# Making progress

## UKCIP & adaptation in the UK

## UKCIP staff 2005–2011



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# Introduction

The UK Climate Impacts Programme (UKCIP) was established by the UK Government in 1997, who awarded the contract for co-ordinating research into the likely impacts of climate change in the UK to the Environmental Change Institute at the University of Oxford. It was originally established to provide decision-makers with information on climate change impacts, and did not have a remit to consider adaptation to climate change.

Two further renewals of that contract (in 2002 and 2005) meant that since then, a substantial body of experience and knowledge has developed at UKCIP. The scope of the work has developed considerably, moving from engaging organisations in the initial assessment of impacts, to helping organisations develop and implement adaptation strategies and actions, and supporting the new legislative requirements associated with adaptation.

The purpose of this report is to review the work of UKCIP since 2005, to identify its successes and to offer some insight into what has been learned during that time. However, this report also marks the end of 14 years of activity on climate change impacts and adaptation under the umbrella of UKCIP. For this reason, reflections on the changes that have occurred since 1997 are made where appropriate.

This current contract, beginning in April 2005, had twin aims: to improve knowledge and understanding of the impacts of climate change among stakeholders, and to help stakeholders to be better equipped to undertake adaptation to climate change. UKCIP's overarching goal has been to the creation of a UK that is adapting well to the unavoidable impacts of climate change. The years covered by this contract have been particularly dynamic in the evolution of adaptation in the UK. Progress has been substantial in a number of areas, but still there is a need to make better use of the experience and information we have now and to share this more widely.

Alongside UKCIP's work since 2005, the Government's resource on adaptation has developed and in 2007 the Adapting to Climate Change (ACC) programme – a cross-government initiative – was established, housed within the Department for Environment and Rural Affairs (Defra) which is the government body responsible for adaptation in the UK. This significantly increased the Government's in-house resource on adaptation and was instrumental in the success of activities such as the Government's Departmental Action Plans on adaptation and statutory obligations on adaptation. ACC also took on responsibility for managing the contract with UKCIP.

"UKCIP is recognised globally for its innovative approach in fostering adaptation and is seen by many in Europe as a role model of a boundary organisation that promotes bottom-up approaches, stimulates local initiatives and searches for pragmatic solutions"

Lorenzoni *et al.*, 2006

In late 2010, Defra began work in earnest to consult on the future support for adaptation that would be necessary and appropriate for it to provide. In early 2011, Defra announced that future work on adaptation would benefit from a new focus, to respond to the changed adaptation landscape and to use available resources to step up the impact of the tools and support that had been developed by UKCIP. Thus, from 1 October 2011, the Environment Agency, a Defra-funded body with responsibilities to protect and improve the environment, and to promote sustainable development, was asked to build upon and develop UKCIP's work, and begin a new chapter of work on adaptation.

UKCIP was the first organisation of its kind in the world, and its establishment and development is a credit to the UK's vision and leadership in climate change. UKCIP's approaches, methods, projects and ground-breaking work in stakeholder-led engagement is widely referenced in academic and grey literature. UKCIP is recognised as having played a major role in increasing awareness of the need to adapt and in driving forward action on the ground (Swart *et al.*, 2009).

A literature review conducted as part of the first Climate Change Risk Assessment shows that there is an extremely broad body of work on climate change risks for the UK spanning all sectors and ranging from national level down to regional and even local studies. This is unique, and is undoubtedly the results of the UKCIP programme (CCRA Scoping Study, 2009). The UKCIP programme is the envy of other countries who regard UKCIP's success story as a good example of how to develop effective and appropriate adaptation policy and support (Swart *et al.*, 2009).

Much has changed since UKCIP's creation in 1997. The approaches to adaptation have evolved, moving from impacts assessment to adaptation action, from working with self-motivated individuals and organisations to working with those required to adapt and from a focus on climate data to climate risks. The policy framework has changed too, with an enhanced team in Defra and a Climate Change Act (2008) that enshrines climate change adaptation in a legal framework.

The staff team at UKCIP is proud of what has been achieved in the past 14 years. This report summarises the most recent successes which have set the foundation for future development of adaptation actions in the UK.

# Executive summary

The United Kingdom Climate Impacts Programme (UKCIP) was set up in 1997 to co-ordinate climate impact research and to involve stakeholders in that research, with a focus on natural resources (water, agriculture, biodiversity). At this time, it was believed that adaptation would occur as climate impact information became available, as part of a natural progression. UKCIP's role was limited to providing a national set of climate projections, to developing decision-support tools and to engaging stakeholders in research to understand the impacts of climate change.

With the start of the present contract in 2005, the remit of UKCIP was expanded to include the facilitation of adaptation, and specifically the engagement of the local government and business sectors. UKCIP defined itself as having roles in learning from adaptation in practice, in developing more adaptation support tools, and in acting as an 'honest broker' between Government, knowledge sources, and those trying to adapt.

The adaptation landscape has evolved substantially since 2005. One of the most important changes was the Climate Change Act 2008. It brought a distinctive focus to adaptation, provided a statutory requirement for activity relating to adaptation, and also introduced independent scrutiny in the form of the Adaptation Sub-Committee of the Committee on Climate Change. Where UKCIP once used to work with self-selecting, willing adaptors, now its audience included communities being required to consider adaptation, and looking to UKCIP (and others) for support in doing this.

UKCIP developed its portfolio of tools. There were updates to some existing tools, including the Adaptation Wizard, BACLIAT (Business Areas CLimate Assessment Tool), case studies and LCLIP (Local Climate Impacts Assessment). These updates were informed by engagement with the stakeholder community.

UKCIP also created new resources including CLARA (Climate Adaptation Resource for Advisors) and AdOpt (Adaptation Options). UKCIP was centrally involved in the publication and dissemination of a new set of climate change information for the UK – UK Climate Projections (UKCP09) which took a challenging and new approach by providing probabilistic climate information. UKCP09 has been widely taken up, and has established itself as the standard set of climate information used in the UK to assess climate impacts and adaptation options.

UKCIP was able to extend its reach to a greater number and variety of adaptors. As well as the Climate Change Act 2008, the creation of National Indicator 188 on climate change adaptation was a spur to action in many local authorities, some for the first time. Given the critical role of local government in establishing community level resilience to climate change, this was a welcome development. It is regrettable that all National Indicators have recently been abandoned, and efforts are now underway to maintain widespread interest in adaptation amongst local government in the absence of the NI188 framework.

Developing work with the business community demanded new approaches. Working with representative organisations and professional bodies enabled UKCIP to reach many organisations via a trusted intermediary, and this has proved very valuable. One example was the relationship that UKCIP developed with IEMA, which included a new publication on adaptation, and an adaptation component to their professional development programme.

During this contract, UKCIP made effective use of advances in web technologies to provide more resources online and to deliver training to a wider audience.

While organisations need to make changes to their own structures and processes in order to be adapting well to climate change, for many of them, they also need the policy and statutory frameworks that guide or control them to acknowledge the adaptation requirement too. So it was helpful that this contract period coincided with a substantial increase in the number of Defra staff assigned adaptation issues, with the creation of the cross-government adapting to climate change (ACC) team. The increased resource was very welcome – raising the profile of adaptation within government and opening up new opportunities for UKCIP's work. There were also some associated challenges too: dealing with a 'churn' of civil servants working on the ACC programme and working with the different priorities of stakeholders and of government.

UKCIP is fortunate to have many excellent links with the international adaptation community. Over the course of this contract, UKCIP has hosted visits from academic institutions and from government agencies and departments from around the world. UKCIP has also, beyond the funding arrangements with Defra, been able to participate in projects that have made use of UKCIP's position at the forefront of adaptation and stakeholder engagement.

In reviewing its work over this and earlier contracts, UKCIP has developed some key messages about adaptation in the UK, which it believes will be helpful to the new structures that the government is putting in place to help to deliver a new phase of adaptation support in the UK. These key messages are underpinned by the absolute requirement to engage with stakeholders and so that adaptation can take place in a timely, effective and appropriate way.

# Chapter 1: A changing landscape for adaptation to climate change

The 6 years since the start of the current UKCIP contract have seen major shifts in the climate change adaptation landscape. In the UK, there have been significant developments in policy, in organisational responses to change and in key societal functions that contribute to our ability to adapt well: functions such as research into climate change impacts and adaptation, support for decision-makers in the early stages of the adaptation journey, and the capacity for and experience of working in partnership on these challenges.

This section briefly summarises some of the main developments.

## 1.1 THE POLICY LANDSCAPE

For many years, the policy response to climate change was dominated by the need to mitigate our greenhouse gas emissions; adaptation was often missing from serious discussion, for fear that this would be regarded as an admission of defeat. More recently, however, there has been an increasing recognition of the need for policies to stimulate and co-ordinate adaptation to those impacts which we cannot avoid. Most notably, this was signalled by inclusion of significant adaptation measures in the Climate Change Act 2008 including the UK Climate Change Risk Assessment, Government's Departmental Adaptation Plans and the Adaptation Reporting Power on public agencies and statutory undertakers. The Act also made provision for an Adaptation Sub-Committee to be established within an overarching Climate Change Committee, specifically to provide independent, expert advice and scrutiny of the National Adaptation Programme.

Many factors have influenced this policy shift, not least continued research and modelling which improve our understanding of the problems and approaches, and public perception of our vulnerability to extreme events such as heat-waves, severe flooding and harsh winters. The Stern Review into the Economics of Climate Change helped to shift the perception of this as a 'green' concern to an economic issue at the centre of policy agendas. Adaptation has also been an increasing focus of enquiries, for example by the National Audit Office (NAO, 2009), Environmental Audit Committee (EAC, 2010) and Royal Commission on Environmental Pollution (RCEP, 2010), as well as professional bodies such as The Institution of Engineering and Technology (IET, 2011).

National policy has also recognised that the direct impacts of the changing climate are felt by a range of different organisations at particular locations and vary from place to place according to a range of physical, environmental and socio-economic factors. Local authorities therefore have a vital role in helping their communities to adapt to climate change and, while many have been at the forefront of local responses – such as the voluntary Nottingham Declaration – there was a lack of effective adaptation policy drivers for local authorities. This changed with the introduction of the new local authority performance framework in April 2008, which for the first time required all English local authorities to report their progress on adaptation via the indicator NI188: Planning to adapt to climate change. This provided a major stimulus for local authority work on adaptation. The extent to which this work will be affected by the coalition government's abolition of the performance framework currently remains unclear. The major challenge for the future will be to ensure that there is adequate consideration of adaptation at a local level in the context of reduced local authority budgets and the policy shifts towards localism and the Big Society.

### 1.2 THE ORGANISATIONAL LANDSCAPE

An increasing number of organisations are aware of the significance of current weather and changing climate for their own activities – and of their role in building the UK's ability to adapt. Some have experience to build on, for example: the water utilities, because of their regulatory environment and the need for long term planning; the insurance sector, because of its exposure to the vulnerabilities of households and businesses; the National Trust, because of its responsibility to manage a large and diverse portfolio of assets, including historic houses and monuments and important natural environments, "for ever, for everyone" (NT, 2011).

For the majority of public, private and civil society bodies, however, awareness and confidence of the implications of a changing climate are poor or only now emerging. Climate change will have impacts for them in many ways, both directly on their operations and through their relationships with other organisations. No one body has all the expertise, resources or level of control needed for it to adapt well, in isolation from others. Adaptation can be seen as a set of responses influenced and shaped by a dynamic 'ecosystem' of organisations.

Partnership and exchange between and within private, public and civil society sectors has been, and will continue to be, an important feature of the landscape, particularly with the Government's focus on the 'Big Society'. This involves those with experience of adaptation, those with new adaptation responsibilities as a result of policy developments, those developing policy, standards and professional or sectoral support for others, and those with emerging commercial drivers to plan and act: for example, through contracts, through corporate social responsibility or through entrepreneurial ambitions. In this regard, one of the most significant developments in recent years has been the experience of climate change partnerships around the UK and their relationships with, on the one hand, national bodies such as Defra, the Environment Agency and UKCIP and, on the other, local authorities, communities and business organisations.

Another development has been the beginning of a shift in focus from purely risk-based decision-making in the face of uncertainty to also include the organisational context itself. Instead of describing courses of action to deliver good adaptation, attention is increasingly being paid to an organisation's attributes and how these interconnect to make it well-placed to identify opportunities, muster resources, capture expertise, create partnerships and opportunities for dialogue and manage and monitor the processes involved in delivering effective adaptation action.

### 1.3 ECONOMIC LANDSCAPE

Over the last 3 years the adaptation agenda has developed in a changing and challenging economic landscape. The global economic downturn and its consequences for the UK economy have significantly shaped Government policy and spending patterns. While adaptation has remained a priority for Defra, cuts to public sector budgets have influenced the resources available to stakeholders engaged in adaptation and placed an even greater emphasis on the efficient mainstreaming of adaptation into existing structures, functions and activities. In the private sector, there has been an understandable focus on shorter-term competitiveness which presents a challenge in communicating the medium and longer term economic case for adaptation. However, under such economic conditions there may be a greater appreciation of the need to live with uncertainty in a broader context and opportunities to further enhance decision-relevant adaptation support. UKCIP has found that framing adaptation in terms of the ability of stakeholders to achieve their own objectives in a changing climate may be attractive, especially where resources and time horizons appear limited.

### 1.4 THE UKCIP JOURNEY

Having charted the evolving adaptation landscape, this section focuses on one aspect of that development, namely the journey that many of UKCIP's stakeholders, described in Box 1, have taken from assessing climate impacts to responding to anticipated impacts. In doing so, it steps back to the very early days of UKCIP to place recent learning and developments in their appropriate context.

When the UK Climate Impacts Programme (UKCIP) was established in 1997, its task was to facilitate an integrated, stakeholder-led assessment of the impacts of climate change on the UK (UKCIP, 1997). It was widely recognised that in order to prepare for a changing climate, organisations first needed to understand what impacts climate change would have on their activities, functions and operations. However, government-led research on climate change at the time, such as the national assessments undertaken by the Climate Change Impacts Review Group in 1991 and 1996 were not reaching potential users or providing them with the information they needed to make informed decisions on climate change (Lorenzoni *et al.*, 2006). Since it would be the organisations themselves that would determine how to respond to the impacts of climate change, the Department for Environment Transport and the Regions (DETR), believed that stakeholder organisations themselves should be framing and pursuing the research questions that would yield the information they needed to adapt.

It was in this spirit that DETR established UKCIP as an organisation that could facilitate 'bottom-up', stakeholder-driven research in an integrated manner to yield the information needed for UK organisations to adapt to climate change. UKCIP thus provided core tools for impacts assessment and offered on-going support and guidance to both the research teams and project funders (McKenzie Hedger *et al.*, 2000) so that regional and sector wide climate impacts assessments could be conducted in a decision-relevant and integrated manner. Equipped with such information, organisations would then be in a position to take actions to prepare for the impacts that lay ahead.

UKCIP's role at the outset was thus explicitly concerned with assessing climate impacts only. It was not, at that time, concerned with advising on adaptation.

The initial expectation was that all regions of the UK and key sectors should conduct a high level (qualitative) scoping study of potential impacts to identify those key issues which needed to be studied in greater (quantitative) detail. A four step process started to emerge namely: scope impacts; quantify risk; adapt to climate risks; review. This is exemplified in the case of the North West of England whose scoping study (Shackley *et al.*, 1998) identified potential impacts on tourism as a key issue for further consideration. A quantitative assessment was subsequently commissioned (McEvoy *et al.*, 2006) with funding from relevant regional stakeholders. Similarly, the scoping study of climate change impacts on London commissioned by the London Climate Change Partnership (London Climate Change Partnership, 2002) identified transport as a critical issue that warranted further attention. A technical study on the implications of climate change on London's transport system was consequently commissioned (Greater London Authority, 2005) and both studies informed the development of the climate change adaptation strategy for London (Mayor of London, 2010).

**BOX 1: UKCIP STAKEHOLDERS**

UKCIP stakeholders are most simply described as decision-makers in organisations in the UK. They could be working in the public, private or civil society sectors, and they often are responsible for some of the longer term or strategic issues for their organisations. Examples might include people working in disciplines as diverse as planning, biodiversity, risk management, social services or construction.

Another important group of stakeholders, albeit smaller in number, are those who are often supporting those decision-makers, such as researchers (academic or consultancy-based) who are making use of information about climate change and about adaptation to advise on adaptation strategies and actions.

UKCIP's 2005 assessment of its work (West & Gawith, 2005) characterised our stakeholders as 'core' (involved in research projects, networks and other activities) and a wider group who had a more passive involvement (maintaining a watching brief). Since then, the stakeholder base has shifted and these descriptions are less relevant.

UKCIP's reach has grown. For example, the number of subscribers to UKCIP's e-news has increased from 3500 in 2005 to over 8000 in 2011. The range of organisations represented has increased, with a substantial minority of non-UK subscribers covering most areas of the globe.

Since 2005, UKCIP devoted more resources to engaging with stakeholders in local authorities in England and with businesses and this is reflected in our stakeholder profile. This trend was also influenced by the introduction of the national indicator on adaptation for local authorities, and the requirement for some private companies to report on their adaptation activities under the Climate Change Act 2008.

UKCIP's activities have moved away from supporting distinct research projects or activities, to provision of a wider range of resources which could be accessed remotely and without direct reference to UKCIP's staff. While direct contact with stakeholders has remained a strong characteristic of UKCIP's work, the greater range and volume of online offering of tools, training and information has enabled a larger number of stakeholders to make use of UKCIP's materials.

By 2005, high level scoping studies had been undertaken in all English regions and the Devolved Administrations in Northern Ireland, Scotland and Wales and quantitative assessments had been conducted for around ten sectors, including the natural environment, water resources, health, tourism, and the built environment (West & Gawith, 2005). A suite of cross-sectoral projects had also been completed (e.g. REGIS and Defra's cross-sectoral studies) generating an unprecedented wealth of information on how a range of organisations and the UK as a whole would be affected.

A number of learning points began to emerge from this phase of work that are explored more fully in subsequent chapters of this report. First, while successful completion of a scoping study led in some cases to a quantitative assessment of priority issues being undertaken, this was not always the case for a set of complex reasons which are explored in Chapter 2. Second, quantitative impact assessments appeared to not always be a vital prerequisite for climate adaptation: measures could be implemented on the basis of a high level assessment to reduce current vulnerability to climate variability as well as to future climate change.

Third, it became increasing clear that information alone did not necessarily lead to action on adaptation. A suite of equally, and in some instances more, important factors than climate impacts information was needed for organisations to adapt. These included such factors as leadership, agency, decision-making time frames and so on, as described in work undertaken within the South East England Climate Change Partnership (Alexander Ballard, 2008). Finally, it was evident that adaptation was not an end in itself, but an on-going process. Indeed, perhaps of greater and more lasting value to the regional and sectoral scoping studies that were completed in the early years of UKCIP, were the on-going climate change partnerships they established. As Hulme & Neufeldt (2010) note, "the success of UKCIP in promoting adaptation is not so much attributable to mere information provision, but also to the creation of stakeholder networks". These partnerships have provided groups of engaged decision-makers with a means of working together to take forward the climate adaptation agenda within their areas of mutual interest, and to share their learning and experience (see Chapter 4 for further detail).

This learning – as well as the evolving policy and organisational landscape described above – was reflected in UKCIP's evolving work programme and priorities for 2005–2011. Core objectives remained to: improve knowledge and understanding of climate change impacts across the UK; provide tools, guidance, support, and training for adaptation; build capacity for adaptation through partnerships of stakeholders across the UK; provide a focal point for information on climate impacts; and share learning internationally. In 2005 the UKCIP team expanded to provide additional resource in priority areas, namely training, engaging and supporting businesses and local authorities in adaptation, and better understanding the adaptation process in theory and in practice. UKCIP's methodologies were also revised, as seen, for example, in revisions to the UKCIP Adaptation Wizard in 2008 and 2010.

The work that has been undertaken to deliver these objectives is outlined in Chapters 2–4 of this report. Our experience of supporting adaptation in practice is described in Chapter 2. Chapter 3 focuses on the tools, guidance, support and training provided by UKCIP to support adaptation in the UK. Chapter 4 summarises work that has been undertaken with UK organisations and extracts key lessons learned. It is from this evidence base that key lessons are extracted and from which recommendations for future directions in the closing chapters are made.

# Chapter 2: Understanding the adaptation challenge

Although a considerable body of evidence is now available on the likely impacts of climate change, the existence of this information has not been met by a commensurate degree of effective planning and action on adaptation (Ford *et al.*, 2011; Preston *et al.*, 2011). Examination of the literature and UKCIP's experience since its inception in 1997, highlight the fact that it can be difficult for organisations to make the transition from generic, 'making the case' messages to conducting detailed, context specific, assessments that are needed to inform practical decision-making and will, in turn lead to action on the ground. The reasons for this are complex and need to be explored to appreciate the context within which UKCIP has operated and the approaches that have been taken and found to be successful. To explore the material raised in this chapter in greater detail, please refer to Brown *et al.* (2011) and Lonsdale *et al.* (2010).

## 2.1 THE ADAPTATION CHALLENGE

Attempts to accurately predict and adapt to a particular future are likely to be inappropriate in many cases and it is widely acknowledged that approaches to adaptation need to be flexible, so that they can evolve and respond to new conditions as they arise and/or become foreseeable. Adaptation is not simply a technical challenge but has many aspects and is likely to require a long-term commitment which is itself flexible and adaptive to changing values, expectations and priorities as well as changing environmental conditions.

Adaptation to climate change presents a complex methodological challenge. Value-laden decisions must be made regarding the level of risk to be accepted and the level of adaptation required. Making such decisions can be difficult though, given the following traits of the 'adaptation challenge':

- **Uncertainty** – in terms of future emissions, climate and societal impacts and responses.
- **Complexity** – the interconnected nature of climate with physical, biological and social systems.
- **The potential for very significant consequences**.
- **Irreversibility** – changes may be irreversible on human timescales.
- **Urgency** – decisions made now can shape future climate sensitivity.

This complexity and uncertainty makes adaptation a 'wicked' or 'unbounded' problem (as opposed to 'tame' or merely 'tricky' problems (Rittel & Webber, 1972)) described by Chapman (2002) as a problem where:

- There is no clear agreement about what exactly the problem is;
- There is uncertainty and ambiguity as to how improvements might be made;
- The problem has no limits in terms of the time and resources it could absorb.

Conventional linear management approaches may be appropriate when the problems are 'tame' but different approaches are required when having to deal with wicked problems, i.e. moving beyond a 'predict and provide' paradigm. Wicked or unbounded problems require a different approach to planning and implementing solutions that acknowledges uncertainty and explicitly encompasses disagreement between different groups affected. This requires a process of dialogue where the actors involved can listen to, and understand, the perspectives of others. Government and policy processes have traditionally made decisions using theory based more on certainty, rationality and predictability (Eyben, 2005).

As adaptation occurs within a pre-existing governance and legislative landscape which partially directs the responses employed, a balance needs to be struck between aligning actions with these existing structures and ensuring that these structures evolve to create an enabling environment in which appropriate adaptation decision-making can thrive. Given the value-laden nature of adaptation decision-making, it is vital that the assumptions associated with, and framing of, adaptation are acknowledged, understood and recorded.

## 2.2 FRAMING

Climate change can be viewed from a number of different perspectives or frames. These frames reflect the way in which we individually or collectively view the world, as well as our values and beliefs. There is thus no single correct way to frame climate change. Critically, these framings explain why people come to different conclusions even when faced with the same evidence. Framings can also shape adaptation goals and determine how risks

are assessed and options prioritised. Yet despite their importance, frames are often poorly understood and rarely considered in the context of decision-making. The difficulty in adequately 'framing the problem' was highlighted as one of the key adaptation challenges in the report of the Royal Commission on Environmental Pollution (RCEP, 2010) and is linked to the 'wickedness' of climate change and the adaptation challenge described above.

Different framings have individual strengths and weaknesses and assessment results are often highly sensitive to dominant framings. Consequently there is a strong argument for making explicit the dominant framing, as a minimum, and ideally looking to add additional, contrasting framings to help open up the adaptation process. To some extent this is achieved by taking a participatory approach and including diverse stakeholders in the decision-making process, but this can be further strengthened by explicitly dealing with the differing fundamental assumptions and value judgements which separate different groups.

An appreciation and understanding of the concept of framing and the factors and assumptions which lie behind each frame should lead to more open, considered decision-making in the context of adaptation.

### 2.3 THE IMPORTANCE OF SCOPING AND OBJECTIVE SETTING

Some of the most important decisions in adaptation planning are made during the scoping phase. But, our work to date suggests that many organisations tend to spend very little time on scoping and may see adaptation simply as a technical issue which can be tackled on a project level as a discrete package of work, either in-house or by specially commissioned external consultants. While this approach is appropriate for some questions, it may not always be sufficient. For example, with a risk-based adaptation assessment, it is difficult to decide the appropriate level of analysis required, for example, the planning horizons and comprehensiveness of assessment, both in depth (detail) and breadth (scope).

Broad impacts assessment can be relatively objective but adaptation is as much about policy setting for 'desired outcomes' (what are we adapting for?) as understanding the 'objective' threats and opportunities (what are we adapting to?), particularly where trade-offs need to be made or where synergies are possible or desirable. A lack of clarity of the desired outcomes can consequently present as much of a barrier to adaptation as uncertainty about the nature of future climate hazards. A strategic scoping phase of assessment is therefore helpful to steer adaptation work at the programme and project level. In the scoping phase, a great many decisions and judgements are made which influence the depth and breadth of an assessment and the mechanisms and players involved in subsequent work. Thus, if this process is not actively and explicitly engaged with, tacit assumptions associated with different approaches and tools can have a strong influence on outcomes, or create path dependency which limits the flexibility of planned adaptation.

