



Appendix 12: A toolkit for cities

Adaptation Strategies for European Cities: Final Report

This is part of the Final Report of the project "Adaptation Strategies for European Cities" which has been compiled by Ricardo-AEA for the European Commission Directorate General Climate Action



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Contact:

Jonathan Perks
Ricardo-AEA Ltd.
Gemini Building, Harwell, Didcot, OX11 0QR
t: +44 (0)1235 753460
e: jonathan.m.perks@ricardo-aea.com
Ricardo-AEA is certificated to ISO9001 and
ISO14001

RICARDO-AEA

I.C.L.E.I
Local
Governments
for Sustainability

ARCADIS

MANCHESTER
1824
The University of Manchester

Alexander Ballard

adelphi

Adaptation Strategies for European Cities

A Toolkit for Cities



Report for EC Directorate General for Climate Action

Ricardo-AEA/R/EDED57248

Issue Number 1

Date 06/08/2013

Customer:

EC- Directorate for Climate Action

Customer reference:

CLIMA.C.3/SER/2011/0030

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Ricardo-AEA reference:

Ref: EDED57248- Issue Number 1

Contact:

Jonathan Perks
Ricardo-AEA Ltd
Gemini Building, Harwell, Didcot, OX11 0QR
t: 0870 190 8435
e: jonathan.m.perks@ricardo-aea.com
Ricardo-AEA is certificated to ISO9001 and ISO14001

Author:

Neil Walmsley

Approved By:

Jonathan Perks

Date:

06 August 2013

Signed:

Jonathan M Perks

Executive summary

Background to the project

This is the final framework and toolkit for the project “Adaptation Strategies for European Cities” (Reference CLIMA.C.3/SER/2011/0030) which is submitted, in accordance with our proposal dated 31st August 2011. This document provides an overview of the framework, the individual steps for cities to follow to build their resilience to climate change, guidance to further reading and case studies, and recommendations for how this material should be incorporated into the European Climate Adaptation Platform (Climate-ADAPT).

A toolkit on adaptation to climate change for city authorities is a key deliverable to help ensure the legacy of the project and to share the learning and experiences of the cities which have been directly involved. Throughout the project, tailored resources have been developed to support workshops and communication activities, coaching, webinars, and peer exchange. Within Task 1, the literature review and the review of good practice examples (strategies, tools and guidance, and adaptation options) generated factsheets, and additional reports were completed on the results of the survey and on the state of play in city adaptation across Europe. During the coaching phase, individual cities received tailored advice, guidance and direction towards different tools and resources, as appropriate. Following completion of the coaching phase, a number of additional case studies have been written up.

In parallel with this project, the development of Climate-ADAPT has continued, with enhancements to content, broader dissemination of and engagement with the platform, and increased profile within the context of the EU Adaptation Strategy. The project website was constructed to reflect closely the structure and content of Climate-ADAPT in order to facilitate the transfer and integration of project web resources into Climate-ADAPT at the end of the project. Work across the various project strands has highlighted and confirmed the wide range of existing tools and resources which are available to support cities in adaptation planning, and links with other current projects, which have or will generate tools, have also been made.

The increasing emphasis on Climate-ADAPT as the focal point for accessing and sharing tools and resources on adaptation across Europe make it a logical “home” for the legacy toolkit from this project. Rather than creating an additional, “competing” standalone toolkit to add to the large number of products which are already available (and commonly included in the Climate-ADAPT database), the preferred solution for the completion of this project was the integration of project tools and resources into Climate-ADAPT, to bolster the existing urban content of the platform accompanied by recommendations for further development of Climate-ADAPT to enhance accessibility to city-relevant resources.

This document is the final toolkit report, providing an overview of the resources available to cities seeking to adapt to the impacts of climate change which have been used through the project and how the materials can be integrated into the Climate-ADAPT website.

The report provides specific information and additional content to be added within the individual steps of the Adaptation Support Tool. This information takes the form of text to be inserted within the existing webpages and resources to be highlighted. These resources have already been uploaded to the Climate-ADAPT website by the project team.

The toolkit is therefore a collection and arrangement of resources such as publications, case studies and links to information portals and other tools that have proved useful in the support to the cities on their adaptation journeys. Many of the resources have been created by the project partners in advance or over the course of the project, though a number have been created by external organisations. Where these resources are from external sources, we have included those considered to be of a good quality and have added value to efforts by cities to develop their adaptation strategies. The resources have been mapped to the stages of the Adaptation Support Tool (AST) for consistency across Climate-ADAPT. We have also

indicated how the resources could be linked to the Cities and Towns page of Climate-ADAPT.

Additionally, we recognise that the AST is intended to provide a general approach to adaptation planning rather than specifically for cities. Through the project we have used a number of tools, most notably the **Integrated Management System** (IMS) framework aimed at integrating climate change and sustainability into city planning. While these tools do not conflict with the AST, they do add an additional level of detail and steps to follow for cities.

To help reconcile this, we have provided within the toolkit recommendations for how the website, and specifically the AST, could be developed in the future to include these additional steps. These have primarily focussed on suggestions for additional steps within the AST, as well as for additional pages within the overall Climate-ADAPT website.

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Appendices

Appendix 1 Map of Resources to the Adaptation Support Tool

Appendix 2 List of Resources

1 Creating an Adaptation Toolkit for European Cities

The aim of this toolkit/framework is to act as a legacy for the project to ensure that the materials developed and experiences of the cities are shared more widely. It will help to ensure that the outputs of the project are effectively disseminated via the Climate-ADAPT website and made available for other cities across Europe and internationally.

The toolkit was envisaged to provide step by step guidance and tools for city authorities on designing and implementing an adaptation strategy and measures, including:

- Guidance on assessing climate impacts and vulnerabilities in cities across different regions and sectors and on information sources;
- Guidance and methodologies for mainstreaming adaptation into key policy areas for cities, for example transport, water and health, including on cost and benefits of adaptation measures; and
- Case studies and best practices identified.

During the course of the project a number of toolkits, produced by other organisations including those involved in the project, specifically ICLEI, became publicly available which provided this guidance and case studies to cities. Several of these toolkits were used through the project in the workshops and training sessions. As such, it was decided that the creation of another toolkit for cities would be an unnecessary duplication of effort and may cause confusion to users.

Instead, the project team felt that a more valuable deliverable would be to focus on how the guidance and resources could be directly integrated into the Climate-ADAPT website, enhancing its value to users by providing an additional level of information to cities. It would also reduce the effort required to ensure that the guidance and resources for cities was kept up to date by removing the need to provide a regularly updated stand-alone document.

