



Climate Change Schools Project ADAPTATION CHALLENGE

Adapt

Verb

- *to adjust (something or oneself) to different conditions*
- *to change something to suit a new purpose*

What is Climate Change Adaptation and why do we need it?

The world's scientists agree that the earth's climate is changing.

Some climate change is now unavoidable - regardless of what we do in relation to greenhouse gas emissions such as carbon dioxide, methane, nitrous oxide etc. Our historic emissions, the persistence of these gases in the atmosphere and the warming of the oceans make some change in our climate inevitable over the next 40 to 50 years.

So, regardless of any emission reductions (or reducing our carbon footprints), we are guaranteed a certain amount of climate change during ours, and our children's, lifetimes. People have always adapted to variations in their climate. In the past this has been by making preparations based on their knowledge gained through experience of local weather patterns. Consider the Inuit who hunt based on their traditional knowledge of sea ice extent and seasonal temperature changes, or farmers who have known when to plant certain crops or when to protect their livestock from seasonal pests. Periodically, people have also been forced to react to and recover from extreme events and 'surprises', such as floods, droughts and storms. However, climate change is now resulting in a move away from historic weather patterns and is linked to an increase in severity and frequency of more extreme events – torrential rainfall, heat-waves, droughts, wildfires etc.



This means communities' past experience and traditional knowledge alone can no longer provide a reliable guide to the climate they expect in the future. We will all need to take action to understand the likely impacts of climate change and prepare for them. This is termed **Climate Change Adaptation**. This is different to 'climate change mitigation' which is more about reducing our carbon footprints and becoming more resource efficient.



How can communities adapt to climate change?

Climate Change Adaptation really revolves around two areas:

(1) Raising Adaptive Capacity – quite simply, we cannot adapt very easily to changes in climate unless we understand what those changes are likely to be. The North East of England has recently carried out a very detailed study to establish:

- Our regional baseline climate – that is, what has our climate traditionally been like?
- Recent weather events and impacts - what is our current vulnerability or our weaknesses in dealing with these?
- Climate projections to 2050 for the region to local authority area level based on cutting-edge techniques– this tells us what we might expect our future climate to be like in the North East in the coming decades.
- Potential impacts of projected change on key assets and infrastructure – this tells us about our future vulnerability, or where our weaknesses might be in dealing with future climate change
- A broad outline of adaptation required – the measures we need to take now to protect ourselves and our communities over the coming decades to live positive, happy and healthy lives.

This information is available to all via the website – www.adaptne.org and further information is given below.

But what does it mean for you?

Raising awareness of the likely impacts of coming climate change through education and training for all ages, ensuring that the impacts of climate change are considered in planning our developments and service delivery, and putting in place ways of managing the risks all improve our ability – our capacity - to adapt.



(2) Physical Adaptation – We will also need to make physical changes to our buildings, infrastructure (drainage, bridges etc), workplaces, schools and homes to ensure that we cope well with expected climate change. We will need to ensure they are capable of coping with projected conditions, do not overheat or flood, that our transport and services can continue and that our communities and businesses do not suffer.

These physical adaptations will take many forms, from strengthening vulnerable bridges or building flood defences, through to providing shade for buildings and classrooms, ensuring guttering is maintained and of sufficient ability to cope with deluges, raising computers / equipment out of basements and off the floor away from potential flood waters, or planting new species of garden plants able to cope with a new climate. These are just a few ideas – the aim is to be practical, though also creative, in planning how we can physically adapt our surroundings to climate change.

Overall, the important things to remember are that we need to act now to put in place proper plans which will help us to increase our ability to adapt to climate changes ('building adaptive capacity'), and find ways to help lessen, adjust to and take advantage of the consequences of climate change ('delivering adaptation actions'). These actions are required at all levels - international, national, regional and local. If we are to ensure the resilience of our communities in the long run, then we will all need to work together.



How is the North East's Climate likely to Change?

The **North East Climate Change Adaptation Study** (www.adaptne.org)¹ found that we are already vulnerable to current extreme weather events, like floods, droughts and heat-waves. This means that we are actually not very well adapted to our climate in the first place! Computer modelling of potential climate change for the North East indicates that we will become even more exposed and vulnerable to climate change impacts in future. The Study has been at the forefront of research around the country, as it predicts in detail what may happen locally to our communities by the year 2050.

The most important findings for the North East to the year 2050 include:

- **Annual** rainfall is likely to reduce throughout the region by around 10%.
- Rainfall is projected be very variable across the **seasons** – increases of up to 21% in winter, reductions of up to 37% in summer.
- Deluges, or prolonged heavy rainfall will increase (e.g. September 2008)
- Some areas will see an increase of up to 20% rainfall during these extreme events.
- Average **seasonal** temperatures will increase, with a region-wide annual average temperature change of just under 2°C.
- Extreme **hot weather** will increase by around 3°C
- Events at or above the 28°C threshold temperature used for the definition of heatwaves will occur more often – this has a major impact on the elderly and young people.
- Frosty days will decrease.
- There will be less **snowfall**, from 45% and 83% depending on location in the North East.
- **Mean sea levels** will rise around our coastlines - around 0.3m, although some recent studies suggest far higher increases.
- **Sea surge levels** will also rise around 0.3m and 0.35m



So what's currently being done to adapt to climate change in the North East of England?

The North East is already leading the way in many areas of climate change adaptation, but there is still a lot to be done. The Environment Agency, Northumbrian Water Limited and North East Councils are already investing millions of pounds in flood defence works, water supply, treatment and drainage works, and transport improvements.

The North East Climate Change Partnership is helping to deliver a series of innovative projects. These include the Climate Change Schools Project, Climate Change Business Adaptation and Cheviot Futures. Some of these projects are funded through the Local Levy raised by the Northumbria Regional Flood Defence Committee.

However, the biggest challenge now is to make climate change ADAPTATION part of all planned investment in the region. This needs the help of everyone if we are to 'future-proof' the North East against climate change and to learn the skills needed to predict effectively and make the right decisions in the short term. What better way to encourage everyone to get involved than to have the next generation, our young people, who will have to live through these changes, to lead the way!