### 2.4 ESTABLISHING BOUNDARIES

Before undertaking any kind of risk assessment, it is important to clearly set out the problem at hand and the boundaries within which any plans and decisions are to be applied. Climate change risks cannot simply be assessed by examining their bio-physical aspects, as the way they are played out is a result of the policy and social landscape which changes with time and is often much harder to quantify.

An example of the importance of non-biophysical impacts and societal development is provided by the 2009/10 snowfall. Although the snowfalls were not historically extreme, many were poorly prepared, possibly because there have been fewer snowfalls in recent years. As a result, investing in large stockpiles of salt and snowplough equipment may not

have been judged to be necessary, or at least good value for money. Reduced frequency of snowy conditions may also have resulted in many drivers being out of practice at driving in such conditions. In addition, a series of societal developments such as health and safety culture, explicit liability and multiple household employments most likely enhanced societal disruption.

The net effect was that the 2009/10 snowfall was more consequential for transport disruption, school closures and economic losses than might have been the case historically when such events or similar were more commonplace. In a purely physical sense, the hazard of winter snowfall has lessened, as such events are not necessarily becoming more extreme, and are becoming less frequent. But the consequences when they do occur are likely to be greater because the level of preparedness has decreased, driven by planning choices and general societal developments.

This example is not intended to suggest that any of these choices are wrong, but simply illustrates that consequences of climate conditions can change for the better or for the worse simply through societal and planning changes. Both 'knowledge domains' (biophysical and socio-economic) are needed to fully scope the adaptation challenge. Different approaches are appropriate for different issues and should not be adopted unquestioningly.

## 2.5 RISK PATHWAYS

Climate information providers, as one would expect, provide information about the climate. Yet many decision-makers are more concerned about the effect these changes could have on their operations than they are with the climate per se. Bridging the gap between provision and need requires an understanding of the risk pathway, the way in which climate drivers are transferred through various intermediate stages into an effect, positive or negative, on a particular organisation or system. For example, an assessment of flood risk in a particular catchment is very different in character to an assessment of the risk to an organisation's business continuity resulting from flooding. Information about the risk of flooding is a valuable input into the latter assessment, but is probably a poor indicator of a business's risk of disruption.

A risk pathway refers to the way in which climate drivers are transferred through various intermediate stages into an effect, positive or negative, on a particular organisation or system. The particular risks identified are strongly dependent on the assessment endpoints which are chosen. As a rule, the greater the separation between the climate driver (e.g. heavy rainfall) and risk endpoint (e.g. business disruption for a particular firm), the more intermediate steps occur along a risk pathway, and the more complex and uncertain a risk assessment is likely to be. Thus defining appropriate assessment endpoints and elucidating the risk pathway is a significant challenge in adaptation planning.

Understanding the risk pathway is extremely helpful when identifying and appraising adaptation options, as this will highlight potential intervention points where risks can be minimised or avoided. Without this understanding, the generation of adaptation options is likely to be limited.

## 2.6 THE ADAPTATION BOTTLENECK

Preston & Stafford-Smith (2009) point out that traditional climate change research methods have done little to overcome the gap between top-down impacts assessments and focussed decision support, because they are not always linked to any particular decision-making event or question. They suggest that in order to push past this 'bottleneck' and deliver policies, programmes and measures that reduce vulnerability to climate risks, assessments need to be undertaken in the service of adaptation decision-making.

Two key issues need to be addressed to help organisations push through the adaptation bottleneck:

- Climate risk assessments need to be linked to a particular decision-making event or question.

- The information used needs to be tailored to suit the requirements of the assessment to ensure it is appropriate for the task at hand: generic high level information is suitable for awareness raising activities, but more detailed information that is specific to the problem at hand is required to support adaptation decision-making.

It is for this very reason that UKCIP has always set out to facilitate stakeholder led assessments of climate impacts that are informed and directly overseen by stakeholders to meet their information requirements. Where assessments have been linked to a particular decision-making question, they have successfully delivered adaptation actions. Where those assessments scoped impacts and raised awareness in a general sense, it proved more difficult for them to deliver practical adaptation actions.

## 2.7 INFORMATION PROVISION

UKCIP's experience in providing and disseminating information on climate change science, impacts and adaptation shows that it can be difficult to strike an appropriate balance between acknowledging the complexity of issues and providing the simple clear guidance which stakeholders invariably desire. This is true both of climate change projection information, which is explored in some detail in Chapter 3.2, but also to the challenges associated with adaptation. Balancing robustness with simplicity is clearly a desirable goal, but it is not always possible to provide fully 'translated' simple messages without glossing over important complexities, which begs the question: what is the best balance?

People new to the climate adaptation agenda may underestimate its complexity and the difficulties involved in conceptualising the problem. As a result, there is an expectation that guidance should be simpler so that it meets stakeholder requests. This assumes that the gap stems from the inability of technical people to communicate their work effectively in plain English, and is not difficult to breach. While the challenge of effective communication is a genuine one, some issues are complex and there is a real concern that in providing simple messages, important details will be overlooked and adaptation planning processes and decision-making will suffer.

An appropriate balance must therefore be struck between providing information that is accessible to decision-makers and yet which remains sufficiently technically robust and accurate to inform good decision-making. We have found that an effective way of reconciling the potentially conflicting requirements of information providers and users, can be to create mechanisms for the two communities to engage at an early stage of the process (e.g. through the UKCP09 Users Panel, as described in Chapter 3.2). Initiating early engagement activities provides the opportunity for information providers to highlight the trade-offs that occur between completeness and simplicity, so that users can make informed decisions about which trade-offs they are prepared to accept.

## 2.8 MAINSTREAMING

Our experience of working with organisations has shown that climate change adaptation is not a discrete activity. Climate drivers are intrinsically cross-cutting and in many cases interact with non-climate factors to determine impacts and consequences. The need to integrate climate and non-climate factors into practical adaptation management has led to

the concept of mainstreaming or embedding adaptation. This is where climate change risks are managed as far as possible by bringing them into established practices and procedures such as business continuity and asset management.

For mainstreaming to be a successful strategy, it is necessary to introduce new concepts into existing practices and when necessary adjust the existing practices to cope with the challenges the new concepts present. There are two broad approaches to mainstreaming climate risk and adaptation assessment.

- Climate risks can be seen as a sufficiently new or unique source of risk that it requires an initial assessment separate from existing risk procedures. Findings from this assessment can then be reconciled and integrated into existing practices.

- Climate risks can be seen simply as an extension of existing risks, perhaps requiring the use of some new data or consideration of longer timescales but risks are considered to be identifiable through existing mechanisms. Cross-cutting challenges and procedural shortcomings are identified and escalated up the decision hierarchy via existing mechanisms.

In practice, these are not mutually exclusive approaches and some combination may yield the best results. In any case, whatever approach is taken, the assessment will need to consider climate risks at all levels of decision-making. The need to incorporate multiple levels of decision-making means that the question of who owns the assessment of climate risk and responsibility for managing them, and what mechanisms are in place to facilitate climate risk escalation through the decision hierarchy, is critical to the delivery of effective climate risk assessment.

### 2.9 BUILDING ADAPTIVE CAPACITY

UKCIP's work with private and public sector organisations has allowed it to assemble some observations as to what are typical characteristics of organisations that enable them to be adapting well. However, as relatively few organisations are currently taking significant action, our analysis is not solely drawn from direct observation of action. The following is thus a synthesis of observations and reflections amongst UKCIP staff.

We have observed that organisations tend to move through a number of stages as they adapt to climate change. These stages are embodied in the five steps of the UKCIP Adaptation Wizard and can be broadly described as:

- Develop a project plan;
- Assess vulnerability to current climate;
- Assess vulnerability to future climate change;
- Identify, evaluate and select adaptation options;
- Implement, monitor and review adaptation options.

Our experience of working directly with organisations has also shown that two types of adaptation response may be recognised (West & Gawith, 2005). Building Adaptive Capacity (BAC) involves creating the information and conditions (regulatory, institutional, managerial) that are needed before adaptation actions can be undertaken. Delivering Adaptation Actions (DAA) involves taking actions that will help to reduce vulnerability to climate risks or exploit opportunities. In practice these form a continuum, but distinguishing them can help to assess progress in preparing for and managing climate risk and provide insights into the characteristics of those organisations that have made more progress than others.

Indeed this distinction that has been considered useful by others and has been adopted widely in practice and in the academic literature (e.g. Tompkins *et al.*, 2009; HM Treasury, 2010; Whitely Binder *et al.*, 2010).

Many of the identified attributes are not necessarily specific to being able to adapt well to changes in climate, but are symptomatic of organisations that adapt well to any changing pressures and opportunities. An example is an organisation that is, by monitoring changing risks and opportunities to its operations and markets, able to adjust as a result of various attributes such as its research and monitoring capability, its flexible management structures and supportive policies. Whether that changing pressure is a result of a changing climate or another driver of change, the characteristics and attributes that promote 'successful' adaptation will often be similar.

The differences that come with climate change relative to other drivers of change that an organisation faces are its unusual temporal, spatial and pervasive characteristics. In terms of responses, there are expectations (from stakeholders, clients, customers, and within the broader community) that the resulting adaptation will not only be effective and efficient, but also equitable and legitimate (HM Treasury, 2010; Adger *et al.*, 2005). Furthermore, how others in the same geographical area or sector respond (or fail to respond) will, in turn affect an organisation's ability to respond (either positively or negatively) influencing the nature of any responses and increasing the need to identify and address potential barriers, conflicts and synergies.

As noted above, through its work with organisations, UKCIP understands that some organisations will be delivering adaptation actions while others will build the adaptive capacity of different sectors, activities and regions. The capacity building category includes organisations that regulate, represent and support businesses and employees as well as different regional and national government bodies and agencies. The same attributes will apply to this type of organisation. However, an organisation's capacity to deliver adaptation action will depend heavily on capacity building organisations, as they will be responsible for developing a favourable institutional environment for implementing those actions (including regulation, codes, standards, training, industry positions, lobbying, accreditation etc.).

## CHAPTER 2 SUMMARY

- This chapter has explored some of the key issues associated with addressing the adaptation challenge. These need to be understood in order to appreciate the context in which UKCIP has worked and approaches and methods that have been taken.

- This chapter has shown that adaptation is a complex issue that needs to be adequately understood if real, relevant and appropriate action on adaptation is to take place. The temptation may be to simplify the issues and rush headfirst into adapting. This is to be avoided. Both the academic literature and UKCIP's experience suggest that it is important to understand the context within which the adaptation decision is being made (framing, objectives etc.). Without this, there is a risk of inaction, inappropriate adaptation, or maladaptation.

- Risk assessments that are clearly focussed on a particular decision are likely to contribute to successfully delivered adaptation actions. More general assessments are less useful in this regard.

- There is a difficult challenge to balance the necessary complexity associated with climate change information and making it useful to non-technical decision-makers. Engagement at an early stage between those providing technical information and the decision-makers who will use it can help to uncover these issues and allow shared understanding to develop.

- Climate change is an issue that is inherently cross-cutting, and interacts with many other issues. It is necessary to bring climate change into the mainstream of decision-making, alongside other organisational risks and uncertainties.

- It is useful to distinguish between building adaptative capacity and delivering adaptation action. The organisations that operate within the the building adaptive capacity category (supporting businesses, setting the policy or regulatory context) are essential to enable the delivery of practical adaptation action. Organisations that are able to adapt well to change (from any source, not just climate) are likely to be better placed to respond effectively to climate change.

# Chapter 3: UKCIP tools and training

The core of UKCIP's function has been to provide UK organisations with a range of appropriate tools, resources, training and support to enable their adaptation journey. These tools have been developed through UKCIP's 'learning through doing' culture and hence draw heavily on our experience of working with users and the feedback from them on each tool's utility. UKCIP sees the process of change as supportive. Adaptation requires cooperative learning rather than one-way learning. It is just as important for UKCIP to learn from the stakeholders as it is for the stakeholders to learn from UKCIP. In this way UKCIP's work plan is, and always has been, stakeholder-led; an attribute we believe has defined the success of UKCIP.

This chapter consists of two parts. Part A describes each of UKCIP's current tools and their origins, summarises their uptake, and reflects on key lessons learned through their application and development. It then goes on, in Part B, to focus on the training that has been provided to support stakeholders as they adapt to climate change. Previous experience showed UKCIP that providing tools alone did not necessarily lead to uptake and action: training on the use of tools can be as important as providing the tools themselves (West & Gawith, 2005). As a result, a designated trainer was recruited to join the UKCIP team in 2006 to enhance our capacity to support the uptake of UKCIP's tools.

Although each of the tools is presented separately in this chapter, they are intrinsically linked: throughout the adaptation process a user is likely to find the need to use several, if not all, of the tools reported in this chapter.

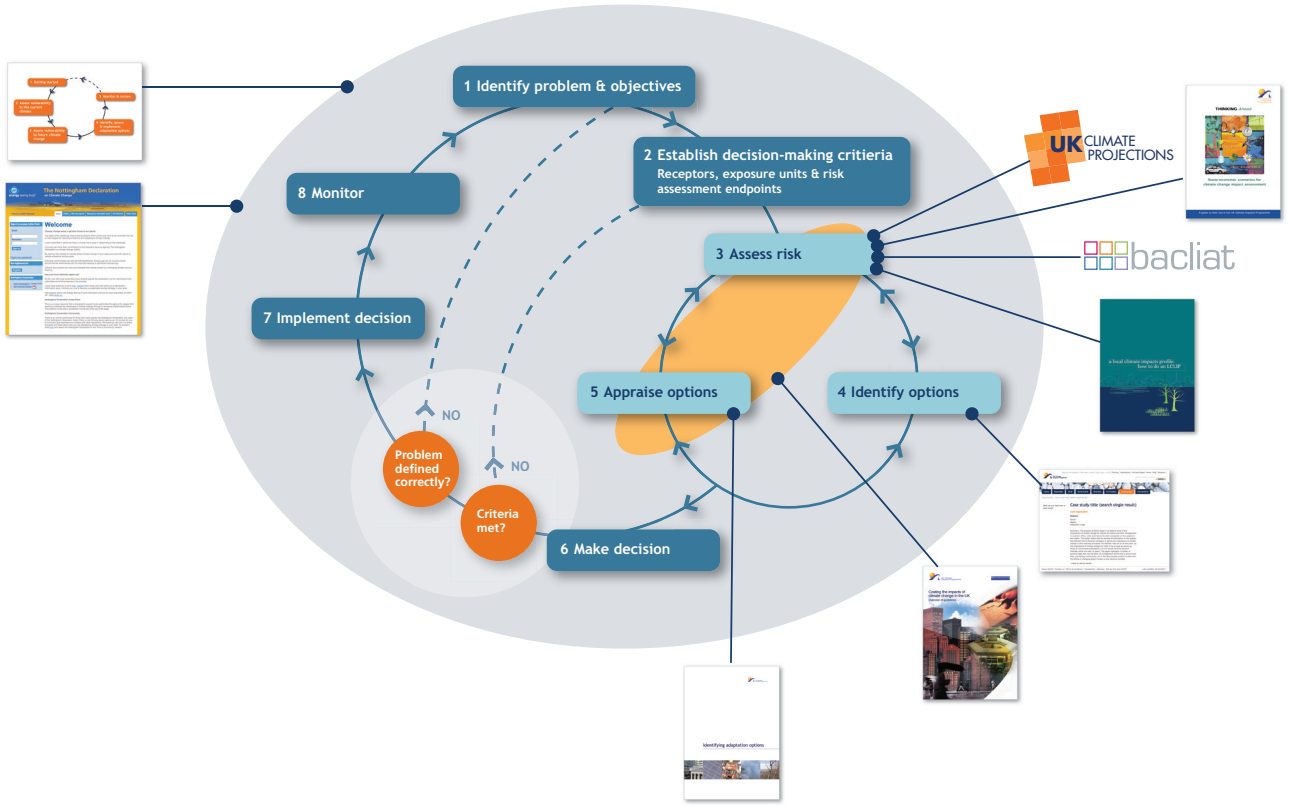



**Figure 3.1: UKCIP tools in the adaptation process.**

## PART A: UKCIP TOOLS

## 3.1 THE UKCIP ADAPTATION WIZARD

### ORIGINS

Risk-based approaches are commonly used to help make decisions on the basis of imperfect information and in a context of uncertainty. Such approaches came to the fore in the early 2000s as offering a valuable means of facilitating decision-making on climate change adaptation. They offered a means of treating climate risks as one of many other risks that needed to be managed, making it easier to factor consideration of climate change into decision-making.

Recognising the value of this approach, UKCIP worked with the Environment Agency to develop a framework to help UK organisations assess climate risks and make decisions on how to adapt (Willows & Connell, 2003). The framework was well received, particularly on the international arena: it has been recommended in UN, World Bank and European Environment Agency guidance, endorsed by the US National Academy of Sciences as a robust approach to informing decision-making under climate uncertainty (National Academy of Sciences, 2010) and become an accepted methodology for climate adaptation assessments in the UK (e.g. Hacker *et al.*, 2005; Acclimatise, 2006, 2007; Wade *et al.*, 2006; CCRA, 2011). Similar approaches have since been developed based on the UKCIP Adaptation Wizard, such as the Australian Greenhouse Office's climate change impacts and risk management guide (Australian Greenhouse Office, 2006) and the Carpe Diem West Academy's climate adaptation roadmap (Carpe Diem, 2011).

In spite of this success, the Risk Framework was regarded by some practitioners as being too theoretical and technically demanding to be readily applied by non-technical experts (West & Gawith, 2005). Furthermore, although other tools and frameworks had been developed to address different components of the climate risk assessment and adaptation process (e.g. the US Federal Emergency Management Agency's (FEMA) Flood Wizard; the International Institute for Sustainable Development and partners' "Livelihoods and climate change adaptation tool"; and The Netherlands Red Cross's seven step risk reduction process), each had a fairly specific application, none of which was ideally suited to helping UK organisations adapt to climate change.

UKCIP developed and launched the UKCIP Adaptation Wizard in 2005 to fill this gap and provide users with a simpler and more accessible version of the Risk Framework. It was modified and revised in 2008 and 2010 to reflect learning and experience acquired with practical application of the Wizard, and to keep pace with the rapidly evolving literature and experience of adaptation in action in the UK and internationally.

### DESCRIPTION OF THE TOOL

The Wizard shares the Risk Framework's intellectual basis and key concepts, yet is presented in a 'lighter' style and in an action-oriented format which helps to convert theory into practical action. The Wizard is a generic decision-support tool that covers all aspects of climate risk assessment and adaptation in one process. It is designed for application by a broad range of users and can be applied equally to a plan, a project, a programme or a policy. It is also a valuable awareness-raising and educational tool (e.g. in coursework by IEMA students), and serves as a gateway to all the information and resources UKCIP has to offer organisations adapting to climate change.

The Wizard adopts a questions-driven approach to take users through a 5-step process to assess their climate risks and develop an adaptation response, as described in Chapter 2.9:

1. Getting started
2. Assess current vulnerability
3. Assess vulnerability to future climate change
4. Identify, evaluate and select adaptation options
5. Monitor and review

Each question provides background information and then sets out a task or exercise for users to complete to help them generate the information needed to answer the questions posed. Where appropriate, templates are provided to capture the necessary information. At the end of each step, a checklist prompts users to ensure that all actions have been undertaken. A list of useful resources that may help in completing the tasks is also provided. The Wizard draws heavily on all other UKCIP tools and resources, and in this sense can be described as a 'meta-tool'. For instance, the UKCIP report "Managing adaptation" is essential reading in Step 1. The assessment of current vulnerability in Step 2 draws on the methods and experience of LCLIP. UKCP09 and BACLIAT are essential tools within Step 3; Step 4 draws on AdOpt, and Step 5 is soon to be supplemented by forthcoming guidance on Monitoring and Evaluation (Figure 3.2).

### UPTAKE OF THE WIZARD

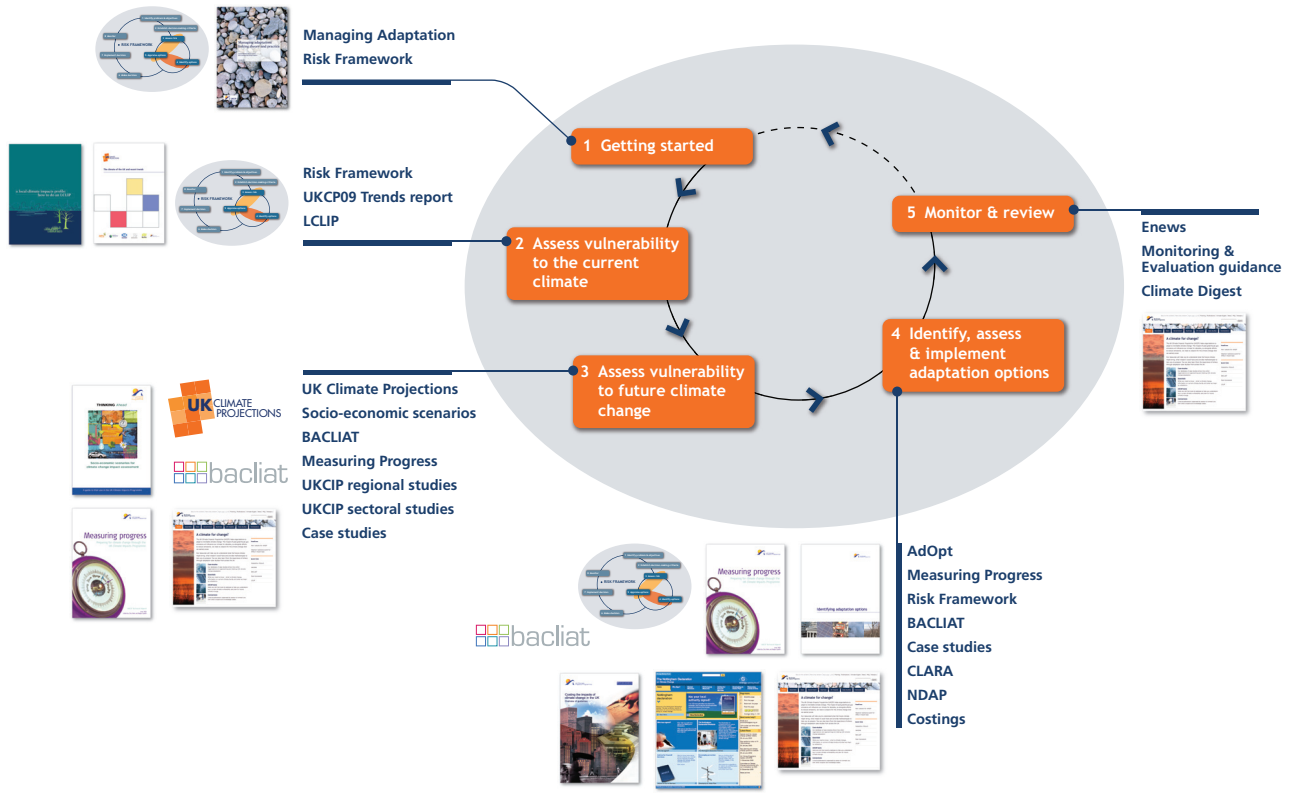
Like the Risk Framework, the UKCIP Adaptation Wizard has been well received in the UK and abroad with Wizard web pages being amongst the most frequently visited pages on the UKCIP website. It has been adapted and revised to form local level adaptation support tools

in both the UK (in Norfolk and Lancashire) and abroad, as in the Climate Adaptation Wizard that has been developed for the State of Victoria, Australia. It has inspired the development of national level adaptation support tools in Germany (Kompass, 2010) and Slovenia (Cegnar, 2011) and is the basis of the European Union Clearinghouse's Adaptation Support Tool (Rini, 2011). Elsewhere it has been described as "an inspiration for those developing similar computer-based tools and resources adjusted to a developing country setting" (Olhoff & Schaer, 2010).

In the UK, the Wizard has informed the methodologies of those submitting evidence under the Climate Change Act's Reporting Power Authority and formed the methodological basis of Government's Departmental Action Plans (DAPs). It has also had a major influence on revisions undertaken to HM Treasury's Green Book Supplementary Guidance on Climate Resilience in 2011. Similarly, the Scottish Climate Change Impacts Partnership (SCCIP) produced guidance to Scottish businesses on how to adapt to climate change (SCCIP, 2010) which was based almost exclusively on the UKCIP Adaptation Wizard and UKCIP's Business Areas Climate Impact Assessment Tool (BACLIAT), described in Chapter 3.3.

Since re-launching the Wizard in 2008, UKCIP has concentrated on 'ground truthing' the tool by helping individual organisations work through the Wizard process so that it can be tested for its relevance and robustness, and improve its utility and value to users. The companies with whom we have worked are listed in Annex C.

**Figure 3.2: The UKCIP Adaptation Wizard as a meta-tool.**



## LESSONS LEARNED

- Drivers of engagement – in common with the experience of other strands of UKCIP's work, organisations most likely to engage appear to be those that are already exposed to climate risks, have long lived assets and, critically, have an individual that is motivated and has the necessary resources or authority to take this issue on within the organisation. Reputation is also a strong driver: many of the organisations with whom we have worked have a strong environmental and corporate social responsibility and reputation to protect and enhance. It appears also to have been picked up by those that have made good progress on mitigation and are looking to take their work on climate change to the next level.

