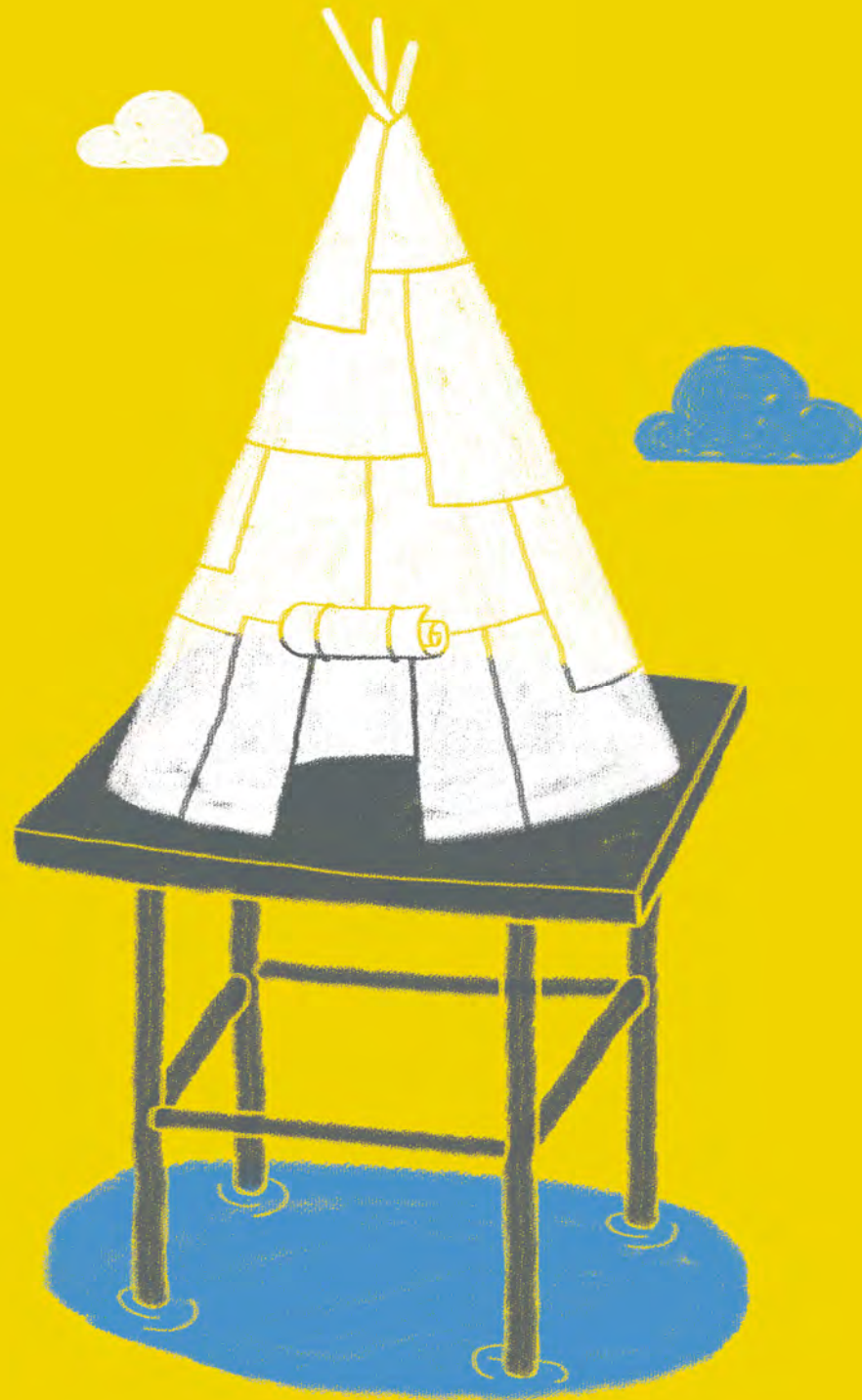


Elaboration and implementation of a local adaptation strategy or action plan



International
experience



Local authorities

ADAPTING TO CLIMATE CHANGE

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Foreword

➤ **Climate change adaptation, French local authorities and international experience**

Under the French “Grenelle” climate and environment legislation, some 500 sub-regional territories in France are required to draw up a territorial climate and energy plan (“Plan climat-énergie territorial”, PCET). They are invited to include in their plan a component relating to climate change adaptation, an issue that calls for a different approach to that of climate change mitigation.

The French Environment and Energy Management Agency (Agence De l'Environnement et de la Maîtrise de l'Energie, ADEME), was keen to provide all French authorities working on a PCET, whether mandatory or voluntary, with access to the experience of other local authorities around the world that have already taken concrete actions. These are local authorities that have successfully completed an action plan for climate change

adaptation and then moved on to implement these actions. While there is no single recipe to follow, it is possible to identify good practices that French local authorities might find useful.

Ten local authorities agreed to share their experience, and 28 representatives from these local authorities made themselves available for interview (Annexe I). ADEME and the authors of this report would like to thank them for their contribution.

➤ **A document designed for a broad audience of French local authorities engaged in adaptation**

This report is intended for local authority staff and the climate change actors who provide them with support. No prior knowledge of climate change adaptation is required. All the concepts specific to adaptation are explained in text boxes as and when they arise.

The first part of the report explains why and how the ten local authorities, whose processes for developing and implementing adaptation strategies and plans are analysed in this study, were selected. The second part summarises the approach followed by each local authority studied, and the third part sets out the experience acquired in the process. Based on the experience of the local authorities studied, the fourth part of the report offers answers to the questions that French local authorities might have when preparing the adaptation component of their PCET. All the feedback from the local authorities studied is highly pertinent to their French counterparts.

A list of documentary sources (websites and manuals on adaptation intended for local authority use) is provided in the annexes, as is a French-English glossary of terms.

Concept no. 1: Climate change adaptation

Combating climate change demands profound changes in individual and collective behaviour to achieve significant reductions in greenhouse gas emissions. Such changes of practice constitute climate change mitigation.

The likelihood of changes in climate and the increased frequency and severity of extreme climate events will also call for major changes, and for the issue of climate change to be factored into decision-making processes. This latter set of modifications is what constitutes climate change adaptation.

Countries signatory to the United Nations Framework Convention on Climate Change (UNFCCC) have undertaken both to reduce their greenhouse gas emissions and to launch adaptation initiatives. In France, the Grenelle Environment Forum enabled local authorities to participate in programmed efforts in favour of climate change adaptation.

A. Learning from international experience

I. Identification of territories

Territories around the world that have a head start in climate change adaptation are potential sources of valuable experience for French local authorities, when their approach is consistent with the framework for a territorial climate and energy plan (“Plan climat-énergie territorial”, PCET) in France.

Five criteria were used to identify such territories from amongst those that had already published an adaptation strategy:

- (1) the territory is governed by an authority run by locally elected officials,
- (2) a formal process of identifying adaptation measures has been conducted,
- (3) such measures have been translated into operational actions,
- (4) methods of governance and a participative approach have been clearly defined and
- (5) consistency has been sought between adaptation and other public policies.

France’s overseas departments face a specific and substantial challenge in terms of climate change adaptation. Several have already begun forging links with other small island states that have experience to offer in terms of vulnerability assessment, action undertaken by civil society and investment in protective infrastructure. The experience of these small island states has

little pertinence, however, for local authorities in France, mainly due to the differences in their methods of governance. Sub-national island territories of an OECD country are more pertinent to an analysis of the approaches that might be adopted by French local authorities.

As of mid-2011, only a few dozen local authorities around the world had already published an adaptation strategy or action plan and met the above criteria. Of those agreeing to an exchange of experience as part of an international study commissioned by ADEME, a panel of ten territories was chosen, specially selected to reflect the diversified situations of local authorities preparing their PCET in France. The target diversity criteria were:

- Size, from major city to small town;
- Environment, entirely urban or mixed urban and rural;
- Type of climate change impact expected in the short term: an important factor for coastal and island territories and mountain territories, less important in other environments;
- Local authorities willing to share their experience: these are often local authorities already involved in climate change networks.

➤ How local authority experience was gathered

The local authorities identified were invited to take part via an exchange of documentation and telephone interviews.

The strategy or action plan was generally available on the Internet. Each local authority provided the study with its preparatory documents and communication media and indicated the methodological guides used in devising their approach to adaptation (Annexe 2).

Up to three individuals from each local authority were invited to give an account of their experience (Annexe 1). The individuals involved included administrative managers in charge of implementation, members of agencies providing support to local authorities, and stakeholders, including experts.

The interviews focused on process management, strategic decisions, methods used in designing the approach and the lessons learned.

2. Participating local authorities

Ten local authorities were selected for the purposes of the study:

- 1 - City of London, United Kingdom;
- 2 - Stockton-on-Tees, United Kingdom;
- 3 - Murcia, Spain;
- 4 - Canary Islands, Spain;
- 5 - Helsinki, Finland;

- 6 - Halifax, Nova Scotia, Canada;
- 7 - Elkford, British Columbia, Canada;
- 8 - Chicago, Illinois, United States;
- 9 - Ku-ring-gai, New South Wales, Australia;
- 10 - Eastern Metropolitan Region Council, Western Australia, Australia.

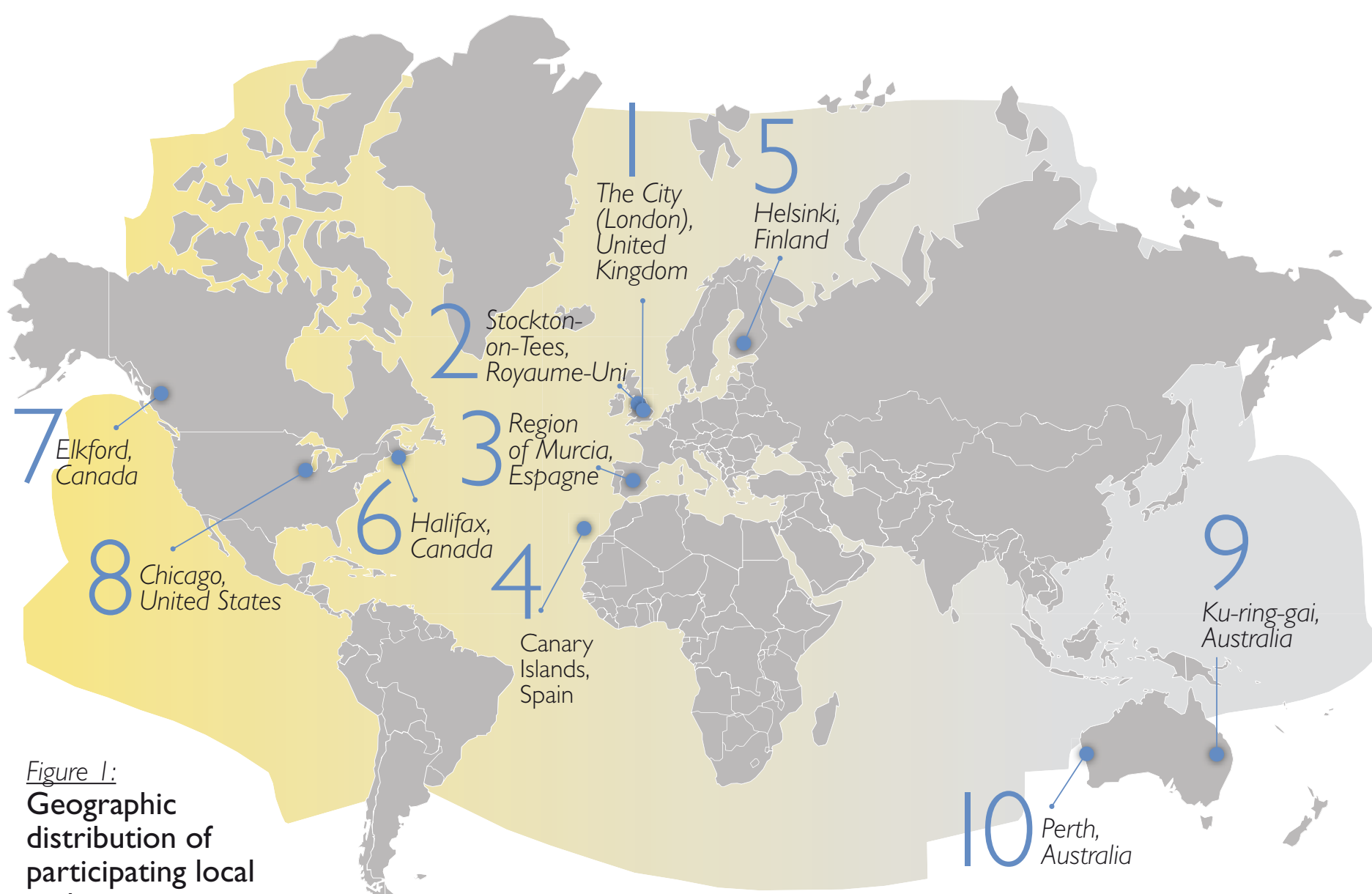


Figure 1:
Geographic
distribution of
participating local
authorities.

A. Learning from international experience

These local authorities cover the range of French local authorities working on a PCET, from major city to mid-sized town as well as territories with heritage issues arising from proximity to a regional nature park. The territories were also selected to represent a variety of situations (coastal, urban, rural, mixed, mountain) faced with the impact of climate change.

The table below shows the territorial level of the local authorities analysed in the study, their geographical distribution and the type of

environment in which they are situated and which will largely determine the type of climate change impact to which they will be subject

As of mid-2011, three local authorities (the two Spanish regions and the Helsinki Metropolitan Area in Finland) were very close to completing the design stage of their adaptation approach and expecting shortly to move into implementation. In the remaining seven, implementation of adaptation actions had already begun.

Equivalent territorial level in France	Region of the world			
	Northern Europe	Southern Europe	North America	Australia
General Council		Murcia, Espagne	Halifax, Canada	EMRC, Australia
Metropolitan area	Helsinki, Finland			
Major city	The City (London), United Kingdom		Chicago, United States	
Mid-sized town	Stockton-on-Tees, United Kingdom			
Mixed area with heritage status (regional park, etc.)			Elkford, Canada	Ku-ring-gai, Australia
Island region		Canary Islands, Spain		

Environment: ■ Mountain ■ Coastal ■ Subtropical ■ Urban ■ Drought issues

Table 1: Environment and territorial level of participating local authorities.

3. Criteria of comparison between local experiences

Comparative criteria make it easier to analyse the experience of very different territories. In terms of climate change adaptation, six sets of criteria appeared to be particularly useful:

- Starting point for the adaptation approach;
- Governance of the approach;
- Participation and communication (internal and external);

- Timing of the approach;
- Type of action determined and funding available, and
- Interactions between territorial levels.

B. Accounts drawn from ten local authorities

I. City of London (United Kingdom)

> Context

The City of London Corporation is one of the boroughs making up the Greater London Authority. It is home to hugely important and diversified financial and business services. Although it has a resident population of only 7,900, over 300,000 people travel into the City every day to work, making it highly dependent on transport. The main climate issues affecting the City of London are extreme climate events, creating risks of flooding and urban heat islands.

> Type of initiative

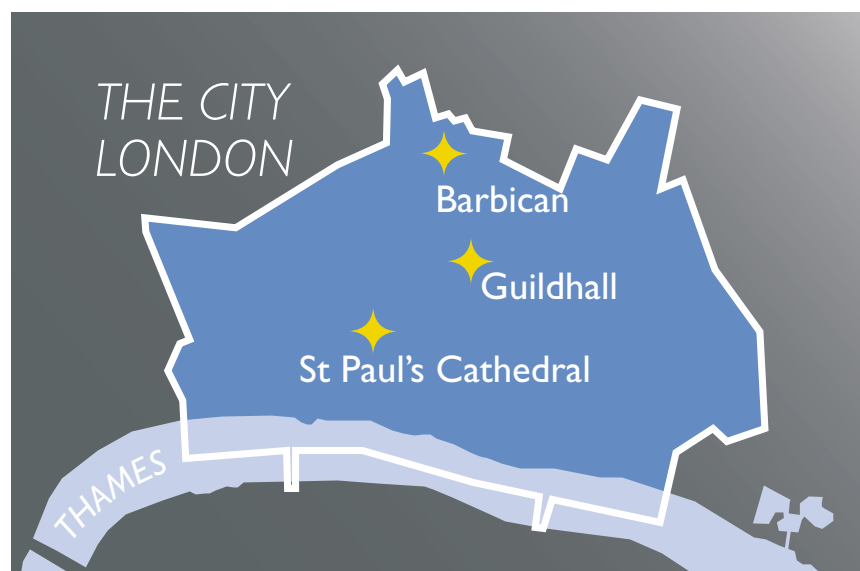
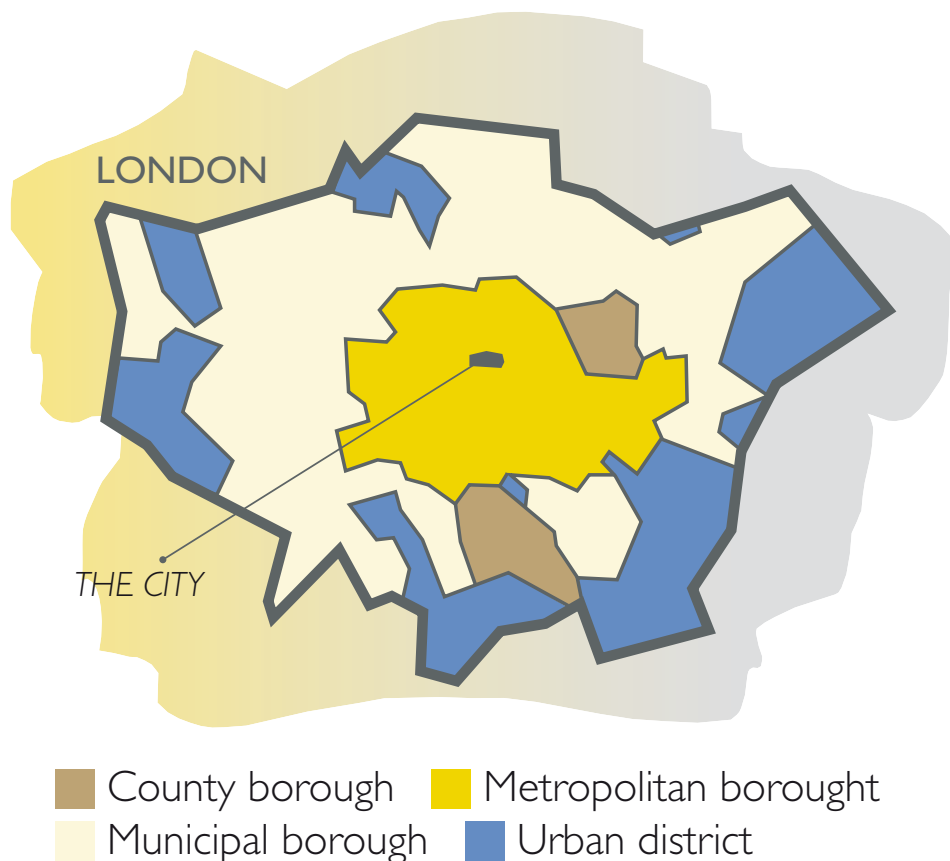
The initiative consists of a voluntary adaptation strategy first launched in 2007 and updated in 2010. An adaptation strategy was mandatory only at Greater London Authority level. A mitigation plan existed prior to the development of the adaptation strategy.