Each aspect of Task 1 in the project confirmed the flexible multi-dimensional nature of urban adaptation, which means that the training phase of the project had no single preferred approach to promote. Instead, the role of coaches was to support individual cities to identify the most appropriate tools and resources for making progress on the adaptation journey in their specific local context. Consequently, we identified that a flexible project toolkit or portfolio was needed that took into account of the multi-dimensional nature of adaptation (no single approach to promote adaptation) and the unique local context each city faces. Rather than providing another new tool or resource, it was decided that it should instead be viewed as a gateway to the portfolio of materials available to support urban adaptation, grouping them in a way that facilitates the comparison and selection of alternative building blocks available at each stage in the adaptation process. This approach will also enable a smooth transition of final products into Climate-ADAPT.

1.1 Purpose of this document

This section provides an overview of the approach of this document in aiding Climate-ADAPT to provide a toolkit and a framework for cities to follow as they develop their adaptation strategies, integrated into their existing package of resources. This document specifically provides;

- 1) An inventory of tools and resources generated in or used during the course of the project, and recommended as useful for cities in the development of their adaptation strategies,

- 2) Explains how the different resources and tools available on Climate-ADAPT can be linked together and presented in the future.

Through this document, Climate-ADAPT will be able to provide additional content through the website aimed specifically at cities based upon the work of the project, and provide links to existing high-quality tools and resources.

This report provides a framework for how the tools and resources, with supporting material, can be integrated into the existing material on Climate-ADAPT. The report is structured in the following way:

- Chapter 1 provides an explanation of how the toolkit has been developed and the content is intended to be integrated into the Climate-ADAPT website,
- Chapters 2 through 7 describe how the additional resources should be included within the existing steps of the AST, along with appropriate accompanying text to provide an additional level of information for city-level users. In places it also includes recommendations for how the individual AST step can be further developed in the future.
- Chapter 8 provides further recommendations for how Climate-ADAPT can be developed further in the short and long term to better aid city-level adaptation practitioners, including suggestions for alterations to individual web pages.
- Appendix 1 provides a full inventory of the resources to be uploaded to Climate-ADAPT, included a visual map of how these resources can support the different steps of the AST.

1.2 Adopting the framework of the Adaptation Support Tool

To effectively integrate the material developed during the course of this project with the existing material on Climate-ADAPT, we have decided to create a framework based upon the existing Adaptation Support Tool (AST). During the course of the project it was recognised that there are a wide range of resources available to aid cities in developing an adaptation strategy, and as such it was decided that a gateway to a flexible portfolio of resources would be of greater value to cities than an additional standalone toolkit.

The framework effectively expands the existing sections of the AST with additional guidance for city planners, as well as further research, case studies and guidance material.

Figure 1. The Adaptation Support Tool (AST)

(<http://Climate-ADAPT.eea.europa.eu/web/guest/adaptation-support-tool/step-1>)

The screenshot displays the 'European Climate Adaptation Platform' website. The header includes the 'CLIMATE-ADAPT' logo, navigation links (Glossary, Contact, Sitemap, Legal notice, About), and a search bar. The main navigation menu highlights 'Tools', and the sub-menu shows 'Adaptation support tool' as the active section. A circular diagram on the left illustrates the six steps of the tool, with step 1, 'Getting started', highlighted. The main content area for step 1 includes a title 'Getting started', a sub-heading 'What is the Adaptation Support Tool?', a brief description of the tool's aim, a reference to the EU strategy on adaptation to climate change, and a 'Read more' button. Below this, there are two columns: 'Guidance and tools' and 'Further reading', each containing a list of relevant documents and reports.

The AST provides a series of steps for users to follow which can be applied in a wide variety of different contexts, though it does not currently provide direction specifically for cities and urban environments. At each step in the process, there is a considerable level of additional information and actions that a team of practitioners seeking to build the resilience of a city will need to follow.

A number of conceptual frameworks exist that have been designed specifically to support adaptation planning and risk assessment within the city context, most notable the Integrated Management System for Local Climate Change Response (IMS) by ICLEI or the Future Cities Adaptation Compass. These frameworks generally cover similar issues linked to the assessment of risk, including climate change hazard, vulnerability and adaptive capacity. Clarifying understanding on adaptation issues by utilising a conceptual framework can support adaptation planning.

The main frameworks that provide support to cities seeking to develop and implement adaptation strategies include (but are not limited to) the IMS framework, the Future Cities Adaptation Compass, and the UKCIP Adaptation Wizard:

- **The Integrated Management for Local Climate Change Response: Capacity Development Package** (<http://www.localmanagement.eu/index.php/cdp:home>) follows six main steps, covering organisational setup/involvement and communication, a baseline review, target setting, political commitment, implementation and monitoring, and evaluation and reporting. The content of these individual steps corresponds with that of the AST, though in a different sequence and certain activities (such as building political support) have considerably more emphasis.
- **The Future Cities Adaptation Compass** (<http://www.future-cities.eu/project/adaptation-compass.html>) follows a similar structure to the IMS

Framework, and covers checking vulnerability, understanding climate change impacts, assessing risks and opportunities, exploring adaptation options, and determining the need for action/selecting measures. It does not, however, cover the implementation phase of an adaptation strategy.

- The **UKCIP Adaptation wizard** (<http://www.ukcip.org.uk/wizard/>) is most similar to the AST in terms of structure and approach, though does not focus specifically on cities. The main steps it covers include Getting Started, Assessing vulnerability, Identifying, assessing and implementing adaptation options, and Monitoring and Reviewing.

These frameworks generally follow many of the activities within the steps of the AST, though to a greater extent and sometimes in a slightly different order. Each framework provides a number of sequential stages for users to follow in developing and implementing an adaptation strategy that are common to each of the frameworks, including:

- An initial understanding of climate impacts upon the user, and their capacity to adapt,
- The assessment of options and development of an overarching strategy
- The Implementation of the strategy – *except Future Cities Adaptation Compass*
- Monitoring and Evaluation

Each of the frameworks emphasises the need for stakeholder dialogue and engagement throughout the process, particularly in order to identify priorities for each city and build the necessary support for action. Each proposes the development of an appropriate stakeholder engagement process, including the development of a communications plan.

There are a few differences between the AST and these toolkits, particularly around the initial planning process and the development of political support. The toolkits tend to place a greater focus on the initial assessment of vulnerability, threats and adaptive capacity, as well as the building of political support, the latter of which takes place at a later stage in the process, once the strategy is being developed. The IMS framework, for example, dedicates an entire step to the building of the political support. These two increased areas of emphasis reflects the complex nature of cities and competing demands, requiring strong political 'buy-in' to effectively implement strategy. In this toolkit we have integrated the key points from these frameworks into the individual steps of the AST and provided links to their content.

