

# A Climate Change Action Plan for North West England: Exploring the position of green infrastructure

<b>Climate change impacts addressed</b>	High temperatures Urban flooding River flooding
<b>Spatial scale</b>	Region
<b>Response type</b>	Action Plan
<b>Themes driving the initiative</b>	Adaptation to future climate Mitigation of climate change Quality of life and attractiveness of place Development need despite climate impacts Higher-level policy framework
<b>Good practice</b>	Prioritising adaptation Leadership / championship External collaboration Outsourcing research Sound evidence base Raising awareness internally

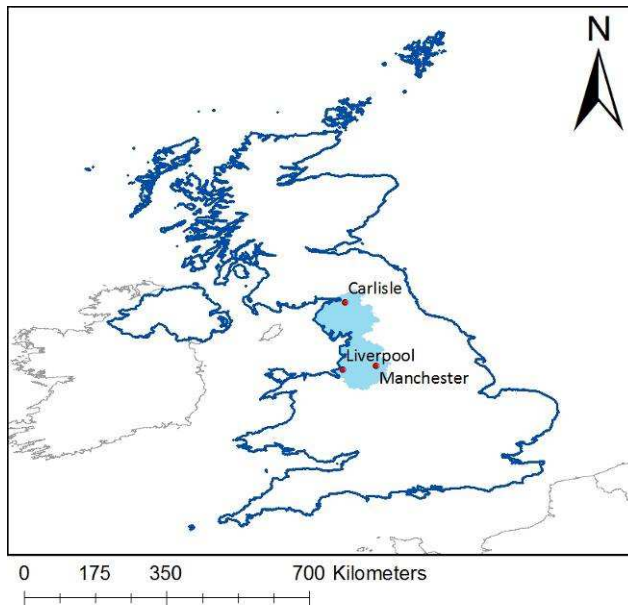
## Summary

In North West England a regional Climate Change Action Plan was first developed for the years 2007-2009. This was then refreshed in February 2010 for the years 2010-2012. The objective of the revised Climate Change Action Plan is not to replace, but to strengthen the vision of a low-carbon and well adapted region, taking into account progress made to date and developments at national and international levels. Green infrastructure plays a prominent role in the plan, both in terms of its role in climate change mitigation and adaptation. Indeed, one of the stated actions is a “regional assessment of the risks, opportunities and priorities for green infrastructure in adapting and mitigating for climate change”. This work is being undertaken as part of the Interreg IVC GRaBS project. The strong position of green infrastructure in the plan reflects a history of research on the subject in the region, as well as a coordinated and structured effort by professionals to embed green infrastructure into regional policy, which has facilitated the inclusion of the concept in statutory regional strategy documents<sup>1</sup>. Key lessons offered by this case study include the significant role of collaborative working during the development of the action plan, and previously in the region on the promotion of green infrastructure including the use of economic arguments to support green infrastructure actions.

## The location

North West England is one of the nine official regions of England. It has a population of nearly 7 million people. North West England is bounded to the west by the Irish Sea and to the east by The Pennine hills. The region extends from the Scottish Borders in the north to the Welsh Mountains in the south. Two large conurbations, Liverpool and Manchester, occupy the south of the region and account for much of the region’s population. The north of the region, including northern Lancashire and Cumbria, is largely rural (Figure 1).

<sup>1</sup> The change of government in the UK following the 2010 general election is likely to bring with it significant changes to the statutory spatial planning system. The future of the regional tier of governance is uncertain, and some regional level organisations may be lost or reformed with different remits. Changes could also lead to revising the status of regional plans from being statutory to non-statutory. The regional planning documents and the CCAP would nevertheless be likely to remain strong statements of principles and priorities for regional decision makers to draw on.



**Figure 1. Location of the North West region in the UK**

The current climate of the North West is classified as mid-latitude oceanic with warm summers, cool winters and plentiful precipitation throughout the year. The 2009 autumn floods in Cumbria exposed the region's vulnerability to intense rainfall events. The temperature ranges are rarely extreme at the moment.

The UK Climate Projections (2009) <sup>(1)</sup> show that under a medium greenhouse gas emissions scenario for the 2080s the climate of the North West is projected to change significantly and experience:

- An increase in average summer temperatures with a central estimate of 3.7 degrees;
- 21% less rainfall in the summer, possibly leading to subsidence, lower crop yields and water stress;
- 16% more rainfall in the winter increasing

the threat of winter flooding, transport disruption and risks to urban drainage;

- Sea level rise in Liverpool of 30-32cm.