> Governance

The City of London Corporation's Sustainable Development Unit acted as the driving force of the adaptation strategy, from design through to monitoring. A group of heads of technical services and elected officials was involved in every step of the approach, and the strategy was formally approved by the elected officials.

> Design

The City of London based its approach on the nationally applicable method proposed by the United Kingdom Climate Impact Programme (UKCIP). The regionalisation of climate scenarios and historical records of extreme climate events



enabled stakeholders to identify climate change impacts for their territory and propose actions for all sectors under consideration. No economic analysis was carried out at the design stage, but such analyses are carried out as part of the studies for each major infrastructure project.

> Actions

Preference was given to “no-regret” actions, i.e. actions whose benefits outweigh the costs and may have positive impacts not only on adaptation but also in other areas. Such actions offer a useful point of entry for encouraging the transition to operational status. High-profile actions (example: green roofs) were highlighted. Low expense information measures (example: maps showing the location of heatwave refuges) were also introduced.

The City decided to make adaptation an integral part of its strategic document on planning, thereby shifting the burden of action onto economic actors.



Source: The green roof consultancy - <http://greenroofconsultancy.com>

> Funding

A budget was set aside for the design of the approach, but there is no specific budget for implementation. The Corporation was awarded a national grant for climate change communication.

> Participation

Corporation services and stakeholders were consulted. The Corporation is a member of the London Climate Change Partnership, an agency that seeks to raise awareness among stakeholders (through studies, events, invitations to become involved).

> Communication

It was decided that communication would target stakeholders, mainly businesses, rather than the general public. The two key messages are “adaptation is a question of management and not an environmental issue” and “adaptation is not rocket science”.

> Distinctive features

The City has opted to continue its role as a pioneer of sustainable development.

> Drivers

The recruitment of a Head of Sustainable Development was a key factor in the move to take action, as was raising individuals' awareness and engaging administrative managers.

> Challenges

The main challenge lies in mobilising actors in areas outside the Corporation's remit. Adaptation in the health sector, a new addition to the Corporation's responsibilities, is also a challenge.



2. Borough of Stockton-on-Tees (United Kingdom)

> Context

Stockton-on-Tees is an industrial town, population 200,000, in the north east of England. The town lies in a valley that forms the estuary of the River Tees and is prone to flooding. Climate events (heatwaves in 2003 and in 2006, flooding in 2007) served as triggers for the adaptation approach.

> Type of initiative

The initiative is a climate action plan designed as a strategic plan, picking up an existing mandatory mitigation component and adding a component on adaptation. The approach was voluntary, prompted by the national “adaptation” performance indicator for UK local authorities (NI 188).

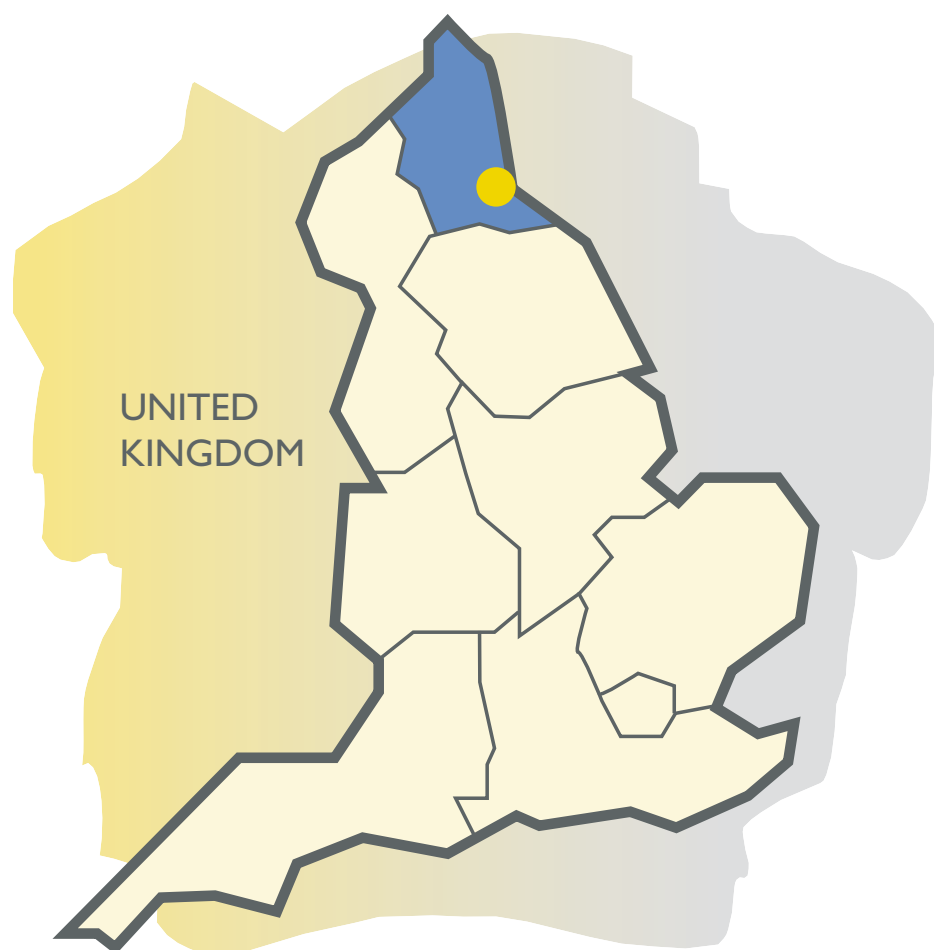
> Governance

The approach was managed by the Borough Environment Department, from conception through to implementation. The plan was approved by the Borough Council.

> Design

Stockton-on-Tees used the United Kingdom Climate Impacts Programme (UKCIP) to construct its adaptation approach. The council received support from a regional agency (Climate North East) as part of the North East Climate Partnership, as well as from a circle of actors concerned for the borough’s environment, known as the “environmental partnership”.

The Borough of Stockton-on-Tees adopted the solutions put forward in the UK’s national “heatwave and flooding” plans. This choice was prompted by the council’s desire to move swiftly in order to tie in the adaptation approach with the strategic planning document under preparation.



Heat waves and flooding triggered the adaptation process

> Actions

The main action decided was to include the implications of flooding and heatwave risks in the strategic planning document. The council also decided to take part in a regional programme to raise awareness of climate change (mitigation and adaptation) in schools.

During implementation, an economic modelling study on an old-style home (mitigation and adaptation) was launched.

> Funding

No funding is currently provided for adaptation at council level. The organisation, studies and events are all coordinated by the Climate North East regional agency, which has access to various sources of funding.

> Participation and communication

The Borough Council's environment partnership, made up of stakeholders in climate change, including the local university, co-signed the adaptation document.



Source: Atelier Stockton Borough Council, 2011.

> Communication

Raising public awareness of the causes of climate change is one of the actions set out in the plan, but the council has not yet released the map of flood risks to the public.

> Distinctive features

The choice of a fast-track approach to coincide with the preparation of the strategic planning document, which encouraged the transition to implementation.

> Drivers

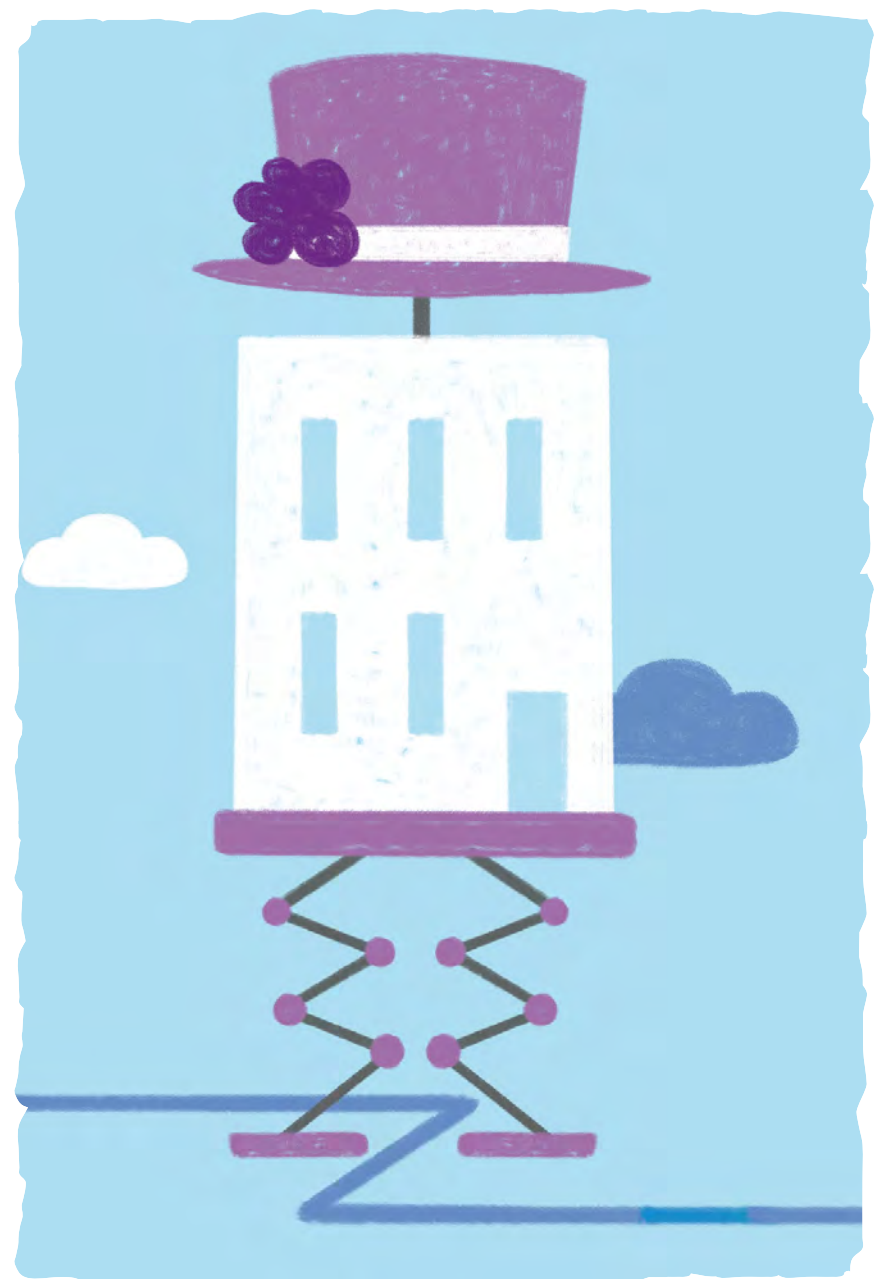
The UKCIP national decision support tool and facilitation by regional and local agencies are key elements in progressing to action.

> Challenges

Current national austerity measures have led to certain actions being blocked and to a reduction in agency human resources.

Networking with other local authorities needs to be further developed.

It is proving difficult to mobilise economic operators in the housing sector.



3. Region of Murcia (Spain)

> Context

The region of Murcia is an “autonomous region” of Spain with devolved legislative and executive powers, covering a population of 1.5 million. Tourism, services, the agri-food industry and farming are the region’s main economic activities. The chief climate issues affecting the region are rising sea levels, water resources management and heatwaves.

> Type of initiative

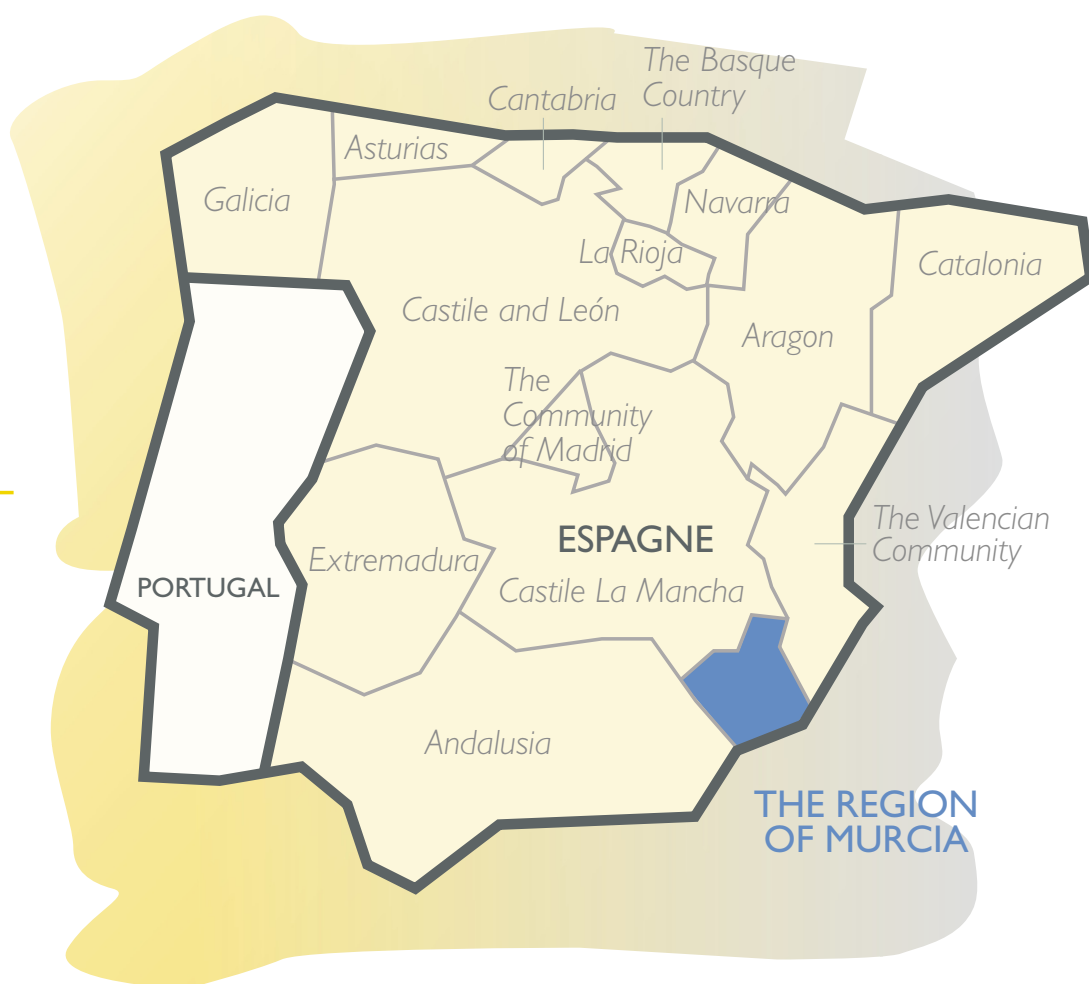
The initiative takes the form of a voluntary agreement, a “charter”, inviting local actors to engage voluntarily in developing adaptation actions. The aim is to take an initiative already successfully launched first for sustainable development and then for mitigation (RS CO₂, social responsibility and climate change) and extend it to adaptation.

> Governance

The regional climate change observatory is responsible for coordinating the approach, with the support of technical and scientific committees. Representatives of the various socio-economic sectors (agriculture, tourism, etc.) act as links to sector players and encourage them to sign up for the charter. Member organisations are responsible for implementing the actions they have selected, and local authorities formally approve the approach.

> Design

Certain socio-economic sectors (those with the greatest economic weight) were selected and then invited to sign up. An extensive catalogue of actions was proposed through a consultation process with sector representatives to encourage as many actors as possible to take part. Each signatory to the charter proposed a number of quantified objectives, measures and timetables. A logo was created



and formally registered with the patents office. The logo singles out members for recognition as contributing by their actions to regional climate change adaptation, bringing them economic spin-offs in terms of publicity and public image.



Source: ORCC Murcia.

The monitoring system, based on certification and publication of objectives reached and measures introduced, is a good way of encouraging members to live up to their commitments.

> Actions

A catalogue of short or medium term (2 years) measures was devised for each sector. The measures involved are often inexpensive, but there is a risk that some commitments will involve actions that make limited demands or that already exist.

> Funding

The EU LIFE programme provided funding for the design phase. The cost of implementation is met by each member.

> Participation

The charter relies on the engagement of stakeholders. Consultation was confined to experts.

