within its jurisdiction, and can also take place between local authorities.

Vertical coordination for climate action at the case study cities involved national and regional governments and institutions, as well as the EU, in both case study countries. All case study cities benefited from the support of scientific institutions at the national level in developing their climate change strategies and action plans. In the UK the Royal Commission on Environmental Pollution and in Hungary the Academy of Sciences provided the scientific basis for climate policy development at the national and local level. Institutionalization of national support is at a more advanced stage in the UK, where the role of local authorities is acknowledged in national climate policy. Organizations like the Energy Saving Trust, the Carbon Trust and the UK Climate Impacts Programme provide services to local authorities and help them develop their own climate change strategies and action plans. Regional and county level partnerships for projects that contribute to tackling climate change were also set up in both countries. In the UK the partnership approach is promoted by national policy, with funding sources attached to cooperative arrangements within localities as well as between governance levels. In Hungary cooperative arrangements and partnerships related to climate action (for example in the field of waste management) at the small

area, county and regional level were driven by applications for EU Structural and Cohesion Funds.

Case study cities in both countries provided examples of horizontal coordination between local authorities and organizations active within their jurisdictions. As in the case of vertical coordination the partnership approach was more institutionalized in the UK. At the same time examples of more spontaneous horizontal cooperation as a way of answering local needs and problems has also taken place in both countries. Local environmental and climate change NGOs cooperated with local authorities in all case study cities to expand public awareness about climate change. Local utility companies and civil protection agencies also worked with city councils in order to address climate change related problems. At the same time local authorities needed to develop outreach activities to raise awareness among organizations not yet engaging in climate action. The UK case study cities developed services and programs to help local businesses create tailor-made climate action initiatives. The need to raise awareness among religious organizations about climate change has also been recognized in the front-runner cities in both countries. Establishing cooperation in climate action with representatives of religious and ethnic communities as a co-benefit provides the opportunity for local councils to access hard to reach population groups. Cooperation with local educational institutions from the nursery school to the university level has also taken place at the case study locations in both countries.

Furthermore, horizontal coordination for climate change action occurred between case study cities and other local authorities. All of the case study cities participated in transnational and national climate action networks of sub-national governments.

Joining these networks allowed local authorities to learn about best practice and benefit from support in the development of climate change strategies and action plans. The networks also provided acknowledgement for achievements of the member municipalities, which increased visibility of climate action results. This was especially important at the Hungarian case study cities, as in Hungary national support mechanisms for developing comprehensive climate policies at the local level are still missing. The experience of Woking provided a further example for horizontal coordination between local authorities. By the way of a council owned energy service company the municipality benefited from exporting local best practice through the development of sustainable energy projects to other locations in the UK.

Multilevel governance of climate change action took place by the way of the above outlined vertical and horizontal coordination mechanisms in the two case study countries. Through the comparative analysis better understanding was achieved about the similarities and differences between multilevel governance of climate policy in the two different national contexts. Furthermore, best practice in the processes and instruments of multilevel governance of climate change action were identified (for more about best practice and transferable lessons please see Section 9.2).

## 8.5 Mainstreaming climate action

The case study cities provided various examples of locally implemented policies that contribute to tackling climate change. Measures in various sectors have been classified according to the five modes of governing climate change in cities, as described by Bulkeley *et al.* (2009). These include self-governing, provision, regulation, enabling and partnership. The analysis showed that the four case study cities (especially the three that explicitly engaged in climate action) have been implementing similar measures. Similarities have also been found regarding the relative importance of governance modes. Case study authorities in both countries tended to participate more in the self-governing, provision, enabling and partnership modes of engaging in climate change action. Relatively less emphasis was given to local regulation going beyond national standards. All of the case study councils have applied measures belonging to different modes of governance in combination with each other, in the form of policy packages.

The UK case study cities have shown more progress with respect to self-governing climate change action, as reflected by the measures implemented at local authorities as organizations. The Hungarian case study authorities have also taken steps to address climate change at the organizational level. At the same time their approach has not been as comprehensive as that of the UK cities. Front-runner councils in the latter country have already achieved substantial greenhouse gas emission reductions at the organizational level and have taken a systematic approach to integrating adaptation related considerations into their operations.

In terms of provision as a mode of governing climate action, the Hungarian case study authorities have shown good results in greenhouse gas emission reductions. This has been achieved by switching to large-scale CHP at local power stations. At the same time councils did not play the key influence in this process, as the power stations (at least at the time) were not owned by them. Local authorities of the UK case study cities have been successful in setting up small-scale CHP installations within their jurisdictions. At the same time these mainly supplied council property. In addition to this the UK case study authorities have reached a comparatively more advanced stage in integrating renewable sources into the local energy supply. The availability of EU Structural and Cohesion Funds has played an important role at the Hungarian case study cities in terms of developing more climate friendly infrastructure in waste and wastewater treatment services. Authorities of front-runner cities in both countries developed innovative measures that contributed to the provision of climate friendly services at their jurisdictions. The most important measures included gaining majority ownership in local utility companies as well as setting up arm's length organizations for the implementation of sustainable energy projects.

Regulation as a mode of governing climate action was relatively less pronounced at the case study authorities in both countries. While intention was indicated in climate change strategies and action plans to implement regulatory measures going beyond national policies, only few have been implemented. Buildings and urban planning, as well as public procurement were the areas where stringent local regulations were intended to be or were already put in place. At the same time local authorities played an important role in ensuring compliance with EU and national regulatory instruments.

Enabling was a mode of governing climate change action widely applied by case study authorities both in terms of awareness raising as well as financial support mechanisms. Information and education campaigns have been initiated in all case study locations, while the councils of the two front-runner cities in the UK have also been able to set up model flats for the demonstration of residential energy efficiency solutions. Participation in support programs for residential energy efficiency improvements was widespread at the Hungarian case study cities. Similar programs in the UK tended to focus mainly on fuel poor households. Expansion of the programs to include a wider population and other social groups would be necessary to reach ambitious national climate policy targets.

Partnerships have also been set up both in the UK and the Hungarian case study cities to address the challenges posed by climate change. Cooperation in the form of partnerships was more institutionalized in the UK where national funding has often been made conditional upon the existence of such arrangements. Councils of both the UK and the Hungarian case study cities have cooperated with public, private and civil organizations at the local, county and regional levels to implement projects and programs related to climate change action. Regional and area level cooperation occurred with respect to adaptation related issues, as well as in order to implement larger scale waste and wastewater treatment projects.

It can be concluded that all case study authorities made progress in mainstreaming climate action within their jurisdictions, although this has taken place in different ways. The two UK case study cities are at a more advanced stage in terms of



systematically addressing climate change through developing climate strategies, action plans and policies. Interdepartmental cooperation mechanisms for climate action within the UK local authorities were also at a more developed stage than in the Hungarian case study cities. Implementation of climate action related projects and programs took place in all four case study cities. In Hungary the availability of EU funds significantly influenced mainstreaming through the co-financing of large-scale infrastructure projects which also potentially contribute to the tackling of climate change.

## 8.6 Drivers and barriers

Case study cities in the UK and Hungary have been facing similar drivers and barriers during the development and implementation of their climate policies. At the same time there were differences stemming from specific local and national circumstances. (For an overview of drivers and barriers of local level climate action based on the experience of UK and Hungarian case study cities, see Table 12.)

The experience of case study cities in both countries has shown that during the emergence of, as well as in later stages of climate change action high level political support for the issue has been indispensable. Continuity in city leadership as well as a long standing hung situation in the local assembly were identified as supporting factors of successful climate action. These circumstances have also contributed to overcoming the barrier of the four-year election cycle obstructing long term climate policy decisions. Being a front-runner in climate action has carried the co-benefit of positive city image and brought political advantages for city leaders.

Apart from the support of politicians the role of officers has also been key in the integration of climate action into functions and competencies of local authorities. Officers with relevant expertise and commitment for climate action have played an important role in all four case study cities as policy advocates both within the local authority as an organization and within the community as a whole. They contributed to establishing interdepartmental cooperation for climate action as well as to awareness raising about the issue. At the same time climate, environment and energy officers acting as policy advocates have been concerned about the lack of sufficient

and timely implementation of climate change strategies and action plans. Discrepancy between rhetoric and practical action on tackling climate change has been a danger both at the national and the local level, even in front-runner cities.

Financial barriers arising at local authorities as organizations have contributed to these concerns. Financial constraints and conflicting investment needs have occurred at both UK and Hungarian case study authorities. While case study cities intended to utilize their first mover advantage and implement further, more ambitious projects related to climate change action, lack of sufficient funding has often prevented the implementation of these initiatives. Availability of external financing dedicated or contributing to climate action projects (for example from carbon markets, from EU funds, or from national sources), as well as the perception of potential for cost and vulnerability reductions have at the same time acted as drivers. Connected to overall financial difficulties, barriers have surfaced in the form of conflicting priorities of different departments. At the same time high level political support and strategic leadership regarding climate change action have contributed to resolving these problems. Bringing together different departments to address the challenges posed by climate change in an integrated manner and improved communication has contributed to overcoming this organizational barrier.

The two elements of climate change action, mitigation and adaptation have also been competing against each other for financial resources of local authorities. Systematically exploring synergies in all mitigation and adaptation related projects and programs contributed to overcoming this problem. The practice of exploring synergies during project implementation was at a more advanced stage at the UK case

study authorities. Case study cities have also taken up the approach of addressing adaptation related issues at the regional level (parallel to local action), in order to share best practice and utilize resources in a cost-effective way. Also, many adaptation related issues arise at the regional level, for example in the catchment areas of rivers. As water and environmental protection agencies also operate on this governance level, therefore regional cooperation has been found to be an effective mode of dealing with adaptation related issues by case study authorities.

Leaders of the case study cities have come up with innovative organizational measures to be able to implement climate change and sustainable energy strategies. In both case study countries utility companies are usually not or only partially owned by local authorities. The authorities of the Hungarian case study cities have both acquired majority ownership of local district heating companies, and in the case of Tatabánya the local CHP plant as well. These arrangements have allowed city leaders to influence modernization of the energy infrastructure and pricing, better integration of sustainable energy sources, as well as improved customer services and information provision. At the same time in other cases, when front-runner authorities have not been successful in acquiring local utility companies either from the state or private owners, has acted as a barrier to climate action. In the UK the authority of Woking has taken the innovative step of establishing an energy service company to manage local sustainable energy installations and the private wire system. The company provides relevant expertise and human resources to cover increased technical upkeep, expansion and customer service needs. It also enables the city to use accumulated best practice in other locations and benefit from resulting profits, as well as to engage in

projects that require longer commitment than the four-year election cycle would allow.