- Ownership of the issue within an organisation is important. Our experience suggests that it can be useful for adaptation to sit within a risk management team, so climate risks can be managed as part of an overall package of organisational risk management. These individuals are familiar with making decisions on the basis of incomplete or uncertain information and are well positioned to judge the severity of the threats and opportunities posed by climate risks relative to other risks an organisation has to cope with.

- Practical guidance, advice and case studies, or worked examples, are important to facilitate uptake of web-based tools: earlier iterations of the Wizard provided insufficient guidance on 'how to do it'. Feedback from users revealed that it was not enough just to say 'assess your climate risks'. Practical guidance and tasks to propose how this could actually be done was important.

- Tension between generic and specific. In UKCIP's experience, the Wizard has proved a flexible and robust framework. It is sufficiently structured to set out a process for people to follow, but sufficiently flexible to enable users to fine-tune the tasks and activities involved to meet the needs of their organisation and the way they work. The Wizard also provides a good framework for updating and refining one framing of the adaptation issue and for updating work in response to changing information and thinking on adaptation.

- Getting started is a crucial first step. Over the course of UKCIP's lifetime we have learned just how important the starting point of an assessment is. The tendency is for an organisation to want to 'get on with the doing'. However, without giving suitable consideration to one's goals and ambitions at the outset, an effective adaptation strategy will prove elusive. As a result of this learning, UKCIP published supplementary guidance to the first step of the Risk Framework (Brown *et al.*, 2011).

- Managing expectations: despite its name, the UKCIP Adaptation Wizard won't develop a tailor-made adaptation strategy for you at the click of a few buttons. Developing and implementing an adaptation strategy takes time and commitment from a number of individuals within any organisation. It helps if people have realistic expectations about the task ahead and have the necessary authority/support from senior management to give the time necessary to generate the requisite information.

## 3.2 UK CLIMATE PROJECTIONS

### ORIGINS OF UKCP09

At the outset of this phase of the UKCIP contract, the UKCIP02 climate change scenarios were the standard set of scenarios offered to UK stakeholders.* Since their release in 2002, climate science has advanced apace. The next set of projections was thus commissioned by Defra in 2003 (UK Met Office, 2006) to make best use of the significant improvements being made in the analytical capacity of climate models and analysis techniques, so a better understanding of the future climate could be offered to UK stakeholders. In addition, experience in the application of UKCIP02 revealed a number of perceived shortcomings of the UKCIP02 scenarios (Gawith *et al.*, 2009) which a new set of climate information might aim to address. Key amongst these was the recurring user-expressed request that the uncertainty inherent in the future climate projections be made more transparent (UKCIP, 2006; UKCIP, 2011), and for information on a finer temporal and spatial resolution. Many UK organisations were at the time progressing from identifying potential impacts to developing climate change adaptation strategies, thereby creating a demand for climate information that could be used in risk-based assessments to support robust adaptation decision-making.

### DESCRIPTION OF UKCP09

UKCP09 is the fifth generation of climate projections for the UK, and is the most comprehensive package of climate information produced to date. Developments in climate science enabled suppliers of climate information to go one step further in meeting the demands of the user community for greater transparency in the treatment of uncertainty. This meant that the resulting projections were probabilistic in nature. In addition to these monthly probabilistic projections, a weather generator tool was developed. This allows the monthly projections to be statistically downscaled to a daily or hourly resolution to give a representation of what future climate may be like on a daily basis.

Uncertainties due to future emissions were not explored in probabilistic terms, as there was no agreed method by which future greenhouse gas emission storylines could be assigned relative likelihoods. Emissions uncertainty thus continued to be addressed through the use of three different emissions scenario storylines. As a result, UKCP09 provides probabilistic projections that correspond to three different emissions scenarios, which are labelled as High (IPCC SRES: A1FI), Medium (IPCC SRES: A1B) and Low (IPCC SRES: B1) (Nakićenović *et al.*, 2000).

A number of additional components were included in the UKCP09 package of information, each a response to an expressed need of the UK adaptation assessment community. UKCP09 includes a more comprehensive set of marine projections than has ever been available for the UK, including projections for storm surge, multi-level ocean projections and sea level rise projections (Street *et al.*, 2009). A set of observed data is also available, providing daily information for past observed temperature and monthly values for a range of climate variables (Met Office, 2011). In response to user requirement, Spatially Coherent Projections and technical notes on storm, fog and lightning were added in the latter half of 2010.

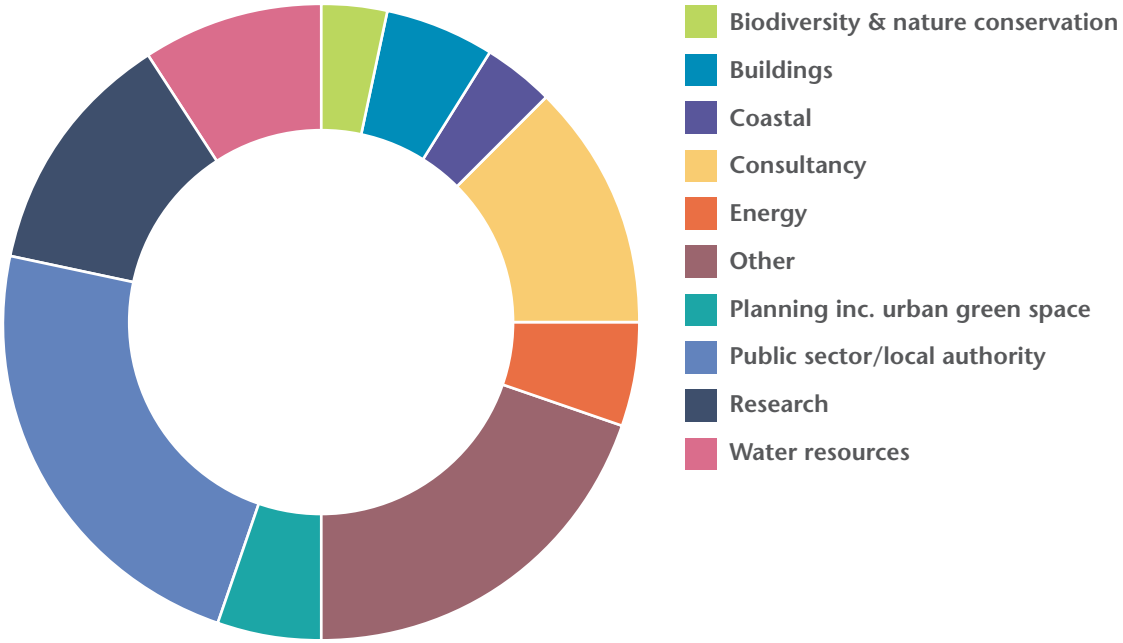
* Analysis of the application of UKCIP02 has been documented elsewhere (e.g. West & Gawith, 2005; Gawith *et al.*, 2009; UKCIP, 2006) and is not covered in this report.

## UPTAKE OF UKCP09

UKCP09 has been widely used by the UK impacts and adaptation community. A survey of UKCP09 users conducted within 6 months of its launch showed that most of the respondents were from the public sector, with researchers and consultants being the equal second most frequent user type (see Figure 3.3).

Since then, uptake of UKCP09 within the UK has been significant. By July 2011 there were 5689 registered users for the User Interface, which caters for those who wish to manipulate the data. A better reflection of the general uptake of UKCP09 is the number of unique hits on the website (http://ukclimateprojections.defra.gov.uk) which currently stands at 158,342. In addition to statistics on the usage of the UKCP09 website, evidence of its use is illustrated through the range of UKCP09 case studies presented on the UKCP09 website (http://ukclimateprojections.defra.gov.uk/content/view/865/521/). It is also clear from submissions under the Climate Change Act's Reporting Power Authority, the work of the first Climate Change Risk Assessment and a host of other research projects currently underway under the umbrella of UKCIP and beyond, that UKCP09 is the standard benchmark set of climate information in use by the UK impacts and adaptation community.

**Figure 3.3: Breakdown of sectors in which UKCP09 was being used (September 2009).**




## LESSONS LEARNED FROM UKCP09

A number of important lessons have emerged from our experience in developing and disseminating the Projections which we hope will be heeded in future.

- As noted in Chapter 2, there are a number of crucial issues that users need to consider before turning their attention to the climate change projections. The Projections themselves do not hold the answer to all queries in relation to climate adaptation, and they should not be the starting point for an adaptation assessment. Only once users have defined the problem they need to address, set their objectives, established boundaries around their problem, understood their vulnerability to current climate and so on (as noted in Chapter 2 and elsewhere in this report) should they explore climate change projections.

- Information to support vulnerability, impacts, risk and adaptation assessments needs to be delivered in an understandable manner. Users call for clear, concise, decision-relevant messages from the Projections. This is clearly a vital issue, but as is noted in Chapter 2.7, it can be very difficult to strike an appropriate balance between communicating a clear, simple message that can be used by decision-makers and remaining true to the robust use of the science.

- When a new set of climate information is made available to a user community, real data needs to be available for testing purposes prior to the official launch. This was not possible with UKCP09. If real data is made available for testing, minor bugs in the presentation or delivery of the climate information can be identified and resolved before the information is made public. Availability of test data would also enable any supplementary guidance material to contain real, rather than hypothetical, examples of use at launch. Real examples carry greater credibility with the users.

- The method of delivery of information to support climate adaptation is inextricably linked to its resultant uptake. As the intended recipients of climate information, users need to be consulted about its utility at the beginning of the development process. They also need to be closely involved up to and beyond the point of information delivery. This includes ensuring that a wide range of user needs are considered, including encouraging the participation of newer, disengaged, or less vocal groups of users. In the case of UKCP09, although there was substantial user involvement, it would have been beneficial to involve users even earlier in the process than they were.

- Our experience suggests that users would prefer to see refinements to current methodologies, rather than be presented with totally new approaches when new products are made available. Users of UKCP09 have invested considerable time and resources into learning about the new Projections and how to use them effectively. They need to be reassured that this investment is not going to be in vain when new types of projections supersede UKCP09 in future and in particular, that any modifications to the Projections in the near future will not require a step-change in learning.

- In order for users to feed into the development of the Projections in any meaningful way, they need to be sufficiently aware of the potential limitations that the Projections development methodology may impose. For instance, UKCP09 users were not made aware, at an early stage, that the Projections would not be spatially coherent across grid squares. This had serious ramifications for a number of users, in particular land use managers and those in the water sector. As noted in Chapter 2.7, it is important that users are made aware of the consequences that some of their requirements might have on other aspects of a forthcoming tool, so they are aware of the trade-offs their requirements impose, and make informed decisions on available options before it is too late.

- The scientific basis to the Projections needs to be reviewed at an early stage in their development. UKCP09 used a ground-breaking methodology and it would have been desirable if the methodology had been peer-reviewed prior to the launch. The belated review of the methodology used to create the UKCP09 Projections was found to be robust, but the fact that it occurred late in the day undermined confidence in the new product and had the potential to tarnish the reputation of the new Projections even before they were launched.

## 3.3 BACLIAT (BUSINESS AREAS CLIMATE IMPACTS ASSESSMENT TOOL)

### ORIGINS

It has long been recognised that one of the first steps to preparing for a changing climate is to assess the potential impacts of future climate change. During UKCIP's project A Changing Climate for Business (CCFB) (see Chapter 4.2 iii), it was recognised that this seemingly simple task presents some challenges, namely:

- Impacts are highly context-specific, so while published information, such as regional and sectoral scoping studies, can be useful, it is more important to carry out an assessment of the specific situation being considered.

- A certain amount of creative and lateral thinking is required to develop a comprehensive list of potential impacts, so that one individual starting with a blank sheet of paper is unlikely to get far beyond the obvious impacts or those related to their particular role.

- There are many different ways in which climate impacts and their complex interactions can be characterised. Without a structure and clear definitions to use as a starting point, assessments can lead to long incoherent lists, confusion between the impacts of climate change and impacts on the environment, or a pre-occupation with organising and defining appropriate categories of impacts. All of these can be unhelpful at this early stage of the adaptation process.

BACLIAT was therefore developed in collaboration with the CCFB partners. It aims to generate a comprehensive list of the potential business impacts of climate change by offering a simple yet clearly defined structure and encouraging a brainstorming approach with a range of appropriate employees.

### DESCRIPTION

"We've found it a really useful and easy way in which to engage business"

Alex Webb, Climate SouthWest

BACLIAT comprises six* headings relating to business areas (markets, process, premises, people, logistics, finance), each with a strapline explaining what it covers. These are designed to be generic enough to apply to any type of business and also applicable to a whole sector. It is essentially a workshop resource, whereby participants spend time brainstorming impacts under each heading. It can be used simply to raise awareness or as part of the development of an adaptation strategy for a company or sector.

In 2011, BACLIAT was expanded into a set of workshops, covering current vulnerability and identifying adaptation options as well as the original purpose of identifying future climate impacts. As such, it reflects the first three stages of the UKCIP Adaptation Wizard, but is tailored specifically to the interests of businesses. The 2011 refresh of BACLIAT also involved the addition of a 'speed BACLIAT' tool, which aims to provide a quick desk-based first iteration for resource constrained businesses. The idea is that this will generate enough evidence to make the case for further investigation where appropriate.

* Previously seven but the heading 'management implications' was dropped for the second edition as this starts to deal with responses rather than impacts, and does not fit well with the threats and opportunities headings.

"BACLIAT is useful, straightforward and generally user friendly"

Craig White, Arup

### UPTAKE

In 2010 UKCIP carried out a review of BACLIAT use (Johnstone, 2010), which suggested that it has been used extensively and generally well received. Its primary use has been as a workshop resource and BACLIAT workshops have been run by UKCIP and other intermediaries, such as the regional partnerships with a wide range of business groupings. It is estimated that over 400 individuals and 350 organisations (mainly businesses and business-facing organisations but also some local authorities and community groups) have taken part in a BACLIAT exercise over the years. BACLIAT has also been modified for use as an audit tool by UKCIP (see Chapter 4.2 iii) and others, such as ENWORKS (ENWORKS, 2009), the CREW* research team (Wedawatta, 2009) and Business in the Community (BitC, 2010) and as a means of structuring research (such as AEA, 2008; Climate NE, 2009) or guidance materials (such as Adaptation Scotland, 2010). It was also used by the Institute of Environmental Management and Assessment (IEMA) who used the headings in a survey to assess their members' progress on adaptation (IEMA, 2009).

BACLIAT has also been used in non-business environments, such as with local authorities and voluntary sector organisations. The only amendment they make is to the 'markets' heading, replacing it with something more appropriate, such as 'demand for services'.

### LESSONS LEARNED

Our experience of using BACLIAT, together with the 2010 review of users, flagged up some issues that the 2011 refresh has sought to resolve. These are summarised below:

| Issue | Response |
|---|---|
| Not easy to use without expert facilitation | • Supporting materials were provided with the aim of providing facilitators with more confidence in running BACLIAT workshops.<br>• Care was taken to provide a range of resources (presentations, templates, links to information sources etc.) without being too prescriptive. |
| Some businesses are not prepared to put aside this kind of staff time (e.g. SMEs or those not fully engaged or unsure of the relevance to them) | • 'Speed BACLIAT' was developed. It is a downloadable spreadsheet that provides plenty of prompting to enable individuals to go through a first iteration of assessing their current vulnerability, future impacts and potential adaptation actions. A 'fill in the blanks' scoping report is completed at the end. |

* Community Resilience to Extreme Weather (CREW) is one of the Engineering and Physical Sciences Research Council (EPSRC) funded projects under the ARCC programme www.ukcip-arcc.org.uk/

| | |
|---|---|
| Need to maintain the simplicity while taking opportunity to broaden the scope | • A set of workshops were developed based around the generic headings and designed to be flexible.<br>• BACLIAT sticks to brainstorming and does not involve technical analysis.<br>• No glossary of technical terms to understand.<br>• Clear links to the UKCIP Adaptation Wizard so that results can be easily embedded in a strategy development process if required. |
| Not sufficiently action-oriented and practical for some businesses | • New workshops to help with taking action were developed.<br>• Speed BACLIAT also includes simple practical measures. |
| Output from a BACLIAT exercise can be a mixture of impacts, consequences, vulnerabilities and ideas for responses. This means that results cannot be directly transferred to a risk assessment process or other analyses. In addition, alternative but similar sets of headings have been proposed by others such as the CBI. | • In order to maintain the simplicity that was valued by users, it was decided that it did not matter whether the headings fitted into any rational impacts or adaptation typology.<br>• BACLIAT remains a brainstorming aid and does not include any analysis, although it does give advice and signposts on how to tidy up the results generated.<br>• The headings are now well established and used in other publications.* Therefore it was felt there was no value in changing to match with others, although it is flagged up that other headings may be appropriate, in particular those that are derived from a company's own organisational structure or functions. |

* Such as 'Adapting to Climate Change: A Guide for Businesses in Scotland' www.adaptationscotland.org.uk//3/82/0/Adapting-to-Climate-Change--A-Guide-for-Businesses-in-Scotland.aspx

## 3.4 CLARA (CLIMATE ADAPTATION RESOURCE FOR ADVISORS)

### ORIGINS

Over the course of 2007, UKCIP worked with Oxfordshire-based Small and Medium Enterprises (SMEs) and the SME support community (see Chapter 4.2 ii). UKCIP felt that SMEs were not being served well for UKCIP's existing tools and that there was a need for something new. Thus UKCIP developed a resource for enabling business advisors to incorporate adaptation into existing programmes. This approach rather than a tool aimed directly at SMEs was selected for the following reasons:

- UKCIP did not have the resource to deliver the required support directly to SMEs nationwide.
- Busy managers of SMEs often have preferred sources of advice and may be hostile to new information from an unknown source that does not appear to be joined up.

- It is more consistent with the Government's business support simplification programme, which aimed to streamline the existing amount of publicly-funded business support schemes and ultimately use Business Link as a single point of contact for all business advice.

- Few existing business support programmes explicitly tackle adaptation although interest in moving into this area is increasing. In addition, there are many small commercial outfits offering informal business services in related areas, most notably in business continuity planning.

It was felt that such a resource would benefit the business support community by allowing them to develop their service into a new area. UKCIP would also benefit from having a mechanism for spreading the message on impacts and adaptation throughout the SME community, therefore raising awareness.

The Climate Adaptation Resource for Advisors (CLARA) was developed in close consultation with UKCIP's network of business advisors, including Business Link, Sustainable Business Partnerships, Business in the Community, Environmental Information Exchange and small commercial consultancies.

### DESCRIPTION

CLARA aims to act as a gateway to information on climate change impacts and adaptation for the existing business support community, so that they can deliver good quality advice and signposting. However, it is recognised that businesses may access the resource themselves. Aspects of the resource, such as a set of 'factsheets', are therefore relevant and accessible for this audience.

It is a web-based resource structured around background information, advice on making the business case to SMEs and practical tips for delivering a support service, including delivery resources. It also contains a links section where there is an up to date list of links to publications and projects relating to SMEs and climate change adaptation.

### UPTAKE

As a relatively new tool, detailed information has not been collected on the use of CLARA. However, web stats show that the CLARA web pages receive over 400 unique page views per month.

### LESSONS LEARNED

The consultation process carried out during the development and shortly after the launch of CLARA provided some lessons about the kind of resource that SME advisors need and would like in relation to climate change adaptation. These are summarised below.

- Advice on expressing the business case is most important. Related to this are ideas on how an adviser can bring it up in conversation with a business who might have asked them to come and talk to them about completely different issues.

- It needs to be simple, direct and practical rather than theoretical, highlighting the most critical issues and achievable actions.

- It needs to be clear about the balance of short and long term issues. Small businesses find it very difficult to engage with the long term, so a focus on short term issues and quick wins is critical.

- As with all UKCIP resources, there is a tension between the generic and specific. While CLARA needs to be relevant to all types of business advisor and advice, without too much technical detail, there is a risk that this can lead to bland, meaningless statements. A balance needs to be found with information accessible at different levels and signposts to further information where appropriate. Overall, it was thought that it would be better to aim for concise rather than comprehensive.

## 3.5 LOCAL CLIMATE IMPACTS PROFILE (LCLIP)

### ORIGINS

Local Climate Impact Profiles (LCLIPs) were developed by UKCIP in 2006 as a simple means of gaining a better understanding of current vulnerability to climate events at a local level, based on identifying recent impacts of extreme weather events. LCLIPs have proved valuable in raising awareness of climate impacts and well as forming a basis for developing an adaptation programme. The LCLIP methodology was originally piloted by Oxfordshire County Council and has since been applied in other organisation types (e.g. businesses) and incorporated into Step 2 of the UKCIP Adaptation Wizard.

### DESCRIPTION

LCLIP is a tool to help understand current vulnerability of a local area by gathering information on the following:

- The nature and the magnitude of the consequences of recent weather events;
- The identity of the agency(s) responsible for managing the consequences of events;
- The preparedness of responsible agencies to deal with the consequences of local weather events;
- The details of the weather events and impacts that caused these consequences;
- Together, this information will allow an initial judgement to be made on what were significant consequences for a local authority/organisation and its locality.

Typically, extreme weather events affecting a locality are identified by searches of local media sources. These are then followed up by interviews with representatives of relevant council service areas to determine their responses and, where possible, any costs and resources associated with responding to the events. Comprehensive guidance on the approach is available from the UKCIP website (www.ukcip.org.uk/lclip/) together with example spreadsheets to help record the information and case study examples.

### UPTAKE

LCLIPs proved very popular with the local government community, with more than half of all English local authorities having undertaken one. Many councils used the LCLIP methodology to meet the requirement to assess current vulnerability for level 1 of NI188. Councils known to have undertaken an LCLIP can be located on the UKCIP website (www.ukcip.org.uk/lclip/lclip-locations/) as can 10 more detailed case studies (www.ukcip.org.uk/lclip/lclip-case-studies/). The methodology has also been adopted abroad, with four councils in Helsinki, for example, undertaking LCLIPs to inform the development of their joint climate adaptation strategy (Kankaanpää, 2011).

#### LESSONS LEARNED

- The LCLIP approach started with modest ambition. It has proved extremely popular because of its relative simplicity and ease of use, and is indeed now being applied by organisations beyond the audience (local authorities) for whom it was originally intended. In addition to enhancing the understanding of current climate vulnerability, it has also provided a very useful approach to raising awareness amongst parts of authorities, and other organisations, that have not previously considered the impacts of climate change seriously. The process typically takes between 8 and 12 weeks and many councils have found it cost-effective to use temporary staff, such as recent graduates or students during their vacation to undertake their LCLIPs.

- UKCIP commissioned Ecofys to undertake a review of the effectiveness of LCLIPs in 2009 (Ecofys, 2009). This confirmed the wide uptake by local authorities and general support for the effectiveness of the approach, but raised a number of concerns about the lack of detail in the original guidance. Subsequently, the guidance document, and other supporting materials, were revised to provide greater clarity on the aims of and approaches to undertaking LCLIPs.

## 3.6 NOTTINGHAM DECLARATION PARTNERSHIP

### 3.6.1 NDAP (NOTTINGHAM DECLARATION ACTION PACK)

#### ORIGINS

The Nottingham Declaration is a voluntary pledge that local authorities can sign committing to take action on climate change. Originally launched by Nottingham City Council in 2000, it had been signed by 100 councils by 2005. At that time, a decision was taken to relaunch the Declaration backed by a partnership of the major organisations involved with local authority work on climate change: Local Government Association (LGA); Improvement and Development Agency (IDeA); Nottingham City Council; Carbon Trust (CT); Energy Saving Trust (EST); Environment Agency (EA); UKCIP and ICLEI – Local Governments for Sustainability. The unique aspect of the relaunched Declaration was that it gave equal weight to both mitigation and adaptation.

Following the launch of the second version of the Nottingham Declaration in November 2005, the partnership decided there was a need for a tool to support progress in meeting the commitments of the Declaration. A web-based tool, known as the Nottingham Declaration Action Pack (NDAP) was launched in July 2006.

#### DESCRIPTION

NDAP is a project management tool that provides guidance to local authorities on developing a practical action plan for responding to the challenges of climate change. The five-stage approach is based on a synthesis of the Carbon Trust Local Authority Carbon Management Program and the original version of UKCIP's Adaptation Wizard. Local authority operations are divided into three roles: manage own estate/corporate role; service provider and community leader giving a complete structure consisting of 30 cells as illustrated in Figure 3.4. Each of these cells corresponded to a webpage (generally significantly larger than a single screen) providing guidance for the particular stage and role. NDAP was hosted by EST as a separate section of their corporate website.