> Communication

Communication was initially intra-sector to facilitate the recruitment process. External communication provides charter members with economic benefits in terms of publicity and image, via a range of tools: logo, website, press, literary or theatre awards.

> Distinctive features

The charter is a flexible, low expense instrument, adaptable to a wide variety of situations. It relies on the implementation of adaptation measures by a large cohort of actors. The positive publicity from external communication provides an incentive for membership.

> Drivers

The keys to the success of this approach are a similar and successful initiative already in place for sustainable development and mitigation, economic spin-offs from external communication, the ability to identify and engage stakeholders and giving members free choice of measures.

> Challenges

A risk exists that members might select relatively undemanding targets and measures, since there is no direct economic trade-off for charter members. Another major challenge is providing members with information on existing programmes offering potential sources of funding, which would enable members to embark on more demanding measures.



4. Canary Islands (Spain)

> Context

The Canary Islands archipelago is a remote island “autonomous region” with devolved legislative and executive powers and a population of 2.1 million. It comprises several administrative levels: regional, island (each island is governed by a “Cabildo”, an administrative entity unique to the Canary Islands) and local.

Four national parks have been created to protect the considerable biodiversity and richness of the landscape.

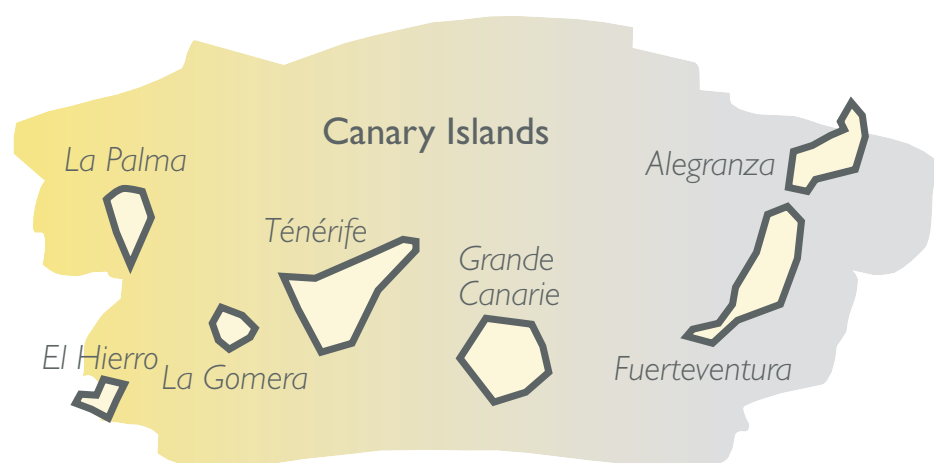
Several of the islands are UNESCO biosphere reserves and some areas are listed World Heritage sites. The main climate issues for the archipelago relate to rising sea levels and biodiversity conservation, with all the uncertainty linked to the island nature of the region.



> Type of initiative

The regional parliament’s approval of a strategy to combat climate change called for an adaptation plan to be drawn up.

The plan deals solely with adaptation, as mitigation is dealt with in the strategic document.



> Governance

The regional sustainable development and climate change agency provides management, coordination, organisation as well as monitoring and evaluation.

The sustainable development forum, made up of all stakeholders in sustainable development of the islands, is the consultative body. The sustainable development observatory is responsible for developing knowledge at the local level. The regional parliament approves the plan (approval was due at the end of 2011), once it is agreed by the regional government, and imposes a requirement on local authorities to implement it.

> Design

Consultants were commissioned to draw up the plan, following the same method as was used for its national equivalent. The plan includes a guide to application and a list of crosscutting and sector-specific measures based on scientific data.

A monitoring committee, made up of forum members and managed by the agency, will be responsible for subsequent evaluation.

> Actions

The measures decided upon are diversified in nature, across a wide range of time scales: changes to the regulatory framework and local and regional planning, projects, information and

awareness raising, data creation. All are no-regret measures involving the systematic pursuit of collateral benefits, including adaptation-mitigation co-benefits. Implementation is decentralised.

> Funding

The design phase required two full-time staff and a budget for consulting services. Funding for implementation will be the responsibility of each local authority.

> Participation

Consultation was carried out at two levels: initially confined to the forum, then extended to the general public.

> Communication

Communication focuses on both the strategy (mitigation) and adaptation, via press conferences and print press.

> Distinctive features

This is an approach to adaptation within the framework of sustainable development that aims to set an example. The emphasis is placed on knowledge creation to win over local and regional elected officials and actors in a context of uncertainty. The selection of priority actions is the responsibility of local authorities, and should be based on analysis of the efficiency and effectiveness of these actions. The process is flexible, and thus able to consider advances in climate change knowledge.



Source: ARDDCC Canaries, 2011.

> Drivers

Mandatory implementation following approval from the regional parliament overcomes the challenge posed by decentralised implementation by each local authority within the autonomous region.

> Challenges

- Continuing to gather climate data meeting the characteristics of a highly specific territory.
- Convincing local authorities to allocate resources to the implementation of adaptation actions in the context of a widely dispersed territorial administrative system.



5. Helsinki Metropolitan Area (Finland)

> Context

The Helsinki Metropolitan Area is situated on Finland's south east coast and encompasses four cities (Helsinki, Espoo, Kauniainen and Vantaa). The region has a population of around 1 million and plays an important role in the national economy. The main climate issue revolves around rising sea levels and flooding.

> Type of initiative

This is a voluntary strategy inspired by the national adaptation plan and the initiative of local elected officials, and relates to both mitigation and adaptation. The starting point for the adaptation approach was the management of flooding risks.

> Governance

The region's Environmental Services Authority initiated the approach and is responsible for its coordination. The Authority was also a driving force behind the design stage. A steering committee was set up, composed of elected officials from the four local authorities and representatives from municipal technical services and from the Ministry of the Environment.

> Design

The design phase is still in progress. It began in 2003 with the launch of studies into the impacts of climate change on sea levels and flood risks. The component on mitigation was finalised in 2007 and the Authority developed the adaptation strategy over the period 2009-2011.

> Actions

For each sector, adaptation actions are defined for the major risks associated with identified climate change impacts: (1) heatwaves and drought, (2) increased precipitation and risk of flooding, (3) storms and (4) rising sea levels.



> Funding

Participation in two projects, the Julia 2030 project and the cross-border BaltCICA project, involving the countries of the Baltic Sea region, contributed to funding for the development of the approach.

> Participation

During the design phase, experts, elected officials and businesses were consulted through workshops. This consultation of stakeholders was supplemented by online consultation of citizens.



➤ Communication

Conferences were held to communicate the approach. European funding programmes also helped with publicity. A range of tools was used: logo, website, press, scientific articles.



Source:
Kankaanpää, S.
2011-12-06.

➤ Distinctive features

The approach is linked to the Partnership for European Environmental Research (PEER)¹ programme. Flood risk management is a crucial issue. As of mid-2011, implementation had not yet begun.

➤ Drivers

The key elements prompting action are support from a research structure, the awareness and commitment of managers at the region's Environmental Services Authority and mainstreaming of the approach into ongoing plans and policies.

➤ Challenges

The main challenges are effectively involving city experts and members of the steering committee, and actually starting up the implementation phase.

¹ PEER is a partnership agreement between Europe's seven largest environmental and sustainable development research centres.

6. Halifax Regional Municipality (Canada)

> Context

Halifax Regional Municipality (HRM), population 372,679, is the capital of the Canadian province of Nova Scotia situated on Canada's Atlantic coast. Seventy-six percent of the population lives in the Halifax urban area (2006 census).

Halifax is a major economic centre in Eastern Canada. Its main activities are agriculture, fisheries, mining, forestry and natural gas extraction.

Halifax Regional Municipality has legislative and executive powers.

The approach was triggered by climate issues relating to rising sea levels and extreme climate events.

> Type of initiative

The adaptation plan in this instance is a reference and guidance document that has not been officially approved by municipal councillors. Adaptation (and mitigation) issues have been mainstreamed directly into the municipal planning strategy, and the adaptation strategy is being developed as part of the development of municipal planning.

> Governance

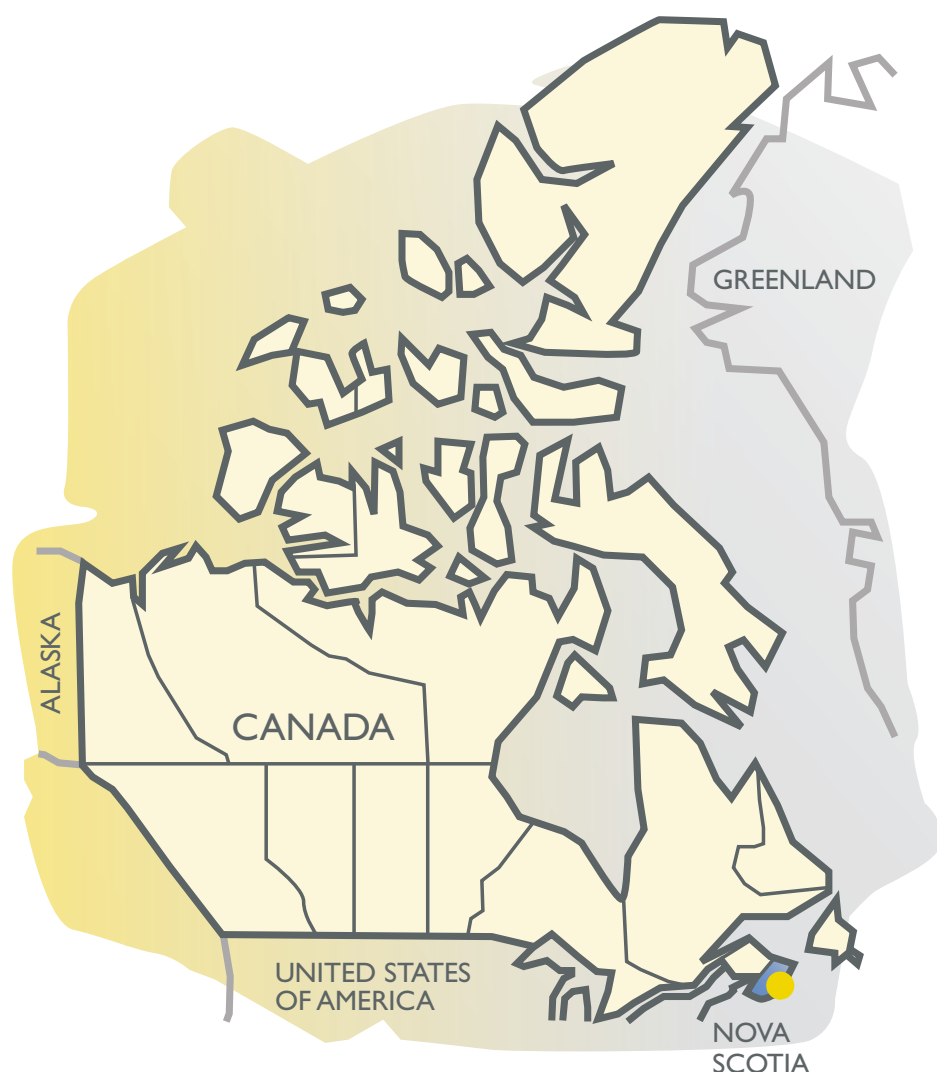
The municipality is responsible for implementing actions, including providing funding for some of the research.

Research and communication work is handled by two universities and supported by the provincial and federal governments

> Design

The methodology of the adaptation plan (guidance document) is based on two national risk assessment guides.

In practice, mitigation and adaptation are mainstreamed directly into the municipal planning strategy (2007-2032).



Source:
Halifax
Climate
SMART.

> **Actions**

The actions decided upon are mainly intended to deal with the impacts of rising sea levels on the port of Halifax. They were proposed prior to the decision to invest in the implementation of adaptation actions.

> **Funding**

The federal and provincial governments funded research and consultancy services for the design phase and drafting of the plan.

A budget is also available for research into the impacts of climate change on the Port of Halifax and for communication campaigns.

The cost of other actions is included in the overall municipal planning budget.

> **Participation**

Broad public consultation not specific to adaptation was carried out as part of the municipal planning strategy.

> **Communication**

Communication on rising sea levels is currently internal only. Communication aimed at the general public on this subject is pending the results of research work.

Communication tools other than maps, videos, for example, are currently being considered.

> **Distinctive features**

Adaptation actions have been mainstreamed into existing policies. The adaptation plan has not been officially approved and serves instead as a guide, a reference document on adaptation.

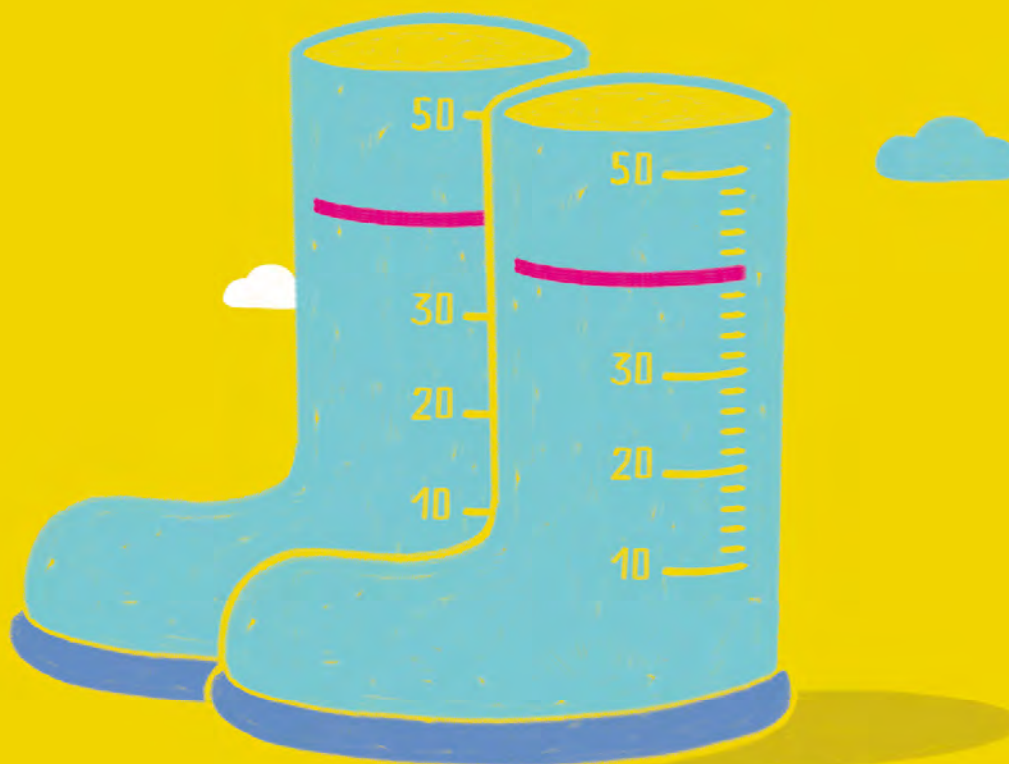
The approach focuses on the principal climate risk of rising sea levels and its impacts on the Port of Halifax.

> **Drivers**

The decision was taken to act before obtaining scientific proof of the impacts, and any necessary adjustments will be made subsequently. Generous federal funding for research made it possible to carry out extremely thorough vulnerability assessments.

> **Challenges**

In the absence of a strategic document on the subject, adaptation measures are dispersed between different municipal documents. This results in a lack of transparency, and difficulty in communicating with municipal departments.



7. District of Elkford (Canada)

> Context

Elkford is a small community of some 2,500 inhabitants in Western Canada, south of the Rocky Mountains, in the province of British Columbia. It is surrounded by mountains, forests, lakes and rivers. Founded as a mining town in 1971, Elkford is now enjoying growth in tourism and investment in leisure property. The main climate change issues the district faces are forest fires and flooding.

> Type of initiative

Elkford has two distinct plans in place: a mitigation plan and an adaptation plan. Both were officially adopted before mitigation and adaptation measures were mainstreamed into the official community plan that determines the planning management of the district.

> Governance

The Columbia Basin Trust provides funding under the terms of a call for projects, as well as scientific and technical capacity.

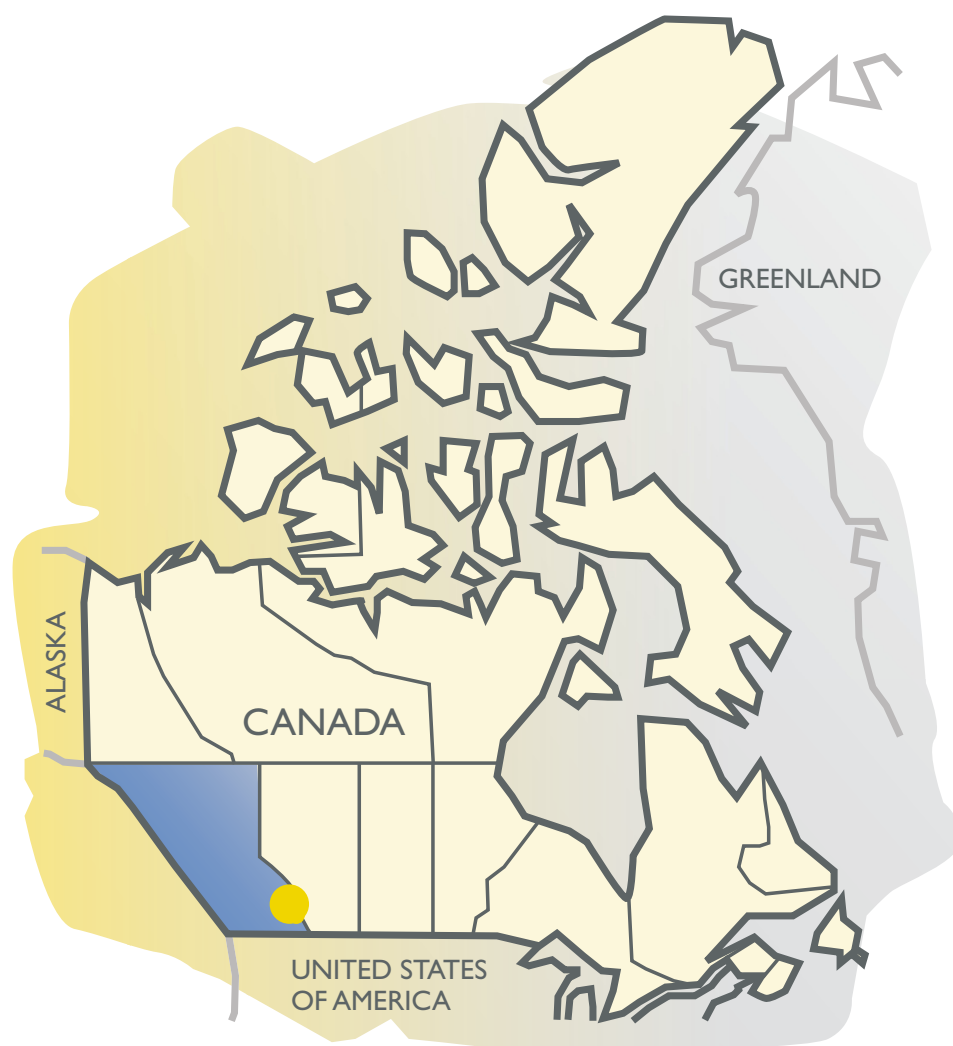
The municipality is responsible for mainstreaming the adaptation plan into its planning and for the implementation of actions.

