

## CLIMATE CHANGE

### Purpose

To support the Partnership in delivering its Multi-Area Agreement (MAA) commitments on Climate Change and to identify the priorities it should address in continuing to reduce carbon dioxide emissions and adapting to the impacts of the changing climate.

### 1. Summary

- 1.1 *“Tackling Climate Change is a key consideration of the MAA and the West of England Partnership will be developing its capacity to understand the effects of its activity on Climate Change and integrating climate considerations into its arrangements.” (West of England MAA 2009)*
- 1.2 This paper aims to help the Partnership achieve that commitment. It deals with both the emission of Carbon Dioxide – the principal greenhouse gas - and the impacts of a changing climate on the West of England and how we need to adapt.
- 1.3 It identifies the national and local level drivers for action on climate change and the need for consolidation at the West of England level. This will ensure partnership programmes support local commitments on climate change and the delivery of other MAA goals.

### 2. Proposals

- 2.1 It is proposed that the Partnership:
  - a) Identifies the extent to which its strategic responsibilities provide a framework for contributions to national targets for carbon reduction, combining the effects of national, council and partnership action.
  - b) Supports the Councils in developing spatial planning policy that demonstrates how development can reduce carbon emissions and adapt to the impacts of climate change.
  - c) Promotes balanced communities and sustainable travel patterns across the sub-region and ensures design and construction standards maximise opportunities and reduce potential negative impacts.
  - d) Supports the aspirations of local Sustainable Community Strategies and Joint Waste Core Strategy policy to promote waste prevention.
  - e) Fully exploits the JLTP3 process to promote sustainable travel patterns, reduce emissions from transport and create a resilient and adaptable transport system.
  - f) Uses the Local Economic Assessments as a basis for defining a low carbon and resilient economy for the sub-region.
  - g) Works with the Councils to consolidate strategic risks from the impacts of climate change, identified through the climate change risk assessment process, and incorporates these into the Partnership’s work and projects.
  - h) Establishes processes with the Councils to make effective use of the expertise we already have on climate change and to identify what additional support is needed to deliver the Partnership’s goals.

### 3. Legislation and Policy

#### ***UK Climate Change Act***

- 3.1 The UK has passed legislation that introduces the world's first long-term legally binding framework to tackle the dangers of climate change. The Act sets a legally binding target of at least an 80% cut in greenhouse gas emissions by 2050 and a reduction in emissions of at least 34% by 2020 (against a 1990 baseline). It also established a carbon budgeting system, which caps emissions over five-year periods.
- 3.2 The Act also confers specific responsibilities on the Councils for Adaptation to the effects of climate change and Councils are required to follow Government requirements as "reporting authorities". In essence, under National Indicator 188, Councils need to:
- Assess the risks and opportunities comprehensively across the area;
  - Take action in any identified priority areas;
  - Develop an adaptation strategy and action plan setting out the risk assessment, where the priority areas are – where necessary in consultation & exhibiting leadership of local partners - what action is being taken to address these, and how risks will be continually assessed and monitored in the future; and
  - Implement, assess and monitor the actions on an ongoing basis.
- 3.3 Action by local authorities and the Partnership will be critical to the achievement of the UK Government's climate change objectives; we are uniquely placed to provide vision and leadership and through our powers and services to support action by businesses, individuals and communities.

#### ***National measures, including the UK Low Carbon Transition Plan***

- 3.4 The UK Low Carbon Transition Plan (LCTP) sets out a package of measures to meet the UK's carbon targets to 2022.
- 3.5 The LCTP predicts that the power sector will make the greatest emission reductions. A key tool for delivering this is the EU Emissions Trading System, which places a limit on emissions from electricity generation and heavy industry. The Government predict that 40% of the UK's electricity will be zero carbon by 2020 thereby reducing the carbon intensity of the electricity that the sub-region uses. Other major savings will come through tightening building regulations, new vehicle policies, additional renewable transport fuels, energy efficiency in homes, smart metering, the Community Energy Savings Programme and zero carbon homes.
- 3.6 Nationally, an adaptation programme has been established to co-ordinate action. This includes a UK wide climate change risk assessment to address the most pressing climate change risks to England. The programme and risk assessment is to be reviewed every five years.

## 4 West of England Data

### Carbon Dioxide Emissions

4.1 Carbon Dioxide emissions in local authority areas in the UK are currently measured in a consistent national process which provides data for National Indicator 186.