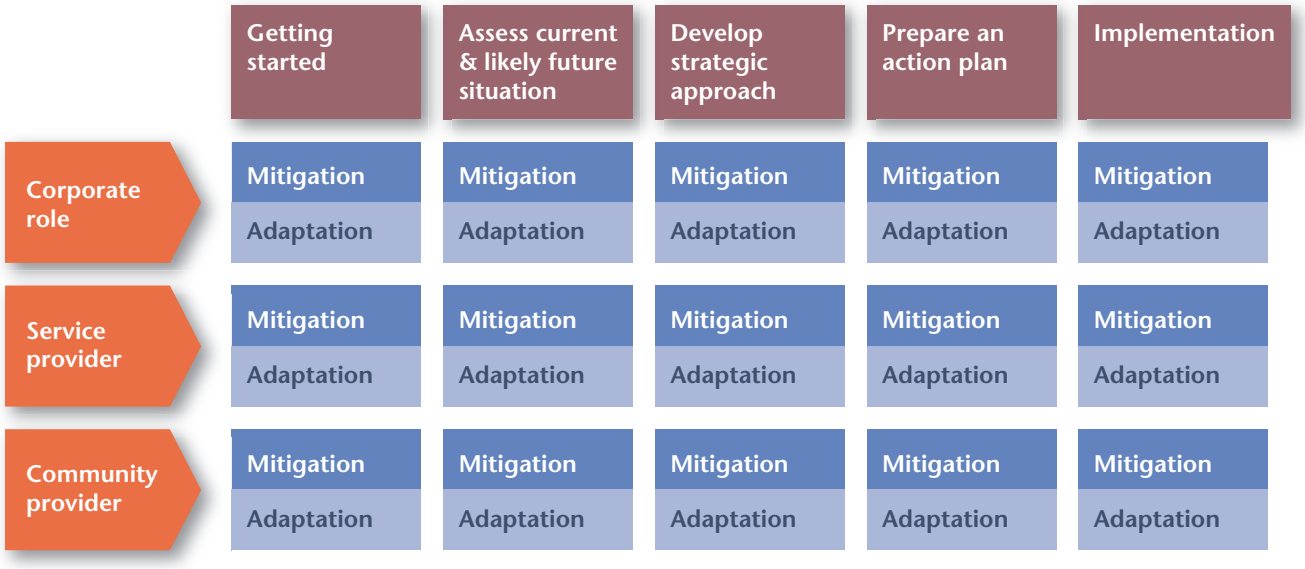



**Figure 3.4: Schematic representation of the structure of NDAP.**

UKCIP used the launch of NDAP as an opportunity to raise awareness of adaptation issues amongst local authorities by providing training workshops in each of the English regions during the latter half of 2006. In total, these were attended by more than 250 local authority officers representing more than a third of English councils.

The Nottingham Declaration website was updated and expanded in 2008 to provide a wider range of support for local authority work on climate change, including information for specific service areas. At this time, whilst the basic principles of NDAP were retained, the structure was simplified to reduce the level of duplication involved in the original approach.

### UPTAKE

The Nottingham Declaration has now been signed by over 90% of English local authorities and similar declarations have been signed by all the Scottish and Welsh councils. There is limited direct evidence of the extent of the uptake of NDAP, but at its peak the Nottingham Declaration website was getting more than 3000 hits per month. Private surveys by the LGA indicated that in 2007 and 2008 the NDP website was treated as the principal source of climate change information by the local government community. More recently, the proliferation of other sources of information and lack of resources to update the site regularly has greatly reduced the level of use.

### LESSONS LEARNED

- NDAP was the first tool offering guidance on climate change adaptation specifically aimed at the local government community in England. As such it had a considerable role in raising awareness and setting out the basic risk-based approach adopted for local adaptation in the UK. The original version of NDAP, and the subsequent update to the NDP site, were very well-received by the local government community, but resulted in only limited practical activity because of the lack of any strong drivers for local authority adaptation work at the time.

- The Nottingham Declaration and NDAP had a considerable influence on local authority approaches to climate change, both mitigation and adaptation. However, the future of the partnership in the new local authority policy landscape is uncertain. At the time of writing, a consultation is underway on the future of the Nottingham Declaration.

### 3.6.2 ADAPTING TO CLIMATE CHANGE: GUIDANCE NOTES FOR NI188

#### ORIGINS

In April 2008, central government introduced a new performance framework for local government that was intended to simplify the mass of indicators, targets and reporting requirements that had grown up over time. This new framework consisted of 198 indicators that local authorities were required to report against annually and for the first time included an indicator on adaptation. NI188: Planning to adapt to climate change was unique in being the only process-based indicator within the set of otherwise outcome based indicators. The reasoning being that adaptation by its very nature is locality specific and that priorities vary from place to place, and hence no single outcome indicator can serve as an appropriate generic, or proxy, indicator for local council adaptation in England.

As part of the introduction of the new performance framework, the Local Strategic Partnerships (LSP) associated with top tier councils were required to set targets for 35 of the indicators in their local area agreements (LAA) selected according to their local priorities. These targets were negotiated and agreed with Regional Government Offices with 56 of the 152 LSPs choosing to set a target for NI188.

#### DESCRIPTION

The overall rationale for NI188 was described as:

> To ensure local authorities are sufficiently prepared to manage risks to service delivery, the public, local communities, local infrastructure, businesses and the natural environment from a changing climate, and to make the most of new opportunities.

It consisted of five levels of attainment scored from 0 to 4 as follows:

> Level 0: Baseline
>
> Level 1: Public commitment and prioritised risk-based assessment
>
> Level 2: Comprehensive risk-based assessment and prioritised action in some areas
>
> Level 3: Comprehensive action plan and prioritised action in all priority areas
>
> Level 4: Implementation, monitoring and continuous review

UKCIP were asked by Defra to draft a guidance document on behalf of the Local and Regional Adaptation Partnership. This was intended to augment the indicator definition by providing more detail on how to meet the requirements of each level of the indicator.

The guide starts by introducing some key adaptation concepts and terminology and provides suggestions for sources of information as a context for local authority work on adaptation before describing the requirements of the NI188 levels.

Information on each level is consistently structured around the headings:

- Technical definition
- Rationale
- Aims
- Commentary
- Available resources and examples

#### TECHNICAL DEFINITION

This is simply a statement of the requirements for achieving the level as described in the definition. Typically, each level requires a number of different types of action. These are highlighted and described under the following headings.

#### RATIONALE

This section provides a brief explanation of the role the level, and its component actions, play in achieving the overall objective of the indicator. It summarises the principles that inform the requirements of the level and suggests some reasons why these are worth achieving.

#### AIMS

The aims of the level, derived from the technical definition, are listed as a series of short bullet points.

#### COMMENTARY

The commentary section discusses each aim in more detail and includes: suggested approaches, questions to prompt wider considerations, possible outputs and sources of additional information.

#### AVAILABLE RESOURCES AND EXAMPLES

In addition to the sources of relevant information given for each aim, sources relevant to the whole level are provided at the end of the section on each level.

The guidance is completed by a glossary of adaptation terms and a number of annexes including information on self-assessment and a schematic diagram of a risk-based approach to adaptation.

### UPTAKE

The NI188 guide was the principal source of guidance on meeting the requirements of the indicator and, as such, was used by the vast majority of English local authorities. This was supported by an online survey conducted by UKCIP in November/December 2010 where over 92% of respondents had used the guidance and almost 80% had found it fairly, or very, useful. Opportunities to comment on the guidance produced varied responses with the minority of critical responses being roughly divided between those who thought it was too long and detailed, and those who wanted more explicit guidance on exactly what to do at each step.

As part of the support programme for local authorities, UKCIP was the major contributor to 4 rounds of regional workshops organised in conjunction with Government Offices and Climate Change Partnerships during the first 2 years of the performance framework. This series of events moved successively through the levels making use of the guidance material to structure the presentations and workshops. This programme was very well received as indicated in the online survey where 93% of respondents who attended found the events very, or fairly, useful.

The initial LAA round commencing in 2008, which saw the introduction of the performance framework, was intended to last 3 years with local authorities required to submit their self-assessment returns annually. In practice, there were only 2 reporting rounds because the coalition government announced the ending of LAAs in July 2010 as an early part of their localisation agenda. The abandonment of the performance framework and the requirement to report progress on NI188 has probably rendered the guidance document largely redundant.

## LESSONS LEARNED

- NI188 had a vital role in raising awareness amongst English local authorities new to adaptation and progressing adaptation work amongst the minority that had already recognised its importance. For the first time, the need to report annual progress provided a strong, external driver for local council work on adaptation that began to overcome barriers arising from the short-term drivers that tend to dominate local government.

- NI188 was unique in being the only process-based indicator in the performance framework. A number of factors shaped the definition of the indicator. These included:

  - The fact that central government (HMT and Audit Commission) were reluctant to accept a process-based indicator and would only allow one defined in terms of broad outcomes rather than a particular prescribed process.

  - Tools such as the UKCIP Adaptation Wizard and the Nottingham Declaration Action Pack provide a systematic framework for local authority adaptation work, but authorities have different priorities and resources so cannot be expected to work consistently through such frameworks. They need flexibility to respond to their local situations.

- Recognising these factors, the definition of the indicator, and the supporting guidance, sought to offer a systematic structure with sufficient flexibility to allow individual authorities to approach the work in ways appropriate to their local priorities, experience and resources. The guidance also sought to place the requirements of NI188 in broader context of adaptation objectives and principles.

- For the most part this approach was well-received and successful. For instance, almost 80% of respondents to the online survey (www.ukcip.org.uk/government/local-authorities/adapting-to-policy-landscape/) found the guidance very, or fairly, useful. However, some people would have preferred less flexibility and clearer step-by-step instructions. There was also some concern that the additional information on the broader principles and practice of adaptation extended the scope of the requirements and led to differences between the indicator definition and the guidance.

- The introduction of NI188 as part of the 2008 performance framework, together with the guidance and supporting events, made a significant impact on local authority progress on adaptation. However, to date, there have been very few practical adaptation actions undertaken by local authorities and little indication that adaptation considerations are becoming embedded effectively in council policy and decision-making processes.

## 3.7 MONITORING AND EVALUATION

### ORIGINS

The complex and long-term nature of climate change places even greater emphasis on embedding monitoring and evaluation as a continuous and flexible process. Furthermore, as a society we are still at a relatively early stage in understanding how best to adapt to future climate change, how vulnerability can be most effectively reduced and resilience enhanced and what the characteristics of a well-adapting society might be. In such circumstances learning what works well (or not), in which circumstances and for what reasons, is critical. In particular, it raises two key questions: 'Are we doing things right?' and 'Are we doing the right things?'

The development of guidance to support effective monitoring and evaluation of adaptation interventions stems from the need to build upon Step 5 of the UKCIP Adaptation Wizard ('Monitor and Review') and a growing appreciation that adaptation projects are now reaching the stage where valuable lessons can be learned. At the European level, the absence of such guidance is recognised as an important gap that needs to be addressed with increased urgency (Rini, 2011).

The Online Evaluation Tool currently being developed by UKCIP, results from two workshops attended by practitioners and experts in the fields of adaptation and monitoring and evaluation. It also draws upon international good practice in this emerging area of research, including collaboration with the World Resources Institute. In line with the views of the workshop participants, this tool does not seek to provide a comprehensive evaluation framework. This is because we believe there is no 'one-size-fits-all' approach to climate adaptation evaluation and because we recognise that climate change adaptation may just be one aspect that is being evaluated. Instead, the tool will provide practitioners with a way of checking that their approach to evaluation forms part of an iterative adaptation process which is undertaken in a spirit of continual improvement and learning.

### DESCRIPTION AND PURPOSE OF THE TOOL

This tool is targeted at individuals and organisations who are designing, or about to undertake, an evaluation of a climate change adaptation intervention. This tool will be useful whether the activities in question have a strong climate adaptation focus or whether this is just one element of a broader project or programme. The purpose of the tool is to help stakeholders to think through some of the factors which can make an evaluation relating to a 'wicked problem' (Rittel & Webber, 1973), such as climate change, inherently challenging. By using this tool they should be better placed to design evaluation approaches which are more robust in the face of these challenges. This tool aims to be practical, pragmatic and should help stakeholders with the following.

- Refine their evaluation objectives.
- Understand how specific traits of climate adaptation may influence the way an evaluation is framed and designed.
- Understand and re-evaluate assumptions.
- Consider how progress and performance might be best measured and evaluated, including how to evaluate the unintended and unexpected.
- Sign-post users to examples and good practice.
- Prioritise evaluation activities, recognising that evaluations need to be proportionate to the investment and are usually resource-limited.

## 3.8 CASE STUDIES

### ORIGINS

Adaptation is a new and rapidly evolving area of practice such that it is not yet possible confidently to define 'best practice'. Learning from the experience of others is however an important mechanism for driving forward activity and UKCIP stakeholders have for a long time been asking for case studies. An online database of case studies – Adaptation Actions – was developed during 2005 and subsequently added to, albeit quite slowly. However, in 2009 a set of business and local authority case studies were developed, to be presented alongside the existing Wizard and UKCP09 case studies in a coherent way.

### DESCRIPTION

'Adaptation Actions' was superseded by a searchable database on the UKCIP website in 2010 and there is now a growing set of readily-accessible case studies available there. These fall into two categories: those that show the application of a specific tool and those that show an approach to adaptation more generally within either a business or a local authority setting. The latter are structured so that each begins with very brief factual details and key messages, for those whose main concern is to see that activity is occurring across a range of organisations (some of which are well known brands). There is then more detailed and analytical information set out in a standard template, for those who wish to learn from some the experience of some aspect of the process. However, there are also shorter case studies that link to other material available from other sources so that it is possible to access a wide range of examples from different sectors, localities and types of organisation.

### UPTAKE

As the case studies database is relatively new, there is little formal information on its use. However, web stats show that the case studies home page receives over 2000 unique page views per month. In addition, there are over 200 unique page views per month accessing the case studies via the alternative routes of the Local Authority, Business, LCLIP and Wizard sections of the UKCIP website.*

### LESSONS LEARNED

The purpose of our case studies is to provide examples of adaptation in action and to draw out transferable lessons that can be used by others trying to adapt. The term 'case study' covers a huge range of possible formats from very simple accounts of action, without analysis, which provide a minimal amount of context, to qualitative narratives such as those developed in a learning history approach which seeks to bring together analysis and story in a way that has value for those involved in the original work as well as those reading it (Reason *et al.*, 2009). Our case studies fall somewhere between these two approaches, as it was recognised that there are several different ways that case studies could be used. We attempt to provide some exploration of the original motivation or drivers for taking action, some reflection on what supported action and what constrained it and what advice might be given to others undertaking a similar task. In developing each, UKCIP felt clarity about the following aspects were important.

* In-depth UKCP09 case studies are contained on the UKCP09 website, which is separate from the UKCIP site, although managed by UKCIP in this contract.

As a result of these different uses of case studies, significant thought went into how the case studies were structured and what information was contained. The resulting set of case studies aims to provide a wide range of examples, so that most sectors and types of organisation or project are covered containing a balance of technical and process-based information.

The standard case study template helped to make sure that information across case studies was comparable and that as much useful information was collected as possible. However, the case studies are very diverse both in terms of the type of activity (for example, research studies, practical actions, strategy development or awareness-raising) and scope (for example, organisations, sectors, products, or business function). Therefore, a degree of flexibility was employed so that some headings are common to all case studies while others are used only where relevant. In developing future case studies, the following questions were thought to be important for a project, when creating case studies of their experience.

#### WHO IS THE CASE STUDY FOR AND WHAT ARE THEIR NEEDS?

A case study should have a target audience. It is important to understand what their needs are in order to ensure that the case study is pitched at an appropriate level, contains interesting and relevant information and has an engaging style and is easy to navigate to extract the relevant information. Is the intention to write something very concise or is there scope for distinguishing context specific aspects of the work and learning that is more generally transferrable? Additionally, how should the case study look? Should there be photographs and quotations?

#### HOW MUCH IS THE CASE STUDY DEVELOPMENT AN OPPORTUNITY FOR YOUR OWN REFLECTION AND LEARNING AND HOW MUCH IS IT AN EXAMPLE FOR OTHERS?

It can be both! Case study development is an opportunity for reflection by the project team and others involved (funders, beneficiaries) to really question what happened, how this differs from their expectations and in what ways. As well as reflecting on did we achieve our objectives, the team can also ask themselves were these the right objectives?. Really understanding this enables the team to have a much clearer idea of how to focus their next activities or advise others doing similar work.

#### HOW MUCH OF THE PROCESS OF THE WORK DO YOU WANT TO CAPTURE?

A good case study should identify where the team started, what wanted to be changed, what actually changed as a result of the work, how that change was achieved, how any resulting impact was measured and include further actions taken planned, e.g. has the learning been taken beyond the original activity? Often there is also very useful unexpected learning that helps us to question our assumptions of how change happens and thus how to support effective change in the future. This also needs to be captured, for example, through questions like what advice would you give to others doing similar work or how would you do this work differently having had this experience?

#### WHO DO YOU WANT TO INVOLVE IN DEVELOPING THE CASE STUDY?

Clearly the value of the outcome of the work depends on the perspective of the person who is describing it. There may be many differing perspectives on what was of value in the work and a decision has to be made about who should be involved in telling the story and to be open about why they were chosen. Is it to be an inclusive process that engages all those involved as participants, funders or beneficiaries or is a particular perspective of interest? Clearly whose voice is heard has consequences for what is presented and how much learning about what really happened is possible.

#### WHAT KIND OF INFORMATION DO YOU WANT TO CAPTURE?

Case studies vary from very simple accounts of what work was done, by whom and for how much money, to complex and reflective 'learning histories' that capture much more of the motivation for taking on the work in the first place. This latter approach explores more about the people and organisations involved and how their skills and values influenced what happened and offer more on how expectations and assumptions were either supported or challenged by the work and what that might mean for future work. Different types of case study are appropriate for different purposes so there is no one size fits all recommendation on how to do this well, but it is important for the team involved to have discussed what kind of information is of interest to them and to their audience.

#### HOW CAN THE WORK BE KEPT 'LIVE'?

Case studies in the field of adaptation can have a relatively short lifespan so it is important to think through how they can be kept up to date. For how long will the information be accurate and reliable? Is the work finished or ongoing? Who can be contacted for further information?

### 3.9 SOCIO-ECONOMIC SCENARIOS

Climate variability and change will not occur in isolation of social and economic change. Our vulnerability to climatic changes and the way in which we choose to respond to it will be influenced to a large extent by the nature of the economic, social and technological world in which we live. A set of socio-economic scenarios was thus produced by UKCIP in 2001 to help users consider these issues in their regional and sector-specific assessments. A 2005 review of UKCIP studies showed that only a handful had used the socio-economic scenarios but, where they had been applied, they had a major effect on study results (West & Gawith, 2005). A 2009 review of the application of socio-economic scenarios (Hughes *et al.*, 2009) underlined their importance and provided recommendations on the type of support that could be offered in this area in future.

## PART B: UKCIP COMMUNICATIONS AND TRAINING

### 3.10 COMMUNICATIONS

#### ORIGIN

UKCIP has always had effective communication at its core. As an organisation with little to offer by way of incentives (e.g. funding) to encourage organisations to adapt, clear messages, compelling arguments and enthusiastic individuals were at the heart of UKCIP's engagement strategy. Communication work, at UKCIP, was something to which all of the team contributed.

Even when organisations were required to address adaptation (e.g. English local authorities and NI188), the case for communication was no less demanding. In an age of 'requirement', guidance, accessibility and clarity are warmly welcomed.

#### DESCRIPTION AND PURPOSE

As a boundary organisation, UKCIP has had to work as a channel for knowledge, moving between, for example, scientific and policy worlds, and finding ways in which these communities can work together in the context of adaptation.

Considering the needs of stakeholders is a critical component if the communication is to be successful and for UKCIP, making technical information accessible to non-specialists, as with UKCP09, is a particular challenge. There is a difficult job to balance the need to have straightforward, usable messages while maintaining some necessary complexity.

UKCIP also had the challenge of creating tools and resources that were sufficiently generic to be used by a wide range of organisations, but that still delivered outputs that could be applied by those organisations. There has been some success with tailoring of some products: UKCP09 had information available for different applications and BACLIAT evolved a 'speed' version that could be used by an individual at their desk.

### ONLINE AND WEBSITE

Even in 2005, a great deal of UKCIP's information was distributed as a publication of some sort, as sharing reports and information online was still relatively slow and cumbersome. However, since then digital infrastructure has evolved so that it is easy for most of UKCIP's stakeholders to find information as and when they need it via the UKCIP website. Alongside face-to-face meetings, the website is UKCIP's single most effective communications tool, giving UKCIP a global audience. It has changed the way UKCIP works and most resources developed by UKCIP more recently were intended principally for use or distribution online.

The following products complement UKCIP's website:

- **UKCIP Climate Digest** – This is a monthly digest of 4–6 adaptation-relevant academic papers. Stakeholders are notified via enews, with a link to the Climate Digest web page. From here, users can search the Climate Digest archive. Climate Digest grew from an original request to provide a regular briefing for Defra, but recognising that this would be a more widely useful resource, UKCIP created an online version. It has become one of the more popular of UKCIP's information resources.

- **UKCIP Enews** – Each month UKCIP compiles a short email bulletin, known as enews, which is also available to read on the UKCIP website. It features news and information relevant to adaptation, and always includes a link to the latest Climate Digest. It consists of 6–10 items, usually no more than 100 words long, including at least a URL and sometimes a contact email too. It has a particular focus on UK activities, although it also includes stories from outside the UK where there are useful parallels. Individuals can subscribe and additionally, enews is publicised via Twitter and Facebook.

- **Online, Twitter and Facebook** – UKCIP has had a Facebook page since 2010 and a presence on Twitter since 2011. It has the potential to enable us to reach organisations that we might otherwise miss through other routes, such as the private sector, which is traditionally a more difficult audience for us to reach. It has also proved to be a useful vehicle for publicising events, vacancies and last minute stories that would otherwise miss the main enews bulletin.

### PUBLICATIONS

This contract saw a significant shift away from the production and distribution of publications. In part this was because UKCIP was involved in fewer projects for which reports were a requirement: events, online products and activities were more usual outputs, reflecting the move from considering the impacts of climate change, to developing strategies and actions.

Moreover, the development of online resources meant that the demand for hard copy versions of documents almost vanished.

UKCIP also continued to publish its views in other media. With a growing demand for information about climate change adaptation over the period of the contract, articles by UKCIP staff regularly appeared in publications, often 'grey literature' such as trade journals. A list of these items appears in the Annex A.

### UPTAKE

For most of the contract period, UKCIP saw a steady increase in visitors to its website. There were particular peaks around the launch of UKCP09 and associated with events such as international negotiations on carbon emissions. Information about web usage is in Annex A.

Enews subscribers grew steadily, but a noticeable decline began in 2010. UKCIP believes that this reflects the impact of the economic downturn as posts were cut, particularly in the public sector. However, as at September 2011, there were still over 8000 subscribers.

In the spirit of keeping access to UKCIP's information as straightforward as possible, no details were collected and kept about online users until December 2010, when some changes to the site made it easier to ask for details of users of UKCIP's online tools. By September 2011, 2240 people had registered.

### LESSONS LEARNED

- Putting stakeholders' needs and perspectives at the core of any successful communications activity is essential, but not always easy to combine with other considerations, including the technical complexity of information, multiple messages and broad audiences.

- Generic messaging and information is good for introducing ideas, issues and resources. However, tailored information for specific audiences will be considered more useful by stakeholders.

- Long-lived projects with a number of partner organisation requires flexibility, as factors like objectives, personnel and budgets can change. Maintaining clarity of message and a focus on agreed objectives can be difficult.

### TRAINING

Within this contract period there was a significant increase in training opportunities offered by UKCIP, following recognition of the need for UKCIP to better support uptake of its climate adaptation tools. Training and support has been offered by the whole UKCIP team covering core tools (UK Climate Projections; Risk and Uncertainty in Decision-making Framework; UKCIP Adaptation Wizard; Local Climate Impacts Profile) and the other key areas of UKCIP's work (National Indicator 188; SMEs and businesses; Nottingham Declaration; Adaptation Reporting Power; Departmental Adaptation Plans; Climate Change Risk Assessment and awareness raising for Defra). UKCIP has also run many ad-hoc workshops and training events throughout this contract period for external organisations, a list of which is provided in Annex D.

The Training Officer has supported these areas, but during this period has taken specific responsibility for delivery of UK Climate Projections training and the development of UKCIP's online learning capacity. This is described here as an example of one of many of the training activities undertaken at UKCIP.

## 3.11 UK CLIMATE PROJECTIONS (UKCP09) TRAINING

### ORIGINS

During the development of the UK Climate Projections, it was recognised that users of the new Projections would require support in interpreting and applying the forthcoming scenarios which would be probabilistic, rather than deterministic, in nature.

### DESCRIPTION OF THE PROJECTIONS TRAINING PROGRAMME

Training began 18 months before the official launch of the Projections, and took the form of a full day workshop in each of the English regions and the devolved administrations. These sessions outlined the methodology being used in UKCP09 and highlighted the need for organisations to consider how they would use probabilistic ranges rather than a single deterministic figure.

With additional financial support from Defra, and to coincide with the launch of the Projections, UKCIP was able to launch the Projections in Practice (PiP) Programme. PiP delivered half day sessions to two main audiences, namely high level policy makers requiring an overview of UKCP09, and users that required knowledge of the User Interface (UI) and how to extract data from it. It ran for 6 months.

Both audiences received a highly interactive and practical session with some delegates undertaking both. The UI session has since been developed into a full day session and has been delivered on an ad hoc basis since the conclusion of the PiP programme.

The PiP programme spent a week in each English region, and was also delivered in modified forms under separate funding arrangements within the devolved administrations.

Part of the PiP funding was used to create online learning for the Projections. This established both an online learning environment where content could be hosted, and the content itself. Bespoke content was available from the launch of the Projections and has subsequently been developed into a range of online learning modules, which continue to be available and used.