The review of existing tools and guidance demonstrated the breadth of support available for urban adaptation: depending on the context of each city, including its national context, geographic location, and preferences in sustainability planning and management, some resources will be found more or less helpful at different stages in an adaptation process. However, while the various tools and guidance can differ in their style, presentation, specific content and detail, there is fundamental agreement that urban adaptation is viewed as an ongoing process with cross-cutting implications, and a need to be integrated into multiple aspects of urban planning and management.

Where it is clear that the structure of the AST may need to be further developed to properly support city-level adaptation measures, we have included recommendations as to how this may be achieved in future iterations of the tool. The toolkit also includes, where appropriate, case studies from the cities participating in the project and others that have been used in the training session. While each city is in many respects unique and will need to develop their own strategies and approaches, these case studies should help provide useful guidance.

1.3 Overview of Stages

In each step of the AST, we have provided additional text to be included that will provide further guidance for practitioners at the city level, which will be complemented and enhanced by the further resources. As previously mentioned, other frameworks such as the IMS

framework and Future Cities Adaptation Compass feature prominently. The additional information for cities provides an approach that can be followed at the city level, though there are additional sources of information that can complement and enhance these steps. The approach is informed particularly by the Integrated Management System (IMS) which was used extensively through the project with the participating cities.

Rather than promoting one adaptation tool or resource over against others, the recommendation for the training phase of the project was to enable cities to view the components of the process of building an adaptation strategy through a more general integrated sustainability management approach. For the purposes of the project¹, we adopted the “Integrated Management System” (IMS) which provides logical steps which can easily be understood by city administrations, regardless of their familiarity with adaptation and technical language, terms and concepts associated with adaptation. This cycle is shown in Figure 2.

Figure 1 The Integrated Management System to be used to structure the urban adaptation journey



The advantages of the Integrated Management System are that it:

- holds together an emphasis on knowledge development and evidence building with stakeholder engagement and communication;
- makes clear an explicit priority to achieve political commitment to the development and implementation of the strategy;

¹ This is adopted as a pragmatic approach to facilitate interactions on adaptation planning and management with the range of cities participating in the training phase of the project: there is a wide range of experience in adaptation (from none at all through to very advanced) and this generic cycle offers a common framework that can be understood by all. For the final deliverables of the project (including final toolkit) we will review the effectiveness of this approach, and also consider alternative structures, in order to draw together project materials in an accessible way, bearing in mind other constraints, such as consistency with other materials presented on the Climate-ADAPT platform.

- can incorporate all of the “good practice” elements recommended in other adaptation guidance (such as the Climate-ADAPT Adaptation Support Tool), within a more generic framework;
- can be viewed as a journey with one step following the other, where cities can have different starting points; and
- includes pre-existing checklists which can be modified for application to adaptation challenges, specifically.

The IMS framework for Local Climate Change Response, developed by ICLEI and used throughout the project, consists of five major steps that are repeated in annual cycles. As previously mentioned, the IMS approach overlaps considerably with that of the AST, though certain steps are conducted in a slightly different sequence, with a greater emphasis on the initial assessment and planning stages and the inclusion of an entire step dedicated to the building of political support for the process.

In this toolkit we have integrated the additional information and steps/processes within the existing steps of the AST. Where there is significant overlap in terms of approach and content of the frameworks, we have provided complementary information and resources for users. Where the frameworks do not align, we have highlighted this and presented possible recommendations for how this can be reconciled. Similarly, where certain steps of the AST are not seen to add value to city-level adaptation planning processes, this has been highlighted and recommendations put forward for how this can be rectified.

1.4 Categories of Resources

Through the project, a number of external resources were identified that were felt to be particularly useful for supporting cities in increasing their resilience to climate change impacts. Several of these resources are helpful throughout the process, whereas others can provide useful information and support in specific steps. We also developed a number of case studies that are helpful in illustrating the different approaches adopted by participating cities.

Throughout the project, other analysis and reporting was undertaken exploring various aspects relevant to adaptation in cities. Several of the project reports may provide lasting value and are considered for inclusion on Climate-ADAPT and in the toolkit, Factsheets on adaptation strategies, tools and options were created and made available on the project website, and these are included in the toolkit.

Other training material was also developed through the project to assist cities in the workshops, and coaching sessions and webinars. Much of this material is however in presentation form, or tailored to the specific circumstances of the individual cities, and not suitable for uploading to Climate-ADAPT, and is therefore excluded from the toolkit. A description of such materials is shown in Table 1.

Table 1 An overview of resource categories.

Resource type ²	Description	Relevance in project toolkit
Publications and reports	Documents that have either been published in an internationally peer-reviewed scientific journal (in the case of EU research project results) or have been approved by the organisations responsible, national	We have included, where appropriate, publications and reports that provide further background information that may be relevant for city-level practitioners at different steps in the AST framework.

² These are the data categories within the Climate-ADAPT database.

Resource type ²	Description	Relevance in project toolkit
	governments or agencies (in case of other types of documents such as assessments, national adaptation strategies and plans).	
Information portals	Information portals relate to adaptation. This category includes, for example, international, EU and national adaptation portals, wiki's and (interfaces on) databases. In this section of Climate-ADAPT, information portals are included which can be from EU research projects or from national projects and/or agencies.	As we have consolidated most of the relevant resources into Climate-ADAPT, we have included only a very small number of information portals in this toolkit report.
Guidance	Guidance documents and guidance portals, sections of portals and web pages are specifically aimed at guidance.	Several useful guidance documents have been included as recommended reading for city-level practitioners.
Tools	This category includes online interactive tools providing support for adaptation, such as decision support systems, modelling and visualisation tools, and tools for cost-benefit analysis.	Several of the tools included span the complete adaptation process, such as UKCIP Adaptation Wizard, whereas others are more relevant and appropriate at specific steps within the AST.
Maps, graphs, datasets	Datasets, maps and graphs related to climate change adaptation, including, for example, maps visualising observations, projections, impacts, vulnerability and risks. Map viewers are also included.	Datasets have not been included as the relevant datasets are already available through Climate-ADAPT.
Indicators	These are EU and international organisations and co-operative programs working in the domain of climate change adaptation (both EU and non-EU)	We have included only a limited number of indicators within the toolkit, as currently only a small number exist for adaptation within urban areas.
Research and knowledge projects	Research and knowledge projects and programmes are aimed at developing the Climate Change Adaptation knowledge base.	We have included a small number of resources here where useful new information is starting to emerge.