Contextual circumstances originating from the national level have also posed barriers to climate action at the case study cities. These were of regulatory and financial nature. The global credit crises that started in 2008 influenced national and local governments both in the UK and Hungary, increasing financial constraints. Lack of clear commitment and guidance from the national government to implement climate policies has come up as a barrier in both case study countries, even though the UK is world leader in the adoption of national climate legislation. The performance assessment framework for local authorities now includes climate action related indicators, at the same time it is yet to be seen how stringent will be the implantation. Funding sources targeted at local authority level climate action have also been put in place. As for the coordination of national strategic guidance and fiscal incentives, there is still space for improvement in the UK. For example in the case of improving energy efficiency in buildings, several smaller support programs have been running in the country, at the same time strategic guidance from the national government and coordination of the programs is lacking (David Orr, Personal communication). This also affects climate action at the local authority level.

Regulatory pressure and requirement for local authorities to engage in climate action is still lacking in Hungary. At the same time country-wide support programs for energy efficiency improvements in the residential buildings sector have been running since 2001 and are considered as successful. Local authorities have played a role in co-financing and implementation. Financing acquired from carbon markets has

ensured continuation and improvement of these country-wide programs. At the same time in Hungary climate change legislation is yet to be put in place at the national level. This would enable the creation of the national regulatory framework for local authority level climate policy. At the same time the difficult financial situation of the country affects climate action both at the national and at the local level. An increasing number of local authorities are finding it impossible to provide the necessary co-financing for EU Structural Funds (Szabó 2010). These financial barriers are expected to remain a reality in Hungarian local authorities for years to come. An economic upturn, as well as the reform of municipal finance would contribute to increasing local authority engagement in climate action.

Urban planning characteristics of cities can act as barriers and at the same time as drivers of local level climate action. The case of Tatabánya provides example for both circumstances. As the city has been established by merging four separate villages, it has very unfavorable urban planning characteristics. It has no real functional city center, and is a very long settlement. This carries negative implications for travel related greenhouse gas emissions. At the same time, as a large proportion of residential buildings in the city have been built with industrial technology during the socialist years and are connected to the district heating infrastructure. Through energy efficiency modernization of these buildings and infrastructures substantial greenhouse gas emission and energy cost reductions can be achieved. Therefore this urban planning characteristic acts as a driver for local climate action. The expansion of district heating has also been on the agenda of the UK case study cities, at the same time large-scale, pre-existing infrastructure is lacking. Therefore the potential benefits of district heating system modernization act as a driver here to a lesser extent.

Lack of sufficient public interest in the climate change issue and difficulties in establishing community engagement have proved to be barriers at case study cities both in the UK and in Hungary. The UK case study authorities have mainly achieved results in climate action through changing their own operations as organizations. Through participation in residential energy efficiency support programs larger proportions of communities have been engaged at the Hungarian case study cities. At the same time this mainly concerned sustainable energy use and not general interest in climate action. In Hungary expanding consumer culture following the socialist era, as well as lack of experience with grassroots action have also surfaced as barriers. Information gaps, lack of awareness, system complexity, uncertainty and skepticism have been identified in the Leicester Climate Change Strategy as obstructing climate change action at the community level. To overcome these barriers local authorities in both countries have been providing information, and engaged in communication and awareness raising activities about the climate change issue. They also cooperated with other local stakeholders to achieve higher level of community engagement.

This and the preceding sub-chapters provided an overview of the national climate policy frameworks of case study countries and compared the experience of the emergence, coordination, mainstreaming and drivers and barriers of local level climate action in the two different national contexts. In the following sub-chapter I turn back to the initial research question and provide answers based on the previous analysis.

**Table 12 Drivers and barriers of local level climate change action based on the experience of UK and Hungarian case study cities**

<b>Barriers</b>	<b>Drivers/Supporting factors/Co-benefits that can address barriers</b>
Political conflict within local council	Even distribution of political parties in local assembly (hung assembly), political cooperation induced by co-benefits
Election cycle obstacle to long term climate change action	High level local political buy-in to climate change action related projects, continuity in local politics
Lack of expertise in climate change action related fields among local politicians and officers	The hiring of dedicated officers with relevant expertise, personal commitment of LA politicians
Demoralisation of officers as a result of delays in implementation	Adoption of climate change strategy and action plan with explicit targets and timeline; competitive advantage over non-adapters; profits from first-mover advantage in mitigation technologies; availability of acknowledgement and rewards
Discrepancy between rhetoric and practical action	
Conflicting priorities of LA departments	Integration of climate policy through interdepartmental cooperation, hiring of climate change and energy officers, bringing together different kinds of expertise
Conflict between mitigation and adaptation	Explore synergies and cooperate with other stakeholders (for example adaptation based on regional action)
Local utility company control not in LA's hands; privatisation of energy supply industry	Acquiring control over local utilities (provided that national regulatory context allows this)
Financial constraints, conflicting local investment needs	Availability of funding (local, national, EU); emphasis on co-benefits, including energy cost reductions; preparation cheaper than paying for climate change impacts
Lack of statutory requirement, LA level climate change action not supported by national policy framework	National regulatory framework that acknowledges, institutionalizes and supports LA level climate change action
Financial constraints of national and local government	Using international funds if available, national support programs implemented at the local level with LA assistance
Lack of commitment and guidance from central government	Development of national climate change strategy and action plan, enabling and supportive national level policy framework
Global credit crisis	Setting up dedicated funds for climate change action related projects, raised from earlier energy cost reductions
Urban planning characteristics - can act as barrier as well as driver (in case of potential for modernisation)	
Socio-economic conditions - socialist past: expanding consumer culture, low environmental awareness, unfamiliarity with grassroots action	Increasing community engagement through LA working in partnership with local stakeholder groups (community, religious, business, etc. organisations)
Low awareness of, scepticism connected to and insufficient information about climate change	

Source: Own compilation based on previous chapters.



## 8.7 Answering the research questions

At the beginning of the thesis the following fundamental research problem was identified:

*Why do cities engage in climate change action and how does climate policy emerge at the local authority level?*

In this section the fundamental research problem is addressed based on the analysis carried out and the results outlined in the previous chapters.

In the following the five research sub-questions are answered:

1. *Which were the main drivers inducing the emergence and development of climate action at the case study cities?*

Through the experience of the UK and Hungarian case study cities two main factors were identified as driving and supporting local level climate action. The first driver that was found in all case study locations was the presence or expectation of energy cost-reduction related co-benefits. This finding is in line with the expectation that resources constrained local authorities would first engage in those elements of climate action that are either cheap or lead to cost savings. The second key supporting factor was steady local political leadership committed to the use of sustainable energy sources and to tackling climate change. The combined presence of these two key factors lay behind the initiation of climate action at the front-runner cities where the research was carried out.

The two main, combined drivers represented by energy cost reduction related co-benefits and committed, steady political leadership were enhanced by further supporting factors. These included the availability funding from international, national and EU sources for local initiatives contributing to tackling climate change. Further, funding related supporting factors included willingness to engage in innovative business mechanisms to finance climate action projects, and at one of the Hungarian case study cities environmental fines paid by a local power plant.

Besides high energy costs, public health concerns have also been found to induce climate action at the case study localities. Best practice and acknowledgement of results received through membership in national and transnational networks of sub-national governments acted as a further supporting factor.

EU membership of the two case study countries supported local level climate action through several channels. The EU is striving to achieve a leadership position in international climate policy. This results in a regulatory context, which often requires a stronger climate policy stance that member states would otherwise take. This also carries favorable implications for local authority level climate action. As mentioned above, one of the roles of EU membership is the availability of co-financing for climate action related projects (for example small-scale information campaigns, as well as for larger investments such as waste and wastewater treatment plants).

The above findings carry important implications for the expansion of climate action from front-runners to a wider circle of local authorities. As steady, innovative and

committed leadership are local circumstantial factors (that not only support climate action, but also other important local initiatives), this is a factor which is not easy to replicate over a wide range of locations. Therefore strategic direction from the national level combined with regulations and financial incentives are necessary to achieve widespread participation of ordinary cities in sustainable energy and climate action initiatives.

Another implication of the above findings is that local authorities do not engage in climate action exclusively for the sake of tackling this global challenge by local initiatives. The cases of the UK and Hungarian front-runner cities showed that their main motivation is to reduce costs. Through the use of sustainable energy solutions including improvements in energy efficiency, energy cost reductions can be achieved. This co-benefit is expected to remain one of the main drivers of climate action at the local authority level.

2. *Which main barriers did case study cities face when engaging in climate action?*

Through the experience of the front-runner cities forming the focus of the research, crucial factors were identified that were obstructing further development of local action against climate change. Key barrier groups include financial constraints, lack of sufficient influence over externally provided services, lack of statutory requirement for local level climate action, insufficient political commitment and lack of public pressure. These barriers have been playing their effects in a combined manner.

Financial constraints obstructed some of the front-runner authorities in making the switch to more ambitious climate action projects, and even in implementing elements of existing climate change strategies and action plans. The lack of sufficient local authority influence over the provision of local services and the running of utility companies proved to be a barrier for example in the areas of energy supply and public transport. Insufficient commitment of political leaders led to the sidelining of climate change action relative to other issue areas. Discrepancy between political rhetoric and delivered results in climate action has also been found to lead to the demoralization of climate change and environment officers at local authorities. Lack of external pressure behind climate action in terms of no or insufficient statutory requirement and guidance from the national level, as well as in terms of lack of interest from the local public was obstructing the further development of climate policy initiatives at the case study cities.

Besides the ones mentioned above, other barriers were also obstructing local level climate action. At the same time, based on the interview responses of local authority officers the above were deemed to be the most important at the case study locations.

3. *How did national and supranational climate policy frameworks and national and transnational networks of sub-national governments influence climate action at case study cities?*

Based on the experience of front-runner cities in the two case study countries vertical relationships between the common supranational climate policy context, national climate policy frameworks and local level climate action were uncovered. Horizontal coordination mechanisms taking place through the participation of local authorities in national and transnational networks of sub-national governments for climate action were also explored.

The common supranational governance context supported climate action in both case study countries, and the four front-runner cities. EU membership and the fact that the EU is striving to position itself as an international leader in climate action brought positive implications for domestic climate policy in both case study countries. EU climate targets and related directives serve as an anchor for national climate policy. In case of the UK even more ambitious domestic climate targets were set. Both case study countries often have to take painful measures to implement their sector specific obligations to the EU, for example with respect to increasing the share of renewable energy sources in energy supply, waste and wastewater treatment, emissions trading, and building regulations. Fulfillment of these commitments often requires implementation at the local level. This contributes to the acknowledgement by central governments of the importance of local authority level action in reaching national climate targets. At the same time local authorities can benefit from EU co-financing to

implement projects relevant to climate change action. EU funds played a role in the case study cities in sustainable energy projects, and adaptation related research as well.