To deliver the PiP programme additional staff resources were employed on short term contracts including an online learning specialist, trainer (x2) and training co-ordinator.

### UPTAKE

The PiP programme was delivered to around 5000 people over 6 months. This included both face-to-face and online participation.

A summary of sectors from which attendees to the PiP programme were drawn can be found in Annex E.

### LESSONS LEARNED

- Earlier engagement with the UKCP09 data would have enabled a smoother link between the launch of the Projections and the delivery of ‘hands-on’ training. There was a time lag of 3 months from launch of the Projections to the start of the PiP programme to enable materials to be created, tested and developed.

- Additional resources were required for UKCIP to be able to deliver this large-scale programme. It was a useful model to recruit staff specifically on short-term contracts for the programme.

- The PiP programme has left a useful legacy, as through this initiative UKCIP was able to create an eLearning environment and develop bespoke content.

- Training events cannot be rushed. UKCP09 sessions ran alongside more general introductions to adaptation and much of the feedback received related to not enough time being given to the Projections, with other sessions taking too much time, e.g. "The morning session was very dry – attendees were there as they wanted to know about the Projections and how they could be used, so listening to, for example, Defra telling us we should use them and that adaptation is important was not particularly helpful." (South East PiP Session) Careful planning to ensure a good match between audience and material would minimise this.

- Delivering UKCP09 sessions in different places every day of the week proved to be very challenging. Time that might have been spent delivering training was instead spent packing away equipment, travelling and setting it up again. It also demanded a heavy administrative burden with multiple hotel bookings, and venues to organise. It also made it much harder to solve IT issues because every time the venue changed, a new set of problems emerged. This is illustrated through feed-back from the East of England, where negative comments about the IT facilities were made in 3 of the 5 sessions.

- However, this mode of delivery was welcomed by many delegates as they did not have to travel to a central location. In order to spread the message further it may be worth considering two strategic locations.

- In developing the sessions it was obvious that there were some very complex ideas for delegates to take on board if they were to get the most out of the Projections. UKCIP developed a number of exercises to facilitate the transition from UKCP02 to UKCP09 which were warmly welcomed by delegates as they introduced difficult concepts in an easy to understand and recognisable context. The exercises also enabled and facilitated discussion amongst delegates.

- Messages were also tailored to the general audience. Policy makers/senior managers needs were addressed in a separate workshop, whilst those that required hands on experience of the UI received a separate training session.

- When delivering training session on the UI, a ratio of 1 person to 1 computer was strictly enforced, as the best way to learn the UI system is to use it, rather than watch someone else use it.

- The conclusion of the PiP programme was a week long programme of webinars. These proved to be very successful and very well received and gave UKCIP the confidence to begin exploiting webinar technology more fully.

- PiP reached a large and varied audience, delivering high quality training across the country; 78.7% of attendees rated the events as Good or Excellent.

- Confidence in using the Projections jumped from 16% before PiP to 67% after.

- UKCIP felt some frustration as there was the potential to reach a much larger audience, and there is continuing demand for further training. Once new objectives were added to the original programme and some of the administrative tasks were spread amongst several organisations, it became more difficult to maintain a focussed programme targeted at a particular audience.

#### LESSONS LEARNED FROM DELIVERING TRAINING.

Key characteristics of UKCIP training – face-to-face and online:

- **Clear** – aims and objectives are set for all sessions. This helps ensure that we deliver what we set out to do.

- **Relevant** – we undertake research into the needs of participants to make sure that what we offer is relevant and where possible uses non-technical language.

- **Engaging & Participatory** – learning by doing is a great way of developing new skills and ideas, particularly if the concepts presented are a little alien! We also never claim to have all the answers, particularly regarding how other organisations work, so we ask the audience lots of questions, explore ideas with them, get them doing exercises and get them talking to each other as much as possible.

- **Quality** – we provide quality-learning resources. Our presentations are of a high standard and follow as much as possible our corporate image. We make PDF versions of our presentations available though our website. Materials developed for exercises are robust and replaced if they become damaged, and are updated regularly.

- **Feedback** – is essential to the continued improvement of our training delivery and maintaining our high standards. Events are evaluated by feedback sheets, and increasingly by utilising online surveys.

- **Pride** – UKCIP staff are skilled and experienced presenters. They take pride in engaging with, and sharing their knowledge with others. They are enthusiastic about the benefits of adaptation and proud to represent UKCIP.

### 3.12 ONLINE LEARNING

#### ORIGINS

Through the additional resources made available through the PiP programme, UKCIP was able to establish an online learning environment. It was one of the programme aims to evaluate, and if appropriate, establish online learning capacity. Online learning has now been expanded to cover further aspects of adaptation.

#### DESCRIPTION

UKCIP's online learning is hosted internally on a Moodle framework. Moodle is an open source platform, that is widely used within the education sector, and which the University of Oxford's Department of Continuing Education had experience of developing and using.

Since the launch of the first online module for UKCP09, additional modules have been added, broadening the scope of the training on offer to encompass adaptation more generally. The whole site was restructured at the end of 2010 to incorporate new modules. There are over 1300 registered users of the site.

As of August 2011, the following content is available online:

- An Introduction to the UK Climate Impacts Programme.
- Adaptation in Action.
- Adaptation for Business and Organisations.
- UKCP09: An Introduction.
- Understanding and Using UKCP09.
- Using the User Interface – Beginner and Intermediate Examples.
- Understanding and using UKCP09 Marine Projections.
- UKCP09 Discussion Board.
- Adaptation Reporting Power.*
- Oxfordshire LAA2 Delivery Group.*
- Adaptation and Resilience to a Changing Climate: UK Energy Sector and its Infrastructure.*

  ** Sections are accessible by invitation only.*

The Adaptation Reporting Power section was developed in response to the support Defra requested from UKCIP for the Reporting Power Authorities, and offers a suggested methodology for completing the reporting process.

In addition to the online learning environment, UKCIP also explored training delivery through the use of webinars. Initially using Adobe Connect Pro and later migrating to WebEx.com, this has proved to be a valuable and flexible mode of delivery. It also demonstrates UKCIP's commitment to being a well-adapted organisation, as it has also permitted UKCIP to deliver training sessions remotely when weather conditions meant travel was not possible. The webinar has now become an intrinsic part of UKCIP stakeholder engagement and is widely used by the organisation.

During 2010 a webinar series was organised to support the re-launch of a revised version of the UKCIP Adaptation Wizard. These sessions were well received and popular with 30–40 groups and individuals joining each session.

### UPTAKE

As at 1 August 2011, there were 1391 registered users on the eLearning site. They come from a broad range of backgrounds including students, professionals, consultants and although predominantly users are based in the UK, there are also users from countries as far afield as USA, New Zealand, Australia, China, India, South Korea and Afghanistan.

UKCIP has video podcasts posted on the University of Oxford iTunes site, the University of Oxford Podcast Site and on the UKCIP homepage on youtube.com and these have been viewed thousands of times.

UKCIP has run many webinars since the first trials in 2009. While there have been audiences of over 100, they usually involve audiences of approximately 25–30 delegates. Webinars have been very useful for the delivery of short, targeted sessions and allow participants to interact with the presenter without leaving the comfort of their office or home.

## LESSONS LEARNED

UKCIP has adopted new technology as our knowledge of it has developed and as we identified a use for it. Using the maxim of working smarter not harder, we have explored how best to exploit the technology. Timely and appropriate use of new technology can enhance an organisation's ability to reach audiences, and provide content at convenient times for the learner.

## CHAPTER 3 SUMMARY

- **In this chapter, the principal resources provided by UKCIP have been described along with a discussion on their origins, development and use. Supporting users of UKCIP's information has been enhanced by effective communication and training.**

- **UKCIP has provided a range of dynamic tools to support climate change adaptation. These have been well-received and have improved the capacity of UK organisations to assess their exposure to climate risks, and respond accordingly. UKCIP tools have also had an impact internationally where they are held by many as being world-leading.**

- **Generic frameworks and tools are a valuable starting point, but organisations will inevitably prefer to see a higher degree of tailoring to meet their specific application. Working with stakeholders has enabled UKCIP to develop its tools and to inform their development by drawing on the experience of their practical application. Those tools offering focussed guidance and user support, including training programmes, tend to have been more popular and used more often. The role of the webinar in supporting training and engagement is now well-established.**

- **UKCIP has made good use of new opportunities for delivery and engagement. Many tools are delivered online, which has brought benefits as they can be updated easily, and interactions with users can be more dynamic. UKCIP's website has evolved to become a principal mode of delivery, with a steady increase in users (visitors, downloads and registrations) for most of the contract period. However, since 2010, a slight but steady decline has been observed.**

# Chapter 4: Working with organisations – the impact of UKCIP

"There is absolutely no excuse in the UK, thanks to UKCIP, for anybody to say "I don't know about climate change", or "I haven't been told", or "information is inaccessible"

ESYS, 2004

UKCIP has made a major contribution to the identification and assessment of climate risks to UK organisations, and to the development and delivery of adaptation strategies to deal with anticipated impacts. As mentioned previously, UKCIP has been credited with facilitating the generation of an unprecedented body of information of climate impacts and adaptation at the country level (CCRA scoping study, 2009) and has played a major role in increasing awareness of the need to adapt and driving forward action on the ground (Swart *et al.*, 2009).

This chapter describes UKCIP's work during the past 6 years with key organisation types, sectors and partnerships. Each section describes what we have done and how, and teases out what the impact of UKCIP's tools, guidance and communication products has been to the UK adaptation effort.

## 4.1 THE DEVELOPMENT AND DELIVERY OF UKCP09

The probabilistic nature of UKCP09 meant that significant communication challenges were associated with its dissemination. It was thus crucial that users were more involved in the development of UKCP09. Through sustained user interaction with its user community, UKCIP has had a critical influence on the uptake and use of the Projections. The mechanisms of engagement and value of that engagement are described below.

### THE USERS' PANEL AND COMMUNITIES OF USERS

As noted in Chapter 2.3, users are typically more concerned about the implications of climate change on their operations than they are about the climate change information itself. It is therefore crucial that climate information is delivered in a way that informs its use. Interaction between users and providers is thus essential to delivery of effective information. A set of users covering a broad range of sectors and expertise in using climate information was thus invited to form a Users' Panel. The panel met approximately quarterly and were given the opportunity to interact with the providers and influence the development and delivery of the Projections. It proved to be a useful mechanism for providers and users to interact directly and to learn from each other. Providers gained a better understanding of the users' needs and priorities, with the result that the information they delivered could be better directed at informing use rather than just describing the climate. Users similarly gained a fuller understanding of the constraints imposed by the science on what could realistically be delivered. After the launch of UKCP09, Communities of Users were set up to help users share their experience of using the Projections, to help UKCIP consider what further guidance was required, and to identify potentially informative case studies.

UKCIP's experience in this process shows that engaging providers and users of climate information in a sustained and informed dialogue is imperative to bridging the gap that can lie between them and can go a long way towards creating Projections that are able to inform decision-making.

### THE DEVELOPMENT OF THE USER GUIDANCE

UKCIP was primarily responsible for developing the user guidance that accompanied the delivery of the UKCP09 climate information. It is recognised that an important component to the successful uptake of any Projections is the provision of adequate guidance (Hulme & Dessai (a), 2008). On-going consultation and engagement through the Users' Panel, communities of users and training has given users the opportunity to influence the structure of the guidance and to review its content. This engagement provided UKCIP with insights into the terminology and concepts that needed clarification.

### UKCP09 TRAINING

The comprehensive training programme established to support uptake of UKCP09 is described in Chapter 3.11.

### THE HELPDESK

The UKCP09 Helpdesk, was set up at the launch of the Projections and has been managed by UKCIP. It has been widely used, and although set up for users, is not just of benefit to the users. The queries in the Helpdesk have enabled the providers to gain a better understanding of the needs of the users. Thus, UKCIP has updated their guidance accordingly and it has proved helpful in identifying potential case studies of use of UKCP09.

### CASE STUDIES

Case studies are examples of adaptation in action. They draw out transferable lessons that can be used by others trying to adapt. Feedback suggests that they are very useful for providing context to tools for adaptation, including UKCP09. It would not have been possible to produce these without UKCIP's substantial engagement of the user community. These case studies have been further described in the tools section of this report.

Lessons learned contained are in Chapter 3.

## 4.2 WORK WITH BUSINESS

UKCIP's programme of work with business stepped up a gear in 2005, when the business sector was specifically identified as a group with which UKCIP needed to engage more explicitly. Early in UKCIP's work, there had been engagement with businesses, but often those associated with particular activities or sectors, such as water supply, where the adaptation component was clear. In 2003, UKCIP had begun a small project to investigate broader business engagement around adaptation issues. Based on this experience, and an increasing level of interest from Government, from 2005, UKCIP was given the go-ahead to enhance its capacity to engage this group, resulting in the appointment of a dedicated Business Support Officer. Business thus became UKCIP's newest targeted group of stakeholders. Awareness and action on adaptation within the private sector has grown rapidly since then and UKCIP is recognised as having done as much as any organisation in the world to awaken businesses to the new realities of climate change (Hertsgaard, 2011). Nonetheless, awareness remains at a low level relative to the public sector or relative to awareness and action on mitigation.

### RATIONALE AND APPROACH

While there is a strong argument for supporting adaptation action in the private sector where there is a public good aspect, such as a developer implementing a policy of not building on flood plains, many adaptation actions taken by businesses have private benefits only. The complex mix of public and private benefits meant that designing a programme for business engagement that avoided spending public money in helping businesses manage their own corporate risks represented a challenge for UKCIP. The approach that was taken was two-fold:

#### 1. GENERATING PUBLICLY AVAILABLE INFORMATION

As well as the public good issue there are other types of market failures with adaptation, in the form of imperfect information and misaligned incentives in the management of physical assets (Stern, 2006) justifying government funded intervention. As adaptation is a new and rapidly developing area of practice, working with businesses enabled us to constantly review our approach to business engagement in light of our emerging knowledge and our practical experience (see Chapter 3.3). This understanding is then fed back into publicly available tools and resources for business (see Chapter 3.4). This approach has been welcomed by the business community, as evidenced in the following statement: "The UK, through the UK Climate Impacts Programme, has taken a leadership position in producing some increasingly practical maps and tools to help the UK business sector understand what are the risks and opportunities from the changing UK climate for their operations." (Advance, 2010).

#### 2. CREATING A SUPPORTIVE INSTITUTIONAL ENVIRONMENT

Much of the capacity that businesses need to adapt exists somewhere that is external to the areas over which they have direct control. UKCIP therefore recognised the need to work with the organisations that have responsibility for aspects of the institutional environment (e.g. codes, standards, regulation, government policy, employee skills etc.) within which companies operate. UKCIP therefore focussed much of its activity on working with business-facing organisations to help build a supportive institutional environment for private sector adaptation (see Chapter 4.3). This had the added benefit of increasing the impact of a limited resource by enabling the adaptation agenda to benefit from their resources and existing credibility with a range of business audiences.

### i) LARGE COMPANIES

UKCIP has worked on a one-to-one basis with individual large UK-based companies to raise awareness and help them develop adaptation strategies. The knowledge this experience generated has been fed back into publicly available tools and resources, including case studies (see Chapter 3.8). A list of individual large companies that we have worked with is given in Annex C. This engagement is tailored to specific needs and contains a learning element. It includes, for example, interactive workshops to generate information and/or awareness, advice on strategy development, informal discussions and advice, presentations to relevant committees and lunchtime seminars.

#### LESSONS LEARNED

- This work directly with business has enabled UKCIP to learn how adaptation is initially taken on by businesses and how it then moves through a company as activity progresses. The companies we have worked with have been self-selected and interest tends to be driven by reputational concerns, particularly where strong environmental credentials are of key importance. In other cases, companies come to us from a more technical direction, where they have perceived an increasing risk at a very operational level. The latter are more likely to engage with climate projections beyond the headline messages, where most other businesses UKCIP worked with found that a process of understanding their vulnerability and organisational aspects of adaptation was more important than a detailed understanding of how climate variables were likely to change. Overall, the climate information (beyond the headline messages) were only useful where there was a very specific question to ask.

- Although both mitigation of the causes of climate change and adaptation to its consequences are critical business issues, bundling adaptation messages with mitigation usually causes confusion. It is more useful to integrate adaptation issues with similar business areas, such as business continuity planning, risk management, health and safety arrangements, flood plans etc. It may be less helpful to treat it as an aspect of environmental management.

- UKCIP has identified the importance of organisational culture on the approach taken to awareness-raising and making plans to adapt. For example, in some cases, an approach that involved empowering managers, who already have a lot of decision-making autonomy, to develop their own plans was appropriate while in others a more strategic top–down approach was required.

### ii) SMALL AND MEDIUM ENTERPRISES (SMES)

In 2009, SMEs accounted 59.8% of private sector employment and 49% of turnover in the UK (BIS, 2010). They are also likely to have lower adaptive capacity than larger companies and therefore, require quite different types of information and support. For these reasons, it was recognised that SMEs are an important group of stakeholders to engage with. Part of this low adaptive capacity is because of a lack of resources, which also means that engaging with them on something as specific as climate change adaptation is a huge challenge.

SMEs are often highly linked to their locality in terms of their customers, suppliers, contractors, employees and sources of information and support. For this reason, other than an initial series of one-to-one meetings with SMEs to gain experience and develop resources, UKCIP chose to reach SMEs through the existing business support community. This comprises local and regional organisations, which have the local networks and knowledge to be best placed to engage directly with SMEs. Annex C summarises the activities UKCIP has undertaken aimed at SMEs.

### LESSONS LEARNED

- SMEs have a low level of awareness – many SMEs have little understanding of how climate change could affect them and are unlikely to pick up and use UKCIP tools. This lack of awareness was also demonstrated by various business surveys, such as one carried out in the South East, which showed that although 54% of the SMEs questioned had been affected by extreme weather in the previous 2 years, only 22% saw climate change as a direct threat (Climate South East, 2007).

- Flexibility is an advantage – SMEs are flexible in their business approach and therefore better able to innovate and respond rapidly to change compared with larger organisations, which could be an advantage in many adaptation situations. This could explain why a lower proportion of small organisations than large ones reported being 'significantly' affected by weather in a recent Ipsos Mori survey (Ipsos Mori, 2010).

- The upsides are more engaging – SME leaders are often entrepreneurial and are more likely to be engaged by messages that also emphasise the opportunities from climate change. Further evidence for this is provided by a recent Ipsos Mori survey, which found that smaller organisations are more likely to predict opportunities from climate change than their larger counterparts.

- Action is only likely where benefits are certain – the list of things that could happen out of the blue to put an SME out of business is a long one and it is difficult to make the case for action on climate impacts in particular. Therefore, approaches that focus on high likelihood weather events might be the most appropriate, even where these have smaller magnitudes. In addition, where planning horizons are short, it is better to focus on resilience to current weather variability. Many SMEs are not prepared for the risks of the current climate, so that there is a business benefit to adaptation in the short term regardless of the rate of climate change or the way in which its effects are felt. For this reason, climate projections are of little relevance to most SMEs.

- Key risks often relate to markets and supply chains – being small in terms of their own premises and workforce, many SMEs may be more exposed to climate risks through their markets and supply chains, which can be UK-wide or international.

- An informal approach may be appropriate – SME leaders may be less likely to use structured decision-making processes than those in larger companies, or to need to justify their actions and decisions to shareholders etc. It is important to integrate climate and weather risks into this ad hoc decision-making.

### iii) BUSINESS-FACING ORGANISATIONS AND THE INSTITUTIONAL ENVIRONMENT

UKCIP has been involved in a number of capacity building initiatives with selected business-facing organisations ranging from co-ordinating sector based partnerships, articles in trade press, developing and running extensive training programmes and authoring of in-depth publications. This has spanned a wide range of sectors but with some emphasis on the built environment, in particular in regard to work on codes and standards (for more on our engagement with the built environment see Chapter 4.8).

UKCIP has also played a supportive role in several regional business-related adaptation projects, including working with trade associations, professional bodies, government agencies, charities and commercial organisations. Essentially, UKCIP sought to work with organisations that carry out capacity building as part of their core business, such as through information provision, networks and research or have responsibilities for creating a supportive institutional environment for business,* such as through standard-setting and accreditations. The approach has been to embed climate change adaptation into these existing mechanisms.

Annex C summarises the activities UKCIP has undertaken with business facing organisations and the institutional environment.

#### LESSONS LEARNED

- Business-facing organisations have a key role to play in providing information and support to business organisations and professionals on adaptation. They can tailor information to their specific audiences in a way that UKCIP is not able to. This is especially important where sector-focussed or location-specific information is required.

- There is a need for more sector specific information. Trade associations and professional bodies are well-placed to drive forward the generation of such knowledge. This may involve, for example, the translation or interpretation of more generic information for a specific audience or drawing on the technical expertise of their networks.

- So far environmental managers have been contacted the most but there is potential in other business areas too (risk managers, business continuity managers and quality managers in particular). By developing a range of alternative starting points and processes for adaptation, there is the potential to make use of the prevailing culture of the organisation. This was the rationale behind the development of the BSI guidance on integrating adaptation (Johnstone & Moczarski, 2011) within an existing management system, as it allows organisations to use organisational structures, processes and a terminology that makes sense to them.

## 4.3 LOCAL AUTHORITIES

English local authorities have been in the forefront of responding to the challenges of climate change for many years, but their activities have tended to focus on mitigation. At the start of the contract period, with a couple of exceptions, hardly any councils were seriously considering adaptation to climate change.

* Some of these institutions may have relevance beyond the business community but they are mentioned here as our work in this area came out of our programme of work with business.

Early in the contract period, UKCIP had the opportunity to run a number of workshops at local authority events to explore the drivers and barriers to local authority activities affecting the level of engagement in climate change adaptation. These suggested strongly that climate change was seen as a long-term issue whereas the primary drivers of local authority activities, in the absence of statutory requirements, tended to be shorter term considerations such as: annual budgets, 4-year electoral cycles and immediate concerns with local media coverage.

November 2005 saw the launch of the second version of the Nottingham Declaration on Climate Change. Originally launched in October 2000 as an initiative by Nottingham City Council, the Nottingham Declaration was a voluntary pledge that councils could sign committing them to act on climate change. In keeping with the general tendency, the first version of the Declaration was stronger on mitigation than adaptation. The second version, at least in part due to the influence of UKCIP, gave more equal weight to both agendas. The Nottingham Declaration has been signed by more than 300 English local authorities, representing over 90% of councils, and all Scottish and Welsh councils have signed their own versions of the Declaration.

As part of the development of the updated version of the Declaration, a partnership of all the key bodies, including UKCIP, supporting English local government work on climate change was formed. Mid-2006 saw the launch of the Nottingham Declaration Partnership (NDP) website, the main feature of which was a tool known as the Nottingham Declaration Action Pack (NDAP). This is described more fully in Chapter 3.6.1 of this report. UKCIP was responsible for the development of the adaptation component of this tool and in the autumn of 2006 ran workshops in each of the English regions to support the launch of NDAP. These events were used as an opportunity to introduce the principles of climate change adaptation and raise awareness amongst the local government community. A total of more than 250 people attended these workshops, mostly sustainable development and climate change officers, who at that time were mainly responsible for energy efficiency. NDAP and these support events raised the profile of adaptation within local government, but in the absence of strong drivers, few authorities converted this into practical actions. A major refresh of the NDP website was undertaken in summer 2008 which slightly simplified the NDAP structure, added more policy context and provided service area specific advice on both adaptation and mitigation. Again, UKCIP was responsible for the adaptation component of the site.

The key change in local authority work during the contract period was the introduction of a New Performance Framework for Local Authorities in England in April 2008.* This simplified the complicated system of local authority performance measures into a single set of 198 indicators. For the first time this included an indicator on adapting to climate change. Known as NI188 Planning to adapt to climate change, it was unique in being the only process-based indicator in the set of 198. UKCIP worked closely with Defra developing the definition of the indicator and authoring the guidance material (see Chapter 3.6.2). NI188 had five levels of attainment scored from 0 to 4.

Level 0: Baseline
Level 1: Public commitment and prioritised risk-based assessment
Level 2: Comprehensive risk-based assessment and prioritised action in some areas
Level 3: Comprehensive action plan and prioritised action in all priority areas
Level 4: Implementation, monitoring and continuous review

* www.communities.gov.uk/documents/localgovernment/pdf/505713.pdf

These levels are broadly based on the stages of the UKCIP Adaptation Wizard and NDAP modified to enable local authorities to respond to local priorities.

In addition to requiring all English local authorities to report their performance on NI188 annually, the performance framework required each Local Strategic Partnership (LSP) to set targets for 35 performance indicators in their Local Area Agreements (LAA) selected to reflect local priorities. These targets were negotiated and agreed with Regional Government Offices to cover the period April 2008 to March 2011. Fifty-six of the 152 LSPs included NI188 as one of their target indicators.

UKCIP was the major contributor to 4 rounds of regional support workshops organised in conjunction with Government Offices and Climate Change Partnerships (Chapter 3.6.2) during the first 2 years of the performance framework.

NI188 lost its relevance when in July 2010, the coalition government elected in May 2010, announced the termination of LAAs as part of its localisation agenda (www.communities.gov.uk/localgovernment/decentralisation/) prior to the final annual reporting round for NI188.

Table 4.1 below shows progress on NI188 based on self-assessment returns for the last completed year of the performance framework April 2009 to March 2010 broken down by regions.