Resource type ²	Description	Relevance in project toolkit
Adaptation options	This section contains an overview of generic options (possible measures and actions) for climate adaptation, which are based on literature. It is advised to include a range of options for a particular sector from one or several information sources in order to ensure some consistency within the sector.	A number of short briefings on possible adaptation options for cities, such as green architecture designs, have been included, primarily in steps 2 and 3 of the AST.
Case studies	These are descriptions of practical adaptation case studies, projects and programmes that have been implemented, described and, if feasible, also analysed, in a geographically determined location.	We have included case studies that have been used in the training sessions/workshops of the project and from the participating cities themselves.
Organisations	These are EU and international organisations and co-operative programs working in the domain of climate change adaptation (both EU and non-EU)	We have not included any external organisations within the toolkit, instead focussing on the resources they have produced.

In the following sections, we have provided a list of resources by category for each of the steps, where appropriate, to be added to the 'Read More' section. We have included resources where we feel they will provide particularly useful additional information. Where the existing material within the AST is already sufficient for the needs of city practitioners, we have not provided any additional text and/or resources.

If additional categories are suggested to those currently existing, and it is not possible for EEA to add these due to limitations of space on the webpage, an alternative approach may be to provide a 'Search Results' bar to the right-hand side of the page which links the individual step/sub-step to the database of resources. This may be more convenient and easier to maintain.

2 Step 1: Getting Started

2.1 Overview of Step 1: Getting Started

The first step of the adaptation support tool focusses on aiding the users in understanding the need to adapt to climate change. Additional information in this section includes guidance for cities in setting up their project teams, plans and reference material.

In particular, we recommend that cities undertake a **baseline review** to better understand their current situation, as recommended as part of the Integrated Management System (IMS) approach to managing adaptation in urban areas. This additional activity will aid cities in the subsequent steps of the AST.

2.2 Main Steps

2.2.1 Step 1.1. How to use the adaptation support tool?

There are a number of additional resources such as frameworks and tools that cities can use to complement the main steps of the AST, listed below. These resources can provide detailed instructions for practitioners within cities at each of the different stages of the adaptation process.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada) (http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)
- The BalticClimate Toolkit Policy Makers section: Prepare the ground/recognise the problem (<http://www.balticclimate.org/en/project/toolkit>)

Tools

- Integrated Management for Local Climate Change Response: Capacity Development Package (<http://www.localmanagement.eu/index.php/cdp:home>)
- Future Cities Adaptation Compass (<http://www.future-cities.eu/project/adaptation-compass.html>)

2.2.2 Step 1.2. Why adapt to climate change?

European cities are the major population centres of the continent. They are significant drivers of economic growth and innovation. They are cultural and creative hubs. The particular characteristics of European urban life bring benefits to city inhabitants. In doing so, cities have to cope with a number of challenges to sustaining and enhancing quality of life. Climate change is emerging as one of the most prominent of these. Climate change stands as a major challenge to achieving a vision centred on a secure and prosperous future for European cities.

Publications & Reports

- Seven Climate Change Lessons from the Cities of Europe: CDP Cities 2012 (<https://www.cdproject.net/CDPResults/CDP-Cities-2012-European-Report.pdf>)

2.2.3 Step 1.3. How to plan for adaptation

To support the planning process, cities can undertake a **baseline review** to better understand the issues they may need to consider at the local level, their main stakeholders they will need to engage with, and the mapping of responsibilities within the city administration and amongst stakeholders. It should include:

- Assessing the local situation with regards to environmental and sustainability issues;
- Mapping the legal requirements;
- Mapping the political priorities: current political agenda, stakeholder consultation of key issues;
- The mapping of emerging issues and trends: legal/administrative landscape, environmental trends and risks;
- The mapping of responsibilities and organisational set up;
- Evaluating the local situation;
- Distributing public information about the outcomes of the baseline review; and
- An annual update / 3-5 years revision (depending upon the outcome of the evaluation).

As part of this process, it is important that roles and responsibilities within the city administration (which may be spread across a number of different departments and bodies) are identified and assigned.

It is recommended that cities should also undertake the following, which will support activities in the following steps of the AST:

The development of a Work Plan.

The work plan should aim to create a solid basis for setting priorities and targets in a city or region's climate change response. It takes stock of present climate conditions and expected changes, and helps to evaluate strengths and weaknesses, risks and opportunities in terms of climate adaptation efforts.

The development of a Communications Plan.

A fair and equitable adaptation strategy for a city can only be achieved with the involvement of the city's stakeholders to create solutions that satisfy their needs. A communications plan should be drawn up that will help to the team to engage and communicate with the different stakeholders through the steps of the AST.

Stakeholder identification and engagement plan:

Many different stakeholders will be involved in the process. When considering all relevant impacts of climate change on the city, should cover impacts within the municipality's responsibility (involving the private economy and citizens) as well as the impact of activities of all actors (municipality and stakeholders) on neighbouring municipalities and cities.

Political Commitment & Partnerships

Before setting out to develop and implement an adaptation strategy for a city, it is important that there is an appropriate level of political support for the process. Additionally, as cities have limited executive powers over private companies, households and other sphere of government, it is important that partnerships are formed to help ensure commitments to targets.

Publications & Reports

- Climate Change impacts in Europe. Final Report of the PESETA research project (European Commission Joint Research Centre) 2009 (<http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=2879>)

Guidance

- Integrated Management for Local Climate Change Response: Capacity Development Package – **Climate Baseline Review**
(http://www.localmanagement.eu/index.php/cdp:local_authorities_baseline_review)
- Integrated Management for Local Climate Change Response: Capacity Development Package – **Organisational Setup**
(http://www.localmanagement.eu/index.php/cdp:local_authorities_organisational_setup)
- Integrated Management for Local Climate Change Response: Capacity Development Package – **Involvement & Communication**
(http://www.localmanagement.eu/index.php/cdp:local_authorities_involvement_and_communication)

2.3 Recommendations for expansion of Step 1

This step is of relatively limited value to individuals and teams developing adaptation strategies within the city-context, as there is likely to be an existing awareness of possible environmental risks and potential impacts upon the city. However, in this step, it would be valuable for the city-level practitioners to organise a **baseline review** and start to develop plans of action ahead. This will, however, overlap to some extent with activities in Step 2 of the AST.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps – this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the ‘Read More’ section of each sub-step.

In the longer term, we recommend providing an additional **2 steps** covering

- Preparing a baseline review to identify the issues and critical systems they will need to take into account when developing an adaptation strategy
- Developing initial plans of action to help organise their activities ahead.

These steps would present guidance from the IMS framework and provide initial practical actions for cities to take to get started.

3 Step 2: Assessing risks and vulnerability to climate change

3.1 Overview of stage

Initial identification of risks and vulnerability to climate change at the city level will already have been conducted as part of the **baseline review** (see **Step 1.3**). The threats cities will face will vary with geographical location, but due to their high level of interdependencies of systems and population density, they are particularly vulnerable to climate impacts.