The vertical relationship between national and local level climate action is two-way. At all four case study cities sustainable energy and climate action initiatives preceded the development of comprehensive national climate policy frameworks. The experience of front-runner authorities in the UK later served as best practice for the expansion of climate action to a wide range of localities in the country. At the same time the national governance context influenced climate change action at local authorities in several crucial ways. An enabling regulatory context and financial support programs at the national level were found to be of key importance during the initiation of climate action at the local authorities. For example the favorable domestic energy policy context enabled the UK case study authorities to engage in small-scale CHP and other sustainable energy projects. National level financing programs supported residential energy efficiency improvements at the Hungarian case study cities. In the UK, where no countrywide financial support mechanism of a similar scale was initiated, even front-runner cities faced difficulties in improving residential energy efficiency within their jurisdictions.

While examples exist in both countries of national policies supporting local level climate action, the coordination of these policies is desirable in order to achieve better results. Through the adoption of a comprehensive national climate policy framework the regulatory and financing, as well as other policy mechanisms affecting local authority level climate action can be coordinated. Strategic direction from the national

government through such a framework is beneficial for front-runner and ordinary local authorities alike. The positive influence of a comprehensive, legally binding domestic climate policy framework on municipal climate action is already showing in the case of the UK.

As for the horizontal dimension of the governance of climate change action, local authority membership in national and transnational networks of sub-national governments also proved beneficial. The front-runner cities in the focus of this study had an opportunity to receive methodological guidance, share best practice, as well as to receive recognition for their efforts. This in turn contributed to the strengthening and continuation of local sustainable energy and climate policy initiatives. Recognition of local climate action achievements has also come from the EU, through community level networks. This was more important in Hungary, where no national system has yet been established to award local authorities for the successful implementation of climate action and sustainable energy projects and programs. Furthermore, through membership in transnational networks of sub-national governments, local authorities found a way to lobby more effectively in international climate negotiations, forming an emerging new sphere of authority.

The following conclusions are drawn regarding the influence of vertical and horizontal governance processes on local level climate action: in terms of the vertical dimension, EU membership plays a key role in both case study countries. It provides strategic direction, additional funding and an often demanding policy context for national as well as local climate policy processes. The national climate policy framework is also crucial, far enough through a consistent and allowing regulatory



context combined with financial support mechanisms for local level climate action. Another dimension of vertical relationships is represented by front-runner local authorities influencing the development of the national climate policy framework through demonstrating best practice. As for the horizontal dimension, local authority membership in transnational networks of sub-national governments contributes to filling in the missing vertical elements (for example through benefiting from international best practice and methodologies, receiving recognition for achievements and increased lobbying power).

4. *What are the similarities and differences between the experience of case study cities in the UK and Hungary in local level climate action?*

Several similar traits were found with respect to the experience of the four front-runner case study cities (two in the UK and two in Hungary) concerning the emergence of local level climate action. The potential for cost reductions through sustainable energy solutions was a key driver, regardless of the country context. Favorable circumstances, including political continuity, a committed leadership willing to engage in innovative measures and relevant expertise within the local authority were also important supporting factors both at the UK and the Hungarian case study cities. Furthermore, front-runners in the two case study countries realized similar benefits of sustainable energy and climate action, including energy cost savings, positive city image and first-mover advantage.

At the same time some country specific differences between the experience of UK and Hungarian case study cities were identified. The two UK case study cities are characterized by the more advanced institutionalization of climate action. This is reflected by the higher level of interdepartmental cooperation regarding climate policy issues within the UK case study local authorities as organizations. Mainstreaming was also at a more advanced level, with climate change action plans in place containing explicit targets and time frames. One reason for this could be that these cities have been explicitly engaging in climate action for a longer period of time than the Hungarian case study local authorities.

Another important difference between the UK and the Hungarian experience is that the UK case study cities have been showing more progress in terms of climate action taking place at the local authority as an organization. Profound efforts were made regarding the self-governing of climate action, with a range of measures implemented in local authority property and operations. At the same time, Hungarian case study cities did not make comparable progress at the organizational level. This is likely to be the result of fiscal difficulties and the unfavorable financing structure (with high level of normative government grants not connected directly to service provision) faced by local authorities in Hungary. Both front-runner cities in the UK were able to engage in at least small-scale sustainable energy projects servicing their own operations, as well as in setting up exemplar apartments demonstrating sustainable energy solutions at the household level. Such projects are not yet typical in Hungary. However, at one of the case study cities the public lighting system was modernized and with the help of EU co-financing renewable energy installations were implemented at a local authority operated school building. At the same time local authorities in Hungary were relatively more successful in engaging the wider population in climate action. This occurred through local and national level support programs contributing to improving the energy efficiency of the residential building stock.

Similar vertical and horizontal coordination mechanisms were at work at the two case study countries. Climate action in front-runner cities was viewed (although to different extents) as a positive example, and as proof of best practice by the two national governments. The allowing and in some cases supportive nature of the national framework enabled front-runner cities to engage in climate action initiatives.

For example in the UK the national policy framework allowed the front-runner cities to engage in small-scale CHP projects. Such an enabling context for micro-generation has also been developing in Hungary, although with a relative time-lag. The modification of the national energy policy framework has also been favorably influenced by membership in the EU. Furthermore, vertical coordination took place in the two case study countries through regional cooperation regarding adaptation related issues. Horizontal coordination through membership in networks of sub-national governments occurred in all four case study cities, irrespective of country context. Network membership allowed the case study cities to receive acknowledgement for their efforts and share best practice in the absence of similar support and reward mechanisms from the national level.

Therefore several country specific similarities, as well as differences were experienced. Factors behind the emergence of climate change action, as well as vertical and horizontal coordination mechanisms (particularly at the early stages of local climate policy) were similar at front-runner case study cities in the UK and in Hungary. Differences occurred, however with respect to the level of institutionalization, and the areas where progress has been achieved.

5. *Based on the experience of the case study cities, what is the relative importance of different mechanisms for governing climate change at the local level?*

The five modes of governing climate change (as described by Bulkeley *et al.* 2009) were utilized as a framework to analyze the mainstreaming of climate change action at the case study cities. These governance modes include self-governing, provision, regulation, enabling and partnership.

The four case study cities were favoring similar types of measures in order to address the challenges posed by climate change, and to engage in sustainable energy action. Similarities were also found regarding the relative importance of governance modes. At the same time some country specific differences were identified.

Connected to the self-governing, provision and enabling governance modes, a relatively large number of policy instruments and measures were applied at the case study locations. Partnerships were also formed in both case study countries, especially with respect to issues with regional or area level relevance (such as adaptation and waste management). Regulatory approaches have been utilized mostly in the form of implementing national regulations (in the buildings sector and in urban planning), at the same time local regulations generally did not go beyond national ones.

With respect to country specific differences, case study cities in the UK made relatively more progress in the self-governing of climate action. They have been successful in the implementation of measures and delivering results at local authorities as organizations.

Enabling approaches, including awareness raising and financial support mechanisms were a popular mode of governance both in the UK and in Hungary. At the same time the Hungarian front-runner cities have showed better progress in terms of engaging the wider population in climate action through enabling approaches. The key factor in this was a nationwide financial support program for energy efficiency improvements in the residential buildings sector, with optional co-financing by local authorities.

Partnerships as a mode of governing have surfaced in both countries, as the same time they were more institutionalized in the UK.

Provision as a mode of governing climate change action has been applied in both countries. It has been most widely utilized with respect to energy, wastewater and waste treatment services. At the same time the ability of local authorities to apply this mode of governance also depended on their share of ownership in local utility companies, and the proportion of services covered by external providers.

Therefore it can be concluded that self-governance (leading to operational cost reductions and contributing to dealing with resource constraints) and partnerships were more widespread modes of governing climate action at the UK case study cities, while enabling and provision measures were utilized in both countries. Regulatory measures also started to emerge, especially in the UK case study cities. It would be desirable to enhance all five modes of governing climate action at the Hungarian case study cities. In the UK it would be favorable to improve provision, enabling, partnerships and regulatory modes in order to achieve similar success as in the case of self-governance.

## Summary

In this chapter the results of the research were summarized and the initial research question was answered based on the analysis carried out in previous chapters. The experience of case study cities in the UK and Hungary was compared in terms of national climate policy contexts, emergence and mainstreaming of local climate action, as well as in terms of vertical and horizontal coordination mechanisms. A review was carried out of drivers and barriers of climate change action as experienced in the case study cities in the two countries.

Several key conclusions can be drawn from the research conducted. Motivating factors behind the emergence of climate action were similar at the UK and the Hungarian case study cities: cost reduction related co-benefits and the presence of innovative local leaders were the combined driving force behind sustainable energy and climate policy initiatives in both case study countries. To offset the role of favorable local circumstances strong strategic direction from higher governance levels plays a key role in spreading climate action from front-runners to a wider range of local authorities. In Hungary both the national and local climate policy frameworks need to be strengthened, integrated, and connections between them enhanced. In the UK national financial support mechanisms need to be developed to support existing structures in order to expand climate action from front-runners to ordinary local authorities, as well as from local authorities as organizations towards higher level community engagement.

In the following, concluding chapter of the thesis the theoretical as well as the empirical contribution of the research is summarized. Policy recommendations and transferable lessons are drawn and avenues for further research are identified.



## **Chapter 9 LESSONS AND CONCLUSIONS**

In the last, concluding chapter of the dissertation theoretical and practical contributions of the research are identified. Based on the experience of the case study cities and countries transferable lessons and policy recommendations are summarized. Finally, the chapter and the dissertation are concluded by outlining avenues for further research.

The research results are expected to be valuable for the work of policy makers from the local authority through the regional, national, EU to the international level; national and transnational networks of sub-national governments for sustainable energy and climate action; environmental and climate policy oriented NGOs; as well as academia. Utility companies and private businesses might also find the research results useful through identifying areas where they can join and benefit from local sustainable energy and climate action efforts.

## 9.1 Theoretical contribution

By exploring the cases of four front-runner cities located in two EU member states the research contributed to the theoretical area of multilevel governance of climate change action in six main ways:

1. A better understanding was obtained of the process of the emergence of climate action at local authorities (section 8.2);
2. Understanding of the role played by and motivation of individual actors was deepened (section 8.3);
3. Drivers and barriers of local level climate change action were gathered (section 8.5; research sub-questions 1 and 2) and the combination of key factors driving local level climate action were identified (research sub-question 1);
4. Similarities and differences were identified between the transition country and the Western democracy experience within the context of the EU (section 8.1; research sub-question 4);
5. By mapping vertical and horizontal relationships within and between governance levels a better understanding was gained of the role played in the multilevel governance of climate action by actors at different governance levels (section 8.4; research sub-question 3).
6. Lessons were drawn from a comparative perspective about the relative importance of modes of governing climate action at the local level (section 8.5; research sub-question 5).