> Design

The climate impacts analysis was carried out by the Pacific Climate Impacts Consortium (PCIC) at the University of Victoria. Diagrams were then developed illustrating the link between climate change and its repercussions on ecosystems and on the community.

Priority impacts were chosen on the basis of public consultation. The adaptation plan was designed with the aid of consultants and using two existing methodological guides (Snover et al. (2007) and Bruce et al., n.d.).

An economic analysis is to be conducted during the implementation phase.



> Actions

The main action resulting from Elkford's approach is the application of a "climate lens", meaning that every project approved by the council must meet mitigation and adaptation criteria.

This is supplemented by specific actions for the short term (e.g., designating development areas vulnerable to fire risk), medium term (e.g., strengthening partnerships outside the district) and long term (e.g., mapping aquifers and underground water systems).

> Funding

The budget provided by the Columbia Basin Trust was allocated to the design phase. Universities provided contributions in kind by producing impact studies. There is no specific implementation budget, but the mining industry is expected to contribute to the cost of certain studies.

> Participation

A consultative committee was set up to decide on priority actions.

The population was involved throughout the process, participating in the choice of priority impacts.



Source:
Zumundo
Consultants,
2008.

> Communication

A communication strategy targeting the general public was devised, with the aim of raising awareness of the effects of climate change. The term “climate change”, which has very negative connotations for the general public, was replaced by “changes in the climate”.

An advisory committee was created to select priority measures

> Distinctive features

Elkford is a pilot district for other municipalities in the Columbia River Basin, under the terms of the Columbia Basin Trust call for projects.

> Drivers

- Leadership by the director of services;
- Choosing the right moment: the revision of the official community plan;
- Communication: making it possible to take action even with the majority of the population unconvinced of anthropogenic origin of climate change.

> Challenges

The main challenges facing the district of Elkford are to maintain momentum once the plan is adopted, ensure the availability of human and financial resources in a small district and enjoy access to engineering resources for a new approach to infrastructure design in light of impact risks.



8. City of Chicago (United States of America)

> Context

The city of Chicago is a metropolis home to over 2.6 million residents and the third largest city in the United States. The 2003 heatwave and its effects on public health triggered the city's approach to adaptation.

> Type of initiative

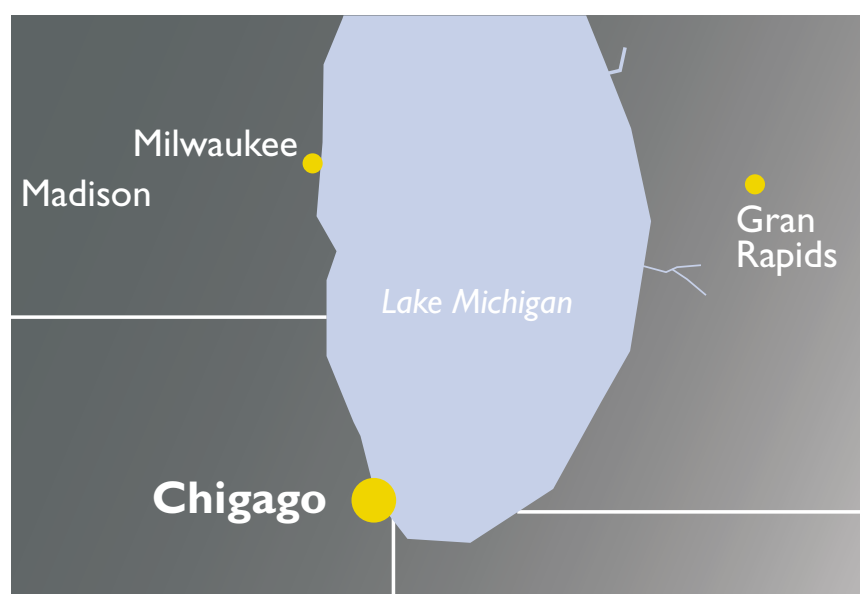
The initiative is a voluntary climate change action plan with five strategic components, one of which is adaptation.

> Governance

The process was spearheaded directly by the mayor and managed by the city's Department of Environment. The city's technical services and agencies ratified the actions chosen. Three interdepartmental adaptation groups are in place. City agents are accountable, and adaptation is one of the departmental performance criteria. Adaptation is fully integrated into the sustainable development reporting system, managed by a Green Ribbon Committee reporting to the mayor. Philanthropic foundations and non-governmental organisations are closely involved in the initiative.

> Design

An economic study quantified the cost of inaction and justified the launch of the approach. Subsequently, an economic assessment of the costs and benefits of possible actions was conducted by a university and by consultants. This produced a ranking of possible actions and identified nine priority actions (out of a proposed total of 150) for climate change adaptation by the city of Chicago.



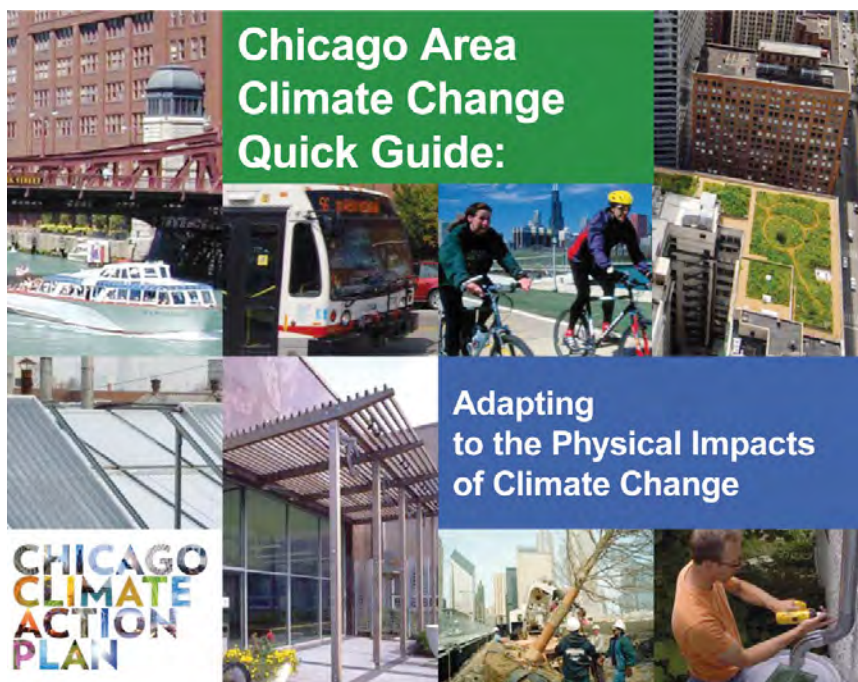
Source: Parzen J., 2009.

> Actions

These actions consist for the most part of updating existing plans, along with communication and awareness campaigns. The working groups used cost-benefit analysis to identify and prioritise new interventions. The actions were implemented in part in the form of projects led by non-governmental organisations and philanthropic foundations.

> Funding

The city of Chicago and partner foundations and non-governmental organisations at state and federal levels contributed to funding for the approach.



Source: Parzen J., 2008.

> Participation

Stakeholders were consulted via two channels: climate summits open to the general public and working groups with members drawn from the city and from the private sector.

> Communication

A communication strategy was drawn up in advance with consultants with the key message: “implementing the adaptation plan is everyone’s responsibility”.

> Distinctive features and drivers

The key elements in Chicago’s adaptation strategy are the unfailing leadership shown by the mayor; support from the foundations, economic justification for the decisions taken and a sound communication strategy.

> Challenges

There is currently a lack of visibility of achievements and monitoring is still only internal. Performance indicators have yet to be defined.

After a premature start, communication targeting the general public needs to be revitalised.



9. Ku-ring-gai (Australia)

> Context

Ku-ring-gai is a local government area within the Greater Sydney metropolitan area, 16 km north of the city of Sydney. It is a territory at the interface between the urban and the rural environment, with a population of around 100,000, mostly in the higher socio-professional classes. The environment is typical of the Australian bush, with no coastline. The main climate issue is forest fires.

> Type of initiative

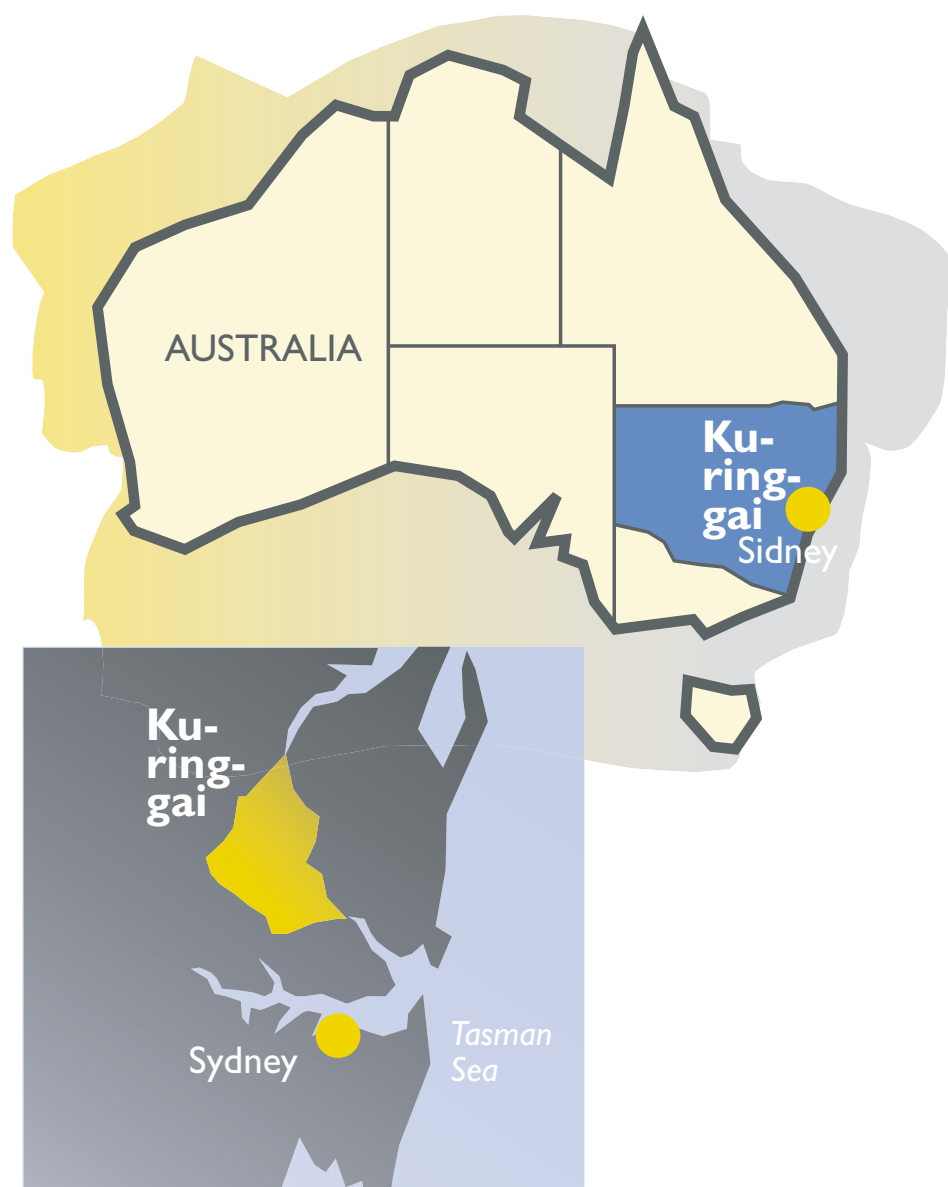
The strategic action plan is designed as an instrument to support political decisions relating to mitigation and adaptation. The initiative is a voluntary approach as part of a national framework of incentives and is motivated by a significant increase across the country in legal claims for compensation for loss or damage as a result of climate change impacts. The plan follows on from a pioneering commitment on climate protection in Australia (1999), and from an energy performance contract (2006).

> Governance

Coordination was provided by the council's Strategy and Environment Section. The plan was officially adopted by the council in 2010.

> Design

The plan was devised as a decision support tool. Its design required three years' collaboration with two universities, and incorporated experience acquired on other local adaptation plans. A study of the legal aspects of local government involvement in adaptation was conducted. The different adaptation options were identified using quantified analysis of the economic, social and environmental performances of each option. The options were then prioritised on the basis of their potential for risk mitigation.



Source: Ku-ring-gai Council annual report 2009-2010.

> Actions

Actions relating specifically to adaptation include promoting the use of construction materials resistant to fire, water, hurricanes and heatwaves. Adaptation has been mainstreamed into the council's five-year plan and the strategic planning document has been modified accordingly. The action plan is open-ended.

> Funding

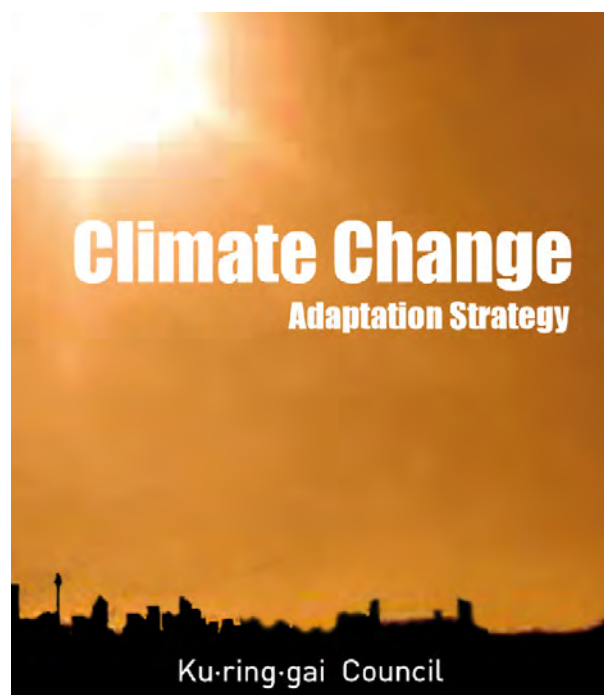
The design phase was jointly financed by the council with contributions from the two partner universities. No specific budget was set aside for implementation. As a result, many actions will need to be financed by private individuals or by business. Individuals who bulk-buy construction material or equipment resistant to extreme climate conditions or based on new technology are eligible for council subsidies.

> Participation

A partnership between the council, the universities and experts has been founded.

> Communication

An awareness campaign was organised in public venues and schools, and a volunteer programme to support vulnerable populations has been set up, accompanied by the production and distribution of guides. The media, too, have helped to promote the project.



Source:
Ku-ring-gai
Council,
2007.

> Distinctive features

An in-depth analysis based on research work was carried out in order to build up a body of local knowledge. The action plan was refocused on social, economic and environmental sustainability rather than on climate change. The action plan includes performance indicators.

> Drivers

A review of the existing risk management strategy prompted the council to take action on adaptation. The scientific approach was useful to the analysis and in prioritising actions. Media promotion of the project was also an important factor in the success of the approach.

> Challenges

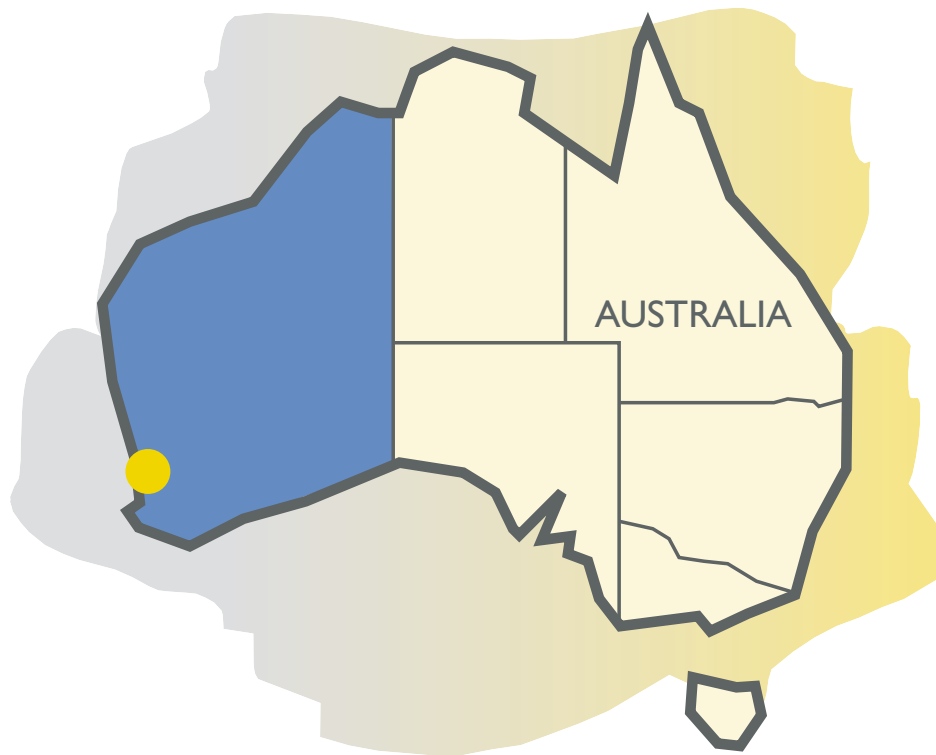
One of the main challenges facing Ku-ring-gai Council is climate change scepticism among department heads and councillors and their resistance to change in a context where the federal political system can hamper local government initiatives.