In Europe, around 75% of the population lives in urban areas and this is projected to increase to about 80% by 2020. As such it is essential that European Cities properly prepare for the future impacts of climate change upon them.

3.2 Main activities

3.2.1 Step 2.1. How is the European Climate Changing?

The impacts of climate change will not be felt equally across a city by all groups, nor will it affect all parts of the urban system (such as roads or sanitation systems) equally. Those living near rivers may be less seriously affected by the effects of heatwaves, though more vulnerable to flooding. Similarly poorer social groups may be more vulnerable due to a lack of resources to properly adapt, or living in areas more vulnerable to different impacts.

Publications & Reports

- The Impacts and Economic Costs of Sea-Level Rise in Europe and the Costs and Benefits of Adaptation, 2011 (http://www.climatecost.cc/images/Policy_brief_2_Coastal_10_lowres.pdf)
- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada) (http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)
- The UK Climate Change Risk Assessment 2012 Evidence Report, Defra. (<http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=15747>)

Guidance

- Integrated Management for Local Climate Change Response: Capacity Development Package – **Baseline Review** (http://www.localmanagement.eu/index.php/cdp:local_authorities_baseline_review)

Tools

- The Future Cities - Adaptation Compass (<http://www.future-cities.eu/project/adaptation-compass.html>)

Research & Knowledge Projects

- European and Global Climate Change Projections: Discussion of Climate Change Model Outputs, Scenarios and Uncertainty in the EC RTD ClimateCost Project, 2011 (http://eucities-adapt.eu/cms/assets/Uploads/UserFiles/11/Combined%20Report%20Templates%20inal%201%204_6.pdf)

Case Studies

- The City Of Stockholm's Action Programme On Climate Change (2007)
- Copenhagen Climate Adaptation Plan (2011)
- Rotterdam Climate Proof – Adaptation Programme (2010)
- Climate Adaptation Strategy – The City of Malmo (2011)
- City of Melbourne Climate Change Adaptation Strategy (2009)
- City of Santa Cruz Climate Adaptation Plan (2011)
- Managing Risks and Increasing Resilience. The Mayor's Climate Change Adaptation Strategy (2011)

3.2.2 Step 2.2 Risks and vulnerabilities in European Sectors and regions

Cities may be more adversely affected by the impacts of climate change than rural areas. Many of the impacts, such as water shortages, flooding and heatwaves, may have a more damaging effect within an urban area due to population density and the damage these may cause to building and systems.

Cities should undertake a risk assessment examining

- The exposure of the city to future climate change hazards through the use of climate change projects and scenarios,
- The sensitivities of the main systems to both climatic and non-climatic stresses.
- The adaptive capacity of the city, including current adaptation related measures/policies and the associate cost and ability of adjustment.

Publications & Reports

- Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network (<http://www.iddri.org/Publications/Rapports-and-briefing-papers/ARC3%20report.pdf>)
- Framework for City Climate Risk Assessment, 2009. World Bank. (<http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1256566800920/6505269-1268260567624/Rosenzweig.pdf>)
- The BalticClimate toolkit Policy Makers section: Assess vulnerability – though a general introduction to vulnerability in four key sectors (agriculture, housing, energy and transport) (<http://www.balticclimate.org/en/project/toolkit>)
- Cities and Climate Change, OECD 2010 Report (<http://www.oecd.org/gov/regional-policy/citiesandclimatechange.htm>)
- Climate Change impacts in Europe. Final Report of the PESETA research project (European Commission Joint Research Centre) 2009 (<http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=2879>)

Guidance

- Urban Regions: Vulnerabilities, Vulnerability Assessments by Indicators and Adaptation Options for Climate Change Impacts, Technical Paper 2010/12 (http://acm.eionet.europa.eu/reports/ETCACC_TP_2010_12_Urban_CC_Vuln_Adapt)
- Climate Change and Territorial Effects on Regions and Local Economies, Final Report Version 31/5/2011, Scientific report (<http://eucities-adapt.eu/app/public/document/index/viewcms/did/21>)

Tools

- The Future Cities - Adaptation Compass (<http://www.future-cities.eu/project/adaptation-compass.html>)

Indicators

- Urban Vulnerability Indicators - ETC CCA/SIA Joint Technical Paper 1/2012 (http://cca.eionet.europa.eu/reports/TP_3-2012)

Case Studies

- The City Of Stockholm's Action Programme On Climate Change (2007)
- Copenhagen Climate Adaptation Plan (2011)
- Rotterdam Climate Proof – Adaptation Programme (2010)
- Climate Adaptation Strategy – The City of Malmo (2011)
- City of Melbourne Climate Change Adaptation Strategy (2009)
- City of Santa Cruz Climate Adaptation Plan (2011)
- Managing Risks and Increasing Resilience. The Mayor's Climate Change Adaptation Strategy (2011)

3.2.3 Step 2.3 Are there also opportunities?

A changing climate introduces risks but may also offer some positive opportunities for cities.

Tools

- Future Cities Adaptation Compass: 'Appraise Risks and Opportunities' (<http://www.future-cities.eu/project/adaptation-compass.html>)

3.2.4 Step 2.4 How to assess adaptive capacity?

The project team should undertake a **governance inventory and analysis** to identify ongoing activities where there may be potential synergies with the adaptation process. For example, the upgrading of infrastructure such as roads or the design of new buildings may provide an opportunity to incorporate adaptation into the design or help complement the wider adaptation efforts of the city.

Similarly, the project team should also examine the vulnerability of different urban systems and social groups. Engaging with different stakeholder groups through the different steps of the process will help to identify priority issues and the most significant threats to a city.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada)

Guidance

- Integrated Management for Local Climate Change Response: Capacity Development Package – **Baseline Review** (http://www.localmanagement.eu/index.php/cdp:local_authorities_baseline_review)

Tools

- UKCIP - Local Climate Impacts Profile (LCLIP) (<http://www.ukcip.org.uk/lclip/>)
- The Future Cities - Adaptation Compass (<http://www.future-cities.eu/project/adaptation-compass.html>)

3.2.5 Step 2.5 How to deal with uncertainties?

Due to the high degree of vulnerability of cities to climate impacts and the scale of the damages these may cause, it is particularly important that cities do prepare adequately, even in the face of uncertainty of projects.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada) (http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)

Tools

- Future Cities Adaptation Compass: 'Check Vulnerability' (<http://www.future-cities.eu/project/adaptation-compass.html>)

3.3 Recommendations for expansion of Step 2

This step closely aligns with the first steps of the other frameworks, and it may not be necessary to make any significant modifications beyond including the additional text above in the individual sub steps. However there is a considerable amount of detailed information available for cities at this stage within other tools and frameworks, and it may be advisable to extend the individual sub-steps further with more detailed information on the specific processes outlined above.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps -- this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the current 'Read More' section of each sub-step where already present, or the creation of a "Read More" section.