## Development of the initiative

### *Key aims*

The North West Climate Change Action Plan 2010 (CCAP 2010) <sup>(2)</sup> sets out a vision of a **"low carbon and well adapting Northwest by 2020"**. Adaptation to unavoidable climate change is one of three objectives of the plan, which also include reducing greenhouse gas emissions and capitalising on opportunities for economic growth offered by climate change. The key aim of the CCAP 2010 is to provide the North West of England with a plan of action in order to achieve this vision. The following discussion provides an overview of the development of the CCAP 2010, with a particular focus on the inclusion within the document of green infrastructure as an adaptation response to future climate change impacts.

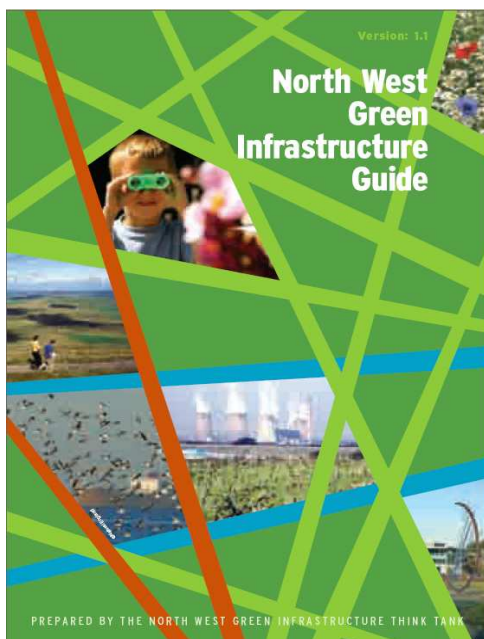
### *Themes driving the initiative*

Green infrastructure is seen to play an important role in climate change mitigation (carbon storage and sequestration, fossil fuel substitution, material substitution, food production, and reducing the need to travel by car) and adaptation (managing high temperatures, managing water supply, managing riverine and coastal flooding, managing surface water, reducing soil erosion, helping other species to adapt, and managing visitor pressure). Key drivers behind the inclusion of green infrastructure within the CCAP 2010 relate to the presence of the green infrastructure agenda in regional policy and research, and the recognition the green infrastructure can provide significant economic benefits. These two key issues are discussed below.

1. There is a strong presence of the **green infrastructure concept** in regional planning, research and practice. Green infrastructure is defined as multi-purpose open space networks <sup>(3)</sup> that supports natural and ecological processes and is integral to the health and quality of life of sustainable communities <sup>(4)</sup>. The definition developed for the North West refers to green infrastructure as the region's life support system – the network of natural environmental

components and green and blue spaces that lies within and between the North West's cities, towns and villages which provides multiple social, economic and environmental benefits <sup>(5)</sup>.

- **Regional Spatial Strategy** <sup>(3)</sup> states that local authorities need to plan and deliver green infrastructure using existing and bespoke mechanisms. This document states that the use of green infrastructure for adaptation to climate change should be maximised. **Regional Economic Strategy** <sup>(6)</sup> refers to natural environment as an under-exploited economic asset and calls for development of a regional strategy for green infrastructure. This document also highlights the adaptation function of green infrastructure (see footnote 1 above).
- Research at the **University of Manchester** and work undertaken by the **Community Forests North West** <sup>2</sup> (a quasi-autonomic non-governmental organisation) have provided a scientific evidence base for the importance of green infrastructure in the region.
- Regional stakeholders work together to champion the concept of green infrastructure and support the development of policy. This includes Natural England, Community Forests Northwest, Northwest Development Agency, Government Office Northwest, Northwest Regional Assembly (4NW), Environment Agency, Forestry Commission, University of Manchester and University of Salford, amongst others. Regional structures were set up to facilitate this working, including:



**Figure 2. Cover of the North West Green Infrastructure Guide**

- **Green Infrastructure Unit**, a partnership between the Community Forests Northwest and Natural England (national nature conservation agency), which undertakes work including managing the website [www.ginw.org.uk](http://www.ginw.org.uk), circulates information and stimulates debate amongst local and regional stakeholders. It has championed green infrastructure a critical infrastructure, alongside transport, waste, energy and water.
- **Green Infrastructure Think Tank**, chaired by the Community Forests North West: a group of academics, consultants and public sector representatives who aim to resolve issues and take the green infrastructure agenda forward. The Green Infrastructure Think Tank developed a Green Infrastructure Guide <sup>(5)</sup> for use by local spatial planners (Figure 2).
- **Green Infrastructure Forum**, chaired by the Community Forests North West. The forum provides a place for exchange of knowledge and information to a wider group of stakeholders in the region.

