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Local Government Response to Climate Change  
in the United Kingdom, Germany and Sweden

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## **EXECUTIVE SUMMARY**

Global climate change will affect all aspects of society. Governments and businesses will face both short term and long term challenges. As the earth's climate warms and the dangers increase, it is evident that immediate action is required. Strategies and actions today and in the coming decades to mitigate climate change are needed. It is also clear that adaptation methods are necessary to prepare for the inevitable impacts that cannot be avoided as a result of a warming climate.

Many countries continue to work on mitigation strategies to address climate change. However, adaptation is now widely recognized as being fundamentally important due to the threat of future extreme weather events. The management of water and other natural resources will need to be addressed. Attention will also need to pay a particular focus on agricultural activities and the sources and generation of energy.

In the United Kingdom, Germany and Sweden a number of policy mechanisms have been implemented in local areas with respect to climate change. Flooding remains a major concern in the UK, Germany and Sweden and current adaptation strategies include the building of reservoirs and dykes in both the low and highland areas. Flood warning systems are also in place and require further development, specifically in Germany.

Increasing temperatures in the regions have prompted new spatial planning techniques, transportation strategies, the proactive management of housing quality and the promotion of energy efficiency. Escalating heat waves have signaled the need to improve early health warning systems across Europe and develop preventive emergency plans. Water conservation methods are progressively more supported in the household, industrial and agricultural sectors due to increasing temperatures in a number of areas.

Regulations regarding climate change in the three countries revolve in large part around the continued development and use of renewable resources, monitoring energy usage, and the promotion of energy efficiency measures in municipal buildings, households and new business development. Renewable resources include wind and solar power, geothermal energy, and the use of biofuels. Renewable resources are a significant part of Germany's climate change strategy and in 2003, 26 percent of Sweden's energy consumed came from renewable sources.

Funding for climate change strategies and environmental initiatives are provided by a number of organizations, governments, the private sector and Non-Governmental Organizations. Financial assistance and renovation grants are potentially provided to private households for reducing energy use and through building renovation.

In all three countries, there is a lack of information provided to the public in order to make society aware of both climate change impacts and ways in which to reduce personal contributions to the problem. While some areas of the UK are using information programs to

change travel and transportation patterns of employees, it is evident through research that both information and incentive programs are not being sufficiently utilized.

There are a number of institutional arrangements and partnerships in place in the UK, Germany and Sweden. The Cities for Climate Protection is an international campaign that currently has 118 local authorities from across Europe participating in the program (LGA, 2005b). Public, private and voluntary sectors in the UK often work together to address the impacts of climate change. In Sweden there are two major networks that focus on climate change mitigation, they are the Climate Change Municipalities and the Eco Municipalities.

In the UK, local governments have implemented a number of initiatives that include a Code for Sustainable Homes, climate change strategies and energy reduction campaigns, as well as intelligent metering that monitors energy used in cities. In one local area a solar village is being developed which, once completed, will provide 20 percent of electricity needs and 50 percent of hot water needs through the use of solar installations.

In Germany, renewable resources are the most significant tools in place to reduce climate change impacts. Wind power now provides more electricity in the country than hydropower. Subsidies are provided to those who want to install solar power to their homes and all types of solar applications are in use. Geothermal power is a renewable resource that is also being developed and used in a number of communities. It is not affected by seasonality, weather effects or temperature and is a clean source of energy.

Sweden wants to become the world's first oil free economy and has been pursuing clean and renewable energy sources in order to achieve this aim. Currently nuclear and hydroelectric power is in use to produce energy but increasingly Sweden is also turning to geothermal heat and solar power. A number of districts are being created that are sustainable and considered ecological cities through the environmental approach taken in the construction and sustainability of the areas. Public and private transportation is being changed to clean vehicles through the promotion of biofuel use and clean transportation such as electric and hybrid vehicles.

It is evident that there are environmental sustainability measures, climate change strategies and initiatives which have been met with a measure of success. What has been revealed is that there are very few performance measures and information programs in place to reveal the success of climate change strategies. Adaptation measures are discussed at length and the importance of these measures is understood, yet implementation remains a future priority.

Climate change will affect many local authority's services, assets and infrastructure. Water, waste management, and energy provision will all be affected. Extreme weather events<sup>1</sup> have shown that climate change will impact society and that infrastructure and services need to be designed to meet the risk (ICLEI, 2007a).

The challenge for the managers and political leaders of local government is to recognize the urgency of climate change and the opportunity to be pro-active and to take the lead in the

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<sup>1</sup> Such as the flooding that occurred in the European summer of 2002 and 2005, and the extremely hot summer of 2003 and 2006.

interests of their community, without waiting for circumstances to force their hand (LGA, 2005: p. 14).