10. Eastern Metropolitan Regional Council municipalities (Australia)

> Context

Perth's Eastern Metropolitan Regional Council (EMRC) is a regional local government representing six local government areas (municipalities) that have entered into an agreement on common provision of certain services. The EMRC serves a population of around 300,000 and covers very diversified zones: residential, urban, rural, industrial and commercial. The territory is dominated by extensive swathes of farmland and natural areas. The main climate issues are fires, loss of biodiversity, flooding, heatwaves and public health.



> Type of initiative

The initiative is a voluntary approach to collaboration between the municipalities. A regional action plan and an action plan for each municipality, covering both mitigation and adaptation, have been drawn up.

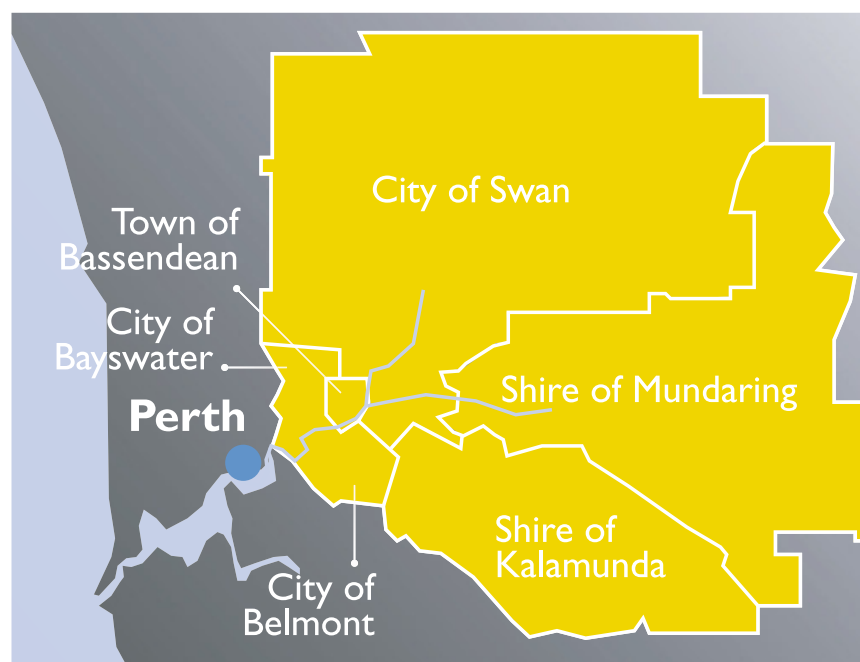
> Governance

A steering committee representing all the municipalities was set up, supported by a regional technical advisory group on the environment, made up of the environment coordinators from each municipality and from EMRC's Environmental Services.

> Design

The process was steered by a firm of consultants, supported by the local elected officials' information forum and by executives at the regional and municipal level.

Workshops for technical staff were organised to identify major risks for the long term (2070), and the priorities for action. The criteria used in ranking actions were: degree of risk, no-regret action, actions associated with the mandatory

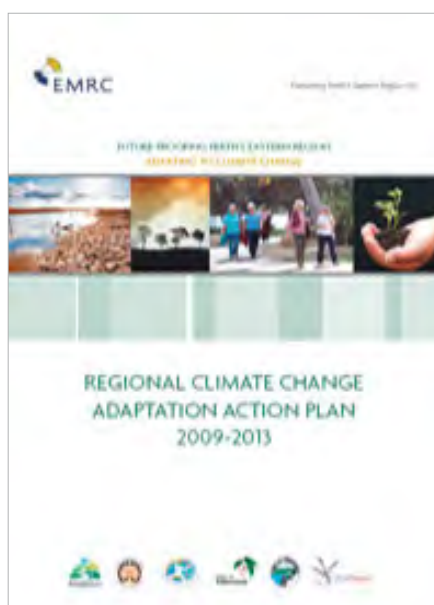


Sources: www.emrc.org.au

responsibilities of municipalities, acceptance by the population, absence of negative environmental impact, cost-benefit ratio and the availability of funding.

> Actions

Actions (short and medium term - 4 years) partly concern both mitigation and adaptation. They are often incorporated into existing programmes (e.g., recycling grey water).



Source:
EMRC, 2008.

> Funding

Federal and regional subsidies were used for the design of the adaptation approach. The region has earmarked a four-year budget for implementation.

> Participation

A collaborative approach between municipalities and a partnership with the region were established.

> Communication

An internal information system for elected officials and technical staff has been set up. In addition, the general public is kept informed by means of a quarterly climate change newsletter.

> Distinctive features

This is a collaborative approach between municipalities.

> Drivers

Key factors in taking action were the subsidy obtained to kick-start the design phase, effective communication among the different levels (municipal, regional and national) and leaving the choice of measures to the municipalities.

> Challenges

The main challenges the EMRC faces are future funding, lack of data on the local impact of climate change and sustaining the interest of local decision-makers.

C. Commonalities between local authorities taking action

The local authorities observed present both great diversity in their approach to climate change adaptation and some noteworthy common features shared by all or most. A set of seven findings forms the core of the experience compiled. Several options specific to one of the territories observed but of immediate

interest to French PCETs are also presented. These elements largely explain why and how the local authorities in question are ahead of the field in terms of climate change adaptation. Following the presentation of these findings, the key factors that facilitated taking action are summarised.

I. Tailor-made territorial strategies

➤ Climate change adaptation, a local issue

The first common feature identified in local authorities that have taken action is that they all made strategic choices based on the specific nature of their territory, and these choices were generally made ahead of the vulnerability assessment.

The linkage between territory and adaptation approach creates a great diversity of ways of addressing the issue.

The impacts of climate change on the territory determined the adaptation approach only in those specific cases where the need for adaptation had already been made apparent following extreme climate events.

This is the case for only three of the local authorities in this study: Chicago, which suffered a heatwave with social impacts that were extensively reported in the international media; Stockton-on-Tees, which suffered successively from flooding and heatwave in the mid-2000s; and Halifax, a port city which was badly hit by a storm. In all the other cases, climate issues were integrated into the vulnerability assessment but were not the triggers for the adaptation approach.

Conversely, the strategic choices made by the local authorities invariably took institutional and human factors into account.

The first consideration in all the options chosen is the local authority's institutional goal.

Over half of the local authorities studied chose to become, or remain, pioneers in the field of sustainable development and/or climate change. For several of them, whether already facing the visible impacts of climate change or not, adaptation underscores the authority's capacity for good management of risks of all kinds, climate change included, and hence for providing quality public services.

Three other areas of strategic choice were observed: governance (section 2), methods of participation and communication (sections 3 and 4) and timing (section 5).

These are often determined by the need to convince certain categories of decision-maker (elected officials, heads of technical services) or stakeholders of the need for action on adaptation.

C. Commonalities between local authorities taking action

➤ An approach devised by each local authority, with external incentives

The resulting published document, and hence the approach it sets out, is called an adaptation strategy in some cases, an action plan in others. Only the Canary Islands published first a strategy and then an action plan. The document published by the other authorities, whether strategy or plan, sets out strategic options such as underlying

principles or a long-term vision and a list of adaptation actions.

All the approaches observed were voluntary with the exception of the Canary Islands, where an adaptation plan is mandatory but is perceived as both valuable and necessary.

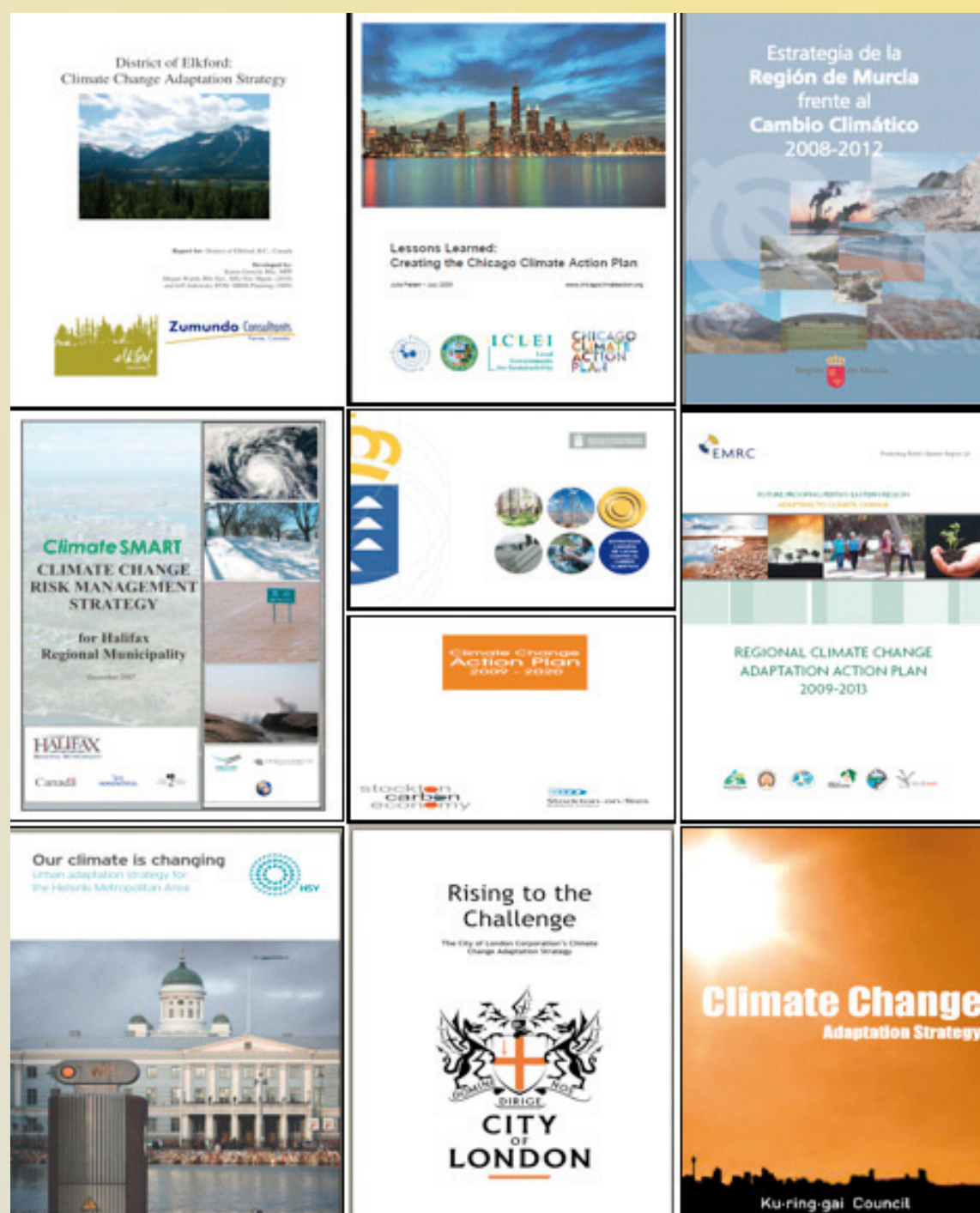


Figure 2: Adaptation plans of the territories studied.

The decision by each local authority is the outcome of internal deliberation and external incentives at the regional and/or national level. Two types of incentive mechanism came into play:

- systematic encouragement, in a variety of forms: several of Australia's regions strongly recommend that local authorities adopt an adaptation plan to guard against legal disputes with insurance companies, which are becoming increasingly common when it comes to compensation for natural disasters. In the United Kingdom, local authorities have been invited over recent years to include progress on their adaptation plan as one of the performance indicators on which

their central government funding is calculated;

- financial support for pioneering territories: in many cases, the territories must compete for funding. Examples include the Columbia Basin Trust's specific call for climate change adaptation projects in Western Canada and the European Union's LIFE programme.

The knock-on effect that the pioneering territories were expected to create is already apparent, as is capitalisation on the experience of the most advanced local authorities. In Western Canada, for example, less advanced territories have been able to capitalise on the experience of pioneers and develop "quick strategies" for adaptation.

➤ Elected officials' commitment on climate change

The adaptation approach was often preceded by a commitment by local elected officials on climate change as a whole.

Some of the plans published by the local authorities studied deal with both adaptation and mitigation (Halifax, Elkford, Chicago, Ku-ring-gai), while others are devoted solely to adaptation (City of London, Stockton-on-Tees, Murcia, Canary Islands, Helsinki, EMRC).

The local authorities that chose to publish a

document specific to adaptation largely did so in order to highlight their strategy.

The solution of a combined document was occasionally chosen when there was a mitigation plan already in existence.

The document then served to underscore the complementary nature of preventing the impacts of climate change and dealing with its consequences.

➤ A formulation process specific to adaptation

The design of the adaptation strategy, whether simultaneous with the mitigation approach or not, was handled as a specific internal process. Some of the priority sectors concerned are different and so, too, are the actors involved.

All the local authorities were keen to ensure consistency between mitigation and adaptation actions. This mainly took the form of seeking out co-benefits, i.e. identifying adaptation actions that would also contribute to reducing greenhouse gas emissions and vice versa.

The fact that, in several instances, mitigation was addressed separately from and prior to adaptation in no way hampered the identification of actions offering collateral benefits. The local authorities that conducted the two approaches simultaneously had access to greater technical support resources.



There are common features shared by all the approaches

2. Choice of governance

➤ The importance of individual initiative and a crosscutting angle of attack

In almost all cases, the strategy was driven by one or more local authority administrative managers, highly motivated and aware of climate change issues. In the majority of cases, these were the officers responsible for the local authority's sustainable development strategy. Their crosscutting function enabled them, from the outset, to mobilise decision-makers in many areas affected by adaptation within their particular structure.

They were thus able to take these different

sectors effectively into account when formulating their strategy.

In some instances, an elected official is behind the approach, as was the case in Chicago, for example. Some of the actors make the point that adaptation, a long-term process, should be a task for those that can provide continuity over time. In fact, those local authority officers who instigated the launch of an adaptation approach have been driving forces from the outset, and still continue to be closely involved in implementation.

➤ Formal approval from elected officials eases the transition to the operational stage

The presence of key players in all the territories observed underlines how essential it is for the adaptation plan to have official approval from local elected officials. This approval marks the transition from the design phase of the local adaptation plan to the implementation phase for actions set out in the published document. The elected officials of the ten territories also played a critical role in the local authority's initial

commitment on climate change, often by way of a national charter.

In contrast, the adaptation plan for Halifax is an internal document for reference only that has not gone through a formal approval stage. The adaptation (and mitigation) actions have been mainstreamed directly into existing policies, and the local authority has concentrated its efforts on the climate-related issue of rising sea levels.

➤ From document to project

The institutional solutions put in place to manage the approach are extremely varied, ranging from a specific agency, responsible for providing local authorities with methodological and/or financial support, to the absence of any specific personnel whatsoever: in this instance, the mainstreaming of adaptation measures into local policies is entirely managed by the technical services concerned. Half of the local authorities studied chose to use consultants to draw up plans that were then submitted to experts and interested parties for consultation.



In several territories, implementation was handled as a project in its own right. In Murcia, the project itself consisted of the entire process of drawing up the charter.

In Chicago, non-governmental organisations and philanthropic foundations finance projects as part of the city-approved adaptation strategy.

Murcia (Spain): the RSCO₂ voluntary agreement, a territory-wide project

A voluntary agreement, a process of commitment by stakeholders already successfully implemented for sustainable development and mitigation, is in the process of being extended to adaptation. This flexible, efficient instrument, adaptable to very different situations, facilitates the effective implementation of adaptation measures by local actors

- businesses, universities, non-profit associations
- in priority sectors for adaptation.

The project team has drawn up a vast catalogue of adaptation actions. The choice of measures and their implementation is left to charter signatories.

Communication, based on a logo for use by signatories, generates economic spin-off as a reward for their involvement.

The choice of sustainable development as an entry point led Ku-ring-gai Council to make adaptation one of the components of its sustainable development strategy. Adaptation is fully mainstreamed into Ku-ring-gai Council's sustainable development project.

Ku-ring-gai (Australia): adaptation mainstreamed into the sustainable development approach

The council's Strategy and Environment Section took charge of the process from its inception. The head of the "sustainability" programme played a decisive role as a driving force behind the process.

The actions were selected on the basis of their economic, environmental and social sustainability and their ability to mitigate the risk under consideration. A simplified quantitative and qualitative method of cost-benefit analysis was developed locally with university

support, covering the economic, social and environmental aspects.

Communication targeting the general public continued to focus on the "sustainability" programme, with a new logo and entertaining media support, since communication focusing on climate change was seen as less likely to attract support. Progress reports on the actions are included in the annual sustainable development report.

3. Choices regarding participation

► Concertation based on local authority's best practices

All the feedback gathered emphasised the importance of participation during the process of formulating a local authority's adaptation approach. Consulting experts, stakeholders and the population was useful in informing, raising awareness and convincing.