This includes three sectors:

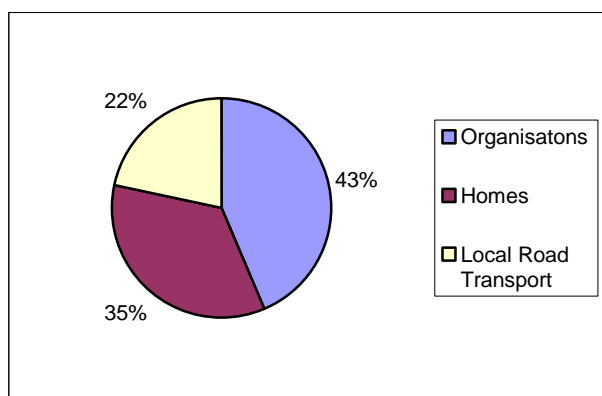
- Energy use in **homes** - mainly gas and electricity
- Energy use in **businesses and organisations** - mainly gas and electricity. It excludes the large energy intensive businesses that are participants in the EU Emissions Trading Scheme.
- Local road **transport** activity - excluding motorway traffic.

The CO<sub>2</sub> direct emissions are given in Table 1 and Figures 1 and 2.

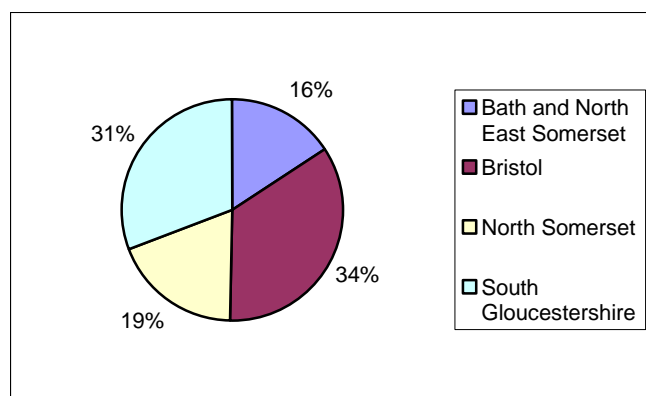
**Table 1: CO<sub>2</sub> direct emissions 2007**

1,000's tonnes	Organisations	Homes	Local Road Transport	Total
Bath and North East Somerset	345	413	256	1,015
Bristol	900	846	462	2,208
North Somerset	451	480	289	1,220
South Gloucestershire	1,016	554	415	1,984
<b>West of England</b>	<b>2,367</b>	<b>1,879</b>	<b>1,166</b>	<b>5,412</b>

**Figure 1: CO<sub>2</sub> direct emissions 2007 – by sector**



**Figure 2: CO<sub>2</sub> direct emissions 2007 – by local authority**



4.2 Direct emissions have been measured on a consistent basis nationally, for NI186, since 2005 and the most recent data is 2007. During that period direct emissions in the sub-region reduced by 3.5%.

## ***The Local Impacts of Climate Change***

4.3 New UK climate projections ('UKCP09') were published in 2009. UKCP09 reflects uncertainty in future climate by setting out a range of possible outcomes for each weather variable, along with the probability of each outcome. For South West England by the 2050's UKCP09 assigns the highest probability to the following changes<sup>1</sup>:

- Warmer, wetter winters:
  - Average temperature +2.1°C
  - Average precipitation +17%
- Hotter drier summers
  - Average temperature +2.7°C
  - Average daily maximum temperature +3.8°C
  - Average precipitation -19%
- Sea Level Rise (in the Severn Beach area) of 20cm by 2050 and 40cm by 2100.

4.4 It is important to remember that these averages mask the extremes, which are the events that disrupt normal life, sometimes with enormous consequences for both people and infrastructure, for example with the daily maximum summer temperature of +3.8%. The projections also predict an increase in extreme weather events.

4.4 Work is underway in all of the Councils on their comprehensive risk based assessment of vulnerabilities to weather and climate. The priority risks and opportunities identified so far are given in Appendix 1.

4.5 At the West of England scale the key impacts are emerging as:

- Flood risks to critical transport and other infrastructure, economic activity and homes
- Damage to infrastructure, communication services, buildings and agricultural crops from storms and extreme heat
- Risk of water shortages
- Pressure on strategic health services and civil contingency services
- Stress on natural systems, environmental services and areas of biodiversity value that contribute to the economic and social well being of the sub-region
- New commercial opportunities e.g. flood defence and water efficiency technologies, insulation and energy generation

## **5. Delivering the Partnership's Commitments**

5.1 Each of the local authorities is acting to cut direct emissions and to adapt to the impacts of climate change. Councils are also promoting wider action through their LSP Partners. These actions will deliver sub-regional outcomes. However, many of the activities of the Partnership are key to the success of these measures.

5.2 The following section outlines the main current activities, issues and opportunities at the sub-regional scale to deliver on the Partnership's MAA commitments.