The theoretical contributions of the research this way help to fill in the research gaps identified in the literature review in Chapter 3. For a more detailed discussion of the research results leading to these theoretical contributions, please see the referred sections and answers to the research sub-questions in Chapter 8.

## 9.2 Transferable lessons and policy recommendations

Through analyzing the experience of front-runner case study cities in the UK and in Hungary transferable lessons were identified that can be utilized at other locations when designing multilevel frameworks for governing climate action. Furthermore, these lessons will also prove useful for designing strategies, action plans and policies for climate action at the local level. In this section transferable lessons and policy recommendations are outlined from two main perspectives: barriers and drivers of, as well as best practice examples regarding the multilevel governance of climate action.

Barriers to local authority level climate policy initiatives, and the drivers and supporting factors contributing to their removal constitute the first important area where lessons of the research can be utilized at a wider range of municipalities. These issues were addressed in detail in Section 8.6, while Table 12 provides an overview of barriers and drivers. Using this table as a checklist, policy makers can assess the characteristics of their locality and identify problem areas and potential supporting factors of successful climate action.

Furthermore, best practice examples and innovative solutions based on the experience of the UK and the Hungarian case study cities were gathered. A group of measures was identified that does not require large-scale financial commitment, and therefore constitutes a practical first stage in climate action at local authorities. This group of measures was divided into four sub-groups, including strategy, action plan, program and organizational development at the local authority; awareness raising and advice;

cooperative arrangements; as well as joining national and transnational networks of sub-national governments, and other cooperative measures between cities. The second group of best practice examples is constituted by measures that require a higher level of initial investment by the local authority, at the same time lead to financial savings and/or contribute to efficient use of resources. The third and fourth groups of best practice examples concern what can be done at the national as well as at the supranational and international levels to support climate action at local authorities.

The best practice measures supporting local level climate action are therefore the following:

1. Measures for climate action that do not require large-scale additional investment by local authorities:
  - a) *Strategy, action plan and program development, organizational measures within local authority:*
    - Development of comprehensive local climate change strategy comprising both adaptation and mitigation related efforts, exploring synergies between the two areas, and integrating climate action with sector specific policies (best practice: Woking and Leicester);
    - Climate change action plans with time-bound, measurable interim and long term targets, verification mechanisms, specification of resource requirement and departments and officers responsible (best practice: Leicester adaptation action plan);

- Development of detailed action plans for special climatic conditions and extreme weather events (best practice: Tatabánya Heat and UV Alert Plan);
- Periodic updates of climate change strategy with assessment of measures and consultation mechanisms (best practice: Woking, Leicester);
- Adopt environmental management systems (such as EMAS) for local authority operations (best practice: Leicester);
- Climate change impact assessment based on inventory of previous extreme weather events and how much the response cost to the local authority, according to service areas (best practice: Leicester);
- Environmental Education Program in schools to raise awareness among children about climate change and through them reach out to the adult population (best practice: Tatabánya);
- Creating separate departments and implementing institutional mechanisms within the local authority to pool environmental, energy and climate policy expertise, and achieve integration of these areas within the organization.

b) *Awareness raising and advice:*

- Development of database of local installers of sustainable energy solutions (best practice: Woking);
- Demonstration homes showing the use of sustainable energy solutions in a domestic setting (best practice: Woking and Leicester);
- Comprehensive local authority services to households for implementation of energy efficiency improvements - free survey, schedule of works with price

guidelines, contractors, discounted goods, energy advice and information about energy efficient products (best practice: Leicester);

- Energy advice centers providing information about sustainable energy solutions that can be utilized in homes and work places:

Best practice: Actio<sub>2</sub>n Woking energy advice center:

- One-to-one consultations on energy savings;
  - Advice on the financing of sustainable energy refurbishments;
  - Display in the energy advice center demonstrating the energy saving and greenhouse gas emissions performance of various appliances;
- Awareness raising about climate change and climate action in local media;
  - Integrate climate action theme into local events (best practice: Tatabánya “Open doors” event series, Leicester cultural events);
  - Climate change officers providing one-to-one advice to local businesses on climate change action plan development, on how to reduce their carbon footprints and how to increase resilience to climate change;
  - Step-by-step guide for businesses on how to develop their own sustainability and climate action programs (best practice: Leicester);
  - Encouraging local private and public organizations to adopt environmental management systems (best practice: Leicester).

c) *Cooperative arrangements at the local, county and regional level for climate action:*

- Setting up, supporting and cooperating with local NGOs for climate action to increase capacity to communicate with the general public about climate action and to establish an informal sphere for coordination with local stakeholders (best practice: Tatabánya, Woking);
- Cooperation with local university for green operation and change of curriculum towards subjects and professions relevant for climate action, through this ensuring a supply of educated local human resource (best practice: Tatabánya);
- Involve local businesses in climate action through activities that contribute to Corporate Social Responsibility (best practice: Tatabánya);
- Cooperate with and support local businesses that contribute to local climate action (building management companies, contractors installing sustainable energy solutions, etc.);
- Cooperation with regional specialized agencies and regional government bodies in local climate action (best practice: Leicester, Tatabánya);
- Partnership approaches to involve local stakeholders in climate strategy development, ensuring participation (best practice: Woking and Leicester);
- Initiating cooperation with organizations representing the interests of local businesses;
- Facilitating efficient use of resources through coordination of action and sharing of good practice at the county and regional level. Best practice examples:



- In Leicestershire regular meetings to discuss the development of climate action;
- Surrey Climate Change Partnership: officer group meeting every three months to discuss climate action initiatives in the county;
- Regional partnerships and regional program for climate action - East Midlands Regional Climate Change Partnership;
- Addressing adaptation issues at the regional level- Climate South East.

d) *Joining national and transnational networks of sub-national governments, and other cooperative measures between cities:*

- Access to best practice and methodological support – for example access to methodologies for calculating local greenhouse gas emissions by Leicester as member of ICLEI CCP;
- Unified awareness raising programs (best practice: Nyíregyháza and the Energie-Cités Display campaign);
- Awards and recognition of results;
- Support for setting more ambitious local climate action and sustainable energy targets than national ones (for example through joining the Covenant of Mayors of the EU);
- Study visits to front-runner cities by representatives of other local authorities;
- City marketing value: contribution to establishing a positive, environment friendly city image.

2. Measures by local authorities that lead to financial savings and/or contribute to efficient use of resources:

- Setting up an energy efficiency recycling fund (best practice: Woking);
- Setting up an energy service company in majority ownership of the local authority but as separate legal entity. Benefits: pooling expertise and administrative resources, better ability to implement projects with long pay-back time and projects outside the jurisdiction of the local authority (best practice: Woking);
- Local authority acquiring majority ownership in local district heating and energy supply companies. Benefits: better ability to implement modernization measures, and introduce sustainable energy solutions (best practice: Nyíregyháza, Tatabánya);
- Creating climate change/energy officer positions at local authorities and hiring individuals with relevant expertise to carry out these tasks (best practice: all case study local authorities);
- Incubation house for SMEs in the green sector (best practice: plans to establish Innovation Center for Green Industries in Tatabánya).

3. Measures at the national level supporting local level climate action:

- Setting up national institutions offering legal advice and legal protection regarding sustainable development, environmental and climate action (best practice: Office of the Ombudsman for Future Generations, Hungary);
- National science academies and institutions providing scientific background and knowledge base to support local level climate action (best practice: Hungarian Academy of Sciences and Royal Commission on Environmental Pollution in the UK);
- National government-led knowledge transfer and climate action commitment mechanisms – Beacon Scheme, Nottingham Declaration, Councils for Climate Protection campaign (UK CCP), best practice dissemination by Audit Commission in the UK;
- National funding sources conditional on working in partnership with local stakeholders (for example in the case of urban regeneration in the UK);
- National level climate strategies acknowledging the importance of local authority level climate action (as seen in the UK);
- National regulation requiring climate action at the local authority level (including climate action in the system of National Indicators in the UK);
- Specialized national institutions supporting climate action at the local level (Energy Saving Trust, Carbon Trust, UK Climate Impacts Programme in the UK);
- National funding programs supporting local level climate action - Warm Front for fuel poor households and Salix for energy efficiency investments of public

sector bodies in the UK, residential energy efficiency refurbishment programs in Hungary.

4. International and supranational mechanisms supporting local level climate action:

- Green Investment Scheme partially financing sustainable energy refurbishments in residential buildings in Hungary;
- EU Structural and Cohesion Funds (for example for waste and wastewater management projects in Hungary);
- EU financing for smaller scale projects through scientific framework programs;
- Technical support from EU (for example through Intelligent Energy Europe Program and ManagEnergy network in the case of the regional energy agency in Nyíregyháza).

In the following, concluding section of the thesis avenues for further research are identified.

### 9.3 Avenues for further research

Based on the research carried out issues worthy of further study were identified. These include the expansion of the geographic scope of the research, exploration of the feedback loops between governance levels, and more detailed analysis focusing on sectors relevant to local climate action.

The first avenue to expand the research concerns geographic area. This study focused on two case study countries: the UK, a Western democracy; and Hungary, a transition economy; which are both member states of the European Union. The research contributed to deepening the understanding of multilevel governance of climate action within these countries and the EU. Some of the results produced are theoretical and applicable in a wider context, at the same time it would be desirable to expand the geographic scope to other country groups. A research gap exists regarding the multilevel governance of climate change action in countries of the global South, as well as in states that have undergone post-socialist transition, and are not members of the EU. Expanding the research to these geographic areas is particularly important, as it is expected that local authorities located within these states generally face even larger resource constraints than the ones forming the focus of this dissertation.

The second area in which follow-on work would be necessary is the further exploration of vertical feedback loops between governance levels. A historical analysis focusing in bottom-up processes in more detail would enable better understanding of the channels through which climate action solutions and

achievements of front-runner cities influence the development of national climate policy processes.

Last, but not least, the third area of further research should involve detailed analysis of specific sectors relevant to climate action at the local level. Urban planning, energy supply and building energy efficiency, transport, waste and wastewater management, as well as education are areas where further research could uncover barriers, motivating factors and innovative solutions in greater detail in the case study countries, as well as in other geographic areas.

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## **APPENDIX 1: INTERVIEW GUIDE**

The guide was developed to provide a framework for conducting semi-structured interviews with local authority officers and other stakeholders. It consists of seven separate sections. While going through the questions in each section the interviewees were provided opportunity to elaborate further on the respective topics. In the case of Nyíregyháza, where the local authority does not explicitly engage in climate action, the questions were modified to focus on sustainable energy initiatives, which are present in the city.