2. The **links between environmental issues and economic development** are increasingly being recognised. At the national level the "**Stern Review: Economics of Climate Change**" <sup>(7)</sup> emphasised that given climate change is happening, measures to help people adapt to related impacts are essential and the longer that adaptation responses are delayed, the more costly they will become. Economic issues and green infrastructure were brought together in a

<sup>2</sup> The Community Forest programme was established in the early 1990s by the then Countryside Commission, the Forestry Commission, and Local Authority Partners. Collectively this work has formed the largest environmental regeneration initiative in England. Major contributions have been made to Government agendas including quality of life, health, community cohesion and addressing climate change.

**Natural Economy North West** project (2006-2009), championed by Natural England and the North West Development Agency (NWDA) <sup>(8)</sup>. This project highlighted green infrastructure's role in economic prosperity and stability, which included its climate change adaptation potential. This project proved to be a key factor securing the engagement of senior managers in NWDA on green infrastructure issues. The NWDA's receptiveness to the green infrastructure and climate change adaptation agenda has been crucial to the development of the initiative.

### *Details of the initiative*

The North West Climate Change Action Plan was first launched in November 2006 (CCAP 2007) <sup>(9)</sup>. It was developed with input from an advisory group of regional partners, organisations and experts. The revised NW Climate Change Action Plan 2010-2012 aims to stimulate and measure the progress of England's Northwest towards a low-carbon economy, preparing it for the challenges of a changing climate and expected future energy demands, whilst protecting and enhancing quality of life and preserving the Northwest's environment. The Plan is separated into five sections, one of which relates to 'a well adapting region.' This section details of a number of prioritised adaptation actions, some of which relate to green infrastructure. CCAP 2010 builds on CCAP 2007 in respect of the role of green infrastructure as an adaptation response.

Adaptation actions within CCAP 2007 were primarily aimed at building adaptive capacity through improvement of the evidence base and understanding the potential scope of adaptation responses required <sup>(10)</sup>. The particular focus of the CCAP 2007 in terms of green infrastructure was encapsulated in action 4.3, which is <sup>(9)</sup>:

***"To undertake scoping studies to assess future regional risks, opportunities and priorities for the potential for green infrastructure, including regional parks, to adapt and mitigate for climate change impacts and commence implementation of findings."***

This green infrastructure action was led by Community Forests North West. Between 2007 and 2010, a website was set up to house information coming out of the project, and includes an evidence base of research, policy and delivery focusing on the use of green infrastructure in climate change adaptation - [www.gjnw.co.uk/climatechange](http://www.gjnw.co.uk/climatechange). Further, a report on "Critical climate change functions of green infrastructure for sustainable economic development in the North West" <sup>(11)</sup> was completed. Also, the relationship between green infrastructure and hydrology in a changing climate were investigated.

In the refreshed CCAP 2010, green infrastructure is mainly covered by Action 10, which is <sup>(2)</sup>:

***"To develop a regional adaptation framework which sets out the regional response to projected climate change impacts and capitalises on opportunities for implementation and demonstration."***

This action includes elements relevant to green infrastructure, for example <sup>(2)</sup>:

- Action 10.2: Flood and coastal risk management through catchment and shoreline management plans
- Action 10.3: The regional assessment of the risks, opportunities and priorities for green infrastructure in adapting and mitigating for climate change.
- Action 10.5: Adaptation response strategies for the region's distinctive landscapes, habitats and species, and the assessment of the contribution of natural systems to carbon sequestration and reduced flood risk.
- Action 10.8: The development and delivery of plans for water efficiency, reliability and resilience; sustainable drainage; and associated carbon reduction.

## Implementation of the initiative

The CCAP 2007 covered the period of 2007-2009 and included a number of enabling actions for climate change mitigation and adaptation <sup>(9)</sup>. The CCAP 2010 covers the period 2010-2012. These include actions relating to adaptation using green infrastructure as discussed above. Responsibility for the delivery of CCAP rests with the Regional Strategy Team, comprising the Northwest Regional Development Agency, Government Office for the Northwest, and the Regional Leaders Board (4NW). The Regional Strategy Team is supported by the Environment Agency, and also by key advisory groups, such as the Northwest Energy Council, the Northwest Climate Change Adaptation Group, the Northwest Climate Change Transport Group, the Regional Sustainable Development Group and the NWDA's Board Environment Sub-Committee <sup>(2)</sup>.