**Table 4.1: NI188 local authority self-assessment returns March 2010.**

| Region | Level 0 | Level 1 | Level 2 | Level 3 | Totals |
|---|---|---|---|---|---|
| East Midlands | 4 | 6 | 33 | 1 | 44 |
| East of England | 4 | 21 | 27 | 1 | 53 |
| London | 3 | 20 | 6 | 4 | 33 |
| North East | 0 | 4 | 5 | 3 | 12 |
| North West | 8 | 15 | 16 | 2 | 41 |
| South East | 9 | 38 | 25 | 0 | 72 |
| South West | 3 | 12 | 24 | 0 | 39 |
| West Midlands | 6 | 17 | 9 | 0 | 32 |
| Yorks and Humber | 1 | 17 | 4 | 0 | 22 |
| Totals | 38 | 150 | 149 | 11 | 348 |

The presence of NI188 acted as a considerable stimulus to local authorities in responding to the challenges of adapting to the changing climate. In an attempt to gain a better understanding of how local authorities were responding to the dropping of the requirement to report against the indicator, UKCIP undertook an online survey in November and December 2010 (www.ukcip.org.uk/government/local-authorities/adapting-to-policy-landscape/). There were approximately 100 responses from more than a quarter of the total number of English local authorities. Although the responses could not be taken as representative

of all local councils, because the respondents were self-selecting, the broad picture was that approximately 40% of respondents expected to continue their work on adaptation. A similar proportion expected their council's work to be reduced, or stopped entirely, while around 20% thought it was too early to tell at that stage. Subsequent anecdotal evidence has tended to confirm this mixed picture. The most committed local authorities are continuing programmes of work, despite reductions in budgets, but many councils, especially districts, appear to have reduced their work on adaptation, or ceased entirely.

Since the announcements on localism and the Big Society by the coalition government, UKCIP has been seeking to explore what these changes to the policy landscape may mean for adaptation work at a local level. Contacts have been made with parish councils and other civil society organisations to raise awareness of adaptation and to explore their support needs.

With the adoption of NI188 in 2008, Defra formed the Local and Regional Adaptation Partnership (LRAP) (http://archive.defra.gov.uk/environment/climate/action/local-authorities.htm) bringing together representatives of all the major organisations supporting local authority work on adaptation. UKCIP has been an active member of the Partnership since its formation and undertook a number of projects on its behalf including the development of case studies, links to examples of local authority risk assessment, and most recently the production of guidance on Local Transport Plans and a series of five briefing notes on various local authority service sectors.

#### COLLABORATIVE WORK WITH OXFORDSHIRE COUNTY COUNCIL

Between 2006 and 2011, UKCIP worked closely with Oxfordshire County Council (OCC) with the broad aims of significantly advancing OCC's commitment to incorporate climate change adaptation within the organisation and its partnership programmes. This work allowed OCC to make use of UKCIP expertise in addressing the impacts and consequences of climate change, and some of the processes, policies and methodologies involved in taking adaptation action. By taking a knowledge exchange approach, UKCIP benefitted from the relationship by gaining deeper understanding of these processes as experienced by practitioners which could then be shared with other stakeholders. Key areas of activity included the significant contribution made by OCC to the development of the LCLIP methodology, and the production of a series of briefing notes which were the result of intensive work with individual service areas.

- Visit OCC's website for more detail: www.oxfordshire.gov.uk/cms/content/what-we-are-doing-about-climate-change

Lessons learned from this work are contained in Chapter 3.

### 4.4 CENTRAL GOVERNMENT

At the beginning of this contract, from 2005 to around 2007, there was an expectation that Defra and UKCIP would devise a programme of engagement with other Government Departments, and that this would follow the second phase of the Adaptation Policy Framework (APF). This second phase was not put into effect, so UKCIP's engagement with other Government Departments was more opportunistic, depending on a show of interest from individuals. This engagement led to a number of advances, none of which could be ascribed solely to UKCIP intervention, but where nevertheless, such intervention had a role. Interactions with two Departments, Health and Defence, had a longer lifetime and are treated separately.

### DEPARTMENT OF HEALTH/NATIONAL HEALTH SERVICE

Repeated engagement with different parts of the Department and its delivery bodies, both nationally and on a regional basis, may have had an influence on enhanced action on climate risk management.

- 2001 DH Health Impacts Report updated in 2008, to reflect new research findings and the UKCIP02 projections.
- Climate change explicitly included in 2010 revision of heat-wave plan.
- NHS Sustainable Development Unit began to address adaptation to climate risks at same time as addressing emission reductions.
- Guidance document "The health impact of climate change: promoting sustainable communities" compiled by South East Regional Public Health Group.
- Interest in direct climate change impacts on health widened to include the potential risks to the health delivery system itself.
- Subject of climate risks in Private Finance Initiative infrastructure developments identified as an issue.

### MINISTRY OF DEFENCE

Repeated attempts to identify a pivotal point through which to engage the Defence sector through the Ministry of Defence and its agencies were frustrated by a changing perception of where 'climate' as an issue belonged within the Ministry. Before around 2000, it was assumed to be an environmental issue and therefore focussed largely on the potential impacts on the biodiversity of Salisbury Plain. Over the next few years to around 2005, it became a real issue for Defence Estates, in relation to their property portfolio. Since then, it has also become an issue for MOD strategic and operational planning. UKCIP has talked to and made presentations to MOD, Defence Estates, Defence Academy, and Royal United Services Institute. Significant actions included:

- Defence Estates Climate Change Management Plan put into effect (UKCIP input);
- Defence Scientific Advisory Committee's 2007 Report "Defence in a Changing Climate" (UKCIP on Advisory Group);
- Development, Concepts and Doctrine Centre's 2010 Report "Global Strategic Trends out to 2040" (climate change is one of four drivers discussed).

### OTHER GOVERNMENT DEPARTMENTS AND AGENCIES

In other parts of Government, the interactions with UKCIP have been more intermittent, and often at an agency or delivery body level:

- Contact with the Department for Transport has been almost separate from progress within delivery bodies or in the private sector. The Highways Agency and Network Rail have progressed climate adaptation without encouragement from UKCIP, though both have used UKCIP products and kept UKCIP informed of progress.

- UKCIP has had conversations with the Cabinet Office, the Audit Commission, and the National Audit Office around the measurement and evaluation of climate adaptation. The National Indicator 188 was one outcome, but reorganisation of the national audit function has precluded further progress.

- UKCIP sat on the scientific review panel for the Pitt Review "Learning Lessons from the 2007 Floods".

- UKCIP was responsible for raising with the Ministry of Justice the issue of the climate risks to conditions in prisons, and to the Ministry's extensive estate portfolio.

- As part of the Projections in Practice Programme in 2009, UKCIP made presentations or ran training events with the Ministry of Justice, Department of Health, Cabinet Office, Audit Commission, National Audit Office, Communities and Local Government, and Department for Work and Pensions.

- UKCIP ran a series of workshops for those delivering Departmental Adaptation Plans on how to use climate projections in policy-making, though there was a real difficulty in recruiting policy-makers who were prepared or able to discuss the process of using climate evidence in policy-making.

- UKCIP took part in Defra's process of challenging the form and content of the draft Departmental Adaptation Plans.

### LESSONS LEARNED

- The fast turnover of civil servant roles and the complexity and instability of the sharing of responsibilities between Departments and their Agencies meant that continuity of engagement was very difficult to maintain. It was often more possible to interact in a meaningful way with those engaged in delivery than with policy-makers. This situation may improve as managing climate risks becomes more mainstreamed and gets written into departmental tasks.

- Short-term very high priorities make the engagement with what is often a new topic very difficult to establish. For example, UKCIP's attempts to raise the issue of new communicable diseases because of climate change with the Health Protection Agency's Communicable Disease Surveillance Centre repeatedly foundered on the dominance in their planning of firstly bird flu and then swine flu. Similarly, a succession of terrorist attacks drove all consideration of national security to identify terrorism as the only threat to national security, a situation that changed only following the widespread floods in 2007.

- In many of the Agencies of Government Departments (especially in the National Health Service, the emergency services, and the Armed Forces), there is such a good tradition of responding to crises, that the perceived alternative, of thinking about issues that are not yet at crisis point, is less acceptable, because the normal response is to respond only when an issue becomes a crisis.

## 4.5 PARTNERSHIPS

### REGIONAL PARTNERSHIPS AND DEVOLVED ADMINISTRATIONS

UKCIP's adaptation work with the English Regions and the Devolved Administrations (DAs) has mainly been orchestrated through what have been known as the Regional Climate Change Partnerships (RCCPs). Some have concentrated exclusively on climate impacts and adaptation; others have embraced some mitigation issues in their region. UKCIP has been represented on the Steering Groups for each of the partnerships as well as through direct contact with the relevant government departments in each of the DAs. It is helpful briefly to describe the political context for both.

The nine English Regions no longer formally exist – the coalition government has abandoned governance arrangements at regional scale (including Regional Assemblies; Regional Government Offices; Regional Development Agencies) and the associated regional strategies and plans. Nevertheless, the RCCPs continue to support adaptation at a regional scale and arrangements are in place for them to continue in the future.

The Devolved Administrations (Scotland, Wales, Northern Ireland) have recognised the implications of climate change being a devolved function, and progressively taken on responsibility for adaptation in that context.

Climate UK brings these two strands of work together in a national network of climate change partnerships from the English regions, Northern Ireland, Scotland and Wales. Its aim is "to share knowledge and learning about tackling the consequences of climate change in the UK and to maximise the benefit from each Partnership's work." Until very recently, Climate UK has been facilitated by UKCIP, and chaired by Richard Cresswell (Regional Director of the Environment Agency in the South West). However, Climate UK has now moved on and constituted itself as an independent social enterprise www.climateuk.net/. In this capacity it is in discussions with the Environment Agency on what its role, and that of the individual regional partnerships, might be in the new adaptation delivery arrangements.

The period between 2005 and 2011 marks considerable progress in both the quality and reach of all of the regional partnerships. Although each partnership was different, typically they had all originated as self-created, 'bottom-up' organisations, with funding and membership of management/steering groups derived from regional organisations.* This arrangement typically supported a 'regional co-ordinator' and a series of projects working with both private and public sectors. The progress that the regional partnerships were making independently experienced a step-change as a result of funding made available from central government, beginning in 2007. Funding in Year One was in the order of £80k per annum, tapering to £60k in Year Two and £40k in Year Three. The partnerships were generally able to direct the funding into programmes of their choosing, so in most cases this funding was used to provide funding sufficient to, at least, ensure continuity of employment for regional co-ordinators.

- The English Regional CC Partnerships were each formed following the publication of a Regional Scoping Study. The Steering Group for the Scoping Study usually translated into the Management Group for the partnership.

The Defra funding was both recognition of the independent achievements of the regional partnerships thus far and a trigger for further development and achievement. Since then the partnerships have blossomed – gaining in confidence, with real continuity of staff, extending their regional networks and providing genuine support to a wide range of stakeholders. The regional presence and proximity to stakeholder groups provide genuine opportunity for knowledge exchange. The two-way process of delivering knowledge of climate adaptation, and learning from the challenges and progress of stakeholders, has been most effective at the regional scale.

Examples of adaptation support undertaken by English regional partnerships can be found on their individual websites:

- East Midlands www.climate-em.org.uk/
- East of England www.sustainabilityeast.org.uk/
- Greater London www.london.gov.uk/lccp/
- North East England www.climatenortheast.com/
- North West England www.climatechangenorthwest.co.uk/
- South East England www.climatesoutheast.org.uk/
- South West England www.oursouthwest.com/climate/
- West Midlands www.sustainabilitywestmidlands.org.uk/
- Yorkshire and the Humber www.yourclimate.org/

The three Devolved Administrations (DAs) have approached the adaptation challenge in ways different from each other, reflecting the governance arrangements and priorities in each country. They also reflect the uncertain relationship between the DAs and Defra ACC.* In Scotland, Adaptation Scotland (formerly the Scottish Climate Change Impacts Partnership, SCCIP) has been operating effectively for some time. During the past few years, the Scottish Government has significantly increased it's funding for Adaptation Scotland/SCCIP and generated a step change in the profile and achievements of the partnership. At the same time the Scottish Government was developing its climate change strategy and a delivery plan. The delivery plan had an important difference from the equivalent in England/UK. In England, Departmental Adaptation Plans (DAPs) were used along with Adaptation Reporting Powers Plans (ARPs). In Scotland (and Wales) the delivery plan used Sectoral Adaptation Plans (SAPs) which integrated the work of government departments with their relevant stakeholder communities. Adaptation Scotland (www.adaptationscotland.org.uk) has received around £100k per annum from the Scottish Government which has enabled it to deliver a substantial programme of adaptation support. The Adaptation Scotland team has consisted of a part-time Director, an officer with responsibility for work with the public sector, another with responsibility for work with the private sector, and a science officer jointly hosted by the Scottish Environmental Protection Agency (SEPA).**

* During this contract period the transition from UK wide climate change policies to more independent climate change policies in the Devolved Administrations has not been without difficulty.

** Adaptation Scotland and the NICCIP have both been hosted by SNIFFER (the Scottish and Northern Ireland Federation for Environmental Research).

In Northern Ireland there has been less activity generally on climate change, partly as a result of ministerial decisions and partly as a result of political priorities in Northern Ireland (NI). While the NI Government has not produced explicit adaptation action plans, it has continued to fund and support the Northern Ireland Climate Change Impacts Partnership (NICCIP) see www.niccip.com. The partnership has received modest funding from the Department of the Environment in NI sufficient to pay for a part-time co-ordinator (2 days per week). The partnership has made useful changes in its membership, which has included wider representation from outside government, including the new Chairman of the partnership who is CEO of a large sustainability charity based in Belfast.

In Wales the approach has not made use of a partnership as such, but the Welsh Government has created a Climate Change Commission for Wales (CCCW)* whose purpose is "to build a broad consensus to mobilise action by the public sector, business and voluntary organisations – as well as by individuals and communities across Wales". The Commission's substantive role has been to advise the Welsh Government (WG) in the development of its Climate Change Strategy (for both mitigation and adaptation). The adaptation work has been supported by an Adaptation Task and Finish Group (AT&F Group) which the UKCIP representative has chaired.

The English regional partnerships now face a new challenge in establishing a working relationship with the Environment Agency (as Defra's new in-house delivery agency) whilst maintaining the 'arm's length from government' position that has been one of their main qualities thus far, and which has allowed them to build such constructive relationships with stakeholders in their region. The newly constituted ClimateUK will assist in this process. The Devolved Administrations have grown in maturity to the point where there adaptation work can be pursued with much greater independence. It will be important that they and England do not miss out on learning from each other in their pursuit of autonomy.

### THE MARINE CLIMATE IMPACTS PARTNERSHIP (MCCIP)

Having spent the last 5 years collating the scientific evidence base on UK marine climate change impacts and translating this evidence for decision makers, MCCIP occupies a unique position in understanding the threats, and opportunities, presented to UK marine stakeholders by climate change. In its next phase, MCCIP aims to build on this wealth of knowledge and engage more closely with stakeholders, to help them understand the threats and opportunities presented by climate change and consider how they might respond to these challenges and UKCIP is playing a key role in developing this new 'Climate Smart Working' approach which will act to champion marine adaptation in the UK and help deliver a sustainable future for those affected by changes in marine and coastal environments and the ecosystems they support.

## 4.6 WORK WITH THE THIRD SECTOR

Social justice, equity and fairness in relation to adaptation has been a key theme for work in developing countries over the past couple of decades as the impacts of climate change are increasingly felt. Questions such as 'who is likely to be most vulnerable?', 'who is responsible for bearing the cost of adaptation?' and 'who makes adaptation decisions?' are now also starting to be asked in the UK, both in response to direct experience of extreme weather events, in line with what is anticipated for climate change, and also in anticipation of greater climate variability in the future. With this recognition there has been an increase in interest in the climate adaptation agenda from both environmental and non-environmental voluntary organisations, often in connection with work on the mitigation agenda.

* http://wales.gov.uk/topics/environmentcountryside/climatechange/tacklingchange/strategy/commission/?lang=en

In order to prevent exacerbating disadvantage, policies aimed at reducing the impacts of climate change need to pay attention to who is vulnerable to the impacts, why and what would increase their capacity to adapt, as well as who has access to resources to reduce the impact and who is included in decisions about resource allocation and adaptation policy development. Voluntary organisations have long been involved with the climate change agenda through regional and local climate change partnerships and activities, but a number of voluntary organisation specific initiatives have been developed recently. In 'The New Politics of Climate Change' (Hale, 2008) describes the deep structural reasons why governments do not deliver the sort of 'urgent response' called for in The Stern Report (2006). 'To achieve this, we must establish a widespread understanding of the connections between climate change and issues of poverty, housing, health, security and well-being that are the concerns of so many.' This led the Baring Foundation to launch a set of four projects in July 2008 focusing on climate change and refugee organisations, community anchor organisations (i.e. local, multi-purpose community organisations); children and youth organisations; and organisations that support vulnerable communities. UKCIP played a support role in this initiative, helping in running workshops, commenting on materials produced and making the case for adaptation. One of these projects, 'The Big Response' has been recently followed up with NCVO's Vulnerable People and Climate Change Project. UKCIP is an advisor on this project.

Soon after, in 2009, the Joseph Rowntree Foundation funded six projects to investigate the social implications of climate change. This continuing work seeks to ensure that people or places facing poverty and disadvantage are not disproportionately affected by climate change, or by policy or practice responses to it. The work provides evidence on the social impact of climate change in the UK, in order to raise awareness of the consequences of climate change for vulnerable people and places; and supporting the development of fair responses to climate change among policymakers, practitioners and communities undertaking mitigation and adaptation activity at a national and local level. UKCIP is a programme advisor for the Joseph Rowntree Foundation Climate Change and Social Justice Programme.

With these initiatives and the creation of the Third Sector Task force on Climate Change,* there is a growing group of voluntary organisations in the UK exploring the implications of climate change from a social justice perspective which is creating new and innovative collaborations between climate change academics and practitioners and social justice and poverty academics and practitioners.

### 4.7 WORK WITH THE RESEARCH COMMUNITY

UKCIP has a strong tradition of and considerable experience in supporting sector-specific, stakeholder-led research programmes, by providing the co-ordination role between projects in a research programme, early examples of which were the REGIS and Monarch research projects. Three research programmes funded by EPSRC have followed (first Building Knowledge for a Changing Climate (BKCC), followed by Sustaining Knowledge for a Changing Climate (SKCC) and currently Adaptation and Resilience to a Changing Climate (ARCC)) which were all designed as joint initiatives to stimulate multi-disciplinary research on the impacts of climate change on infrastructure, the built environment and utilities. UKCIP has been successful in bringing together researchers and decision-makers within these programmes, with the primary objective of engaging stakeholders at all stages of the research to help define and promote successful adaptation options and strategies. More recently, UKCIP has taken on the co-ordination role with the UK Infrastructure Transitions Research Consortium (ITRC).

* Launched in May 2009 to raise the profile of climate change in the third sector www.green-alliance.org.uk/grea1.aspx?id=3704

New tools and scientific solutions to the challenges of climate change emerging in academia risk remaining inaccessible to the wider stakeholder community. To become absorbed and implemented in mainstream decision-making, these solutions must involve and be relevant to the people who need to use them. Participation between researchers and stakeholders brings, in theory, a wealth of experience which can save time and money, maintain project momentum and result in a more widely applicable output. However, in practice, participation is not always straightforward and negative experiences may act to increase the gap between academic understanding and practical experience. It is therefore critical that attention is paid to making participatory processes practical and effective. To determine the effectiveness of such processes thus requires that they are evaluated by both stakeholders and researchers.

#### LESSONS LEARNED

- Roles, responsibilities and expectations need to be fully understood and defined at the beginning of the project. Criteria for determining the success of the project should be determined by all parties (where appropriate) and clearly understood from the outset.

- The overarching communication and integration mechanisms need to be actively maintained to ensure they work effectively and support projects in communicating regularly and working together where opportunities exist.

- A clear communication and dissemination strategy should be developed with all parties at the beginning of the project so that researchers and stakeholders find their respective outputs accessible and compatible. Academic papers alone are not sufficient.

- Stakeholders must be enabled to take an active role within the project and their organisations, making funds available when necessary.

- It is important to recognise the important role that personality plays in collaborative projects.

### 4.8 WORK WITH THE BUILT ENVIRONMENT SECTOR

Spatial Planning is generally included along with the Built Environment and Infrastructure in considering impacts and adaptation. Together these themes feature in the ASC's priority list of adaptation issues (ASC, 2010). Therefore, they have been a focus for the work of both UKCIP and Defra. Defra has established a built environment programme jointly with the Department of Communities and Local Government (DCLG) as well as a publication on infrastructure (HMSO, 2011). UKCIP's work in this area has involved four main types of activity:

- Co-ordination and technical support of EPSRC research portfolios.
- Knowledge Transfer Partnerships.
- Active participation in (mainly government) working groups, steering groups, etc.
- Adaptation support on individual built-environment projects.

#### CO-ORDINATION AND TECHNICAL SUPPORT OF EPSRC RESEARCH PORTFOLIOS

UKCIP's work in this area began as far back as 2006 with Building Knowledge for a Changing Climate (BKCC). This involved the co-ordination of a portfolio of Engineering and Physical Sciences Research Council (EPSRC) funded projects on the built environment with a partic-

ular role in engaging stakeholders. This prompted an interim programme called Sustaining Knowledge for a Changing Climate (SKCC), whose main task was to define a future research agenda.* This in turn led to Adaptation and Resilience to a Changing Climate (ARCC) www.ukcip-arcc.org.uk/ and the associated network (ACN) which is managed by UKCIP and funded by EPSRC. This consists of over £19 million worth of research whose early outputs are already influencing both policy and practice. The network has been recently extended to include the Infrastructure in Transition Research Consortium (ITRC) www.itrc.org.uk/. These research projects have provided powerful evidence of the potential impacts of climate change on the built environment but also a rich understanding of the challenges presented by the UKCP09 Projections, particularly with regard to the use of probabilistic data and issues associated with overheating. UKCIP's main contribution has been to support the engagement of stakeholders with the research projects, the success of which has strongly influenced EPSRC future policy to require stakeholder engagement in many of its funded projects.

### KNOWLEDGE TRANSFER PARTNERSHIPS

UKCIP has worked with the Chartered Institution of Building Services Engineers (CIBSE) on two Knowledge Transfer Partnerships. These involved a Company Partner (CIBSE), an Academic Partner (UKCIP), and a KTP Associate who is appointed for 2 years to undertake a research programme that delivers outcomes supportive of the company's strategic plan. In this case the aims of the two projects were: "Review and develop CIBSE design guidance for the internal environment of buildings, so that weather and climate data for the UK in the 21st Century are appropriately integrated" and "Develop technical specifications for the refurbishment of existing non-domestic buildings in response to projected changes in UK weather and climate". These KTP projects involved close co-operation between CIBSE and UKCIP which provided the foundation for a fruitful institutional relationship, which had a significant influence on the adaptive capacity of the whole construction sector. Outputs associated with this work included the CIBSE publication TM36, a more user-friendly UKCIP publication based on TM36 'Beating the Heat', and a CIBSE online tool 'Design Compass'.

### PARTICIPATION IN WORKING GROUPS, STEERING GROUPS, INCLUDING UK GOVERNMENT

With its reputation on climate impacts and adaptation in the built environment, UKCIP was invited to assist in a wide range of projects and to be a member of various committees, steering and advisory groups related to the built environment. These included:

- Academic Supervisor: Knowledge Transfer Partnership: UKCIP and CIBSE: 2010 to date.
- Defra and DCLG Built Environment Programme: 2010 to date.
- Adaptation and Resilience to a Changing Climate (ARCC) EPSRC: 2009 to date.
- Technology Strategy Board (TSB) D4FC competition review panel: 2010–2011.
- Zero-Carbon Homes Working Group (DECC and DCLG): 2009–2010.
- Sustaining Knowledge for a Changing Climate (SKCC) EPSRC: 2006–2008.
- Building Knowledge for a Changing Climate (BKCC): EPSRC 2003–2006.
- Academic Supervisor: Knowledge Transfer Partnership: UKCIP and CIBSE: 2006–2008.

* www.ukcip.org.uk/wordpress/wp-content/PDFs/BKCC-Results.pdf

- Town & Country Planning Association: Green and Blue Spaces (GRaBS): 2009–2011.
- Sustainable Urban Design Project: Commission for Architecture and the Built Environment (CABE): 2007–2009.
- Adaptation by Design: TCPA Publication: 2007.

#### ADAPTATION SUPPORT ON INDIVIDUAL BUILT ENVIRONMENT PROJECTS

In order to learn more about the practical application of adaptation principles, UKCIP has provided adaptation advice to several individual built environment projects. The designs for the New Worcester Library Building for the University of Worcester, and Worcestershire County Council, involved UKCIP in formulating the brief and assessing the tender proposals for the PFI contract. Through earlier work with B & Q, UKCIP was invited by the Kingfisher Group to assist in developing adaptation strategies for its wider portfolio of buildings across Europe. Amongst housing associations with which we have worked, Gentoo made full use of the Adaptation Wizard in developing an adaptation strategy for dealing with both its existing stock and new-build projects. The Design for Future Climate (D4FC) project deserves a special mention as the (Technology Strategy Board (TSB)) provided funds for design and development work with real buildings that simply would not have happened without the injection of these additional resources. The programme is now producing practical results from a wide range of live building projects, the results of which will prove beneficial across the whole construction sector. UKCIP's own involvement has significantly increased its understanding of design and management responses to changing weather and climate, which it is now able to share.