### **1 Getting on the agenda**

- 1.1.a When, how and why did climate change as a policy issue arise on the municipal agenda?
- 1.1.b Did it initially arise as the climate change issue itself, or was it first connected to other priority areas of the municipality (energy efficiency, sustainable energy use, etc.)?
- 1.1.c Please list the main factors that you think contributed to the municipality becoming front-runner in climate action.
- 1.2.a Please name the most important climate change action related initiatives at the municipality.
- 1.2.b What would you characterize as the main policy outputs?

- 1.3.a Did any changes in socio-economic conditions take place that influenced the emergence of climate change policy at the municipality?
- 1.3.b What institutional changes took place as climate change policy got on the municipal agenda?
- 1.3.c How did resource allocations change as climate change policy got on the municipal agenda?

## **2 Key actors**

- 2.1 Can you name the key actors who initiated climate action in your city (from the council, and other actors from the jurisdiction)?
- 2.2 What role did public opinion play in the emergence of climate change policy at the municipality?
- 2.3.a Please name the actors outside of the council who are key players in local climate action.
- 2.3.b How did they become key players?
- 2.3.c What are their main motivations to promote climate action at the municipality?

## **3 Climate action and municipal priority areas**

- 3.1.a Please describe the priority areas of the municipality.
- 3.1.b Where would you place climate action relative to (other) municipal priority areas?
- 3.2 Does climate policy contribute to achieving other local policy goals? If yes, please describe how?

#### **4 Climate policy making**

- 4.1.a Can you describe the process through which climate policy is made at your municipality?
- 4.1.b What are the main stages of the climate policy making process?
- 4.2 Are there any mechanisms that ensure the integration of climate action with other policy areas (planning, transportation, housing, education, etc.)?
- 4.3.a Does local climate policy address both climate change mitigation and adaptation related issues?
- 4.3.b Can you explain the relative importance of climate change mitigation and adaptation on the municipal agenda?
- 4.3.c Can you name any influencing factors, events that contributed to the development of these relative priorities?
- 4.4.a How successful has been the municipality so far in achieving climate action related commitments and targets?
- 4.4.b What mechanism ensures that targets are met?
- 4.4.c Would you describe this mechanism as successful?

## **5 Winners and losers**

- 5.1.a Can you name stakeholder groups who can be described as winners or losers from climate policy getting on the municipal agenda?
- 5.1.b What are the policy beliefs of these stakeholder groups? What are their main objections against, or arguments for climate policy?
- 5.1.c What resources do different stakeholder groups have?
- 5.2 How did the above mentioned stakeholder groups influence the decisions of the local authority regarding climate action?

## **6 Motivating factors and barriers**

6.1.a What would you describe as the main motivating factors for the municipality to engage in climate action?

6.1.b Which of the following co-benefits are taken into account, and acting as motivating factors of climate action at the municipality?

- Employment creation
- Competitive advantage
- Innovation
- Technological improvement
- Business opportunity
- Promotion of industry
- Energy Security
- Reduced costs (for example ongoing maintenance and future operating costs)
- New forms of cooperation
- Creating legacy of leadership in climate action
- Creating partnership across government departments
- Health benefits
- Improved quality of life
- Reduction in fuel poverty
- Reduced air pollution
- Protection of ecological resources
- Noise reduction
- Reduction in light pollution

- 6.2.a What would you describe as the main barriers that the municipality is facing when engaging in climate action?
- 6.2.b Are the following barriers present at your municipality?
- Lack of statutory requirements for climate action
  - Lack of interdepartmental cooperation
  - Lack of regional cooperation
  - Problem of engaging the wider community
  - Lack of sufficient funding
  - Staff and skills shortages
  - Other issues taking higher priority
  - Lack of appropriate energy use data
- 6.3.c Has the removal of barriers these been considered at your municipality? How?

## **7 Vertical and horizontal coordination**

- 7.1.a How does national/regional/county level climate policy influence climate action at your municipality?
- 7.1.b How does climate action at your municipality influence national/regional/county level climate policy?
- 7.2.a Does the municipality cooperate with other actors at the area/county/regional level in climate action?
- 7.2.b In which climate action related issues does the municipality cooperate with other actors at the area/county/regional level?



- 7.3.a Has the municipality received awards/recognition for achievements in local climate action?
- 7.3.b What were the benefits of receiving awards/recognition for local climate action?
- 7.3.c Has climate action related best practice at your municipality been disseminated? If yes how and to what type of actors?
- 7.4 How did membership in national and transnational networks of sub-national governments for sustainable energy and climate action influence climate policy at the municipality?

## APPENDIX 2: CHARACTERISTICS OF CASE STUDY CITIES

Four, in-depth case studies were conducted as part of the research, in two, middle-sized cities in the UK and in Hungary respectively. In the UK Woking and Leicester and in Hungary Tatabánya and Nyíregyháza were selected as case study sites. All of these cities can be considered as front-runners in climate change action in the respective national contexts. Their achievements are reflected by their membership in and the acknowledgement of their results by national and transnational networks of sub-national governments for climate action. Furthermore, climate change and sustainable energy strategies, action plans, programs and projects have also been implemented as these local authorities.

As for the UK cities, Woking was selected as a case study site based on its internationally acknowledged achievements in climate action. Woking is situated in Surrey county, in the commuter belt of London. The population of the local government district of Woking Borough is 92,400 (Woking Bough Council 2011a). The borough received Beacon Council status twice, first in 2005 related to achievements in sustainable energy use, and in 2008 for efforts to tackle climate change (Woking Borough Council 2008). Furthermore, Woking was the first local authority in the UK to develop a comprehensive climate change strategy, which was adopted in 2002, first updated in 2005 and revised in 2008. The overall objective of the strategy is to comply with or exceed where possible the climate policy targets of central government and other best international standards. Woking Borough Council committed to reduce CO<sub>2</sub> emissions by 60% compared to 2005 levels by 2050

(Woking Borough Council 2008). In addition to this, Woking is a member of ICLEI Local Governments for Sustainability and has received City of Ambition status in the Cities for Climate Protection Campaign of the network. A local authority must fulfill several criteria to obtain this status, including setting ambitious targets and create action plans in at least two areas. One of these must be energy conservation. Woking Borough Council has also signed the Nottingham Declaration. This is a high-level, broad statement of commitment that any council in the UK can make to its own community on a voluntary basis, to address issues of climate change within its jurisdiction.

As for the second case study city in the UK, Leicester is located in the East Midlands area of England. With an estimated population of 304,700 (Leicester City Council 2010), it is the fifteenth largest city in the UK. Leicester is a major commercial and manufacturing center. An important characteristic of the city is the large proportion of ethnic minorities within the population. Leicester has a long history of environmental protection, and in 1990 it has been the first to become Environment City in Britain (Leicester City Council 2011). The city is a world leader in urban energy management and environmental innovation. Leicester received Beacon Council status in the category sustainable energy in 2005 Britain (Leicester City Council 2011). Furthermore, in the main strategic document of the city, “One Leicester”, reducing the carbon footprint is one of the seven priority areas (Leicester City Council 2008). The city adopted the first energy strategy in 1994, with a target of 50% CO<sub>2</sub> emission reductions on 1990 levels by 2025 (Leicester City Council 2007a). The first strategic energy action plan was developed in 1990, which later evolved to a Climate Change Strategy. Based on a partnership approach the Council of the city also chaired and led

the launch of a Regional Energy Strategy. Leicester is a member of ICLEI Local Governments for Sustainability, the ICLEI Cities for Climate Protection Campaign and Energie Cités. Leicester City Council has also signed the Nottingham Declaration on climate change. Leicester was chosen as a case study site because of the long history and recognition of local environmental, sustainable energy and climate policy initiatives.

Turning to the Hungarian case study locations, Tatabánya is a middle-sized city with 71,000 inhabitants (Tatabánya City Council 2008a). It is a relatively new, industrial city founded in 1947 by merging four separate villages (Botos *et al.* 2009). It is located in the North-Central part of Hungary, on a major transport route, near the capital city. Buildings built with pre-fabrication technology during the socialist years comprise a large proportion (63%<sup>15</sup>) of the residential building stock. Historically Tatabánya has been a mining town and a centre of heavy industry during socialism. The post-socialist transition brought with it the collapse of heavy industry in the country, which also had implications for the economy of Tatabánya. Industrial restructuring led to a shift towards manufacturing and development of the service sector. In terms of economic activity and employment opportunities, Tatabánya is in a relatively favourable position compared to other regions of the country. Despite the legacy of being a centre of polluting heavy industry, Tatabánya took a leadership role in local level climate action in Hungary. In 2007 it was the first local authority in the country to adopt a Climate Change Strategy (IS HAS 2007). A Heat and UV Alert Plan was also adopted in 2008 (Tatabánya City Council 2008b), which received international recognition. Furthermore, Tatabánya joined the ICLEI Local

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<sup>15</sup> Based on data obtained from the Ministry of Local Government, Housing Office

Governments for Sustainability international city network and was one of the founders of the Hungarian Association of Climate Friendly Settlements.

The fourth case study city, Nyíregyháza is located in the North-Eastern part of Hungary. With 120,000 inhabitants (MEGAKOM 2008) it is the seventh largest city in the country. About one-third<sup>16</sup> of the residential building stock of the city was built with industrial technology during the socialist years. Nyíregyháza is located in one of the most backward regions of Hungary, characterized by low level of economic activity and high unemployment rate. At the same time within the city itself employment opportunities are relatively better. The city is surrounded by agricultural area, therefore processing of agricultural products has historically been an important economic sector. Nyíregyháza also serves as an important service centre for the county and the region where it is located. After the post-socialist transition manufacturing, processing, logistics and environmental industries were attracted to the city. Nyíregyháza City Council does not engage explicitly in climate change action, at the same time several support programs were started to improve energy efficiency at the municipality. The programs focused on improvement of efficiency of the district heating system (as part of the local NYITÁS – “Opening” program), retrofitting residential buildings built with prefabrication technology (local contribution to the state co-financed Panel Program) and improving the energy efficiency of streetlights (Nagy 2007, Nagy 2008, Energie-Cités 2008). Renovation of public institutions (for example the investment into renewable energy based heating at a local elementary school) has also been initiated with the support of EU Structural Funds (NYÍRTÁVHŐ 2010). Furthermore, Nyíregyháza is a member of the Energie

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<sup>16</sup> Based on data obtained from the Ministry of Local Government, Housing Office

Cités network, which aims to expand the use of sustainable energy solutions within its member cities and raise awareness about the importance of energy efficiency (Energie-Cités 2008).