Each action outlined in the CCAP 2010 is assigned to a lead organisation responsible for defining the detailed steps required to ensure its effective delivery, with assistance from supporting partners. All the organisations responsible for delivering actions in the CCAP form the **Northwest Climate Change Partnership**.

Action 10 of CCAP 2010, which includes adaptation through the use of green and blue infrastructure, is overseen by the **Northwest Climate Change Adaptation Group**. Specifically <sup>(2)</sup>:

- Action 10.2: led by the Environment Agency;
- Action 10.3: led by the Community Forests North West;
- Action 10.5: led by Natural England;
- Action 10.8: led by United Utilities.

### *Building the evidence base*

The 'Adaptation Strategies for Climate Change in Urban Environments' (**ASCCUE**) project led by the University of Manchester (2003-2006) was a key source of scientific information on climate change adaptation in the region. This project also highlighted the role of green infrastructure as an adaptation response. ASCCUE used Greater Manchester as a case study to model future climate scenarios and the potential adaptation response of various green infrastructure interventions <sup>(12)</sup>.

In 2008 the report "**Critical climate change functions of green infrastructure for sustainable economic development in the North West**" <sup>(11)</sup> was produced by Community Forests Northwest as part of the CCAP process. The aim of this work was to highlight how and where the climate change mitigation and adaptation functions of existing and/or potential new green infrastructure are critical to the short term sustainable economic development of the NW region. Within this report, 'pinch points' were interpreted as being areas of regional economic importance/interest where there are potential considerations for green infrastructure climate change functionality, and where green infrastructure solutions may overcome the considerations. For example, areas of Salford in Greater Manchester can be seen as a 'pinch point'; it has been identified as a housing market renewal area with significant restructuring and development taking place, yet it is also subject to flood risk. A potential action could be to invest in green infrastructure upstream in the catchment to slow down flood waters, reducing risk of flooding and enabling development.

This report is currently being updated as "Green infrastructure: how and where can it help the Northwest mitigate and adapt to climate change?". Alongside ASCCUE project outputs <sup>(12)</sup>, these reports from Community Forest Northwest provide a strong information base for the use of green infrastructure for adaptation in Northwest England and the development of associated policy initiatives such as CCAP 2007 and 2010.

## *Monitoring and evaluation*

CCAP 2007 included some **provisional regional indicators and targets**, against which its performance could be measured, and a progress report against actions was published in 2008 <sup>(9)</sup>. The CCAP 2010 does not set targets associated directly with adaptation to climate change with the use of green and blue infrastructure. However, it is noted that further targets and indicators will be developed when appropriate data sets become available <sup>(2)</sup>.

## **Stakeholder engagement**

### *Collaboration with key stakeholders*

The **NWDA** is the clear leader of the CCAP process. The success of the CCAP lies in its collaborative approach, which was secured by establishing the **Northwest Climate Change Partnership**. This is a group of public and private sector organisations responsible for driving forward and supporting the implementation of the Climate Change Action Plan. Collectively, they are accountable for the delivery of the actions included in the Plan. They also provide advice and recommendations to strategic regional bodies on energy and climate change matters. The partnership was formed in January 2007 and meets quarterly. The membership of the Northwest Climate Change Partnership has evolved to include national and regional cross-sector representation, including city-region and sub-regional partners <sup>(2)</sup>.

At their first meeting, the North West Climate Change Partnership recognised that successful delivery of the Action Plan would be reliant upon rigorous coordination and communication of regional activities and effective co-operation between the regional governance organisations. Consequently, a North West Climate Change Unit has been established, hosted by the Northwest Development Agency, to support the implementation of the CCAP and to coordinate the activities of the delivery partners. The Unit acts as a single point of focus for the CCAP. Sub-regional climate change co-ordinators are in place, working with the Unit, to oversee climate change work at the sub-regional level. Since 2007, a climate change adaptation group has been established to specifically support and oversee the delivery of the adaptation actions. Several of the actions “for catalysing action” in CCAP 2010 aim to support existing regional partnerships, look for opportunities for pan-European cooperation and knowledge transfer, and maximise access to new sources of transnational funding <sup>(2)</sup>.

In terms of green infrastructure, the engagement of a wide range of actors from outside the NWDA has been central to the prominence of this issue in regional policy and the CCAP. These actors include:

- Government Office North West;
- 4NW - the regional leader’s forum, which also secured the political support for the initiative;
- Natural England North West regional office, which co-ordinates projects, research the economic benefits, and facilitate work at regional, sub regional and local level;
- Community Forests Northwest, as the champions of the green infrastructure concept and conveners of the green infrastructure Think Tank and Forum.
- The academic community who have provided a scientific framework for policy to build upon.