## **INTRODUCTION**

This paper will discuss initiatives that local governments in Europe have implemented in order to address climate change. The specific focus of the research will be in the countries of the United Kingdom, Germany and Sweden. The effect of climate change in Europe has prompted a number of local governments to act. Impacts have already been witnessed with intense rains and severe flooding, heat waves, drought, and rising sea levels. Climate change may also have serious negative effects for agriculture, community planning, economies and ecosystems (GOS, 2007a).

Local governments in these three countries are working towards managing the new conditions and reducing emission contributions in local areas. Sustainable solutions are being implemented in order to reduce climate change impacts as a result of human influence. In Europe, municipal leaders and representatives of local governments are committed to improving and implementing climate change mitigation and adaptation strategies (Amir and Peshawar, 2005).

The paper begins with a discussion of the current and future impacts of weather variability on a number of areas. These include the economy; the environment; public health; culture and recreation; and local government asset and disaster management in Europe. Following is a section which presents local government policies that have been put in place to address climate change. The discussion then identifies case study initiatives that have been implemented by local governments in each of the three countries to address the problem. The approach taken in order to discuss local government initiatives and responses to climate change include a literature review, data analysis, internet research, and a review of government documentation and climate policy research.

Europe has the highest population density (60 persons/km<sup>2</sup>) of any continent; of the total European population, 73 percent live in urban areas (UN, 2004), with 67 percent in southern Europe and 83 percent in northern Europe (Alcamo, 2007). With more than 50 percent of the world's population living in cities, municipalities have a greater role to play to address climate change through the decisions they make (Amir and Peshawar, 2005). Local governments have the ability to change the amount of energy their communities use and consume. By making proactive and responsible decisions on areas such as land use, zoning, traffic management, building codes and any number of other activities, the effects of climate change can be significantly reduced.

## FINDINGS

### Section One: Climate Change Impacts on Local Government Activities in Europe

#### 1.1 Asset Management

The effects of climate change and increased atmospheric CO<sub>2</sub> will have a number of consequences for European crop productivity, although Ewert *et al.* (2005) believe that technological developments<sup>2</sup> may help to mitigate the effects that climate change will have on the output of crops in Europe. However, this will mean greater strain on agricultural land as crop yields increase, and further stress on many water systems as availability decreases in the south and southeast as a result of higher temperatures (*ibid*).

Higher temperatures in Europe have the possibility of damaging rail and road surfaces. This in turn may reduce the comfort of passengers and threaten the stability of the transportation network (AEAT, 2003). With temperatures increasing, the use of air conditioning in private vehicles will rise significantly. There is a further possibility that there will be a reduction in the use of public transportation (Wooller, 2003). This may occur as a result of passengers not wanting to travel in conditions that are perceived to be uncomfortable due to increasing temperatures (LCCP, 2002a; LCCP 2002b).

An increase in extreme weather events may cause severe flooding, such as what has been seen recently in 2007. Underground rail systems and roads with inadequate drainage are at high risk of flooding and this will impact the transportation network of millions of commuters due to infrastructure damage (DEFRA, 2004). It is also believed that high winds may affect the safety of air, sea and land transport (Alcamo, 2007).

#### 1.2 Economic Growth Management

A number of economic effects have been identified as a result of climate change impacts on Europe's economy in the future. Industries located on or near the coastline will be affected by sea level rise. Recreational activities and preferences may change as a result of weather effects (outdoor/indoor). As witnessed in a number of countries in recent years, damage to homes and to personal assets due to extreme weather events will increase the number of insurance claims and will stress the viability of the insurance industry.<sup>3</sup>

Climate change may have significant impacts on a number of marine fish and shellfish in the north-east Atlantic (Clark *et al.*, 2003). Climate change also threatens to disrupt the spawning habits of marine life and increase the levels of pollution found due to weather effects and sea level rise (Alcamo, 2007) putting stress on the fishing industry.<sup>4</sup> This will have significant adverse economic effects for those communities that are dependent on the industry (Gitay, 2002).

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<sup>2</sup> Such as the introduction of new crop varieties and implementing improved cropping practices.

<sup>3</sup> The Association of British Insurers estimate that losses from natural disasters cost \$60bn in 2003 and could be as much as \$150bn by 2010 (LGA, 2005: p.9).

<sup>4</sup> Researchers emphasize that the ability to assess a number of impacts such as biodiversity, effects on ecosystems, and even the socioeconomic costs of climate change in coastal and marine areas is limited.



















