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<sup>1</sup> Based on the 'medium emissions scenario'

5.2.1. **MAA Commitment:** *The Partnership will work with Government to achieve the targets set out under the Climate Change Act*

- The national targets developed under the Climate Change Act are based on a 1990 baseline and are set out in 5 year bands. We do not have a West of England baseline for 1990 because local data on emissions has only been available from 2005 but a meaningful baseline could be established relatively easily.
- To provide meaning to this commitment the Partnership needs to identify the level of carbon reduction that will be achieved by the collective efforts of the Partnership, the Councils and the Local Strategic Partnerships, supporting and adding value to national action.
- The University of the West of England is running a research project to develop a comprehensive assessment of emissions from the West of England and the generation of a robust and practical CO<sub>2</sub> reduction pathway, from the present emission state to a future low carbon scenario in 2050. This provides an opportunity for the partnership and partner to engage in developing scenarios for the future.
- Forum For The Future's West of England Programme aims to help make the sub-region the most sustainable in the UK. It is doing this by working in cross-sector partnerships with the major government bodies, businesses and third sector organisations to address major sustainability issues and to showcase best practice solutions. Climate change as a priority area for the programme.

5.2.2. **MAA Commitment:** *That the Partnership promotes sustainable patterns of development and of design and construction.*

- Transport is a key generator of CO<sub>2</sub>. The location of homes, jobs and community facilities has implications for journey lengths and mode of travel. Supporting viable public transport services and promoting development at locations well served by public transport, with good access to district and town centres, will contribute significantly to CO<sub>2</sub> management.

5.2.3. **MAA Commitment:** *Provide support and coordination of activity to achieve low and zero carbon new development by 2016 (housing) and 2019 (non domestic sector).*

- Single Conversation – Although sustainability is core to the Homes and Communities remit, it is important that individual Council targets and a West of England commitment to carbon management from a key part of the infrastructure investment framework.
- A variety of programmes are being developed to address the challenge of improving the performance of the existing built environment. For example, Forum for the Future's 'Refit West' project aims to provide a straightforward business model for householders to get their homes retrofitted.

5.2.4. **MAA Commitment:** *Stimulate the increased installation of renewable energy technologies in the region.*

- The Partnership can play a key role in the development of renewable energy infrastructure through its planning and economic development responsibilities. Developments at Portbury, Avonmouth and Severnside all point to the need for integrated work, which could be facilitated through the Partnership.

5.2.5. **MAA Commitment:** *Undertake regional activity to support carbon reductions and demand management from regional and local multi-modal transport.*

- Transport accounts for 22% of direct emissions in the sub-region and it has been growing - with efficiency improvements overtaken by increased traffic. Further improvements in efficiency are planned but local action will be needed to translate this into carbon savings through modal shift.
- Carbon reduction will be a key goal of the Joint Local Transport Plan. Given the lead times of investment and changes in infrastructure and travel behaviour this JLTP is likely to be the Partnership's most important opportunity to affect direct emissions by 2020.
- There are already specific studies – for example DaTS (Delivering a Sustainable Transport Strategy) that examine opportunities for carbon efficiencies in the transport infrastructure. This type of assessment will need to be embedded in all future developmental work. On climate change, the main initiative has been the West of England Carbon Challenge, which is bringing big companies and public bodies in the city-region together to cut their CO2 emissions through joint target setting, challenge and support.

5.2.6. **MAA Commitment:** *Embed long-term carbon management and resource efficiency [in our economy] through business planning and investment and economic development.*

- Businesses and the public sector account for 43% of our direct emissions and are reducing their emissions. There are national programmes to reduce the carbon intensity of energy, to develop the environmental business sector and to encourage businesses to be more resource efficient.
- Resource efficiency and carbon reduction are a key product in the Solutions for Business portfolio promoted by Government and provided by Business Link. Support for these and the environmental sector combine business advice and financial support. There are also other initiatives such as Forum for the Future's West of England Carbon Challenge, which helping big companies and public bodies in the city-region to cut their emissions.
- At sub-regional level the Bristol Environmental Technology Sector (BETS) network will continue to support businesses in that sector within and beyond Bristol.
- The Local Economic Assessments being undertaken by the Councils will provide a basis for developing a strategic approach to delivering on this commitment and help to create a low carbon economy. The Partnership has a key role in ensuring that these opportunities are realised.
- A *Total Place* project on carbon management is being undertaken (led by Bath and North East Somerset) which will analyse carbon footprints across the public sector and assess the economic impact of climate change and peak oil. This project will provide valuable information to assist carbon management planning across the West of England.