The built environment sector provides a good example of the need for increased specialism in providing adaptation support. Earlier in UKCIP's existence the need was for general advice on climate projections, impacts and adaptation responses. As stakeholders become better informed on climate change, their requirements become more sophisticated and specialised. This will require in future that UKCIP and similar organisations are able to respond effectively to these new, sector-specific demands.

### 4.9 INTERNATIONAL WORK

Although UKCIP is a UK-focussed organisation, it is very highly regarded in the international arena where UKCIP is seen as a forerunner on research and engagement of stakeholders in adaptation. UKCIP's contribution to the field is evidenced in the widespread uptake of our methods, tools and guidance both in the UK and abroad, many of which have been replicated or further developed for additional applications (see Chapter 3 for further details).

UKCIP has hosted a steady stream of international visitors all keen to learn from our experience on engaging stakeholders in the adaptation agenda, and in the development of user-relevant and cutting-edge climate adaptation support tools and high quality communication products. Visitors have come from Norway, New Zealand, Australia, Finland, North Korea, China, South Africa, Canada, USA, to name but a few.

UKCIP staff have actively participated in meeting stakeholders internationally, especially within Europe, where UKCIP is held in particularly high regard. This has included attending or presenting at European conferences (including WCC3, COP15, and EMS/ECAC), sitting on European project steering groups and being formally involved in European and global projects.

### LESSONS LEARNED

- As a learning organisation, UKCIP has gained intellectually from international participation. Adaptation does not travel well in space and time and experience of implementation in other countries has enhanced our knowledge of transferable adaptation techniques. This has enhanced the development of our tools for adaptation in the UK.

- The international dimension to UK adaptation cannot be ignored. As has been highlighted through our work with business, the vast majority of UK organisations with whom we work operate in a global environment and are equally concerned about climate impacts elsewhere in the globe – where their suppliers and producers are located – than they are with UK climate change. The UK's economy, supply chains and labour markets are intricately connected with Europe and other countries. Failure to take account of international trends and adaptation activities could seriously undermine the UK's preparedness for future conditions.

## 4.10 ADAPTATION REPORTING POWER

The Climate Change Act 2008 included provisions for the Secretary of State to require some organisations (such as statutory undertakers) to report on how they are assessing and acting on the risks and opportunities arising from a changing climate.

Under these provisions, Defra issued directions to report to 91 organisations in 2010. Many of the organsations were in the broad area of infrastructure (including energy, transport and water sectors) and there were also a number of other organisations that agreed to report voluntarily.

UKCIP was invited by Defra to assist in the provision of support to these reporting authorities. Along with Defra and Cranfield University (responsible for reviewing the risk assessments of each report), UKCIP offered its existing tools and online resources to the reporting organisations as a route to fulfilling the direction to report.

UKCIP attended meetings with reporting organisations, established online resources for reference (for inclusion on its online learning site) and organised a one-day workshop in December 2010 to share the experience of the 'early reporters' with those still to prepare their reports. UKCIP was then asked to provide expert advice to Defra on the submitted reports, including consideration of the use of UK Climate Projections (UKCP09).

### LESSONS LEARNED

The requirement to report was a powerful driver to adaptation action. Some organisations and sectors had a good understanding of adaptation, but for many others it was a new area of activity. Thus reporting organisations were at very different starting points, with some looking for more comprehensive guidance than others. An opportunity for UKCIP to work at an early stage with a group who were less experienced in climate change adaptation, would have produced a support package tailored to the needs of those who had not previously considered the issue.

The public nature of the reports (all will be published in due course, along with the government's assessment) brought with it a number of concerns, including commercial confidentiality and reputational issues.

The main consideration of the published review of the reports was clearly identified as the risk assessment. UKCIP considers that this focused the demand for support on this part of the process, although other areas may also have also benefitted from input.

Reporting organisations were interested to learn from each other. They wanted to learn from the experience of the 'early reporters' and there was also useful exchange of knowledge and views within the sectors. The experience of the 90+ reporters from this first tranche could be a valuable source of insight and guidance for subsequent reporters.

The outcome of the Adaptation Reporting Power process will reflect a broad range of organisational and corporate concerns. These may not coincide with the findings of the Climate Change Risk Assessment, which takes a national strategic perspective, and it will be important to bring both perspectives to bear when developing the National Adaptation Plan.

### CHAPTER 4 SUMMARY

- **This chapter has illustrated the range of organisation types, sectors and regions that UKCIP has worked with since 2005. It has shown how UKCIP's work has gained an international reputuation, with its work referenced, studied and reworked for application in other countries and contexts.**

- **UKCIP has achieved success by working in partnership with users. In some instances UKCIP has benefitted from feedback to inform development of its tools, guidance and resources. In other instances, UKCIP has been able to contribute its experience of the adaptation process to the expertise of a stakeholder in a particular profession, location or institution. Sometimes, a combination of the two. This has generated a genuine exchange of knowledge and has enhanced the output of these activities.**

- **Regional partnerships, bringing together stakeholders in the English regions and in the devolved administrations of Northern Ireland, Scotland and Wales, have been a powerful resource to build adaptive capacity and to assist with delivering adaptation actions.**

- **Flexibility also has been an important feature of UKCIP's work, listening to and responding to users, and learning from their perspectives and approaches. UKCIP has shared its learning of adaptation gained through this experience, including through case studies and refinements to existing resources and ways of working. However, this flexibility does mean that outcomes can shift from those originally envisaged, so it is important to be open to these changes.**

- **The introduction of high profile, government-led drivers such as sections of the Climate Change Act 2008 and National Indicator 188 made it easier for UKCIP to make good progress with key sectors, such as local authorities.**

- **Working effectively with stakeholders demands an open dialogue with all parties, and taking care to communicate effectively when sharing information, as well as providing routes to gather constructive and useful feedback.**

# Chapter 5: The way forward

In the light of strategic changes, it is inevitable that this final chapter should mark both the end of an era and signpost a different future. In early 2011, Defra announced that the Environment Agency would become the new government 'delivery agent' for adaptation in England. This new arrangement will take effect from October 2011 and UKCIP's work will give rise to two different adaptation ventures – the government-sponsored EA, and an independent UKCIP within its host institution, the Environmental Change Institute at the University of Oxford. The majority of the existing UKCIP team are likely to be redeployed within the Environment Agency to bring their experience to bear to the Environment Agency adaptation delivery team. In parallel, the Environmental Change Institute will host a reconstituted UKCIP@ECI. So the following thoughts are offered in this new context, and will apply differentially to the EA, UKCIP@ECI and to other organisations that make up the adaptation landscape at home and abroad.

This final chapter thus summarises important issues raised in the previous chapters. It is organised in three main sections:

- Main lessons learned by UKCIP;
- The context that has enabled this work and associated learning to take place;
- Changes to the UK adaptation landscape and policy context and implications for the future.

## 5.1 MAIN LESSONS LEARNED BY UKCIP

Many of the lessons learned through UKCIP's work with specific tools and organisations are summarised in Chapters 3 and 4. The purpose of this chapter is to distil the lessons learned by the collective UKCIP staff through their own learning and interpretations of experience. This represents more of a challenge, but a number of important, collective messages are discernable.

"The utility of boundary organisations lies in their distinctive functions, which could not be performed solely by any of the sides they bring together. Such organisations facilitate stabilisation by existing on the frontier of different worlds whilst maintaining accountability to all."

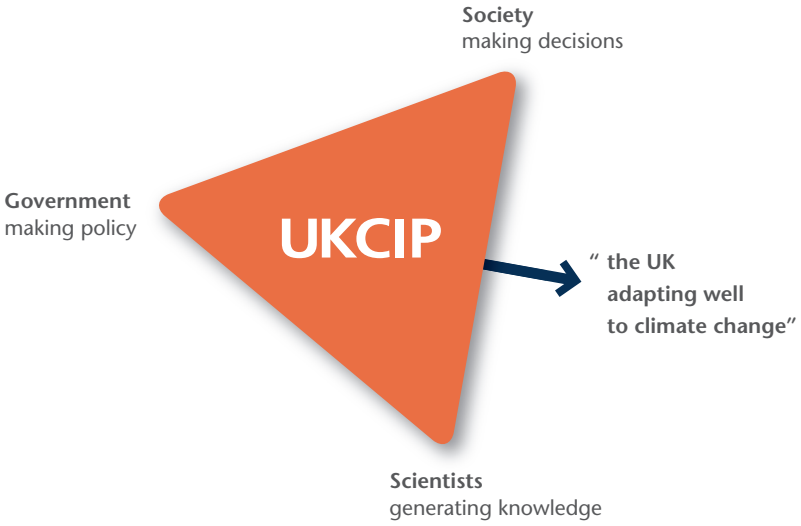
Lorenzoni *et al*. (2006)

1. **We still don't have all the answers on adaptation and this state will continue.** Because of the nature of climate change, adaptation decisions taken in the present may not be put to the test for many years. As such, it is not possible to demonstrate 'best' adaptation practice, although methods for evaluating the process of adaptation are starting to emerge. It is possible to make decisions about adaptation that will be robust in a future climate, which provide flexible adaptation pathways and where decisions can be deemed 'good enough'.

2. **Adaptation is a decision-making process which requires use of uncertain information** – including about the future climate. But many decisions are made in the face of uncertainty, such as economic performance, so uncertainty is no reason for inaction. UKCIP has developed guidance and support on robust decision-making, and offers many examples, drawn from across society, from which others can learn.

3. **The boundary organisation model that UKCIP adopted helps explain the unique qualities that UKCIP values and offers.** UKCIP was established to function at the interface of science, policy and society in an organisation type that has since been recognised as a 'boundary organisation'. UKCIP has valued the qualities of this model. These include the need for learning, independence, engagement of different audiences and actors, the need for different perspectives, disciplines and knowledge, and the attention paid to the interactional skills of facilitation, collaboration and network development. In complex processes, such as adaptation, this model works well as a way to bring together disparate groups and voices and to support effective dialogue and learning on all sides.

4. Understanding motivations and the choices faced by stakeholders about framing adaptation is a crucial part of adaptation support. **UKCIP is beginning to frame adaptation around the overarching theme of: achieving the stakeholder's key *objectives* in the face of changing weather and climate.** The principle is to put the organisation's perspective centre-stage; to show how a better appreciation of climate change and adaptation can help to inform and deliver an organisation's own objectives. This makes it more relevant, rather than telling them 'here is yet another uncertainty to deal with!' and 'you must believe in climate change before you can take this agenda seriously'.




5. **In working with stakeholders, UKCIP has found it invaluable to use the organisation's vulnerabilities to current weather and climate as a starting point.** In this way adaptation is presented as a pragmatic consideration, to identify the steps that can be taken now to improve an organisation's resilience or to make the most of opportunities. It is the chance to focus on positive outcomes and make use of the organisation's own systems, knowledge and data, alongside observations of recent weather and climate. For some organisations, this in itself may be sufficient for useful adaptation, but for others, this can be the start of an engagement with the climate projections, which although complex, can be a powerful tool in the decision-making process.

6. It is important to see **climate change as just one of the influences that an organisation faces**: the others generally assembled under the socio-economic banner. Notwithstanding the global implications of climate change, the threats and uncertainties for most organisations (public, private, or third sector) arise from changes in, for example, demography and technology, and in economic, political and cultural shifts. Climate change considerations need to be used alongside other information and resources to make the most effective contribution to adaptation decision-making.

7. **Organisational or management change forms an essential part of building adaptive capacity.** Experience with most organisations provides strong evidence of the importance of embedding adaptation into an organisation's decision-making processes. In some cases this may involve a process of change management. In most cases 'How will an organisation arrange itself to develop an adaptation strategy?' becomes the big question. If that question is answered satisfactorily, and involves appropriate personnel, then developing the strategy is relatively straightforward, and of itself builds capacity through awareness, understanding and knowledge.

8. **There is an opportunity to provide appropriately tailored information.** Generic tools are a valuable starting point, but many users would prefer them to be tailored to their specific application. Adaptation works best by offering different approaches to support different levels of understanding and contexts, taking account of prevailing conditions in an organisation. This could include tailored adaptation messages and processes. For example, SMEs might require a more informal approach to embedding adaptation which makes use of the prevailing culture, whereas larger organisations might prefer a more structured approach that uses the existing hierarchy for decision-making and implementation.

9. **Learning from practice is essential** as there is a perceived gap between the generic messages of impacts and determining how this drives changes to 'on the ground' operations. How can higher level climate information be translated into something that is relevant for specific situations or decisions? Much is said about the need for learning but what does this mean, e.g. who needs to learn what, for what purpose, and how might that be supported? There is a need to get better at asking for feedback from stakeholders (and implementing recommendations) to ensure support is appropriate. The practice of supporting adaptation needs to be the subject of review and revision, informing training and methodology.

10. **There is a pressing need for an international dimension to adaptation support**. Our work with business has highlighted the fact that most organisations operate in a global environment and are equally concerned about climate impacts elsewhere in the globe – where their suppliers and producers are located – than they are with UK climate change. Failure to take account of the global picture could seriously undermine the UK's preparedness for future conditions. Overlaps between the international dimensions of climate adaptation and delivery of support for adaptation in the UK will need to be managed effectively.

### 5.2 ATTRIBUTES OF UKCIP – THE CONTEXT THAT HAS ENABLED THIS WORK AND ASSOCIATED LEARNING TO TAKE PLACE

Where UKCIP has been successful and made progress and achievement it has been the result of a number of factors and influences. The following section highlights some of these influential factors and explains their benefit.

1. At the most general level **UKCIP has consistently pursued a clear vision of its role** whilst remaining open to different ways of achieving it. UKCIP has, since its inception, balanced strategic objectives with emerging opportunities. It has had freedom about who to work with, the ability to evolve as external stakeholders needs change, with time to think and reflect on experience. This flexibility has been crucial. A key characteristic has been UKCIP's openness to modifying its practice in response to interaction with stakeholders. In this model, the partner organisations become a critical part of the development of adaptation support.

2. **UKCIP's resources have been provided for free**. This was a principle established early in UKCIP's development: resources and information paid for by the public purse should be made publicly available. Stakeholders developing adaptation strategies and actions had to bring their own expertise, time and staff resource to the process, but materials, information and usually UKICP's staff input was provided free of charge. This was clearly a factor in encouraging organisations to make a move into adaptation.

3. **A small team-size allowed UKCIP staff to know their colleagues and operate informally**, with internal communication that was open, frank and led to appropriate change. This internal dialogue was invaluable because there weren't other similar organisations with which to share this experience. Larger organisations require more formal communications structures which tend to be less flexible and responsive.

4. **A powerful value system underpins the commitment of all members of the UKCIP team**. UKCIP staff value what they do as a boundary organisation working at arms' length from government, sharing with others across the team and outside, and bringing disparate groups and perspectives together. As within many smaller, single-issue entities, individual staff feel a strong personal commitment, in this case to the adaptation imperative. This acts as a strong motivator and unites what might otherwise be a diverse group of skills and interests.

5. **Everyone in the UKCIP team had a personal link to an external programme or project** which provided a real involvement in the direct reality of working with adaptation at that level. The regional and marine climate change partnerships and the BKCC/SKCC/ARCC work were good examples, where individuals were given responsibility for particular projects giving them a direct connection with the practical challenges facing stakeholders in adaptation research, policy and practice. Adaptation does not offer a 'one size fits all' solution, so UKCIP has tailored its ways of working for specific groups and developed the most appropriate means of support. Within this, UKCIP has only ever claimed knowledge of adaptation, while it is the adapting stakeholders that bring the expertise of their organisation and sector.

6. **Working in partnership** is critical and is a significant feature of UKCIP's work. UKCIP's work has benefitted significantly from the involvement of a variety of partner organisations. The climate change partnerships across the UK are perhaps the clearest example of local/regional adaptation networks that have shared expertise and resources for mutual benefit. No organisations are sufficiently self-reliant to be able to adapt entirely alone: working as part of a network or partnership enables better adaptation outcomes.

7. UKCIP has also been able to make use of other **networks and intermediaries** where there has been the benefit of a 'multiplier' effect. Thus, trade and professional bodies have given UKCIP access to a huge number of adaptation-relevant individuals. By working in partnership like this, UKCIP has been able to draw on the expertise of the partner body, and to create more relevant and tailored information that has greater resonance with the audience.

8. **Working 'at arms length' from government and the scientific community and academia** has been recognised as a significant feature of UKCIP's success. Stakeholders valued UKCIP's close links to the policy and scientific worlds, but at the same time being seen as independent, has allowed UKCIP to play better the 'honest broker' (Pielke, 2007) or 'critical friend' role. However in recent years, UKCIP has detected a falling off of its influence, particularly in the policy realm. This may be a reflection of the increased profile of adaptation, with more organisations and policy areas seeking to have input, as well as the impact of adaptation establishing itself alongside a host of other statutory requirements.

9. **In order to develop guidance and tools, UKCIP needed to have both direct practical experience and an understanding of other work going on in the field.** UKCIP staff have had opportunities to: read and summarise new academic papers for the Climate Digest; attend and run workshops; act on steering groups and advisory panels; attend and present at conferences, at home and abroad; to learn from and add to UKCIP's approaches.

10. **UKCIP's approach has had its limitations**. The principle, established largely from necessity, of 'working with the willing' has meant that outcomes were not always as envisaged. Partnerships may not have been comprehensive or representative, and outcomes were necessarily influenced by the needs and wishes of the group. This is one of the features of a stakeholder-led approach. This was compounded, for a good part of the contract period, when statutory and other requirements were non-existent, so activity on adaptation was largely voluntary.

### 5.3 CHANGES TO THE UK ADAPTATION LANDSCAPE AND POLICY CONTEXT – IMPLICATIONS FOR THE FUTURE

Over the most recent contract period, UKCIP has seen significant changes in its own organisation and importantly in the Defra team to which it was answerable.

The creation of Defra's Adapting to Climate Change team gave a significant policy boost to adaptation in the UK. At the start of the contract period, UKCIP reported to a single person within Defra and there were few policy or legislative drivers. In comparison, by the end of the contract, Defra's Adapting to Climate Change team had a core staff resource that exceeded the UKCIP headcount and responsibility for a number of policy areas including those derived from the adaptation clauses of the Climate Change Act 2008. The impact of the Act and the additional resource put into adaptation at the policy level has been significant in raising the profile of adaptation much more widely in the UK. It has inevitably influenced UKCIP's work: both in terms of what UKCIP was asked to deliver, and also in terms of the support that stakeholders have required. The notes below describe the main changes emerging in terms of policies and organisational arrangements, and consider the implications for the future.

- **The new arrangement will present challenges of its own, as well as those presented by changes in the policy context outlined in Chapter 1**. The Defra decision to transfer the UKCIP contract to the Environment Agency clearly marks a major change in the UK adaptation landscape. At the time of writing, the Environment Agency adaptation programme is still emerging. It is likely that what will follow under the direction of the Environment Agency will differ from the programme delivered by UKCIP, but it would be regrettable if the lessons learned from the UKCIP experience were not considered when drawing up the Environment Agency work plan.

- **One significant consequence relates to the Devolved Administrations** in Scotland, Wales and N. Ireland. The DAs devolved responsibility for climate change is now clear with each administration developing its own approaches and strategies, but the Environment Agency only has responsibility in England.

- **Much of the strategic policy context flows from the Climate Change Act** as well as initiatives originated in Defra. The new adaptation landscape provides serious challenges for the Environment Agency's new adaptation support programme, including:

  - » Relationships with, and independent support for: the Adaptation Sub-Committee, Reporting Power Authorities, Other Government Departments (OGDs) and the Climate Change Risk Assessment (CCRA) and associated roll-out.
  - » The resulting National Adaptation Programme (NAP) – it is not known what regulation might emerge. It is not clear who will have a role in interpreting, and challenging, the outcomes of NAP (and CCRA).

- **Regional governance in England has recently been removed** for all policy areas. In the adaptation context, this loss is regrettable, as the regions have proved to be the most appropriate spatial scale at which to develop and implement adaptation planning. The network of Regional Climate Change Partnerships has been a conspicuous success in this regard and they will need sufficient support and resource to develop new ways of working in response to the changed landscape.

- **The abolition of the national performance framework for local authorities poses a particular challenge for adaptation.** The loss of the National Performance indicator NI188 (which addressed adaptation) will have serious implications for adaptation delivery. Local authorities have been widely acknowledged as having a critical role in adaptation, and NI188 proved to be a most potent driver of adaptation activity amongst English local authorities. It is not clear how adaptation will now be promoted at this level. The Nottingham Declaration Partnership might provide a suitable catalyst but will need support and resource to be effective.

- **The introduction of the 'Big Society' and 'localism' agendas** take adaptation into relatively new territory. Adaptation support programmes will need to address new audiences, and therefore create new stakeholder contacts and networks as well as new ways of working with, for example, community groups and parish councils. There are concerns that momentum on adaptation will be lost given the lack of clarity about responsibilities and the limited availability of resources.

- **The current economic climate will make it more difficult to make the case for adaptation**. The economic situation makes it prudent to focus on the immediate benefits of adaptation in delivering resilience to current weather, and there are clearly opportunities here. However, it will still be important to maintain a long-term view, both for building adaptive capacity and for delivering adaptation action. Justifying major financial investment on the basis of a changing climate, and taking a long-term perspective may be even more difficult than it has been to date.

- **The recent arrival of new players in the adaptation landscape represents challenges and opportunities for adaptation support delivered by the Environment Agency**. Consultants from a variety of backgrounds including finance, risk, environment, meteorology, change management, as well as climate change, have offered their services to a range of clients. Similarly, academics have been funded to conduct research in adaptation and related disciplines. An agency that could be responsible for assembling, cataloguing and review, and disseminating this work would make an important contribution. More challenging would be to include some form of quality assurance or monitoring of such work.

- **Climate change is just one factor of change to which our society must adapt**. UKCIP acknowledges the importance of, in particular socio-economic factors, such as changing demographics or international development, as well as increasing use of new technologies and low carbon technology and lifestyles. It becomes increasingly important that those involved in adaptation to climate change acknowledge and accommodate these other important influences.

- One particular challenge that UKCIP has encountered is the **impact of a steady 'churn' of personnel** in central government departments. This can make it difficult to establish a continuity of approach if projects are led by a succession of individuals. It is harder to build a strong corporate memory and to provide an environment where incoming staff can develop their own understanding of adaptation issues and policy direction. This tendency has been less marked in other institutions UKCIP has worked with, including government agencies, local authorities and private businesses.

- **UKCIP's assessment is that the Climate Change Act has already had a significant impact on adaptation**. It created a statutory framework within which adaptation has moved towards the mainstream of actions to address climate change, and as a driver for action, it has been unparalleled. The UK Climate Change Risk Assessment, currently underway, will provide a strategic level of consideration of climate risks and will contribute to the development of a National Adaptation Plan. Another product of the Act, the Adaptation Reporting Power, required a mix of organisations to consider adaptation, and in its first round, will see over 90 organisations produce public reports on their readiness to cope with a changing climate. The Act also established the Climate Change Committee, and within this, an Adaptation Sub-Committee, to provide independent advice to Government on adapting to climate change. The impact of the Act is likely to be far-reaching, so long as resources are made available to support its effective implementation.

- **Despite positive development in adaptation, it still relies on successful integration with many other policies and actions.** Adaptation can only be effective if there is a sufficiently supportive network of policies (such as planning) and people with knowledge enough to implement appropriate adaptation actions.

Adaptation to climate change in the UK is an issue that has developed dramatically since UKCIP began its work in 1997. UKCIP's role has been central and has helped to created an adaptation landscape that is seen by many across the world as a model of good practice. The UKCIP team has been privileged to be part of that process.

Climate change adaptation is all about organisations and individuals developing flexible responses in the face of uncertainty, and it is clear that adaptation is now embarking on a new stage of its evolution, building on the work of UKCIP and many others. UKCIP looks forward to continuing to be part of that evolution in its role within the University of Oxford's Environmental Change Institute.

# Annex A: Published work

## UKCIP PUBLICATIONS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## UKCIP WEBSITE

The UKCIP website is the main access point for all of UKCIP's output – reports, case studies and background information, and so is a vital part of our communications strategy. As technology has moved on and internet access become faster and more reliable, the need for printed reports has decreased accordingly. Most of the publications are now only available as pdfs to download or to order on CD.

The site has been re-developed twice over the period of the contract to reflect changes in UKCIP's output and the stakeholder base. The revamp in 2006/7 was the first of the UKCIP sites to be make use of an OpenSource Content Management System (CMS), resulting in a cost-effective but powerful site that was built in-house. As a result, the site was easy to update and maintain.