### *Engaging the public*

The Northwest Climate Change Action Plan has been developed with input from an advisory group of regional partner organisations and experts. Over 25 workshops and presentations were undertaken as part of the consultation exercise, and over 130 responses were received from groups and stakeholders from across the region. One of the actions in the Plan is to increase good

practice in public engagement to facilitate the development of low carbon energy generation schemes and support Local Authority planning decisions relating to climate change.

## Sources of funding

The regional authorities, principally the Northwest Development Agency, have funded the CCAP process. The recent involvement of the Agency in the Interreg IVC GRaBS project has provided additional funding that has been targeted specifically at developing capacity around green and blue infrastructure adaptation responses.

## Can it have an impact?

The strong regional policy framework emphasising the role of green infrastructure in adaptation to climate change has supported the CCAP and the implementation of related actions. In addition, the Natural Economy North West project <sup>(8)</sup> highlighted significant economic benefits of green and blue spaces. These factors have helped green infrastructure to become established as a key element of spatial planning in the region. It is also significant that the organisational structures set up by the Community Forests North West mean that Northwest contains England's most comprehensive network of academics, practitioners, funders, policy makers and planners focused on green infrastructure. This group can provide the necessary advice and help for local authorities in developing practical solutions for adaptation to climate change using green and blue infrastructure approaches.

Indeed, over the past two years there has been significant progress on the implementation of the Northwest England's CCAP process. In particular, the evidence base, necessary to implement adaptation actions associated with the use of green and blue infrastructure, has been considerably strengthened. A marked increase in understanding of climate change risk and resilience across both the public and private sector has been observed. Strong partnerships have been developed, supported by topic-based networks including green infrastructure groups. Plans and strategies are being delivered at sub-regional and local level, and the North West is now considered to be a leading English region on climate change <sup>(2)</sup>.

The sub-regions within the North West have been proactive in developing green infrastructure documents. The Green Infrastructure Framework for Greater Manchester <sup>(13)</sup> and Lancashire Green Infrastructure Strategy <sup>(14)</sup> are examples of green infrastructure strategies for, respectively, urban and rural areas. Both these documents emphasise links between green infrastructure and climate change adaptation. Production of such documents at subregional scale demonstrates that the actions contained within the regional CCAP are being interpreted to match local conditions and highlight that its principles are being implemented in practice.

However, there remains considerable uncertainty existing around the future of regional governance structures in Northwest England following the UK's parliamentary elections of 2010 and the subsequent change of government. This could ultimately act as a threat, where policy stability is needed to drive long term actions such as those relating to adaptation and green infrastructure. Whether the regional strategy (into which the CCAP is designed to feed) remains a statutory document or not, it will act as a clear statement of regional priorities and principles that could guide local planners and decision makers in their actions on adaptation and green infrastructure.

### *Additional benefits*

The collaborative approach to the CCAP has led to a formation of lasting working relationships between the organisations involved in the process. Developing the CCAP has also increased stakeholder's perception of the compatibility between the objectives associated with the natural environment and economic development in the region. Moreover, the extensive research that led to establishment of a sound database of policies, research and practice associated with the use of green infrastructure in climate change adaptation provides an excellent resource for policy-makers, researchers and general public to use in the future.

## **Key messages**

- Emphasising the potential economic losses associated with not tackling climate change has increased focus on developing adaptation strategies.
- Highlighting the importance of green infrastructure to climate change adaptation in strategic statutory documents at the regional level provided the CCAP with a strong framework and mandate to build upon.
- The region's commitment to providing the 'evidence' needed to influence economic decision makers was successful in raising the profile of green infrastructure.
- Involvement of senior decision makers in the NWDA was crucial for the success of the initiative.
- Setting indicators and targets to establish the trajectory of change in the CCAP at an early stage in the process provided a good way to monitor the achievement of the plan's vision.
- Dividing the broad vision of the CCAP into small, manageable actions each of which was assigned a delivery agent helped to ensure the successful implementation of the actions contained in the plan.
- The impact of individual advocates for green infrastructure, such as the Community Forests Northwest, has been tremendous. Informal groups of key stakeholders (such as the green Infrastructure Think Tank) have also been influential in promoting the concept of green infrastructure in the region.
- There is a strong governance framework in place to take forward adaptation activities in the Northwest region, represented by the NW Climate Change Partnership and, specifically, by the North West Climate Adaptation Group.

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