5.2.7. **MAA Commitment:** *Comprehensively assess the risks and opportunities of*

*changes in our climate, respond to priority issues such as flood risk, embed climate change in the plans and decision making of public and private sector organisations.*

- Work is underway to identify risks from a changing climate within each Council area. Some risks are best managed locally and some benefit from a more strategic approach. For example, where risks are managed by strategic public, private or community sector bodies it would be beneficial for local authorities to take a shared approach.
- Our transport infrastructure is vulnerable to flooding and increased storms, and this will increase over time. The Joint Local Transport Plan 3 provides a key opportunity to reduce this vulnerability and ensure that investment is made on a sound basis. To do this the Partnership will need to build on the work of the Councils to assess the vulnerability of the existing and proposed transport infrastructure and identify measures to manage and reduce vulnerability.
- Waste management infrastructure and processes could be vulnerable to the impact of extreme weather. Future weather and climate should be taken into account in decision-making on waste management in the West of England.
- Through their development planning processes Councils are working to incorporate resilience into new development and the Partnership has an important role in the strategic aspects of this. In particular:
  - Support for landscape scale conservation and Green Infrastructure initiatives to improve the ability of natural systems and species to adapt to climate change, eg improving habitat connectivity
  - Using open spaces and agricultural areas to manage flood risk strategically

**5.2.8. MAA Commitment:** *Increase business preparation for the opportunities and risks of climate change.*

- The economy of the sub-region will be affected by climate change – primarily through an increase in risk of flooding, storms and extended hot spells.
- The partnership has a key role to help businesses manage these new risks and to reduce the overall level of risk through effective strategic planning of infrastructure and development.
- The Local Economic Assessments being undertaken by Councils and brought together as a sub-region is a key opportunity to integrate climate impacts into our economic planning to manage risks and realise any opportunities arising.

**6. Recommendation:**

That the Board gives its views on the report and adopts the proposals set out at Section 2 of the report.

## **Authors**

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## **Appendix 1: Risks and Opportunities from Council risk assessments**

Note - this a combination of risks identified at Bristol and South Gloucestershire risk workshops.

### *Infrastructure and Buildings*

- Fluvial and/or tidal flood defences unable to cope with increased flood risk – with associated flooding/disruption of utilities and transport infrastructure
- Surface water drainage and sewerage systems unable to cope with increased intensity of rainfall – with associated flooding/disruption of utilities and transport infrastructure
- Damage / Disruption to properties (homes, schools, hospitals, care premises, business premises, etc) resulting from flooding and increased storms
- Water shortages impacting on water dependent industries and domestic users
- Decreasing availability or affordability of insurance for infrastructure/buildings in flood risk areas
- Overheating of infrastructure/buildings in summer and increased demand for cooling
- Increased pressure on infrastructure, utilities and services (e.g. housing, education) from arrival of migrants from areas worst affected by climate change
- Increased potential for renewable sources of energy

### *Economy*

- Flood/storm damage to business premises and transport infrastructure
- Risk to agricultural economy
- Damage to broadband/telecoms due to extreme weather
- Disruption to economic activity from over-heating of business premises
- Disruption to economic activity from water shortages
- Increased commercial opportunities in water management technologies (including flood defence and water efficiency) and opportunity for education to encourage activity
- Increased potential for renewable sources of energy
- Increased tourism opportunities

### *Health*

- Increased risk to ill health from over-heated buildings (e.g. dehydration and lethargy) and exposure to sun and hot weather (e.g. sunburn, heatstroke, and/or increased air pollution)
- Increased risk to public safety from flooding – immediate health risk/trauma to individuals, e.g. drowning, and longer term health impacts e.g. anxiety/isolation, contaminated water
- Increased health impacts related to poor nutrition. (The availability, diversity and price of food could be adversely affected by the local and global impacts of climate change on agriculture)
- Reduction in air quality
- Health benefits from a more outdoor lifestyle

## *Natural Environment*

- Increased pressures on green spaces (for flood storage, food production, recreation, etc) in the context of an increasing population and potentially diminishing open land area
- Disruption to seasonal climate patterns affecting flora and fauna
- Isolation of species and increased habitat fragmentation
- Drought vulnerable species less successful
- Threats to trees from storms, drought and pests
- Effects on pollination – including bees, butterflies and moths
- Loss of salt marsh – Severn Estuary
- Increase in or change to type of pests and diseases
- Reduction in soil quality from impact of water, salinity, drought, wind and use of fertilisers and pesticides
- Effects on aquatic environment from drier summers (lower river flows with less dilution of pollutants) and wetter winters
- Exposure of species/habitats to water pollution e.g. from flooding of sewers, or more diffuse pollution e.g. run-off from agricultural land
- Expansion of invasive species
- Reduced adaptive capacity due to housing densification