The subsequent re-design and update at the end of 2010 reflected a further evolution of UKCIP's output, changing the focus to being a hub for information and tools to help with climate change adaptation rather than being impacts-focussed. It conforms to W3C CSS and AA accessibility ratings.

www.ukcip.org.uk

## ONLINE METRICS

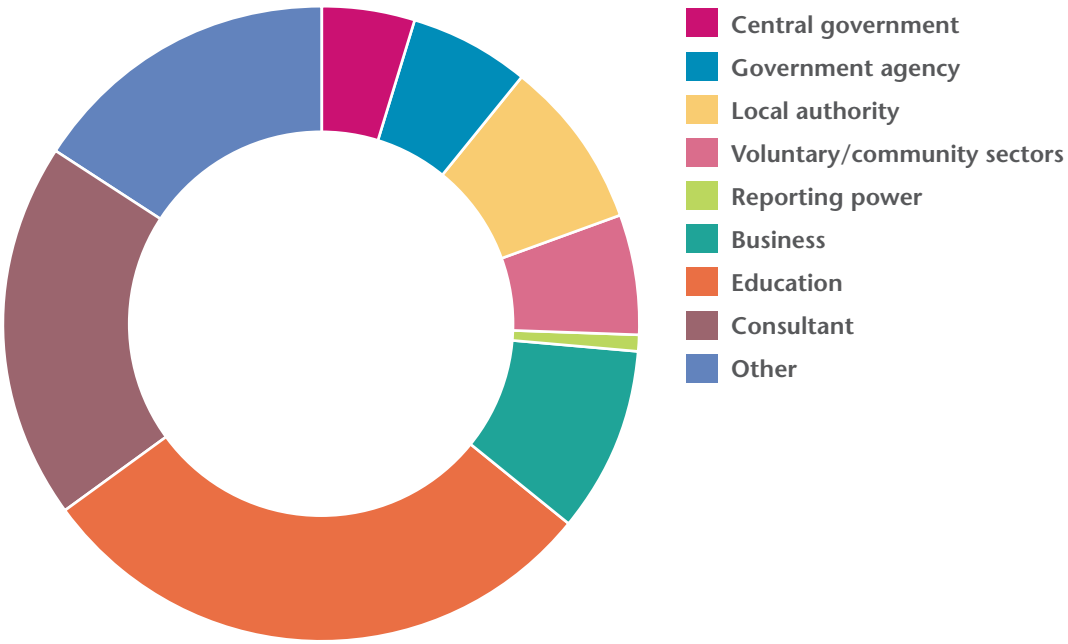
**Table A1: Web statistics for period 1 June 2009 to 30 September 2011**

| | Unique visits | Page views | New visitors | Average time on site | Average number of pages visited |
|---|---|---|---|---|---|
| UKCIP | 158,123 | 996,041 | 56.36% | 3.19 min | 3.65 |
| UKCP09 | 124,029 | 1,254,366 | 54.17% | 5.55 min | 7.32 |
| Moodle | 3596 | 73,126 | 45.91% | 6.46 min | 9.35 |

## TOP 25 MOST VISITED PAGES ON www.ukcip.org.uk

1. Case studies
2. Tools
3. Essentials
4. Adaptation Wizard
5. UK impacts
6. UKCP09
7. Risk Framework
8. News
9. Publications
10. LCLIP
11. BACLIAT
12. Government
13. UK impacts > UK maps
14. Connections
15. Essentials > What is climate change?
16. Business
17. Essentials > Climate impacts
18. UK impacts > UK maps > Temperature
19. Essentials > Adaptation
20. Publications > Regional publications
21. AdOpt
22. Essentials > Climate trends
23. News > Headlines
24. Essentials > Adaptation > Managing adaptation
25. About UKCIP > Staff

**Figure A1: Chart showing type of organisation of UKCIP tools registrants.**



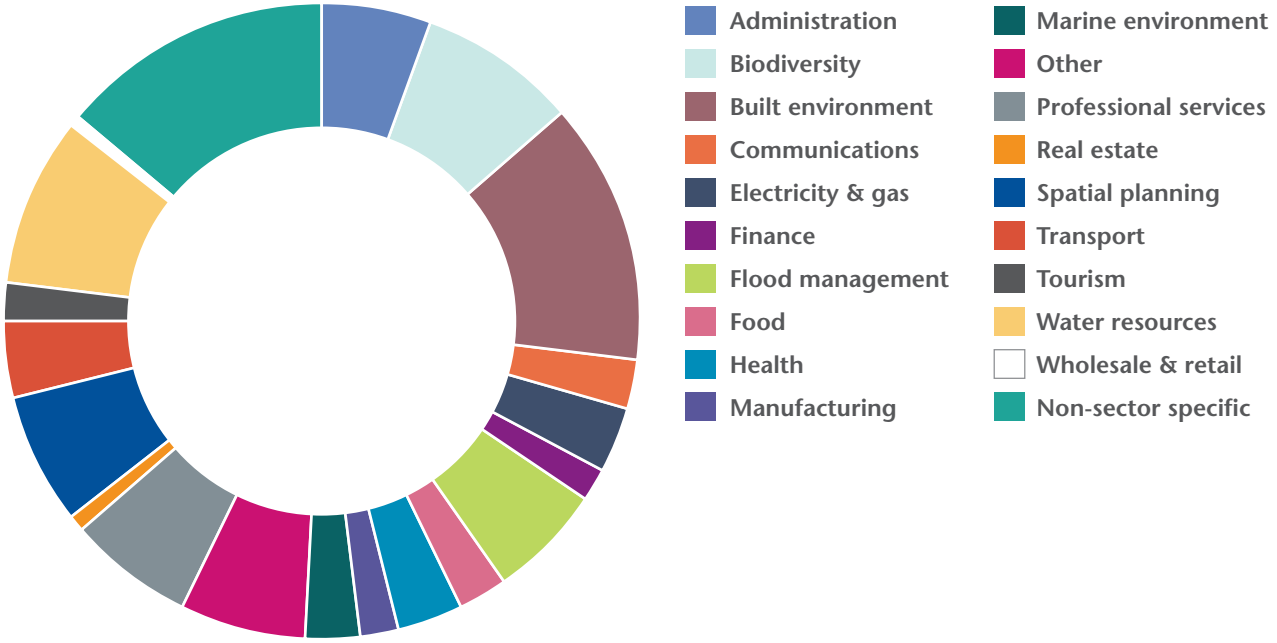



Figure A2: Chart showing sectors of UKCIP tools registrants.

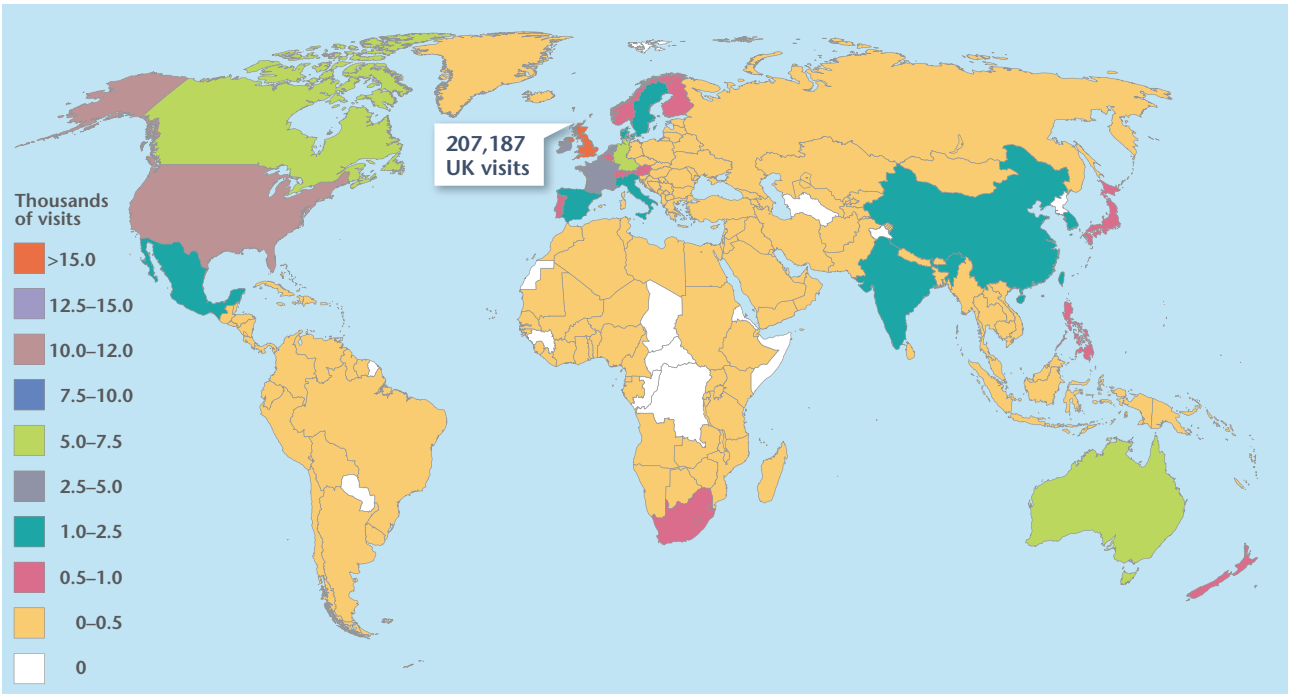



Figure A3: Visits to www.ukcip.org.uk by country for the period 1 June 2009 to 30 September 2011.

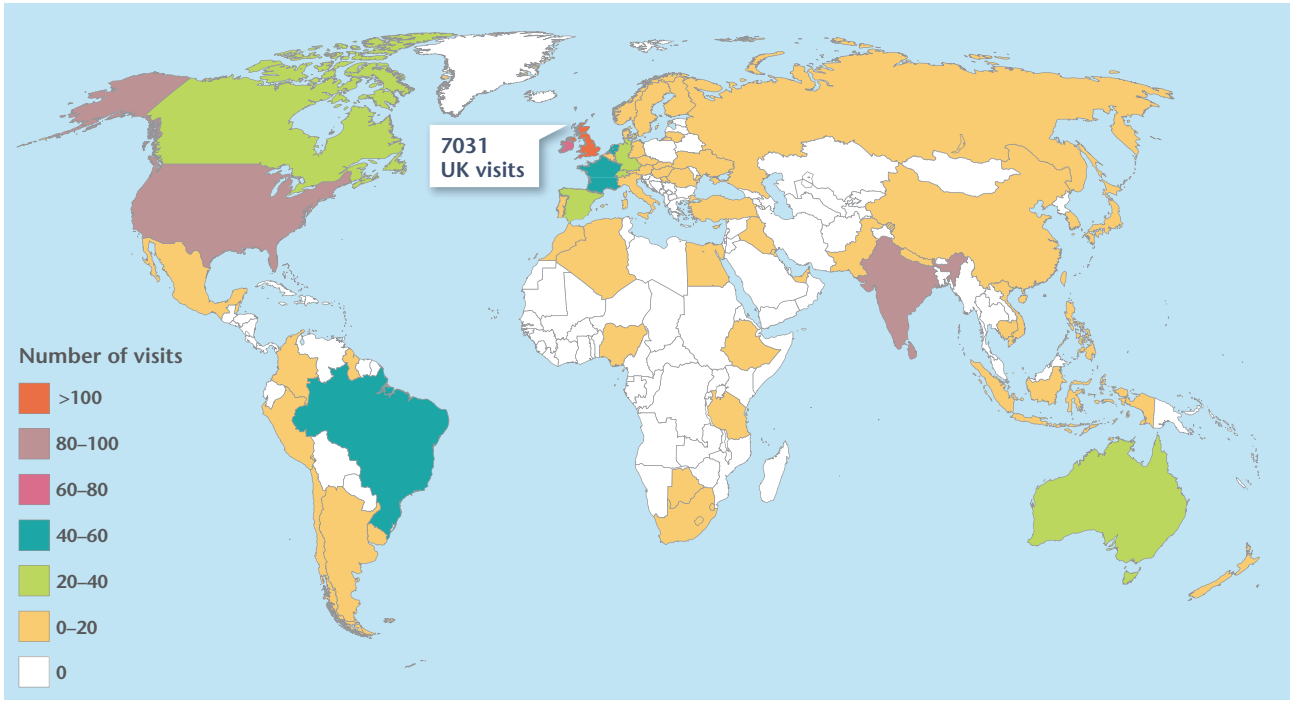



**Figure A4: Visits to http://moodle.ukcip.org.uk by country for the period 1 June 2009 to 30 September 2011.**

**TOP 25 MOST VISITED PAGE ON http://ukclimateprojections.defra.gov.uk**

1. Maps & key findings
2. Reports & guidance
3. Reports & guidance > About the Climate change projections
4. What is UKCP09?
5. Case studies
6. Maps & key findings > Key findings for sea level rise
7. Reports & guidance > About the Briefing report
8. Maps & key findings > UK-wide maps & key findings
9. Index > Emissions scenarios
10. Index
11. Reports & guidance > About the Weather Generator
12. What is UKCP09 > Guiding principles
13. Index > UKCP09 User Interface
14. Reports & guidance > About the Briefing report
15. Reports & guidance > About the Observed trends
16. Reports & guidance > About the Marine & coastal projections
17. Index > Probability level
18. Maps & key findings > UK-wide key findings
19. Reports & guidance > UKCP09 product map
20. Index > 25 km grid
21. Index > Probabilistic climate projections
22. Reports & guidance > Quick downloads
23. Reports & guidance > FAQ
24. Reports & guidance > Online Climate change projections report
25. Reports & guidance > Online Weather Generator report

# Annex B: Projects under the UKCIP umbrella

This section describes some of the activities undertaken by UKCIP, under the main Defra contract referred to in this document. The latter section describes some of the complementary work with other funding sources.

## ACCC: ADAPTING TO CLIMATE CHANGE IN CHINA

UKCIP is working with the Adapting to Climate Change in China (ACCC) programme, with support from the Department for International Development. One theme supports the provision of user-friendly climate information that will be used within the ACCC programme. This involves supporting the ACCC researchers in the engagement of their targeted users, and the development of guidance and case studies along with enhancements to the climate information to improve its relevance for the chosen audience.

The second piece of work focusses on the assessment of particularly vulnerable populations, sectors and systems within three provinces in China. UKCIP is working with two other organisations, the World Resource Institute and the Institute for Social and Environmental Transition to collectively provide assistance to provincial and national-level partners in conducting risk assessments, vulnerability assessments, and other activities associated with adaptation planning. This support has resulted in the development of specific guidance and participation in targeted workshops to refine the methodologies and tools being developed.

## ARCC (ADAPTATION AND RESILIENCE IN A CHANGING CLIMATE)

The Adaptation and Resilience in a Changing Climate (ARCC) project was established in 2009 and funded by EPSRC to facilitate networking between a group of projects focusing on climate change adaptation and the built environment. UKCIP manage the project, design, host and manage the website along with the co-ordination and design of all printed material.

www.ukcip-arcc.org.uk

### BACLIAT: BUSINESS AREAS CLIMATE ASSESSMENT TOOL

BACLIAT was developed by UKCIP as an introduction to climate change impacts for businesses of any size, and is based on a series of workshops.

www.ukcip.org.uk/bacliat/

### BUSINESS CASE STUDIES

These case studies show adaptation in action across a range of sectors. They vary in depth from brief outlines to full-length studies.

www.ukcip.org.uk/business/business-case-studies/

### CLARA: CLIMATE ADAPTATION RESOURCE FOR ADVISORS

CLARA helps business advisors to support small and medium enterprises (SMEs) in understanding and preparing for the impacts of climate change. It includes a section on making the business case and a suite of resources for advisors and the business community.

www.ukcip.org.uk/clara/

### CLIMATE UK

Climate UK is the umbrella organisation for the Regional Climate Change Partnerships.

www.climateuk.net

### IEMA: INSTITUTE FOR ENVIRONMENTAL MANAGEMENT AND ASSESSMENT

The Institute for Environmental Management and Assessment represent environmental professionals who play a key role in driving forward adaptation in organisations. Therefore, we have worked closely with them on a number of initiatives including:

- Their involvement in UKCIP's A Changing Climate for Business partnership in 2007/08.
- Two series of regional training workshops on the business impacts of climate change.
- UKCIP authoring Adaptation guidance as part of the IEMA Practitioner series.
- UKCIP speakers at several IEMA annual conferences.
- UKCIP support in development of an adaptation component to the IEMA diploma.

### ITRC: UK INFRASTRUCTURE TRANSISTIONS RESEARCH CONSORTIUM

The UK Infrastructure Transistions Research Consortium will inform the analysis, planning and design of national infrastructure, through the development and demonstration of new decision support tools. The five Work Streams cover four major challenges along with the development of supporting tools and datasets.

www.itrc.org.uk

### KNOWLEDGE TRANSFER PARTNERSHIP

UKCIP has hosted two Knowledge Transfer Partnership Associates in collaboration with the Chartered Institution of Building Services Engineers (CIBSE). These used information about expected future climate in the UK and applied these to guidance and specifications for the built environment sector.

www.ktponline.org.uk

### LCLIP: LOCAL CLIMATE IMPACTS PROFILE

LCLIP is a resource that local authorities can compile so that they better understand their exposure to weather and climate.

www.ukcip.org.uk/lclip/

### LOCAL AUTHORITIES

Local councils have a key role in ensuring that their communities are sustainable in the face of a changing climate. The consequences of the changes will be felt across all service areas – risk assessments and case studies demonstrate how local government is working to adapt, while a group of briefing notes provide guidance on the issues for specific service areas.

www.ukcip.org.uk/government/local-authorities/

### NOTTINGHAM DECLARATION

The Nottingham Declaration was launched in 2000 as a voluntary initiative on climate change for local authorities. By 2005, 100 councils had signed up to the Declaration and a re-launch that year gave the adaptation element equal significance to mitigation efforts. The Declaration and its signatories have been supported by a partnership of organisations, including UKCIP. Work on developing the Declaration further is currently underway.

### REPORTING POWER AUTHORITIES

Over 100 organisations in the UK (known as reporting authorities) have been asked to provide reports to Defra on their work to adapt to the impacts of climate change. UKCIP are supporting Defra's work to help reporting authorities to prepare their reports during 2010 and 2011.

www.ukcip.org.uk/government/reporting-powers/

### UKCP09: UK CLIMATE PROJECTIONS

The UK Climate Projections (UKCP09) give climate information for the UK up to the end of this century. Projections of future changes to our climate are provided, based on simulations from climate models. UKCIP are an instrumental part of the Users' Panel and Project Management Group to help direct the development of the Projections and involve users in any major decisions. UKCIP also works with users to develop case studies to show practical uses of UKCP09 Projections.

http://ukclimateprojections.defra.gov.uk

### PIP

Projections in Practice (PiP) programme was developed to help users understand how to use the UK Climate Projections, and provided a series of training and workshop events along with a suite of online learning packages. The online component of the programme was developed by UKCIP and is hosted on an OpenSource learning platform (Moodle).

http//moodle.ukcip.org.uk

### TECHNOLOGY STRATEGY BOARD

UKCIP has worked with the Technology Strategy Board on two of its competitions on the theme of 'Design for future climate'. These provided funding for design and development work to adapt buildings to future climate. The outputs of this work will be available more widely across the built environment sector.

www.innovateuk.org

### UKCIP02

The UKCIP02 data was incorporated into the main UKCIP website in 2007. Requests for data were made via an online permission form that required approval by UKCIP staff – applications were simple to check and approve, and could be handled anywhere as the whole process was web-based.

The UKCIP02 scenarios have since been superceded by the UK Climate Projections (UKCP09), so the data was not included in the most recent iteration of the website in order to encourage visitors to use UKCP09. The data is still available on request, and is currently held on a separate site.

# Annex C: Businesses

- Aedas
- Balfour Beatty
- BP
- BT Openreach
- Gentoo
- Home Retail Group
- John Lewis Partnership
- Kingfisher (B&Q)
- Logica
- Marks and Spencer
- Midcounties Cooperative
- The Port of Felixtowe
- PepsiCo/Coppella
- Royal Mail
- Serco
- Scottish Electrical Consulting
- Severn Trent Water
- Skanska

**Table C.1: UKCIP's work with SMEs.**

| | |
|---|---|
| Events | • Business planning for climate change (May 2007)<br>• Built environment SME workshop (July 2007)<br>• Presentation at Bicester Business Breakfast (June 2008)<br>• Weather Resilience – a professional approach (February 2011) |
| Oxfordshire SMEs | • Climate change audits with three SMEs (2007)<br>• Study into the effects of the 2007 summer floods on Oxfordshire SMEs (2008) |
| Engaging the business support community | • Discussions with Oxfordshire based organisations that advise SMEs including Businesss Link, Oxfordshire Sustainable Business Partnership and commercial consultants, which led to the development of CLARA (see Chapter 3.4)<br>• Support to SME projects led by regional bodies (see Table 4.2) |

**Table C.2: Summary of the activities UKCIP has undertaken with business facing organisations and the institutional environment.**

| | |
|---|---|
| A Changing Climate for Business | Three successive partnerships to share experience and optimise UKCIP support for capacity building initiatives. CCFB3, which focused on engineering sectors also aimed to work together on areas of commonality and led to the work on construction codes and standards with BSI (see below). |
| One-to-one work with trade associations | • Supported NACM adaptation study<br>• Assisted SWA/SWRI in writing a tender for their adaptation research and running an industry workshop<br>• Input into CBI reports on adaptation<br>• Review of National Business Link web pages on adaptation<br>• Review of BRC draft guidance on adaptation<br>• Support to Scottish Private Sector Guidance<br>• Review of West Midlands SME guidance<br>• Events for business advisors in the North West<br>• Support to PepsiCo/Coppella project in East of England<br>• UKCIP speakers at various conferences |
| Construction industry codes and standards | Ongoing work with BSI to review construction codes and standards that may be constraining adaptation |
| Quality, environmental, business continuity and risk management systems | BSI publication authored by UKCIP |
| Professional development | • Oxford CPD<br>• IEMA series of workshops |

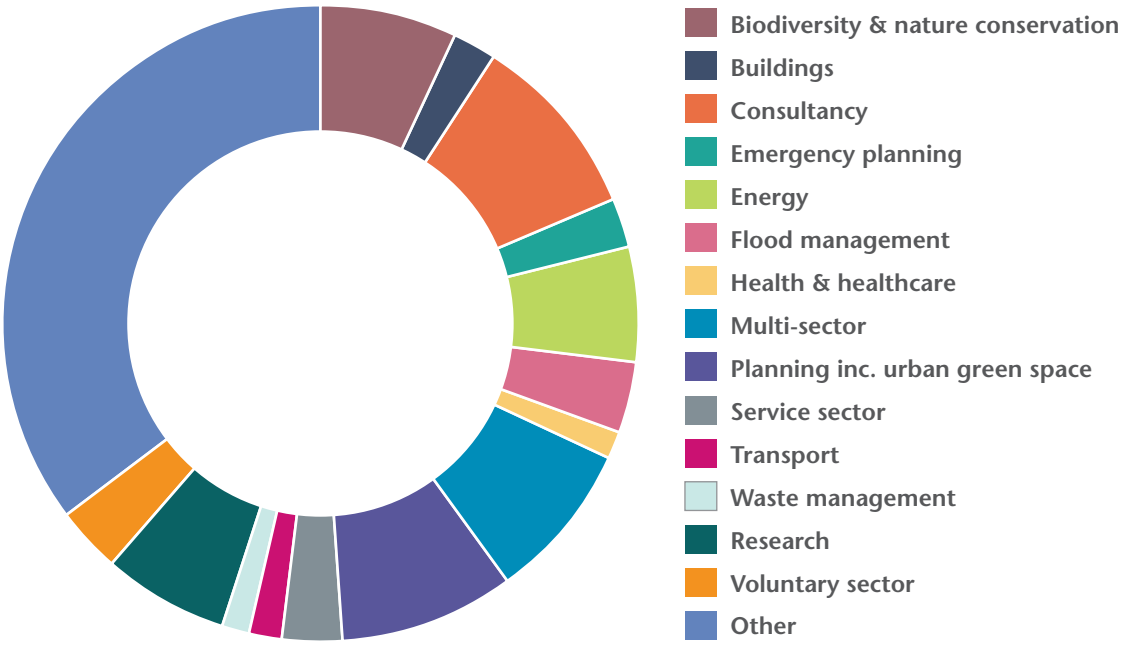
# Annex D: Workshops & training

Organisations for whom UKCIP has run ad-hoc workshops and training events:

- Society for the Environment
- IEMA: Institute for Environmental Management and Assessment
- Association of British Insurers
- Next Retail Ltd
- Marks & Spencers plc
- Coast Alive, The Intereg IVB North Sea Region Programme
- Mid Counties Co-operative Society
- Edinburgh University
- Lancaster Girls Grammar School
- Anglian Water

# Annex E: Sectors attending UKCP09 training

Sectors attending UKCP09 training (PiP Programme):



# Annex F: UKCIP staff, past & present

Marius Apetrei
Gordana Bibic
Courtney Blodgett
Paul Bowyer
Daniel Boyce
Lesley-Anne Brewis
Peter Briggs
Alastair Brown
Iain Brown
Diana Calvert
Malcolm Chandler
Michelle Colley
Richenda Connell
Catherine Cook
Tim Denne
Tom Downing
Clare Downing
Stephanie Ferguson
Megan Gawith
Mark Goldthorpe
Liz Greenhalgh
Christine Harford
Alex Harvey
Vicky Hayman
Merylyn McKenzie-Hedger
Sally Jeffery
Kay Jenkinson
Kay Johnstone
Richard Lamb
Kate Lonsdale
Jim McIlwee
Gerry Metcalf
Lyndsey Middleton
Sophie Millin
Alex Moczarski
Charlie Morris-Marsham
Anastasia Mylona
Laurie Newton
John Orr
Jane Pendlenton
Maria Pooley
Patrick Pringle
Maria Shamash
Anna Steynor
Roger Street
Chris Thomas
Anthony Thompson
Pete Walton
Klara Wanelik
Chris West
Richard Westaway
Gareth Williams
Richard Williams
Tom Wilson
Jacqui Yeates

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