The adaptation approach also benefited from the input of those consulted, and added to the legitimacy of the published document.

Two approaches to participation were identified among the ten local authorities.

The first involved limited consultation of experts or stakeholders, i.e., those concerned by climate change adaptation.

In the second, the general public was also consulted.

All the local authorities concerned chose to involve experts and stakeholders in the design of their climate change adaptation document. The actors were frequently invited to contribute by means of workshops, which proved a source of accurate and up to date information available locally and made it easier to take into account specific factors for each sector. Sector workshops were also organised for each of the main sectors concerned with adaptation, but cross-sector workshops were also held to address crosscutting topics.

The sector workshops were structured to reflect the framework of the local authority's legal responsibilities.

Following the design phase, the task of implementation was handed over to some of the actors (technical services and/or certain stakeholders), depending on the institutional solution adopted.

Various mechanisms were introduced to ensure that other actors also participated in implementation: forums, commissions, partnerships.

In seven of the ten territories (City of London, the Canary Islands, Helsinki, Halifax, Elkford, Chicago, Ku-ring-gai), the general public was invited to participate in the design phase and this public participation was a major element of the adaptation approach. It promotes awareness of adaptation needs, when the impacts of climate change are as yet fairly intangible, and enables the public to take ownership of the approach. Public meetings are much used in North America, for example, to invite the public to participate in identifying the main impacts of climate change and in determining priority actions.

The decision to adopt one or other of these approaches reflects the local authority's current best practice in participative processes, rather than a choice based on a specific characteristic of the territory in terms of climate change. The same applies to the means employed to consult the public: telephone or postal surveys, public meetings, workshops open to the public or consultation on the draft version of the document.

In 7 out of 10 territories the general public participated in the design phase

4. Choices regarding communication

➤ Consult and communicate to convince on adaptation

Most of the local authorities not only opted to rely on their best practices in terms of participative approach but also analysed which groups of actors required the most convincing of the need for action. They then organised accordingly to inform these groups in particular, raise their awareness and involve them in decisions.

Internally, these groups consist of the local authority technical services and their managers on the one hand, and elected officials on the other. All the local authorities studied produced

a substantial body of internal communication specifically aimed at these groups. Externally, the groups concerned are invariably the local economic actors and non-profit associations. Universities and research bodies acted at the very least as involved stakeholders and, in several cases, as active partners to the local authority in its adaptation approach. The general public must be considered a stakeholder in its own right when the population's failure to acknowledge climate change and its impacts constitutes an obstacle to launching the approach.

➤ Communication with the general public generally occurs at a later stage

The local authorities observed generally handle communication with the general public as a step that logically occurs at one of the stages in the adaptation approach. Seven of the ten local authorities (Stockton-on-Tees, Ku-ring-gai, the Canary Islands, EMRC, Elkford, Chicago and Helsinki) have already begun communicating climate change adaptation to the public, but only three of them (Elkford, Chicago and Helsinki) did so from the design phase.

In Chicago, one of the councils that elected to communicate at a very early stage, it is now recognised that it would have been better to have waited until the end of the study phase and focused more on how to engage the public in the approach. One of the main difficulties encountered lies in coordinating the respective timing for communication and for operational implementation. Without such coordination, the effect of public awareness raising remains limited.

The local authorities that chose to communicate at a later stage did so for two reasons. First,

the task of convincing public sector decision-makers and stakeholders took priority, since it was a precondition for taking action. Bringing the general public on board was seen as less of a lever for change. Second, those local authorities facing a major climate change impact due to rising sea levels preferred to wait for the results of research work to be confirmed before communicating. They are currently considering the most appropriate means of communication for publishing these results.

Conversely, climate change awareness-raising programmes in schools are planning to include climate change adaptation from the outset. Findings, in the United Kingdom, for example, suggest that children are more inclined than adults to change their behaviour, as long as the issue of climate change is presented to them clearly.

Communication coordinated with the implementation timetable is essential

> **Diversified, inexpensive methods for communicating positively**

None of the local authorities describe adaptation as a subject that arouses anxiety, but rather as a solution to the problems of climate change and its impacts on the territory. In those local authorities grappling with the already visible effects of climate change, the communication strategy for the general public is carefully studied and communication focuses more on the benefits of adaptation than on the impacts of climate change for the region. The publication of certain information, such as flood risk mapping, for example, is postponed until such time as more precise information is available and tools are in place to communicate objectively and without raising fears. Some local authorities are looking into the best ways of communicating, and two local authorities in North America (Chicago and Elkford) are using consultants to develop their communication strategy.

One of the options chosen for communicating positively on adaptation is the design of key messages. These focus on the opportunities arising from the adaptation strategy (improved living conditions, avoidance of costs), rather

than on the negative impacts of climate change. Adaptation is demystified through messages such as “adaptation is not rocket science” used by the City of London. Another aim is to empower citizens, since this encourages the general public to take ownership of the adaptation approach.

Communication content is chosen according to the target audience. In Elkford, for example, where the population was somewhat sceptical as to the anthropogenic origins of climate change and its possible impacts on the region, the entry point chosen was “perceived changes in climate” rather than “climate change” in general. This won the support of the population and ensured their involvement throughout the entire process of formulating the adaptation approach.

A variety of communication tools were employed: internet, the press, conferences, etc. The cost of the tools was generally low, with the exception of communication campaigns, which were used to inform, explain scientific data in layman’s terms and raise awareness.



Examples of positive messages on adaptation

- “Adaptation aims to improve quality of life and avoid costs”.
- “Adaptation is everyone’s business”.
- “You don’t need to be a scientist to understand adaptation”.

Based on Chicago and City of London communication strategies.

5. Choices regarding timing

➤ Key moments for changing attitudes

In the vast majority of the local authorities observed, the decision to take action coincided with one of the two following situations:

- The aftermath of an extreme event: the aim in this case was to find a solution on both the technical and the policy front. Feedback from the event also served as a tool for concertation;
- Conception of a local authority strategic planning document. In several cases, this was a planning or development document.

In Stockton-on-Tees, this resulted in a fast-track approach, seen as the only feasible solution for winning the support of local elected officials in the run-up to a review of the council's long-term planning strategy.

Stockton-on-Tees (United Kingdom): fast-track action

The council decided to engage with adaptation in the wake of a series of extreme climate events (heatwaves in 2003 and 2006, flooding in 2007).

The decision was taken to fast-track the approach to tie in with the review of the council's planning document.

As a result, flooding risks were fully mainstreamed into the revised document.

It is probable that, had this decision not been taken, the adaptation plan would not now be operational, since the introduction of austerity measures has driven adaptation well down the list of national and local priorities.

Conversely, in Helsinki and Ku-ring-gai, the initial strategy showed that the task of winning hearts and minds called for a lengthy research programme to produce data accurate enough to convince decision-makers.

A third option, adopted by the Canary Islands and Halifax, is to make provisions for in-depth research as an integral part of the action plan, to ensure that certain concrete actions can be launched without delay.

In other words, highly accurate data is not necessary when drawing up the first action plan; a quick analysis using the information on hand is sufficient.

At the same time, the action plan must be designed to take on board new knowledge, especially when new infrastructure is needed or existing infrastructure is required to cope with the expected impacts of climate change. Once the adaptation plan is approved, however, the process of gathering highly accurate data (and finding the funding to do so) must go ahead.

The different approaches adopted give rise to some strongly differentiated vulnerability assessments, ranging from a quick assessment using the data available to an in-depth assessment generating territory-specific climate data.

> Phased structure allowing for periodic review

The local authorities observed see adaptation as a long-term process, in which often only an initial medium-term phase (three to five years) is defined from the outset. The process is organised to be flexible. Many of the documents provided state this explicitly, providing for possible revision of initial options following internal reviews, to take on board both any new knowledge that

may emerge on the impacts of climate change and the experience acquired in the course of the first phase. The City of London, for example, completed an initial three-year phase in 2010 and then published a revised version of its strategy. This approach, known as adaptive management, lies at the heart of all the adaptation approaches observed.

Concept n°2: Adaptive management

Adaptive management is a method of public management used in long-term strategic planning. It is often represented as a cycle, beginning with the design of a phase and ending with monitoring-evaluation preparatory to review, and is applicable to strategic approaches of all kinds and on

every geographical scale.

Adaptive management is a particularly important concept in climate change adaptation. It is a flexible and iterative approach that allows for uncertainty in adaptation scheduling and decision-making.

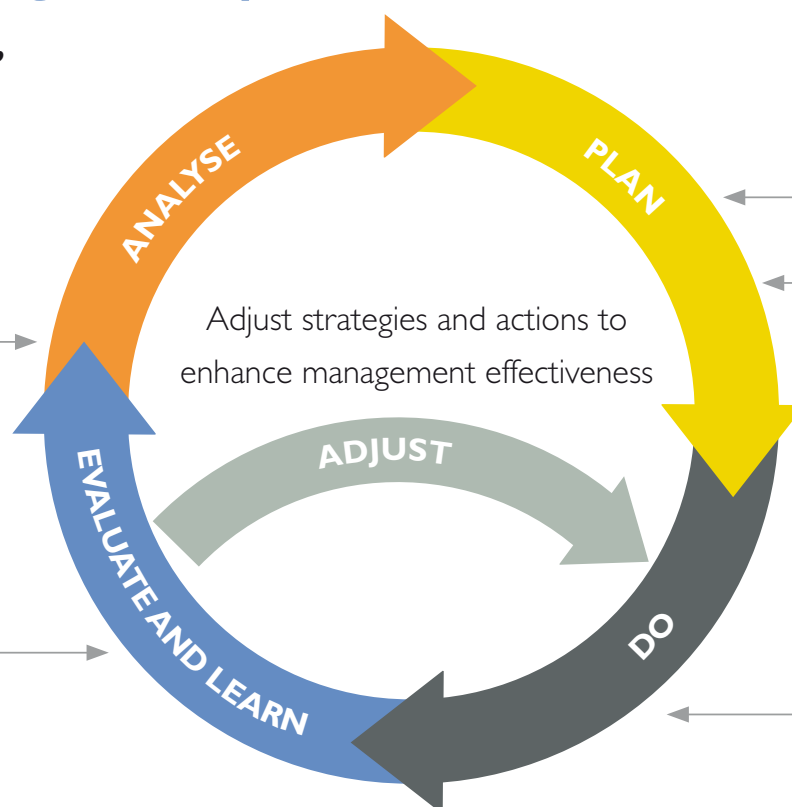
Adaptive management cycle

Analyse knowledge, threats and opportunities

Evaluate needs and priorities for the local authority and stakeholders.

Periodically review overall management programme

Evaluate management effectiveness



Source: CSIRO, 2009 (adapted).

Monitoring and evaluation systems for adaptation policies are still in their infancy. No formally recommended evaluation method exists and the indicators for monitoring adaptation are still being identified.

6. Funding and choice of actions

➤ Implementation without specific funding

One of the main findings from the study of the ten local authorities is that they all moved to the implementation phase before a specific budget was allocated.

This situation is both the cause and the consequence of local authorities focusing their adaptation plans on inexpensive measures, and on regional development measures that transfer the action (and the associated costs) to public and private sector economic actors.

Two unwanted side effects of the lack of a specific budget were identified. Firstly, there is a risk of simply recycling existing measures. Secondly, implementing a plan with no budget

can have a demotivating effect.

Thanks to the participation of non-governmental organisations and philanthropic foundations (Chicago) or of regional agencies (City of London, Stockton-on-Tees, Columbia Basin Trust, Canary Islands, Murcia), access to national or regional funds (Canada, United States, United Kingdom), or inclusion of the adaptation initiative in a European programme such as LIFE, some local authorities were able to access more generous funding for both the design and the implementation phases. There are also instances of private economic players, such as the mining industry in Elkford, becoming involved.

➤ Mainstreamed actions, at the heart of local authority adaptation strategies

The emphasis was on mainstreaming actions into local authority strategic planning.

In Halifax, the adaptation strategy actually consisted of identifying climate change adaptation actions for every local authority sector.

Planning and development is one of the main areas concerned in adaptation at the regional or local level.

The introduction of a “climate lens” approach is intended to ensure that all local authority actions take climate change adaptation into account.

The approach is generally applied to both adaptation and mitigation. Climate change thus becomes an additional factor in local authority policy. The District of Elkford adopted the “climate lens” approach as its main adaptation action.

The mainstreaming of adaptation actions is in keeping with the crosscutting nature of

adaptation, affecting many of the local authority’s responsibilities.

In one sense, it guarantees the implementation of adaptation actions. Even if actions are mainstreamed into existing policies, implementation will depend on their being effectively taken into consideration by the departments concerned.

Where no specific budget is allocated, the local authorities concerned found that there was a risk of the actions failing to be seen as priorities and their implementation consequently being deferred.

Mainstreamed adaptation actions are also harder to monitor via simple performance indicators. This can result in lack of transparency and visibility on their progress and results.

> Diverse methods for choice of action

The local authorities in question used several methods to choose which measures to include in their action plans.

Best practice would be to apply all of the methods conjointly, but time and budget constraints generally mean that one method is used in isolation.

1. Preference for no-regret measures:

All the local authorities aim for no-regret or low-regret measures. These are actions that produce net benefits (i.e. benefits that outweigh the costs), and that will have positive impacts even in the absence of climate change. Some of the documents highlight this fact, others adopt the approach without making specific reference to it. In principle, a cost-benefit analysis is necessary to identify no-regret or low-regret measures. Where no such analysis is carried out (due to time or budget constraints), measures are generally identified qualitatively, relying on matrix-based tools and the expertise of stakeholders.

Concept n°3: No-regret adaptation measures

These are adaptation measures or actions whose benefits outweigh their costs. Such measures frequently address the issue of adaptation whilst also simultaneously meeting other needs. They do not conflict with the objectives of sustainable development and do not bring about circumstances that increase climate change vulnerability in the short or medium term. They can therefore be developed even in the absence of precise climate information.

Source: PNUD, 2008.

2. The conception of

“adaptation scenarios”: Some local authorities (Elkford, EMRC) explore several different adaptation models.

These “adaptation pathways” take into account different climate scenarios and impacts, and make it possible to choose the most pertinent actions, i.e., those that are both robust, irrespective of the eventual scenario, and flexible.

The advantage of this method is that it avoids focusing on a single scenario that may not arise. It is costly, however, in terms of time and financial resources.

3. Cost-benefit analysis of actions:

Several steering documents recommend cost-benefit or cost-effectiveness analysis to determine whether the proposed actions are both effective and efficient.

The method is used to identify no-regret or low-regret actions. It also produces a ranking of actions from which to choose those that should be implemented first.

Economic analyses require specific resources. Of all the local authorities studied, only Chicago chose to carry out a cost-benefit analysis of the various adaptation actions, taking into account timescales and obstacles to be overcome; this identified nine priority adaptation actions out of a proposed total of 150.

All local authorities take no- or low-regrets measures

➤ Common features of all the actions chosen

The actions chosen using these diverse methods can be divided into five categories:

- changes to the regulatory framework and territorial planning;
- action to inform and raise awareness;
- short-term actions that can be implemented easily;
- infrastructure and planning projects, and
- the development of new knowledge.

There is a general preference for inexpensive measures. This tends to focus choices on the first three of the five categories.

One of these categories, changes to the regulatory framework and territorial planning, provides a way of transferring the cost of the action to public or private sector economic actors. Some existing measures may also be included in the adaptation document.

The renewed focus on these measures is expected to have an educational impact on those audiences already familiar with them.

The actions chosen cover every timescale: short, medium and long term. Short-term measures proposed include the implementation of inexpensive measures or measures that transfer costs to other economic actors, and urgent action needed to counter the already visible effects of climate change on the territory. Measures programmed for the medium and long term are those requiring very precise knowledge or substantial economic investment.

Finally, in all the local authorities concerned, some of the actions target vulnerable populations while others focus on vulnerable ecosystems.

These are often inexpensive actions that are easy to implement.

Vulnerable populations and ecosystems in climate change adaptation

Climate change calls for adaptation by society, by individuals and by the economy. Some agents will be able to adapt spontaneously. Programmed adaptation, instituted by national and local government, is a public policy justified by the vulnerability of certain social groups and certain social and economic functions. Adaptation actions must, therefore, take these vulnerable populations and systems into account. One example is the introduction of concrete measures to protect vulnerable people during heatwaves.

Many ecosystems, or services delivered by ecosystems, are also vulnerable and lack the capacity to adapt spontaneously. All local authorities, even those in urban areas, have responsibilities involving ecosystems, and targeted actions are therefore pertinent. The City of Chicago, for example, plans to encourage the planting of new tree species with greater resistance to climate change, in order to preserve its parks and green spaces.

There are two distinct approaches in terms of the number of actions chosen. Some local authorities adopted a small number of priority measures. When the choice of action is left to those who will be responsible for implementation (as in the charter drawn up for Murcia), however, a much wider catalogue of actions is put forward.

Actions for the short, medium and long term

7. Interactions between administrative levels and between territories

> A complementary relationship between local and regional government

In all the local authorities observed, the relationship with higher levels of government is highly complementary. National government provides a legal framework (with the exception of North America) and recommendations on methods for local authorities to use. Regional government organises and supports.

Depending on the country, the methods may be supplied by national or regional governments, and/or by universities in the cases of North America and Australia. Methodological support includes the provision of regionalised climate

scenarios and guides on how to construct a phased approach, as well as tools for organising internal deliberation and consultation (such as matrices for identifying risks and actions). National and regional government may also provide financial support.

Whatever support may be received from other levels of government, responsibility for developing the strategy and effectively implementing adaptation measures rests with the local authority.