4 Step 3: Identifying adaptation options

4.1 Overview of stage

Following the **baseline review** and stakeholder engagement process, it should be possible for cities to identify initial adaptation options. When considering adaptation options, there are a number of case studies from cities in Europe where different options have been identified, assessed and implemented.

Cities should also consider the funding they may have available to help them implement these options. While there are few sources of funds dedicated specifically for adaptation measures, there are a number of other funds focussing on the built environment that may help pay for different measures.

4.2 Main activities

4.2.1 Step 3.1 What adaptation options are available?

Cities should consider the adaptation options available to them based upon the risk assessment and the stakeholder engagement process conducted in the previous steps.

There are a wide range of options available to cities to adapt to different impacts through the use of green structures (such as green roofs and walls), improved water systems, and the design of urban structures. As part of this, it is necessary to identify potential drivers and barriers to the implementation of different adaptation measures, and how they may be overcome. Engagement with stakeholders will help to identify these.

Cities should also consider what funding sources may be available to them to help implement the adaptation measures. There are a number of funds available within the European Union specifically for resilience building within cities, though in many case (particularly where the adaptation measure may be a component of a larger project) non-adaptation specific funds may also be available. These could include:

- **The EU Cohesion Fund**
(http://ec.europa.eu/regional_policy/thefunds/cohesion/index_en.cfm)
- **Joint Assistance to Support Projects in European Regions (JASPERS)**
(<http://www.jaspers-europa-info.org/>)
- **Joint European Support for Sustainable Investment in Cities (JESSICA)**
(http://ec.europa.eu/regional_policy/thefunds/instruments/jessica_en.cfm#1)

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada)
(http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)
- Improving public health responses to extreme weather/heat-waves. Summary for policy-makers. EuroHEAT (<http://www.euro.who.int/en/what-we-do/health-topics/environment-and-health/Climate-change/publications/2009/improving-public-health-responses-to-extreme-weatherheat-waves.-summary-for-policy-makers.-euroheat>)

Guidance

- The BalticClimate toolkit Policy Makers section: Set Strategic Direction (<http://toolkit.balticclimate.org/en/policy-makers/introduction>)
- Integrated Management for Local Climate Change Response: Capacity Development Package – **Climate Baseline Review** (http://www.localmanagement.eu/index.php/cdp:local_authorities_baseline_review)

Tools

- Future Cities Adaptation Compass: ‘Appraise Risks and Opportunities’ (<http://www.future-cities.eu/project/adaptation-compass.html>)
- Future Cities Adaptation Compass: ‘Select Measures and Explore Adaptation Options’ (<http://www.future-cities.eu/project/adaptation-compass.html>)

Adaptation Options

- Raising albedo of buildings and pavement
- Construction and Design of Buildings
- Compartmentalization
- Construction and Design of Buildings
- Floating and Amphibious Housing
- Flood Forecasting and Warning Systems
- Flood Proof Infrastructure
- Extend Water Supply Services
- Evacuation and Contingency Management Plans
- Enhancing Capacity of Waters
- Geothermal Heating and Cooling
- Green roofs and walls
- Heat Health Warning System
- Public education and awareness campaigns
- Public Green-Blue Areas
- Orientation of buildings and open spaces
- Land Use Planning to Reduce Flood Risks
- Innovative Flood Protection - River
- Innovative Flood Protection - Sea
- Reduce Hardened Surface and Use of Water Passing
- Reinforce Flood Protection Infrastructure
- Water Saving Measures
- Water Retention
- Provide Shading
- Urban Farming and Gardening

Case Studies

- Copenhagen: climate adaption plan
- Kalamaria Adaptation Strategy
- Schmallenberg, Germany Adaptation Plan (2008)
- Ghent: A local climate plan that leads the way

4.2.2 Step 3.2 What case studies are available?

A number of cities in Europe have identified and implemented adaptation options, such as Copenhagen, Kalamaria, Schmallenberg and Ghent.

Case Studies

- Copenhagen: climate adaption plan

- Kalamaria Adaptation Strategy
- Schmalleberg, Germany Adaptation Plan (2008)
- Ghent: A local climate plan that leads the way

4.3 Recommendations for expansion of Step 3

As with Step 2, this step closely aligns with the second and third steps of the other frameworks, and it may not be necessary to make any significant modifications beyond including the additional text above in the individual sub steps. However there is a considerable amount of detailed information available for cities at this stage within other tools and frameworks, and it may be advisable to extend the individual sub-steps further with more detailed information on the specific processes outlined above.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps – this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the ‘Read More’ section of each sub-step.

In the longer term we recommend the creation of an additional step, **Funding Adaptation Strategies**, which would provide links to source of funding at the city and project levels to help in the implementation of strategy. This is seen as particularly important for cities, and worth having a separate sub-step within Step 3 to address it.

5 Step 4: Assessing Adaptation Options

5.1 Overview of stage

Due to their inherent complexity, city planners need to carefully consider the different options that may be available to them to adapt to the impacts of climate change.

5.2 Main activities

5.2.1 Step 4.1 How to decide which options to include in an adaptation strategy?

There are a wide range of different adaptation options available to cities, from investing in physical measures to provide protection from physical threats to building 'adaptive capacity' that will help cities anticipate and deal with different impacts as they occur (though may not reduce their risk of occurring or the damage caused). While many cities are still in the early stages of designing and implementing adaptation strategies, a number have already made substantial progress and the resources below provide advice and guidance based upon their experiences.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada)
(http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)
- The PLUREL project activity report: Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages
(<http://www.plurel.net/>)

Guidance

- The BalticClimate toolkit Policy Makers section: Set Strategic Direction
(<http://toolkit.balticclimate.org/en/policy-makers/getting-into-action/set-the-strategic-direction>)
- Climate Change Adaptation by Design: A guide for sustainable communities. Town and Country Planning Association, UK.
(http://www.preventionweb.net/files/7780_20070523CCAlowres1.pdf)

Tools

Future Cities Adaptation Compass: 'Select Measures and Explore Adaptation Options' (<http://www.future-cities.eu/project/adaptation-compass.html>)

5.2.2 Step 4.2 What are costs and benefits of adaptation?

Due to the potentially high cost of different adaptation measures, their benefits and costs need to be considered carefully by cities. It should be borne in mind that many activities may have valuable 'secondary' benefits, which may help justify their cost. Other measures may be implemented at a low-cost if integrated early into existing project plans.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada) (http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)

Tools

- Future Cities Adaptation Compass: 'Select Measures and Explore Adaptation Options' (<http://www.future-cities.eu/project/adaptation-compass.html>)
- Integrated Management for Local Climate Change Response: Capacity Development Package – **Target Setting / Strategic Programme** (http://www.localmanagement.eu/index.php/cdp:auditors_target_setting)

5.3 Recommendations for expansion of Step 4

The actions within this step align with that of other frameworks, but lacks the high level of detail that is included within the IMS and other frameworks, including multiple approaches for assessing adaptation options within an urban setting.