### **APPENDIX 3: LIST OF INTERVIEWS AND EVENTS ATTENDED**

#### **Woking**

##### Interviews:

Senior Policy Officer for Sustainability, Woking Borough Council, 15/10/08

Operations Manager, Energy Centre for Sustainable Communities (telephone interview), 20/11/08

Managing Director, Climate South East (telephone interview), 27/10/08

Chairman, Woking Local Agenda 21 Group, 20/10/28

Local residents (retired couple), 11/12/08

Representative, Business Link Surrey, 11/12/08

Representative, Chartered Institute of Surrey Building Center, 03/11/08

Representative, Woking Asian Business Forum, 03/11/08

##### Events, meetings attended:

Energy Saving Trust Advice Centre Launch, Guildford, 28/10/08

Woking Borough Council, Presentation on Woking climate action achievements, 15/10/08

Meeting with participation of Climate Change Officer, Planning Officer, Representative of Thamesway Group, and Senior Policy Officer for Sustainability, 20/08/10

## **Leicester**

### Interviews:

Environment Team Leader, Leicester City Council, 09/01/09

Service Director for Housing Renewal, Leicester City Council, 09/01/09

Climate Change Officer responsible for adaptation plan development, Leicester City Council, 27/11/08

Climate Change Officer responsible for outreach to local businesses, Leicester City Council, 09/01/09

Environmental Management Group Manager, Leicestershire County Council, 25/03/09

Professor, Assistant Director, Institute of Energy and Sustainable Development, DeMontfort University, 25/03/09

Chief Executive Officer, Groundwork Leicester, 29/01/09

### Events, meetings attended:

Adaptation Conference, Leicester, 29/01/09

CLIMA Workshop, Leicester, 25/03/09



## **Tatabánya**

### Interviews:

Climate Officer, Tatabánya City Council, 30/07/09

Strategic Officer, Tatabánya City Council, 11/05/09

Energy Officer, Tatabánya City Council, 11/05/09

Director, Tatabánya Economic Development Agency, 07/05/09

Panel Program Project Manager, Tatabánya Economic Development Agency,  
22/09/09

Representative, local property management company, leader of Council Housing  
Committee as former Council member, 30/07/09

President of the local Climate Circle NGO, teacher at local elementary school,  
22/04/09

### Events, meetings attended:

Talk by Mayor at the meeting of the local Climate Circle, Tatabánya 03/09/09

Meetings of the local Climate Circle, Tatabánya, 15/04/09, 03/05/09, 30/07/09,  
03/09/09

Car-free day event, Tatabánya, 22/09/09

## **Nyíregyháza**

### Interviews:

Former Energy Officer, Nyíregyháza City Council (by telephone), 07/09/09

Councillor responsible for environmental issues, Nyíregyháza City Council, 17/09/09

Local resident, lawyer involved in environmental issues in the region, 11/09/09

Director, Bio-genezis Ltd., environmental consultancy focusing on wastewater management, 03/08/09

Project Manager, Bio-genezis Ltd., environmental consultancy focusing on wastewater management, 03/08/09

Representative of local environmental NGO (Emisszió Association), 17/09/09

### Events, meetings attended:

Press release of seasonal district heating prices announcement, with participation of Mayor, and the Director of the local district heating company, Nyíregyháza, 17/09/09

## **Additional interviews and events attended**

### Interviews, informal discussions:

Head of Department of Science, Office of the Ombudsman for Future Generations,  
Hungary, 16/03/09

Head of Department of International Relations, Office of the Ombudsman for Future  
Generations, Hungary, 16/03/09

President, Association of Climate Friendly Settlements, Hungary, 11/04/09

Director, GESB, environmental social business focusing on energy efficiency in  
buildings, Hungary, 05/05/09

Representative of RADIANT housing association, UK, 27/11/09

Principal Manager Energy Efficiency and Climate Change, EBRD London, 12/03/10

### Events, meetings attended:

Meeting of the Hungarian Ombudsman for Future Generations with the Director and  
the Knowledge Transfer Manager of the UK Climate Impacts Programme, 17/03/09

#### APPENDIX 4: SERVICES DELIVERED BY DIFFERENT LOCAL AUTHORITY CATEGORIES IN ENGLAND

	Metropolitan areas		Shire areas				London area			
	District councils	Single purpose authorities	Unitaries	County councils	District councils	Single purpose authorities	City of London	London boroughs	Greater London Authority	Single purpose authorities
<b>Number of local authorities</b>	<b>36</b>	<b>20</b>	<b>47</b>	<b>34</b>	<b>238</b>	<b>55</b>	<b>1</b>	<b>32</b>	<b>1</b>	<b>4</b>
Education	x		x	x			x	x		
Highways	x		x	x			x	x	x	
Transport planning	x		x	x			x	x	x	
Passenger transport		x	x	x					x	
Social care	x		x	x			x	x		
Housing	x		x		x		x	x		
Libraries	x		x	x			x	x		
Leisure and recreation	x		x		x		x	x		
Environmental health	x		x		x		x	x		
Waste collection	x		x		x		x	x		
Waste disposal	x	x	x	x			x	x		x
Planning applications	x		x		x		x	x		
Strategic planning	x		x	x			x	x		
Police		x				x	x			
Fire and rescue		x		x		x				
Local taxation	x		x		x		x	x		

Source: DCLG 2009, p.15, Table 1.3a.

## **APPENDIX 5: PROGRESS IN CLIMATE ACTION AT THE CASE STUDY CITIES**

While the research primarily focuses on the emergence and governance of climate action at the UK and Hungarian case study cities, it is useful to provide a brief overview of results achieved by the local authorities. The following brief assessment is based on available public documents and data from local and national authorities.

Evaluation of progress in mitigating climate change is based on carbon dioxide emission reductions achieved at the local authority as an organisation, and per capita level emission reductions in the area of its jurisdiction. Local authority level emission statistics are collected in the UK at the national level as part of a comprehensive assessment framework (the system of National Indicators). However in Hungary local authority level greenhouse gas emission reduction data is not collected by the national government. Therefore evaluation of progress made in climate change mitigation is more problematic in the latter country. At the same time authorities of case study cities have published results of some of the implemented mitigation projects and programs, which are also used as data sources.

Progress regarding adaptation is evaluated based on the following criteria: the inclusion of adaptation considerations in climate change strategies and action plans, vulnerability assessments carried out over local authority service areas, integration of resilience measures within services, interdepartmental cooperation mechanisms to support adaptation action as well as public announcements and commitments made in connection to adaptation.

## Mitigation

Climate action led to reductions in greenhouse gas emissions at all case study cities. In some cases this was due to actions implemented by the local authorities (such as the establishment of small-scale CHP systems and local authority co-financed energy efficiency programs). In other cases it can be attributed to external factors and actions of other stakeholders (such as the technology and fuel switch in non-local authority owned power plants).

The relative importance of mitigation action at local authorities as organizations has been more pronounced at the UK case study cities. Both Woking Borough Council and Leicester City Council were able to deliver results in greenhouse gas emission reductions and energy savings at the organizational level (see Table 13). This was achieved through measures in council offices, as well as in council operated schools, social housing and sports facilities. In Woking by 2006 82% reduction was achieved in CO<sub>2</sub> emissions originating from council property compared to a 1990 baseline, while borough-wide emission reductions reached 21% (council property and community combined) (Audit Commission 2007). Furthermore, 94% of electrical and thermal energy requirements of the council came from sustainable sources and 11% of electricity from renewable sources in 2006 (Woking Borough Council 2008). Leicester City Council also showed substantial progress in mitigation action, reducing CO<sub>2</sub> emissions on the organizational level by 27% by 2006/2007 compared to 1990 (Leicester City Council 2007b). In the same year 3.2% of electricity used in all council buildings came from renewable sources (Leicester City Council 2007b). Small-scale CHP systems were installed in both UK case study cities for supplying council operated buildings.

Energy saving measures have also been utilized at the organizational level at the Hungarian case study authorities, although to a comparatively lower extent. In Tatabánya a 10.8% saving in electricity use was achieved at council offices after the implementation of energy efficiency measures (Total Ltd. 2009). In Nyíregyháza, council buildings benefited from citywide modernization of the district heating infrastructure. More recently energy efficiency modernization of the heating system of a council operated school took place through an EU co-financed project, which included the use of renewable energy technology (wood pellets and solar collectors) (NYÍRTÁVHŐ 2010). At the same time the approach taken by the Hungarian case study cities in terms of climate change mitigation was less comprehensive than that of the two UK local authorities.

**Table 13 Mitigation related results at local authorities as organizations**

	<b>Results at local authorities as organisations</b>
<b>Woking</b>	82% reduction in CO2 emissions from council property in 1990-2006
<b>Leicester</b>	27% reduction in council CO2 emissions in 1990-2006
<b>Tatabánya</b>	10.8% electricity savings in council offices
<b>Nyíregyháza</b>	n.a.

Sources: Audit Commission (2007), Leicester City Council (2007b), Total Ltd. (2009).

Energy savings and emission reductions originating from the community as a whole seem to have been more significant at the Hungarian localities. This is due to two factors. Switching to more energy efficient and environmentally friendly energy generation technologies (from coal and oil to natural gas fired CHP) in power plants supplying the cities was the first factor.

At the same time these plants were not owned by the local authorities when the favorable technology and fuel switches took place. Authorities of the two Hungarian case study cities have been striving to gain ownership of the local energy infrastructure in order to influence operations, and reduce energy costs for citizens. Nyíregyháza City Council acquired and modernized the local district heating company and infrastructure early on after the post-socialist transition, while it has not been able to increase its ownership share in the local power plant. Tatabánya City Council recently gained majority ownership in the local power plant with the aim to influence energy supply and facilitate the introduction of sustainable energy sources. Therefore the tendency at the two Hungarian case study cities was to increase council influence on local energy infrastructure in order to improve efficiency and increase the share of sustainable energy sources in the energy mix.

The second main factor contributing to results in emission reduction at the community level at the Hungarian case study cities was the high participation achieved in residential energy efficiency support programs (see Table 14). Nyíregyháza, where 83% of households is connected to district heating, was especially successful at increasing energy efficiency at the community level, with 28% of flats participating by 2007 in the local authority initiated district heating modernization program (Nagy 2008). In Tatabánya energy efficiency refurbishments took place in 19% of households by 2009, as part of support programs financed or co-financed by the local authority (Kramer-Nagy 2010). The UK case study cities have also been active in implementing residential energy efficiency support programs. At the same time participation in these programs was not as widespread as in the Hungarian case study cities. In Woking, 12% of local households benefited from free or subsidized insulation measures by 2006 [calculation based on Audit Commission (2007) and National Statistics].



While support measures for residential energy efficiency improvements were also implemented in Leicester, CO<sub>2</sub> emissions from domestic sources increased by 7% between 1990 and 2004. At the same time energy efficiency support programs between 2004 and 2010 contributed to CO<sub>2</sub> savings in the residential buildings sector, particularly toward the end of the period (Leicester City Council 2007b). Furthermore, per capita emission decreased by 12% between 1990 and 2004, mainly due to reductions in emission in industry and commerce (Leicester City Council 2007b). Per capita emissions in Woking and Leicester reached similar levels (6,6 kt CO<sub>2</sub> and 6,5 kt CO<sub>2</sub> respectively) by 2007 and were lower than the UK average (7.1 kt CO<sub>2</sub> in the same year) (see Table 15).