> Pursuing consistency between territories

Since there was no identifiable correlation between specific adaptation approaches and the size of the local authority or the nature (more or less urban or rural) of the territory involved, the obvious deduction is that consistent approaches may be introduced in territories irrespective of size. Those local authorities facing the same major risk developed strategies with certain common features, and those that developed strategies with common features were all faced with similar climate challenges.

Four of the case studies consist of adjacent groups of territories involved in a joint adaptation

process. A wide range of approaches is used to ensure consistency between territorial levels. In the case of the Canary Islands, the adaptation approach is developed solely at the regional level. In Helsinki, the four councils making up the Metropolitan Area are an integral part of regional steering. In the EMRC in Australia, each municipality adopts a local strategy based on the regional strategy and the menu of actions that all have helped to define. In London regional and local government have prepared parallel approaches, whilst ensuring that these are consistent.

London (United Kingdom): one strategy for Greater London, one for the City

The City of London Corporation is one of the local authorities making up Greater London, a metropolitan area that also leads the field in adaptation. Its strategy clearly identifies existing actions at national and Greater

London levels, in order to isolate those actions that fall within its remit. The key to consistency lies partly in the organisation of concertation with the relevant stakeholders at each level of intervention.

8. Keys to taking action

To sum up, the territories under consideration that have embarked on a climate change adaptation strategy and have moved into an

implementation phase, or are about to do so, share a set of common features.

➤ The factors that facilitate taking action on adaptation are:

- Methods for managing uncertainty, with the adoption of adaptive management as the main example;
- The presence within the local authority of decision-makers actively engaged in the approach, and the empowerment of various technical services;
- An obligation to implement the measures in the plan, generally arising from formal approval of the document by elected officials;
- Synergy between the formulation of the adaptation plan and other political decisions by the local authority, such as the adoption of a planning scheme;
- The adoption of inexpensive measures, the recycling of pre-existing measures and the choice of measures requiring only a limited amount of precise data for implementation to proceed;

- The work of agencies supporting formulation and implementation at the local level, including via the funding of concrete actions.

In theory, the process of formulating adaptation approaches consists of a series of stages, beginning with the vulnerability assessment and risk analysis, then going on to formulating operational actions and ending with a decision to move on to implementation. In practice, all the local authorities made strategic choices at a very early stage, during the plan's design phase. This made it possible to shape the adaptation approach to the specific characteristics of the territory concerned. These strategic choices that made it possible to take action were made within each local authority, except in cases of intervention by agencies, which played an important role as drivers.



D. What feedback for France's PCETs?

Does the approach adopted by an exemplary local authority have any pertinence for the PCETs of French local authorities? A close examination of the experience reported here suggests this to be the case:

- The local authorities studied vary enormously in size: the presence of an elected official actively engaged in climate change adaptation

and the empowerment of technical services is incontestably an advantage;

- These local authorities decided to take action on adaptation even when the impacts of climate change were not as yet visible. The context for their approach is thus comparable to that of most French local authorities.

I. Mitigation and adaptation: two distinct approaches, managed jointly

Incorporating a component on adaptation into a climate plan covering both mitigation and adaptation is a pertinent solution. Having a single person/team responsible for both elements make it easier to focus attention on actions with collateral benefits. This also helps to avoid instances of maladaptation².

A specific adaptation approach is essential, however, because adaptation calls for a number of determining choices at local authority level.

Certain areas of local authority responsibility may be concerned by both mitigation and adaptation:

- Living environment: changes in standards and regulations must be encouraged in order both to reduce direct and indirect greenhouse gas emissions and to guarantee quality of life in the context of a changing climate and given the eventuality of extreme climate events;
- Management of the territory's agricultural, forest and natural land, an issue that concerns territories of every scale, even metropolitan;
- Adopting a "climate lens": the tool will be more useful if applied to both mitigation and adaptation.

2: Any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead (IPCC, 2001).

2. Taking action

➤ The decision to take action on adaptation should be taken at a very early stage

In many cases, a SWOT analysis will enable the local authority to decide to take action whether or not major climate issues are at stake. As is the case of a general approach to strategic risk management in public affairs, the decision to act may be taken as soon as the threats or

opportunities to the community are significant, without necessarily having to be quantified at this stage. Conducting such an analysis will call for non-technical skills, whether internal or external, such as project management and risk management.

➤ Key moments for taking action

It will invariably be preferable for the timing to coincide with at least one of the key moments for adaptation in a local authority:

- definition of a new local authority strategic

planning document (planning or development document, territory charter);

- in the aftermath of an extreme climate event.

3. Linkages between different levels

➤ Designing adaptation at the local level

As was the case in the local authorities studied, determining choices should be made at an early stage and lead towards the decision to take action. These choices relate to:

- the institutional objective of the local authority;
- governance;
- participation and communication, and
- the timing of the adaptation approach.

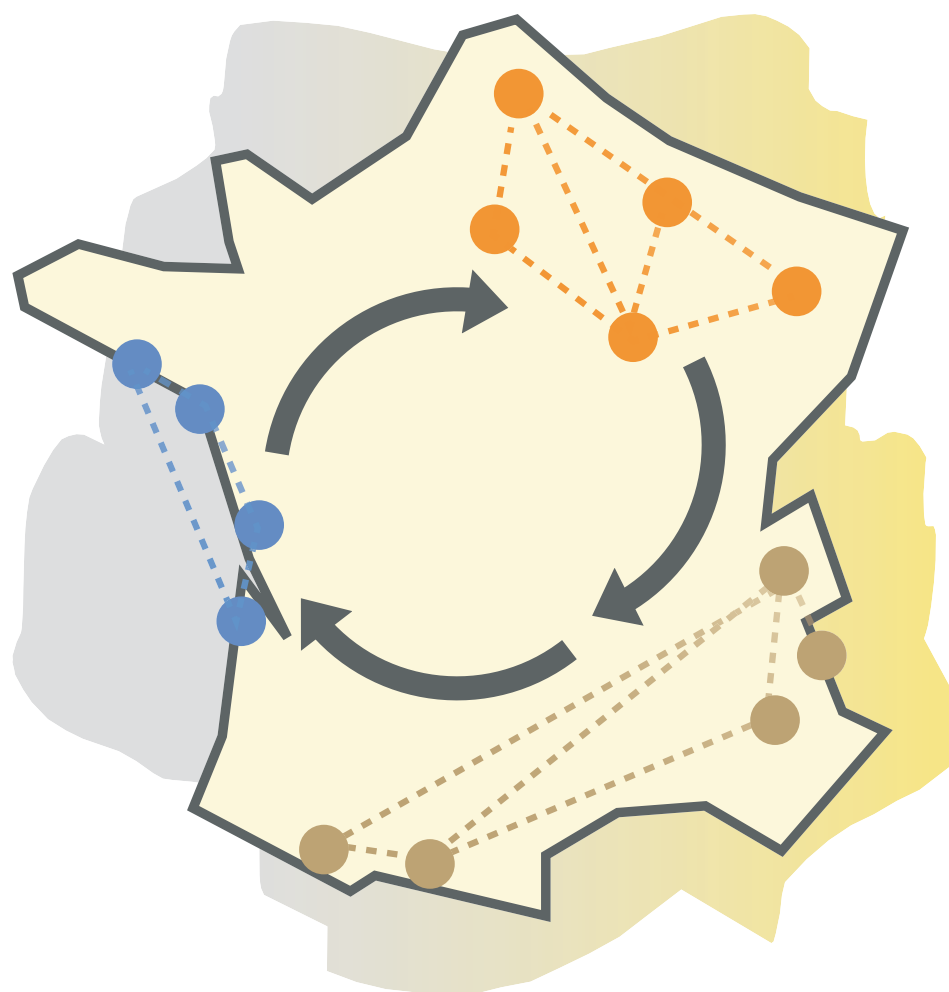
➤ Calling on regional and national government for support

Close links should be constructed between the local authority's adaptation approach and the higher echelons of government. Regional or even national government can often act as a facilitator and source of methods, and may also be in a position to provide technical and financial support for implementation of concrete adaptation actions.



➤ The potential for common approaches and networked action

Sharing the management of adaptation between several local authorities all facing the same types of climate issues is a pertinent approach. Networking will provide benefits during the local authority's design of its adaptation approach as well as during implementation, making it easier to access sources of funding (European funding, for example), and promoting learning through exchange.



Local authorities facing a climate impact: :

- **mountain**
- **coastal**
- **urban heat islands**

Figure 3: Building networks between local authorities on climate change adaptation.

4. Actors and governance

➤ An organisation close to local authorities' sustainable development approaches

An approach combining climate change adaptation with sustainable development facilitates the systematic study of vulnerable populations and ecosystems during the adaption strategy design phase. In a local authority already formally engaged in a sustainable development

approach such as Agenda 21, for example, international experience confirms that it is not only possible but actually helpful to incorporate adaptation as one of the components of the approach.

➤ Encouraging personal initiative

As is the case with sustainable development, personal initiative is a key ingredient in the launch of a climate change adaptation approach. The initiative may come from an elected official or from local authority agents.

Solutions such as training and participation in intra- and inter-authority networks should be introduced as a means of encouraging personal initiatives.

➤ Elected officials and technical managers, actors in formalising the adaptation approach

Administrative managers with a crosscutting function will be particularly well placed to lead the adaptation approach. Depending on the local authority, the function may involve the management of services, strategy or sustainable development.

Technical managers have a special role to play,

since many adaptation actions require formalised decision-making.

Official approval of the distinct adaptation document by local elected officials is essential. Such approval marks the beginning of the implementation phase and makes it easier to take the initiative within the local authority.

5. Managing uncertainty

➤ Uncertainty is inevitable, but calls for new decision-making methods and not a wait-and-see attitude

Working on climate change adaptation inevitably involves allowing for uncertainty in a number of areas: (1) expected changes in climate, (2) the foreseeable impacts of climate change on the territory and (3) the territory's vulnerability.

Three types of tools can help local authorities incorporate uncertainty into their decision-making and enabling them to take action:

- **Adaptive management**, by which climate change adaptation is conceived and managed

as a flexible, open and iterative process that can take on board any advances in the field of climate change;

- **No-regret measures**, which also generate benefits on issues other than adaptation, facilitating decision-making in a context of uncertainty;

- Analysis of different **adaptation options**, by considering different climate and impact **scenarios**. This makes it possible to choose the most pertinent actions to implement.

➤ Monitoring and evaluation, a learning tool

Learning about climate change adaptation is essential, because even the most advanced initiatives in the world are still at the pilot stage. Monitoring and evaluation of the adaptation approach at regular intervals makes it possible to take stock, assess the lessons learned and adjust the approach as necessary. It thus forms an

essential element of any adaptive management approach. Monitoring and evaluation will be most useful if based on recognised indicators and if the local authority opts for an approach recommended within a regional or national framework (ADEME 2011).

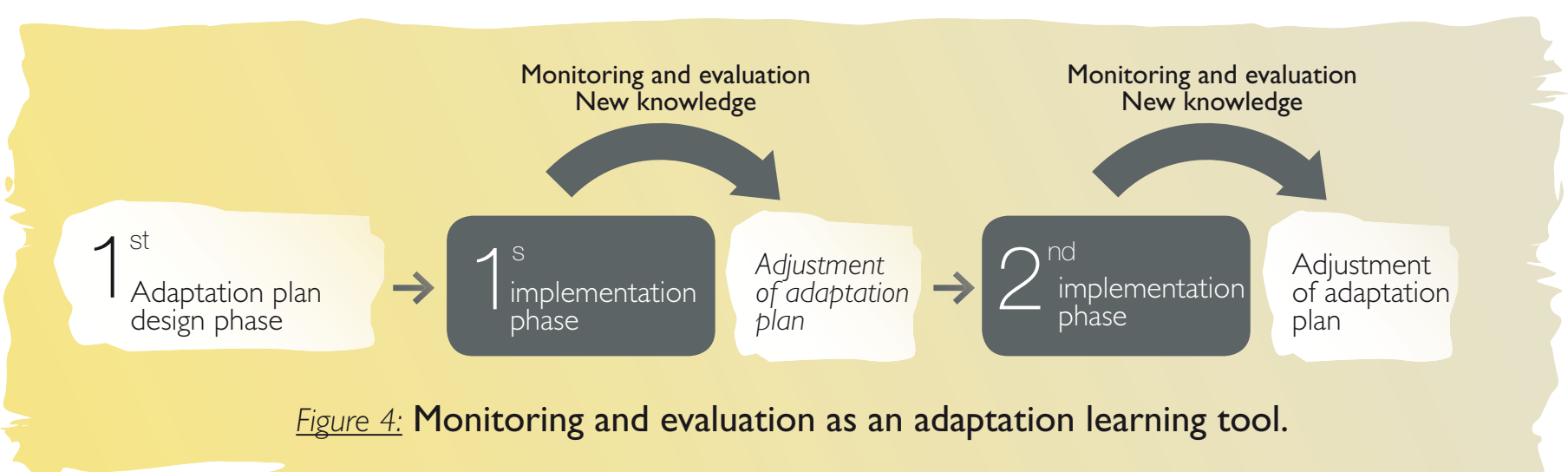


Figure 4: Monitoring and evaluation as an adaptation learning tool.

6. Selection of actions and implications for the funding of adaptation costs

As a general rule, three categories of action are to be preferred:

- **No-regret or low-regret measures**, bringing benefits even in the absence of climate change;
- **Mainstreaming of adaptation into existing policies**, which corresponds with the vision of adaptation as a crosscutting issue affecting a number of sectors simultaneously. In one sense, it guarantees the implementation of adaptation actions;
- Applying a **climate lens** to all local authority

orientations is a pertinent approach for many territories to adopt. The climate lens can be applied as readily to adaptation as to mitigation. It may constitute an adaptation in its own right, if adopted as such.

Cost-benefit analysis is a pertinent tool that can be used to produce a ranking of actions from which to choose those that should be implemented first.

An extensive catalogue is justified when the choice of actions is left to those responsible for their implementation, as is the case with Murcia's charter.

➤ Where public infrastructure is involved

Climate change adaptation may require the construction of costly protective infrastructure, or major changes to existing infrastructure projects. Such choices require in-depth knowledge of the impacts of climate change on the territory. In

such instances, establishing local data is vital and involves delaying the launch of investment. An economic analysis of the various possible options is strongly recommended.

7. Concertation

➤ Mobilising stakeholders from the outset and for the long term

Climate change adaptation requires the mobilisation of stakeholders both within and outside the local authority, particularly during the initial phases. Internal stakeholders include the various technical services and local elected officials; external stakeholders include economic operators, non-profit associations, universities and the research sector.

Where adaptation is concerned, the local authority will be best served by relying on its own

established practices of participation, without seeking to copy the experience of other local authorities.

During the implementation phase, keeping up the momentum of mobilisation over the long or even very long term will be a challenge. The participative process adopted must keep stakeholders, including private operators, involved throughout the process.

Stakeholders are both within and outside of the local authority

8. Communicating on adaptation

➤ Use existing best practices in communication

Experience shows that each local authority will be best served by using its own existing best practices in communication. Inexpensive communication tools are ideally suited to this task. Internet and articles in the press also have the added advantage of raising awareness and conviction when targeted towards adaptation stakeholders.

When a local authority is planning to target the general public with a communication campaign on its climate plan, the communication on adaptation should be synchronised with progress on the adaptation approach. Extreme climate events, whether projected or actual, provide an opportunity for communicating the local authority's plans for reducing risks via the adaptation approach.

➤ Communicate positively about adaptation

Communication on climate change can be managed in such a way as not to arouse anxiety. Firstly, the term “non anxiety-eliciting message” could be replaced by “key message”. Adaptation, like mitigation, creates opportunities, particularly for stakeholders. Experience from a number of countries has shown that it is possible to communicate in parallel to stakeholders both the need for adaptation and the opportunities it represents. This is particularly true in the case of small and medium-sized business, those most directly concerned in developing these opportunities.

It is advisable to make the connection, where such a connection is justified, between extreme climate events and climate change. There may

be a lack of information on this connection, yet this is an important factor in convincing public sector decision-makers and stakeholders to act. Communication aimed at the general public could focus instead on effective risk management by the local authority.

Local authorities embarking on a voluntary territorial climate and energy plan (PCET) may be best placed, in view of the time at their disposal to prepare the adaptation component, to compose positive messages, specific to their territory, for the general public. Those looking to find inspiration in existing messages should consult the Internet websites listed in the annexe.

When extreme climate events and climate change are related, this link must be emphasised

E. Conclusion

Analysis of the approaches followed by ten local authorities that have taken action on climate change adaptation, or are about to do so, identifies a series of common factors:

- All the local authorities in question initiated adaptation approaches, generally on a voluntary basis. In all instances, they made strategic choices on designing a specific approach at their level, tailored to the characteristics of their territory (urban, rural, mountain, coastal, island). These choices were not correlated to the size of the local authority and were rarely motivated by climate issues.
- The decision to implement adaptation actions was taken before a specific budget was set aside. This was made possible by the significant scale of the adaptation actions, which are mainstreamed into the local authority's overall planning and thus do not require a separate, specific budget.
- Regional government almost invariably served as a facilitator and source of methods, often via an agency; in several cases, national governments also performed a similar role.
- The launch of the approach is generally the outcome of an individual initiative. In terms of governance, personal initiatives tend to come more from administrative staff than from elected officials. Formal approval by elected officials plays an important role.
- The local authorities took advantage of a key moment to launch the approach, such as one of the stages in overall strategic planning or in the aftermath of an extreme climate event. The synchrony is helpful in convincing heads of technical services.



- The participation of stakeholders external to the local authority was crucial. Communication towards the general public only rarely played a role.

These factors are pertinent when drawing up the adaptation component of a territorial climate and energy plan (PCET).