This step also differs somewhat from that of the IMS framework, in that while it does not contradict the IMS framework (which also focusses on identifying adaptation options at this point), it does not cover building political support for the implementation of the adaptation strategy. While this is touched upon within different points within the AST, achieving political support and buy-in for a strategy under development is considered important enough to have an entire step dedicated to the process.

It would not be possible to include all this information in an appropriate form without significantly altering the content of this step of the AST. As such, we would recommend that in the short term the additional text above is included within the sub-steps, and in the longer term further steps to cover this additional information is included.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps – this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the 'Read More' section of each sub-step.

In the longer term, we would recommend the inclusion of the following additional step

- Building Political Commitment, covering
 - Involvement of politicians,
 - Drafting of council resolutions
 - Public engagement
 - Linking to existing budgets and plans

This step is particularly important for cities, as they are dependent upon political support to effectively implement their strategies.

6 Step 5: Implementation

6.1 Overview of stage

Once an adaptation strategy and appropriate options have been identified, appropriate funds allocated and political support gained, cities can start to implement the strategy. Throughout the implementation process, it is important that there is an appropriate monitoring and evaluation process (outlined in Step 6) and stakeholders are kept informed of progress.

6.2 Main activities

The process of implementation at the city-level will be very much unique to the individual city. However there are a number of resources available, most notable the **Integrated Management for Local Climate Change Response: Capacity Development Package** to aid cities through this process. There are also a number of case studies from cities across Europe that have successfully implemented their adaptation strategies.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada)
(http://www.fcm.ca/Documents/tools/PCP/changing_climate_changing_communities_guide_for_municipal_climate_adaptation_EN.pdf)
- The PLUREL project activity report: Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages
(<http://www.plurel.net/>)

Guidance

- The BalticClimate toolkit Policy Makers section: Plan and implement
(<http://www.balticclimate.org/en/project/toolkit>)

Tools

- Integrated Management for Local Climate Change Response: Capacity Development Package – **Implementation & Monitoring**
(http://www.localmanagement.eu/index.php/cdp:local_authorities_implementation_and_reporting)

Case Studies

- *Manchester Case Study*
- Copenhagen: climate adaption plan
- Kalamaria Adaptation Strategy
- Schmallerberg, Germany Adaptation Plan (2008)
- Ghent: A local climate plan that leads the way

6.3 Recommendations for expansion of Step 5

The actions within this step align with those of other frameworks, but lacks the high level of detail that is included within the IMS and other frameworks, including multiple approaches for assessing adaptation options within an urban setting. We would recommend that in the future this step is expanded to provide further information regarding the development of project plans, partnerships, and planning of implementation.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps – this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the 'Read More' section of each sub-step.

In the longer term, we would recommend the inclusion of the following additional steps with detailed material drawn from the IMS.

- Developing project and implementation plans.
- Development of partnerships to aid implementation.

7 Step 6: Monitoring & Evaluation

It is essential that as adaptation measures are implemented within cities they are regularly monitored and evaluated to assess their effectiveness, particularly as the climate projects these measures are based upon are continuously being updated and reviewed.

Regular reporting to stakeholders within the city is also important to help maintain support for ongoing adaptation activities.

7.1 Overview of stage

Cities should seek to build Monitoring & Evaluation processes into the design of all their adaptation measures, and should regularly communicate the progress (including successes and failures) to key stakeholders to retain their support for the strategy.

7.2 Main activities

Currently there are only a limited number of tools available for Monitoring & Evaluation at the project level, though most notable is the UKCIP AdaptME tool.

Publications & Reports

- Changing Climate, Changing Communities: Guide and Workbook for Municipal Climate Adaptation (ICLEI Canada)

Tools

- AdaptME (<http://www.ukcip.org.uk/adaptme-toolkit/>)

7.3 Recommendations for expansion of Step 6

This step closely aligns with the final steps of the other frameworks, and it may not be necessary to make any significant modifications beyond including the additional text above in the individual sub steps.

Immediate recommendations:

- Inclusion of text above in the AST for the individual steps – this text is to be inserted after the main text already within the individual steps/sub-steps of the AST.
- Inclusion of the resources in the ‘Read More’ section of each sub-step.

8 Integration with Climate-ADAPT

Climate-ADAPT is a dynamic website and undergoes a continuous programme of development and updating. Partly this is through the uploading of new material from third parties, and partly through a focused programme of improvements. Some of the enhancements which we understand are underway and relevant to the placement of urban resources include

- Improved “tagging” of urban materials
- Enhanced descriptions of AST, consistent with recently published Guidelines³

We have sought in this document to provide a structure for how the existing Climate-ADAPT tools and resources can be further enhanced without requiring any significant changes to the overall structure of the website. Our recommendations have sought to extend the content of the AST to provide a greater level of information for city-level adaptation practitioners.

We believe that this will, in the short term, aid Climate-ADAPT in providing resources for cities in a more effective way, acting as a portal to well-developed toolkits and frameworks that have been developed by specialist organisations in this field. In the previous sections, we have provided content and resources to be added to the existing steps to help the AST provide this, as we felt this to be the most practical approach for Climate-ADAPT in the short term. This will require, however, that the resources be regularly updated manually by the EEA team managing the website to ensure the material is up to date.

Adaptation planning for cities is a lengthy and complex task, and it was not possible to fully cover all the different layers of steps and processes within the toolkit as it currently exists. As such, in the future it may be necessary to develop additional steps within the AST to address this, and potentially create an AST designed specifically for cities, based upon the IMS model.

Additionally, the resources listed within the individual steps of the report have been uploaded to CLIMATE-ADAPT, but some of the resources (such as the factsheets) still have a dependence upon their external project websites, which will not be maintained in perpetuity. Our recommendations would be for these documents to be hosted on the Climate-ADAPT server instead, avoiding the risk that the resources may become inaccessible if the external websites change.