**Table 14 Participation in residential energy efficiency support programs at the case study cities**

	<b>Participation in residential energy efficiency support programs</b>
<b>Nyíregyháza</b>	28% of flats participating in local DH modernisation program by 2007
<b>Tatabánya</b>	19% of flats refurbished between 2004 and 2009 as part of various support programs
<b>Woking</b>	12% of households benefiting from free or subsidised insulation by 2006
<b>Leicester</b>	na

Sources: Nagy (2008), Kramer-Nagy (2010), Audit Commission (2007).

**Table 15 Woking and Leicester - National Indicator 186: per capita CO<sub>2</sub> emissions in the Local Authority area**

LA name	Year	Industry and Commercial	Domestic	Road Transport	LULUCF	Total	Population ('000s, mid-year estimate)	Per Capita Emissions (t)
Leicester	2005	1,047	642	353	2	2,044	286.3	7.1
	2006	1,017	639	345	2	2,003	289.7	6.9
	2007	977	613	346	2	1,938	292.6	6.6
Woking	2005	224	229	147	-	597	89.9	6.6
	2006	227	232	146	-	604	90.7	6.7
	2007	220	228	146	-	593	91.4	6.5

Source: DECC (2007).

Note: per capita emission performance according to sectors in the two UK case study cities from 2005 to 2007. At the time of writing, data on emission performance of local authorities as organizations (NI 185) has not yet been published

## **Adaptation**

Measures that contribute to adaptation to climate change were found at all the case study cities that explicitly engaged in climate action (see Table 16). At the same time no adaptation action beyond business as usual was pursued in Nyíregyháza, the case study city focusing solely on the sustainable energy aspect of climate policy.

Leicester was the most ambitious case study city in terms of adaptation action. A detailed Adaptation Action Plan was adopted representing council commitment to vulnerability reduction and to increasing resilience to climate change. The Adaptation Action Plan includes explicit targets and timeline, evaluation of progress, as well as responsible persons and departments (Leicester City Council 2009). The three significant effects taken into account include flood risk, summer heat waves and water availability. A comprehensive survey has been carried out about previous extreme events in these issue areas and on how they influenced local authority service provision and infrastructure. Furthermore, mechanisms for interdepartmental cooperation have been set up in order to deliver adaptation related targets.

Tatabánya and Woking have also taken substantial steps to address the issue of adaptation, at the same time their approach is less comprehensive than that of Leicester. Tatabánya received international recognition for its Heat and UV Alert Plan (Tatabánya City Council 2008b), which facilitates systematic local action during the occurrence of summer heat waves. Wild fires and local flooding occurring as a result of extreme weather events are also mentioned in the climate change strategy of the city. Woking implemented measures in the fields of strategic flood risk assessment, fire protection, and inclusion of adaptation related criteria

during the planning of new developments. These measures are also mentioned in the climate change strategy of the borough. Woking Council also engages in regional cooperation in the field of adaptation as part of the Climate South East partnership.

**Table 16 Addressing adaptation to climate change at case study cities**

	<b>Woking</b>	<b>Leicester</b>	<b>Tatabánya</b>	<b>Nyíregyháza</b>
Adaptation section in climate change strategy	x	x	x	
Adaptation measures in climate strategy	x	x	x	
Adaptation related action plans	x	x	x	
Comprehensive adaptation action plan		x		
Survey of vulnerabilities of LA service areas		x		
Adaptation related interdepartmental cooperation mechanism in LA		x		

Sources: Woking Borough Council (2008), Leicester Partnership and Leicester Environment Partnership (2003), Leicester City Council (2007a), presentations at Leicester Adaptation Conference 29 January 2009.

## Summary

As this section demonstrated, all four case study cities achieved results in climate change action from the 1990s onwards. In terms of mitigation at the organizational level in local authorities the UK case study cities showed better results. At the organizational level Woking Borough Council achieved the most substantial energy savings and greenhouse gas emission reductions among the four cities, followed by Leicester City Council. At the same time, Hungarian case study cities achieved good results in community level mitigation action. This took place through residential energy efficiency support programs that proved popular among residents, as well as through fuel switch and the introduction of more efficient technologies at local power plants. Residential energy efficiency measures were also implemented at the UK case study cities, but at a smaller scale.

In terms of adaptation Leicester developed the most comprehensive and systematic approach among the four case study cities, while adaptation related efforts of Tatabánya also received international recognition. Woking implemented adaptation related measures locally, at the same time regional level partnerships in this field also played an important role. Despite mitigation related achievements, Nyíregyháza did not implement adaptation measures beyond business as usual.

The case study cities have therefore all been able to show results in climate action, although to differing extent in different areas. All of the case study cities continue to pursue sustainable energy and/or climate policies that go beyond national requirements.

## **APPENDIX 6: POLICY MEASURES IN SPECIFIC SERVICE AREAS ACCORDING TO THE FIVE MODES OF GOVERNING CLIMATE ACTION**

Sources for the tables in Appendix 6:

Woking: Jones (2004), Audit Commission (2007), Woking Chamber of Trade and Commerce (2007), Woking Borough Council (2008), presentation by Rendall and interviews.

Leicester: Leicester Partnership and Leicester Environment Partnership (2003), Improvement and Development Agency (2005), Corporate Director of Housing Leicester City Council (2006), Leicester City Council (2006), Leicester City Council (2007), Leicester City Council (2009), Leicester City Council (2011) and interviews.

Tatabánya: IS HAS (2007), Itthon (2008), Tatabánya City Council (2008b), Botos *et al.* (2009), Total Ltd. (2009), Tatabánya City Council (2009) and interviews.

Nyíregyháza: Nagy (2007), Nagy (2008), Bio-genezis Ltd. (2008), Energie-Cités (2008), NYÍRTÁVHŐ Kft. and interviews.

## Self-governing

Cities	Woking	Leicester	Tatabánya	Nyíregyháza
<b>Local authority service areas</b>				
<b>Energy supply and management</b>	CHP and private wire within the town center; bring down own lighting to ILE guidelines; in 2007 11% of council electricity from RES; in 2006 94% of electrical and thermal energy from sustainable energy sources; to provide expertise and human resources in the sustainable energy field, a Council owned arm's length ESCO has been set up	Installation of a range of RES in schools (pilot project in 15 schools, later to be expanded); EMAS in in council buildings and schools to support behaviour change; watt savers installed in street lighting (pilot phase, financing secured for expansion); more energy efficient lighting for festive lighting, as well as park lighting, architectural lighting and street signals; solar thermal schemes in Council buildings	Energy efficiency improvement and awareness raising program in Council offices, led by climate change officer; new energy officer hired to develop comprehensive energy efficiency strategy for the city	Improved energy efficiency of street lighting
<b>Buildings (municipal and private)</b>	Brockhill Sheltered (Council) Housing - large scale domestic PV, also connected to CHP; Civic offices connected to CHP; water efficiency measures in the Civic offices; hydrogen fuel cell combined with CHP as well as solar thermal panels and PV implemented in Woking Leisure Centre and Pool	Detailed energy and water surveys in Council buildings; appointment of a Project Officer to coordinate energy and water efficiency improvements in Council buildings; Intelligent Metering system in Council buildings and schools; plans to retrofit public buildings with green roofs, where possible; energy efficiency included in purchasing policies; integration of renewable energy to existing Council buildings; passive solar heating incorporated into some buildings; Housing Capital Programme for Council owned social housing stock; EPCs and Display Energy Certificates on Council buildings (over specific floor area size); adoption of a Sustainable Construction Standard for Council new build and major refurbishments; Local Climate Impact Programme, including climate impact inventory; joint application with other county LAs for Salix funding for EE support programs in public buildings	Participation in national support program for energy efficient lighting modernisation of 20 council owned nursery schools and primary schools (Light of our eyes program); plans to provide heating for newly refurbished pool from newly acquired CHP station, where biomass and depony gas are also planned to be integrated into energy production	Improved energy efficiency of indoor lighting in public buildings; EU co-financed project to switch to RES based heating in a local school, combined with building heating system modernisation measures
<b>Transport services</b>	October 2000, relaunched in 2007: Staff Travel Plan for Council staff	Leicester City Council Internal Travel Plan, including travel to work survey conducted among officers; pedestrian travel support website, bike purchase and bus season tickets in place of salary ('salary sacrifice' schemes)	The use of the Green Plus burn catalizator in the Council vehicle fleet	
<b>Waste management</b>	Adoption of Procurement Strategy that is in line with sustainable resource management considerations	Officer recruited to audit Council waste; introduce reduce, reuse, recycle projects; expand the office waste recycling scheme to all Council offices		
<b>Water supply and sewerage</b>	Water efficiency measures in the Civic offices	Detailed water surveys and intelligent metering of water consumption in Council buildings and schools; appointment of a Project Officer to help implement water and energy saving measures in Council buildings; installation of water efficiency technologies in schools (later to be expanded to other Council buildings); greywater recycling schemes in Council buildings	The need for water efficiency measures and management of extreme amounts of rain mentioned in the Climate Change Strategy	
<b>Urban planning</b>	Strategic Flood Risk Assessment conducted for the Borough; Climate Neutral Development Guidance, including good practice on rainwater harvesting and recycling of greywater		Review and advice of climate change officer on development plans; planning to accommodate refugees in the event of extreme flooding in other parts of the country	
<b>Social services</b>				
<b>Education</b>				
<b>Awareness raising</b>		Development of Adaptation Risk Register	Energy efficiency improvement and awareness raising program in Council offices, led by climate change officer; new energy officer hired to develop comprehensive energy efficiency strategy for the city	
<b>Culture</b>		Coordination of and establishing connection between Adaptation Conference and Leicester Comedy Festival in 2009		
<b>Health</b>	Ensure that the Council's future planning and investment into outdoor play facilities includes measures that enable them to remain fit for purpose (provision of shade, drinking water, water play features, lighting to ensure extended use into summer evenings)	Ensuring that the heatwave recovery plan forms part of the Council's emergency plan	Need to adapt to heatwaves included in the Climate Change Strategy, Heat and UV Alert Plan adopted	
<b>City maintenance (parks, public spaces)</b>	Woking park - comprehensive pond restoration, including rain water harvesting system to provide top-up water and flood storage	Review opportunity to plan new trees to reduce the impact of the Urban Heat Island Effect; development of Tree Strategy; reduce subsidence risk caused by Council owned trees in private and Council property	Need for planting more trees mentioned in Climate Change Strategy	