Formal approval by elected officials is important

In addition, there are many lessons that French local authorities could learn from international experience:

Lessons learned

Taking action

- The development and implementation of an adaptation plan are justified even in the absence of an immediate climate emergency.
- It is possible to take action without having a specific implementation budget, using no-regret measures and mainstreaming action into strategic planning.
- Each local authority should seize its key moment for taking action on adaptation: the revision of a crosscutting strategic document, or in the aftermath of a major climate event.

Nature of the approach

- Mitigation and adaptation require two distinct approaches: jointly managed, they provide consistency and synergy between the two.
- Local authorities must make strategic choices as regards institutional objectives, governance, concertation and timing.
- Joint approaches and networked action are to be encouraged: the design of the adaptation component will benefit from close cooperation with regional government and with a network of local authorities facing the same major risk, whatever their size.

Actors and governance

- Personal initiative (from administrative staff and elected officials) is to be encouraged.
- Elected officials lend their support via official approval of the “Adaptation” component.
- An approach to governance similar to that adopted for sustainable development seems the most appropriate.

Managing uncertainty

- Uncertainty is inevitable and calls for new decision-making methods.
- There are tools available to assist decision-making in a context of uncertainty: adaptive management, no-regret measures, adaptation scenarios, knowledge creation.

Adaptation actions

- Preference should be given to no-regret measures and those that transfer action to economic actors (changes to planning/regulatory framework).
- Cost-benefit analysis is a pertinent tool that can be used to produce a ranking of actions from which to choose those that should be implemented first.
- Adopting a climate lens will enable local authorities to analyse their decisions from the angle of climate change.

Concertation

- Concertation with stakeholders is an essential ingredient of a successful adaptation: stakeholders must be mobilised from the outset and over the long term.

Communication

- Communication, both internal and with stakeholders, is essential in order to convince and to trigger action. External communication is secondary, since it is not a lever for change.
- It is possible to communicate positively on adaptation by using key messages to target opportunities.
- Preference should be given to using existing best practices within the local authority.

ANNEXES

Annexe I. Participants interviewed

Richenda Connell, CTO & co-founder,
Acclimatise (United Kingdom).

Juliette Daniels, Manager, London Climate
Change Partnership (United Kingdom).

Simon Mills, Head of Sustainable Development,
City of London Corporation (United Kingdom).

Melanie Greenwood, Environmental Projects,
Stockton-on-Tees Borough Council (United
Kingdom).

Adrian Hilton, Climate Change Coordinator,
Climate North East (United Kingdom).

Francisco Victoria Jumilla, Director of the
Murcia Regional Climate Change Observatory
(Spain).

Pedro García Moreno, technician at the Bullas
Development Agency (Agencia de desarrollo del
Ayuntamiento de Bullas), Murcia (Spain).

Santiago Maldonado, representative of the
Region of Murcia Federation of Agricultural
Cooperatives (Federación de cooperativas
agrarias de la región de Murcia) (Spain).

Jorge Bonnet, Director the Canary Islands
Agency for Sustainable Development and
Climate Change (Agencia Canaria de Desarrollo
Sostenible y Cambio Climático) (Spain).

Juan Antonio Bermejo Domínguez, Dean
of the Official College of Biologists, Canary
Islands (Spain).

Oscar Bergasa Perdomo, President of the
Territory and Population Commission, Sustainable
Development Forum (Comisión Territorio y
Población du Fórum de Desarrollo Sostenible)
of the Canary Islands (Spain).

Juan Jesús Bermúdez Ferrer, union
representative, member of the Sustainable
Development Forum, Canary Islands (Spain).

Susanna Kankaanpää, Climate Specialist,
Helsinki Region Environmental Services Authority
- HSY (Finland).

Johannes Klein, Project Coordinator,
Geographical Survey of Finland - GTK (Finland).

Sanna Luhtala, Project Manager, Ministry of
Agriculture and Forestry (Finland).

John Charles, Real Property Planning,
Infrastructure & Asset Management, Halifax
Regional Municipality (Canada).

Corien Speaker, Chief Administrative Officer,
District of Elkford (Canada).

Michelle Laurie, Columbia Basin Trust,
coordinator of the 'Communities Adapting to
Climate Change' initiative (Canada).

Meredith Hamstead, consultant, Think Bright,
contributing author on the Elkford Climate
Change Adaptation Plan, communication section,
District of Elkford (Canada).

Megan Walsh Lohmann, consultant, Zumundo Consultants, coordinator on the Elkford Climate Change Adaptation Plan, District of Elkford (Canada).

Julia Parzen, consultant, JP Consulting, advisor on the Department of Environment climate change action plan, City of Chicago (United States).

Olivia Cohn, Department of Environment, City of Chicago (United States).

Peter Davies, former Manager for the Strategy and Environment Section, Ku-ring-gai Council (Australia).

Jennifer Scott, Sustainability Program leader, Ku-ring-gai Council (Australia).

Jennie Cramp, Bushfire Officer, Ku-ring-gai Council (Australia).

Yulia Volobueva, Environmental Projects Coordinator, Eastern Metropolitan Regional Council (Australia).

Carmen Elrick, Senior Environment Consultant, Coastal Zone Management Pty. Ltd. (Australia).

Toni Burbidge, Environment and Sustainable Development Coordinator, Shire of Mundaring, EMRC (Australia).

Annexe 2. French-English glossary

This glossary is intended to assist non-specialists reading the report and to explain certain concepts. The United Nations Framework Convention on Climate Change gives precise definitions of terms relating to climate change. The use of these terms outside this international legal framework is subject to debates between experts that are as yet unresolved. English equivalents of the terms are shown in brackets.

Accord volontaire (voluntary agreement, pacto in Spanish). An agreement between a government authority and one or more private parties, as well as a unilateral commitment that is recognised by the public authority, to achieve environmental objectives or to improve environmental performance beyond compliance. (IPCC, 2001).

Adaptation (adaptation). Adjustment in natural or human systems to a new or changing environment. Adaptation to climate change refers to an adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation (IPCC, 2001).

Analyse coût-bénéfice (cost-benefit analysis). A theoretical approach applied to any systematic quantitative evaluation of a public or private project to determine whether, or to what extent, the project is desirable from a public or social standpoint. (EC, 2003). A quantitative method used to compare the costs versus the benefits of an action or an approach by reducing them to a single unit of economic measurement. It is based on assigning an economic value to the effects of actions or the impacts of climate change on tradable or non-tradable goods. It can be used to rank actions according to their effectiveness. It also takes into account a variety of decision-making variables relating to the economy, the environment, and social aspects. Definition proposed by ÉcoRessources Consultants.

Atténuation (mitigation). An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2001).

Bénéfices de l'adaptation (adaptation benefits). The avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures (IPCC, 2001).

Coûts d'adaptation (adaptation costs). Costs of planning, preparing for, facilitating, and implementing adaptation measures, including transition costs (IPCC, 2001).

Capacité d'adaptation (adaptive capacity). The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities or to cope with the consequences (IPCC, 2001).

Changement climatique (climate change). Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically, decades or longer). (IPCC, 2001) In certain French-speaking countries, Canada in particular, the French term is used in the plural to reflect the diversity of climate variations.

Collectivité (local authority). Administrative structures responsible for the interests of the population of a specific territory. A local authority has its own staff and budget, holds specific responsibilities devolved to it by the legislature, and exercises power of decision by deliberation within a council of elected officials. Definition proposed by Tercia Consultants and ÉcoRessources Consultants.

Communauté (community). Term used in English-speaking countries, very close in meaning to the French term "territoire", used to refer to a local authority. Definition proposed by Tercia and ÉcoRessources Consultants.

Communication (communication). Part of the symbolic activity of a society in which, following a process of differentiation, different systems interact and compete for a certain degree of visibility in order to uphold their point of view on arguments of collective interest. (Mancini, 1996, in ENA 2006.) Communication includes communication aimed at the general public and at stakeholders, and internal communication within a local authority. Definition proposed by Tercia and ÉcoRessources Consultants.

Compétence (responsibility). Formally defined field of intervention of a local authority. Definition proposed by Tercia and ÉcoRessources Consultants.

Design (design). The design of an adaptation plan or strategy refers to the series of stages completed prior to approval, which may differ according to circumstances. Definition proposed by Tercia and ÉcoRessources Consultants.

Coûts de mise en œuvre (implementation costs). Costs involved in the implementation of mitigation options. These costs are associated with the necessary institutional changes, information requirements, market size, opportunities for technology gain and learning, and economic incentives needed (grants, subsidies and taxes), (IPCC, 2001).

Élévation du niveau de la mer (sea level rise). An increase in the mean level of the ocean. Eustatic sea-level rise is a change in global average sea level brought about by an alteration to the volume of the world ocean. Relative sea-level rise occurs when there is a net increase in the level of the ocean relative to local land movements. Climate modellers largely concentrate on estimating eustatic sea-level change. Impact researchers focus on relative sea-level change (IPCC, 2001).

Engagement (commitment). Formal decision to take action or change practices, used here in relation to climate change adaptation. Definition proposed by Tercia and ÉcoRessources Consultants.

Évaluation de l'adaptation (adaptation evaluation). The practice of identifying options to adapt to climate change and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency and feasibility (IPCC, 2001).

Gestion adaptative (adaptive management). A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. (UN, 2001). Adaptive management is a means of acting within a context of uncertainty, such as prevails in climate change.

Îlot de chaleur urbain (urban heat island). An area within an urban area characterised by ambient temperatures higher than those of the surrounding area because of the absorption of solar energy by materials like asphalt (IPCC, 2001).

Impact (impact). Used here in the sense of the consequences of climate change for territories or communities. Definition proposed by Tercia and ÉcoRessources Consultants.

Incertitude (uncertainty). An expression of the degree to which a value (e.g. the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures (e.g. ranges of values calculated by various models) or by qualitative statements (e.g. reflecting the judgement of a team of experts). See Moss and Schneider (2000), (IPCC, 2001).

Indicateur de performance (performance indicator). Quantitative scoring or datum reflecting the level of performance of a public body, or the ability of a local authority to implement and achieve its policy, strategic and operational objectives. Definition proposed by Tercia and ÉcoRessources Consultants.

Intégration (mainstreaming). Implementation of adaption measures through the modification of an existing action or policy, and not by means of a specific new action or policy. Many adaptation measures are mainstreamed. Definition proposed by Tercia and ÉcoRessources Consultants.

Mauvaise adaptation (maladaptation). Any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead (IPCC, 2001).

Mesures gagnant-gagnant (win-win measures). Measures likely to promote adaptation whilst also being of benefit to other national priorities necessitating the same activities. Measures whose benefits outweigh the costs of their implementation. See also “no-regret measures” (UNDP, 2008).

Mesure réglementaire (regulatory measure). Rules or codes enacted by governments that mandate product specifications or process performance characteristics. (IPCC, 2001) The responsibilities of a local authority under regulations and codes vary from one country to another.

Modélisation économique (economic modelling). Attempt to represent economic reality using mathematical models. Definition proposed by Tercia and ÉcoRessources Consultants.

Partenariat (partnership). Formal or informal structure to facilitate stakeholder awareness, participation or joint action with a local authority. Public-private partnerships

are structures that play an important role in adaptation approaches in the United Kingdom. Definition proposed by Tercia and ÉcoRessources Consultants.

Participation (participation). Involvement of the various stakeholders, beyond the institutional actors, in concertation and decision-making relating to the preparation or implementation of an adaptation approach. Definition proposed by Tercia and ÉcoRessources Consultants.

Partie prenante (stakeholder). Categories of actors sharing the same interest in the implementation of a climate change adaptation approach. These include those engaged in the approach and those affected by it, positively or negatively. Definition proposed by Tercia and ÉcoRessources Consultants.

Plan d'actions (action plan). Document setting out the adaptation actions decided upon by a local authority. In practice, existing action plans are strategic plans setting out both the strategic approach and the actions. Definition proposed by Tercia and ÉcoRessources Consultants.

Passage à l'action (taking action). In the context of this study, the fact of a local authority moving from the vulnerability assessment stage to the design and subsequent implementation of an adaptation approach. Definition proposed by Tercia and ÉcoRessources Consultants.

Phénomène climatique extrême (extreme climate event). An extreme weather event is an event that is rare within its statistical reference distribution at a particular place. Definitions of "rare" vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile. By definition, the characteristics of what is called extreme weather may vary from place to place. An extreme climate event is an average of a number of weather events over a certain period of time, an average which is itself extreme (e.g. rainfall over a season), (IPCC, 2001).

Politique « sans regret » (no-regret policy). One that would generate net social benefits whether or not there is climate change. No-regrets potential is defined as the gap between the market potential and the socio-economic potential (IPCC, 2001).

Prisme climat (climate lens). Approach designed to ensure that all actions undertaken by a local authority take into account the issue of combating climate change (mitigation and adaptation).

The term "climate proofing" ("passage au crible climat") is closely related.

Definition proposed by Tercia and ÉcoRessources Consultants.

Processus de conception (design process). All the stages involved in the design of the strategy or action plan. Definition proposed by Tercia and ÉcoRessources Consultants.

(Reporting). Rendering a regular account (e.g. to stakeholders, to national government) of compliance with an undertaking given. Definition proposed by Tercia and ÉcoRessources Consultants.

Scénario climatique (climate scenario). A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships, that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed climate (IPCC, 2001).

Secteur d'activité (sector). A sector encompasses those manufacturing, trading or services businesses that share the same principal activity (INSEE).

Sectoriel (sector). Element pertaining to one of the divisions of public action with a local authority or national government, generally corresponding to the structure of the economy. Definition proposed by Tercia and ÉcoRessources Consultants.

Transversal (crosscutting). Element pertaining to all the sector aspects affected by climate change adaptation within a local authority or national government. Definition proposed by Tercia and ÉcoRessources Consultants.

Vulnérabilité (vulnerability). The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate change variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity (IPCC, 2001).

Annexe 3. Acronyms and abbreviations

ADEME - Agence De l'Environnement et de la Maîtrise de l'Energie. (French environment and energy management agency)

BaltCICA - Climate Change Impacts, Costs and Adaptation in the Baltic Region.

UNFCCC - United Nations Framework Convention on Climate Change.

EMRC - Eastern Metropolitan Regional Council

FECOAM - Federación de Cooperativas Agrarias de Murcia ((Region of Murcia Federation of Agricultural Cooperatives).

GHG - Greenhouse gases.

IPCC - Intergovernmental Panel on Climate Change.

HSY - Helsingin Seudun Ympäristöpalvelut (Helsinki Region Environmental Services Authority), Finland.

LIFE - European Union funding instrument for the environment.

OECD - Organisation for Economic Cooperation and Development.

NGO - Non-Governmental Organisation.

PCET - Plan Climat-Energie Territorial, France.

SCOT - Schéma de Cohérence Territoriale (territorial cohesion scheme), France.

SRCAE - Schéma Régional Climat, Air, Energie (regional climate, air & energy plan), France.

UKCIP - United Kingdom Climate Impacts Programme.

Annexe 4. Sources of information

► Websites of public bodies specialising in climate change adaptation:

Global

- ICLEI - Local Governments for Sustainability: www.iclei.org

Australia

- Council of Australian Governments: www.coag.gov.au
- Australian government climate change website
- Local Adaptation Pathways Program page: www.climatechange.gov.au/government/initiatives/lapp.aspx
- Department of Agriculture, Fisheries, and Forestry: www.daff.gov.au
- National Climate Change Adaptation Facility: www.nccarf.edu.au

Canada

- Columbia Basin Trust: <http://cbtadaptation.squarespace.com>

Finland

- Ministry of Agriculture and Forestry (responsible for the entire national adaptation strategy): www.mmm.fi

- BaltCICA project (Climate Change Impacts. Costs and Adaptation in the Baltic Sea Region): www.baltcica.org

United Kingdom

- Department of Environment, Food and Rural Affairs (DEFRA): [www.defra.gov.uk/environment/climate, under Advice by sector/ Advice for local authorities./](http://www.defra.gov.uk/environment/climate,underAdvicebysector/Adviceforlocalauthorities/)
- North East England climate change partnership: www.climatenortheast.com.
- London Climate Change Partnership: www.london.gov.uk/lccp

Spain

- Murcia Regional Climate Change Observatory (Observatorio Regional de Cambio Climático): <http://www.orcc.es/>

► Strategies, action plans and publications from the 10 local authorities

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- Ku-ring-gai Council, 2010. Climate Change Adaptation Strategy. Available mid-2011 on www.kmc.nsw.gov.au
- EMRC. September 2009. Perth's Eastern Region: Adapting to Climate Change. Regional Climate Change Adaptation Action Plan 2009-2013.

➤ Guides for local authority use

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ABOUT ADEME

The French Environment and Energy Management Agency (ADEME) is active in the implementation of public policy in the areas of the environment, energy and sustainable development. The Agency provides expertise and advisory services to businesses, local authorities and communities, government bodies and the public at large, to enable them to establish and consolidate their environmental action. As part of this work ADEME helps finance projects, from research to implementation, in the areas of waste management, soil conservation, energy efficiency and renewable energy, air quality and noise abatement.

ADEME is a public agency under the joint authority of the Ministry for Ecology, Sustainable Development and Energy, and the Ministry for Higher Education and Research. www.ademe.fr

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Climate observations confirm that the territory of France has been affected by climate change for several decades now, notably by an increase in the average annual temperature. Climate models indicate that these trends will continue. To be as well prepared as possible, stakeholders will have to elaborate adaptation strategies.

This document is intended for local authorities that have already carried out a climate change vulnerability assessment for their territory, and want to draw up an adaptation strategy. It describes and analyses the experience acquired by ten local authorities around the world. This analysis covers modes of governance, funding of key measures, cooperation with other local authorities, and the participation of stakeholders, in addition to communication strategies for the general public, and keys to taking action.

This presentation with an operational focus on the work carried out in the ten local authorities, and a summary of the main lessons and insights, will help other local authorities determine the approaches that are best for their jurisdictions.

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