8.1 Immediate/Short-term Changes to Climate-ADAPT

In terms of short term ‘quick wins’, we recommend that the content of the document be added to the existing steps of the AST, and the resources included in the additional resources of the individual steps. Additionally we would also suggest the following changes are made to individual pages within the Climate-ADAPT website:

- City case studies to be included in the **case study search tool** page
- City case studies to be included in the *Individual Cities Action* section of **Countries Local Actions tabs**
- Resources to be added to the **Cities and Towns** pages
- Case studies should be included prominently on the **Cities and Towns** Page, ideally in one of the columns below the main text (replacing *Indicators*)

We would recommend that the following text be added to the Cities and Towns page:

³ http://ec.europa.eu/clima/policies/adaptation/what/docs/swd_2013_134_en.pdf

“European cities are the major population centres of the continent. They are significant drivers of economic growth and innovation. They are cultural and creative hubs. The particular characteristics of European urban life bring benefits to city inhabitants. In doing so, cities have to cope with a number of challenges to sustaining and enhancing quality of life. Climate change is emerging as one of the most prominent of these. Climate change stands as a major challenge to achieving a vision centred on a secure and prosperous future for European cities.

The Adaptation Support Tool within Climate-ADAPT can provide a useful guide for town and city-planners seeking to understand the impacts of climate change upon their municipalities and develop an appropriate adaptation strategy. ”

8.2 Long-term Changes of Climate-ADAPT

In the **longer term**, it may be useful to develop an Adaptation Support Tool specifically for city-level practitioners, following the overall structure of the IMS and Future Cities Adaptation Compass approaches. This will be able to provide a more detailed description within the individual steps of the different activities, and recognise that the sequence of steps for cities to follow is determined by their unique context, such as the need to build political support for the implementation of strategy following its design.

The structure would align with that of the AST currently hosted on Climate-ADAPT, but would follow the overall approach of the IMS tool and have the following main steps:

- Organisational setup/involvement and communication (Getting Started)
- A baseline review (Understanding Vulnerabilities)
- Target setting, (Identifying Options / Developing a Strategy)
- Political commitment
- Implementation and monitoring,
- Evaluation and reporting

The content of each of these steps would be focussed exclusively on the techniques and processes for developing an adaptation strategy within an urban setting, including the organisations of teams within a city’s administrative structures.

8.3 Map of Resources to the Adaptation Support Tool – Appendix 1.

We have included within the Appendix a visual map of the resources that have been highlighted within this document and how they complement the existing AST. The resources are not spread equally over the different steps, however, as there is currently limited resources available for certain steps in urban adaptation planning such as Monitoring and Evaluating for Adaptation at the project level.

Appendices

Appendix 1: Map of Resources to the Adaptation Support Tool

Appendix 2: List of Resources

Appendix 1 – Map of Resources to the Adaptation Support Tool

	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation	6. Monitoring & Evaluation
Publications & Reports	Changing Climate, Changing Communities : Guide and Workbook for Municipal Climate Adaptation (ICLEI)					
	The BalticClimate toolkit Policy Makers section			The PLUREL project activity report: Peri-urban Land Use Relationships - Strategies and Sustainability Assessment Tools for Urban-Rural Linkages		
	Climate Change Impacts in Europe. Final Report of the PESETA research project					
	Seven Climate Change Lessons from the Cities of Europe (CDP)	The UK Climate Change Risk Assessment 2012	Improving public health responses to extreme weather/heat-waves, EuroHEAT		City of Melbourne Climate Change Adaptation Strategy	
		Europe, Climate Change 2007: Impacts, Adaptation and Vulnerability (IPCC)				
		Assessing key vulnerabilities and the risk from climate change				
		Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network				
		Framework for City Climate Risk Assessment (World Bank)				
		OECD Report "Cities and Climate Change"				
		IPCC's 4th Assessment Report section "Industry, Settlement and Society"				

	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation	6. Monitoring & Evaluation
Tools	UCKIP Adaptation Wizard					
	The Future Cities Adaptation Compass					
	Integrated Management for Local Climate Change Response: Capacity Development Package					AdaptME
	Integrated Management for Local Climate Change Response	GRaBS Adaptation Action Planning Toolkit		GRaBS Adaptation Action Planning Toolkit		
				The Future Cities Adaptation Compass		
Indicators		Urban Vulnerability Indicators (2012), ETC/CCA				
Research & Knowledge Projects		European and Global Climate Change Projections				

	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation	6. Monitoring & Evaluation
Case Studies		<p>Copenhagen Climate Adaptation Plan</p> <p>The City Of Stockholm's Action Programme On Climate Change</p> <p>Rotterdam Climate Proof</p> <p>Climate Adaptation Strategy – The City of Malmo</p> <p>City of Melbourne Climate Change Adaptation Strategy</p> <p>City of Santa Cruz Climate Adaptation Plan</p> <p>Managing Risks and Increasing Resilience. The Mayor's Climate Change Adaptation Strategy</p>	<p>Kalamaria Adaptation Strategy</p> <p>Schmallenberg, Germany Adaptation Plan</p> <p>Ghent: A local climate plan that leads the way</p>	<p>Manchester Case Study</p>		

Resource Type	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation
Guidance		<p>Urban Regions: Vulnerabilities, Vulnerability Assessments by Indicators and Adaptation Options for Climate Change Impacts</p>			<p>The BalticClimate toolkit Policy Makers section: Set Strategic Direction</p> <p>Climate Change Adaptation by Design: A guide for sustainable communities (TCPA)</p>	

	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation	6. Monitoring & Evaluation
Adaptation Options			<ul style="list-style-type: none"> Raising albedo of buildings and pavement Construction and Design of Buildings Compartmentalization Construction and Design of Buildings Floating and Amphibious Housing Flood Forecasting and Warning Systems Flood Proof Infrastructure Extend Water Supply Services Evacuation and Contingency Management Plans Enhancing Capacity of Waters Geothermal Heating and Cooling Green roofs and walls 			

	1. Getting Started	2. Assessing Risks and Vulnerability to Climate Change	3. Identifying Adaptation Options	4. Assessing Adaptation Options	5. Implementation	6. Monitoring & Evaluation
Adaptation Options			<ul style="list-style-type: none"> Heat Health Warning System Public education and awareness campaigns Public Green-Blue Areas Orientation of buildings and open spaces Land Use Planning to Reduce Flood Risks Innovative Flood Protection - River Innovative Flood Protection - Sea Reduce Hardened Surface and Use of Water Passing Reinforce Flood Protection Infrastructure Water Saving Measures Water Retention Provide Shading Urban Farming and Gardening 			

RICARDO-AEA

The Gemini Building
Fermi Avenue
Harwell
Didcot
Oxfordshire
OX11 0QR

Tel: 0870 190 1900
Fax: 0870 190 6318

www.ricardo-aea.com