## Provision

Cities	Woking	Leicester	Tatabánya	Nyíregyháza
Local authority service areas				
Energy supply and management	CHP supplying businesses (for example the Holiday Inn Hotel) and Council offices within the town center through private wire (green electricity being delivered directly to the consumer); PV canopy at Woking Railway Station; hydrogen fuel cell combined with CHP at Woking Leisure Centre and Pool connected to district heating network	Several small scale CHP schemes; Central Leicester: Extending District Heating, feasibility studies undertaken on identifying parts of the city where district heating can be extended; investigating the possibilities of development of large scale wind turbines within the city	Closing of Bánhida coal fired power station in 2004; switching heat power station fuel from coal to natural gas operated CHP in 2004; gaining majority ownership in the local CHP station in 2010 gives the LA full power over the operation of the district heating infrastructure in the city - 22,700 flats connected to district heating; plans to integrate biomass and depony gas in heat power plant; feasibility study on the utilisation of wind power in the region	CHP plant opened in 2007 supplies heat to all buildings connected to the district heating infrastructure in the city - 16,500 flats connected to district heating
Buildings (municipal and private)			Prioritisation of district heating and exploring the possibilities for instalment in new developments and investment programs	EU co-financed project implemented by LA owned district heating company to supply RES based heating (pellet and wood chips, solar heaters for warm water in the summer) to a local school, combined with heating system modernisation measures
Transport services	Securing funds for improvement in cycling facilities - cycle storage at railway station, improvements in Woking Cycle Network	Establishment of new cycleways and cycle parking; bike recycling and training; introduction of real time bus information system; establishment of park and ride services	New bus terminal in the center of the city; new linking routes to reduce traffic within the city; cycle parking at public institutions	
Waste management	Collection of recyclable waste at individual houses; kerbside recycling and organic waste collection; detailed online information on location of and services at recycling sites	Community Recycling Centers; kerbside recycling; recyclable waste collection at individual houses	Regional solid waste management program; plans to further develop kerbside recycling facilities; kerbside compost collection; waste collection yard	Regional solid waste management program; kerbside recycling; organic waste, electronic waste and recyclable waste collection in areas with detached housing; waste collection yard
Water supply and sewerage			Planned biogas plant; modernisation of wastewater management facilities	Implementation of Nyíregyháza city and surrounding region sewerage and wastewater management program, including new biogas plants in the region
Urban planning				
Social services				
Education				
Awareness raising			Setting up a regional voluntary carbon offset system where participants pay for climate tickets representing projects that contribute to reducing GHG emissions in the city and its region	
Culture				
Health				
City maintenance (parks, public spaces)	Improvement of flood protection in the Hoe Valley	Group of measures to reduce flood risk	Rainwater drainage measures and maintenance of local streams	



## Regulation

Cities	Woking	Leicester	Tatabánya	Nyiregyháza
Local authority service areas				
Energy supply and management				
Buildings (municipal and private)	Achieve Code for Sustainable Homes level 4 by 2010 for new residential developments; Plan C software to ensure consideration of RES in new developments (in cooperation with Climate South East)	All new housing developments to be zero carbon by 2013 (national target: 2016); ensure compliance with Energy Performance Certificates and Display Energy Certificates in the social and private rented sector; stronger energy efficiency standards than current building regulations for building on land sold by the Council for housing development; adoption of sustainable procurement practices to reduce CO2 impact of procurement decisions	Planned regulation for new building and for refurbishment of existing large buildings to include in the building plan the possibilities for RES instalment	
Transport services	Plans to improve standards for taxi and private hire vehicles licensed to operate in the Borough by 2010/2011			
Waste management		Recycling and composting target of a minimum of 40% to be achieved by 2005		
Water supply and sewerage				
Urban planning	Climate Neutral Development Supplementary Planning Document taken into consideration when deciding about planning applications	Plan to develop Supplementary Planning Document relating to climate change and sustainable development, including advice on conserving energy and water resources, minimising flood risk, sustainable low carbon design and construction methods		
Social services				
Education				
Awareness raising				
Culture				
Health				
City maintenance (parks, public spaces)				

## Enabling

Cities	Woking	Leicester	Tatabánya	Nyíregyháza
Local authority service areas				
Energy supply and management				
Buildings (municipal and private)	Oak Tree House - house purchased by the Council to demonstrate a wide range of water and energy efficiency measures; information tours of the Council's sustainable and renewable energy initiatives; Woking Low Carbon Homes Programme to provide advice and support to home owners on sustainable energy and water efficiency measures; Winter Warmer insulation program, free of charge; share best practice with other LAs through Beacon Scheme; Condensing Boiler Scheme - energy efficient boilers offered at discounted price to local residents; in PPP cooperation with British Gas	Exemplar low energy buildings (Queens Building, Eco House, Rushey Mead School); Programme of Energy Advice and Funding for Private Householders - comprehensive programme providing tailored energy advice, home visits and introduction of available funding; Leicester Loan for residential energy efficiency improvements; expansion of council support through Hot Loft Insulation Scheme for private housing; EU co-financing for the implementation of innovative demonstration projects to tackle urban problems (ERDF Article 10); share best practice with other LAs through Beacon Scheme	Asbestos exemption program in local housing estates (since 2006), half of it completed; small scale council grant and preferential loan scheme for energy efficiency improvements in residential buildings; Council co-financing for the implementation of national level residential EE support programs; planned showcase building for energy efficiency and RES, but no financing yet to do the refurbishment	"Opening Program" - Council support program for the refurbishment of the residential district heating infrastructure; Council co-financing for the implementation of national level residential EE support programs
Transport services	Encourage local businesses to implement Transport Plans; communication to raise awareness about smarter travel choices; promotional campaign through Council publications	Council support service to develop School Travel Plans and Travel Plans for businesses; Leicester University Travel Plan		
Waste management	Promotion of home composting through trialling the use of Green Cone Food digesters, for which price support is provided by the Council; Junior Citizens initiative to educate school children about waste minimisation; Woking Freecycle Network: support for re-use activities			Free provision of organic waste collection containers to owners of detached houses
Water supply and sewerage	Information provision about water efficiency measures; water efficiency measures implemented in the Oak Tree House show home			
Urban planning				
Social services	Enhanced grants to reduce fuel poverty, in cooperation with four other councils	Home energy surveys for fuel poor		
Education	Work with schools in the borough to achieve Eco Schools award; bulletin for schools on climate action	Setting up local food selling points within schools to reduce food miles (pilot project)	Environmental Education Action Plan (spanning 5 years); LA financing for environmental education programs and projects in schools	
Awareness raising	Quarterly update in the local media on progress in climate action; engaging local businesses in climate action through a programme of breakfast meetings with environmental organisations and the Woking Means Business exhibition; provision of environmental checklists for businesses; providing clear messages in an easily accessible format on the Council's website and on information boards outside key energy projects	Climate Change: What's Your Plan?: guidance and consultancy provided by LA for local businesses to help them create tailor-made climate change action plans	Green Branch price for individuals and organisations playing a leadership role in local environmental action; Annual events - World Water Day organized in cooperation with regional waterworks company; World Environment Day; European Car-free Day; Open Doors Event Series about environmental activities of local organisations	Display Campaign (Energie-Cités) in schools to encourage energy efficient building use among teachers and pupils
Culture				
Health			Heat and UV Alert Plan	
City maintenance (parks, public spaces)				

## Partnership

Cities	Woking	Leicester	Tatabánya	Nyíregyháza
<b>Local authority service areas</b>				
<b>Energy supply and management</b>	Surrey CC Partnership - reduction of light pollution; pressing Surrey County Council to bring all their lighting, particularly street lighting into compliance with ILE guidelines	Share best practice with other LAs through Beacon Scheme	Regional cooperation in the development and implementation of energy efficiency and sustainable energy model program	Council cooperation and co-ownership of ENEREA Regional Energy Agency (connected also to the Intelligent Energy Europe Program) in order to expand RES generation and use in the region
<b>Buildings (municipal and private)</b>	Condensing Boiler Scheme - energy efficient boilers offered at discounted price to local residents, in PPP cooperation with British Gas	Cooperation with other LAs in the county to apply for national funds for energy efficiency improvements RES implementation in public sector buildings; partnerships with the private sector to establish discounts for households in Leicester	Working in partnership with METESZ, a local civil organisation that provides advice to homeowners on participation in energy efficiency support programs, as well as energy performance certification (when it becomes compulsory).	
<b>Transport services</b>	Partnership with Surrey County Council to improve cycling infrastructure	Development of joint Local Transport Plan for 2001-2006 with Leicestershire County Council		
<b>Waste management</b>	Joint Municipal Waste Management Strategy 2006-2026 in Surrey County Council; overarching message/logo to promote sustainable waste management		Waste Commando - partnership between waste management company, Tatabánya City Council, local police, etc. for tackling illegal waste disposal; Tatabánya City Council gestor of regional waste management partnership	Waste Commando - mapping of illegal waste disposal sites by local environmental NGO (which benefits from some financial support from the Council environmental fund)
<b>Water supply and sewerage</b>				Regional cooperation in wastewater management, development of new regional facilities and biogas plants
<b>Urban planning</b>				
<b>Social services</b>	Cooperation with four other councils to reduce fuel poverty	Fuel Poverty Strategy in place since 2000		
<b>Education</b>		Climate Change and Sustainable Development MSc course at DeMontfort University; cooperation with university research center in CC Strategy development; the Environmental Partnership working with schools	Environmental Education Action Plan (spanning 5 years); Camp for climate protection and disaster relief for school children organised in cooperation with the local Disaster Relief Agency	
<b>Awareness raising</b>	Climate Change Strategy; Cooperation with Woking People of Faith Forum on awareness raising about climate change; local stakeholders and council officers as Climate Change Ambassadors; cooperation with Woking Chamber of Trade and Commerce, Woking Asian Business Forum and Business Link; Woking climate change officer working with Woking Local Agenda 21 group; cooperation with Climate South East on regional adaptation	Climate Change Strategy, Climate Change Action Plan and Adaptation Action Plan developed in partnership with other local stakeholders; Local Resilience Forum including Flood Group; Workforce Training Initiative with large companies	Climate Change Strategy developed in cooperation with Hungarian Academy of Sciences; cooperation with the local Climate Circle NGO and with organisations represented in the NGO including local Disaster Relief Agency, local schools and nursery schools, the waterworks company as well as other private companies; connection established between CSR activities of local companies and local authority environmental programs	
<b>Culture</b>				
<b>Health</b>		Partnership with Leicestershire Health and voluntary sector agencies to identify vulnerable households	Implementation of the Heat and UV Alert Plan in cooperation with Disaster Relief Agency, local hospitals, police and health authorities	
<b>City maintenance (parks, public spaces)</b>	Management of heathland and woodland including improved fire protection measures and biodiversity action plans in cooperation with the Environment Agency, Surrey Heathland Project and Surrey Biodiversity Network		Program for adopting green areas within the city	