Committee on Climate Change Adaptation

Annex C: Technical Annex to Chapter 4: Society Theme

1. Health and social care services
2. Emergency planning and response
3. Recovery from extreme weather events
4. Resilience of the population to changes in temperatures
5. Resilience of people to pathogens, air pollution, UV radiation
6. Public understanding of climate related risks
7. Business impacts from extreme weather
8. Business opportunities from climate change
9. Supply chain disruptions
10. Water demand by industry

Introduction

- This slide pack:
  - Is the technical annex to **Chapter 4: Society** in the ASC's first statutory report to Parliament on the Scottish Climate Change Adaptation Programme, available at www.theccc.gov.uk/publications
  - Provides the latest trend information on indicators of exposure, vulnerability, action and realised impacts that informed the ASC's assessment. Many of these were developed by ClimateXChange, which were published on their website: http://www.climatexchange.org.uk/adapting-to-climate-change/indicators-and-trends
  - Will be updated periodically as new data becomes available.
  - Highlights indicators that would be useful but where the necessary datasets have not yet been identified.
  - Follows the structure of the society chapter in the ASC's progress report, which is based on the 'adaptation priorities' the ASC identified for health wellbeing and businesses.

Society theme – Health and Wellbeing Scorecard

Adaptation priority	Is there a plan?	Are actions taking place?	Is progress being made?
1. Health and social care services	Amber	Green	Grey
2. Emergency planning and response	Green	Green	Grey
3. Recovery from extreme weather events	Amber	Amber	Grey
3. Resilience of the population to changes in temperatures	Amber	Green	Amber
4. Resilience of people to pathogens, air pollution, UV radiation	Amber	Green	Grey
5. Public understanding of climate related risks	Green	Green	Grey

1. Health and social care services

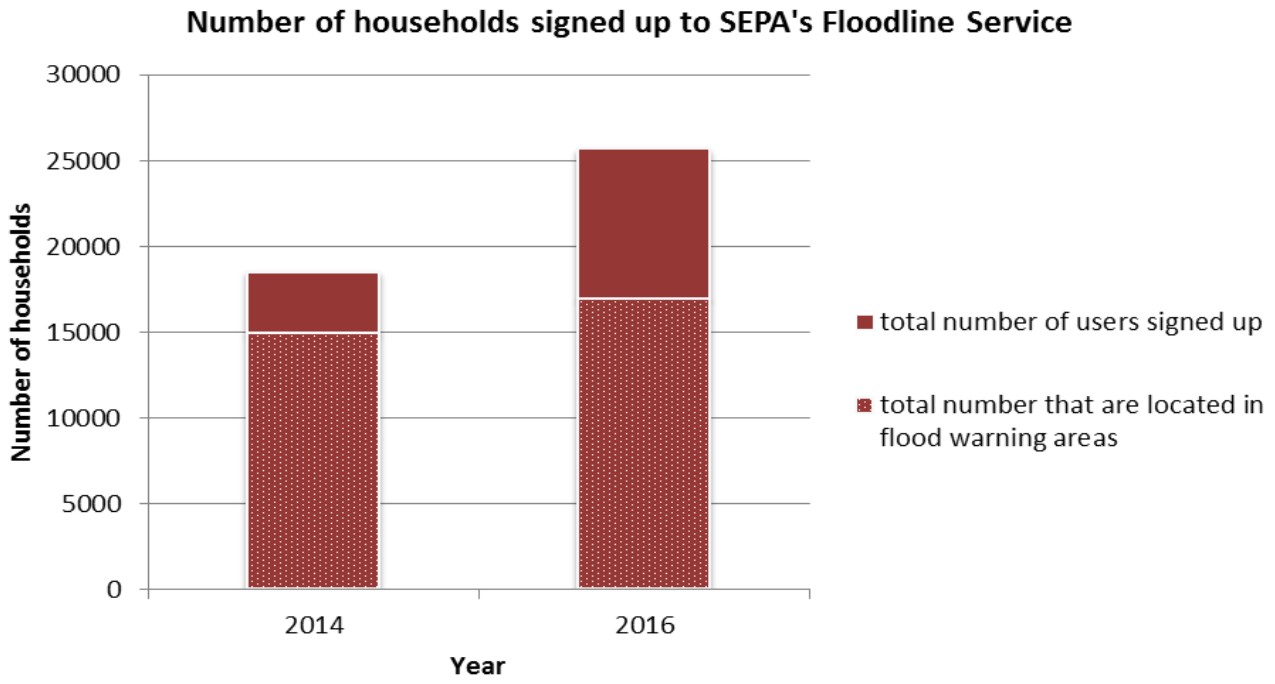
Indicator	Data series	Source	Trend	Implication
E.g. Number of service providers with site-level resilience measures in place for flood, cold and heat.	?	?	?	Data on the uptake of site-level measures to cope with flooding, cold snaps and heatwaves is not currently collected.

2. Emergency planning and response

Indicator	Data series	Source	Trend	Implication
Number of registered users of Floodline service	2011 - 2016	SEPA	⇧	Households who have signed up to the floodline service should have greater awareness of their general level of flood risk and advance information about impending flood events.

2. Emergency planning and response

Number of registered users of Floodline service	⇧	Households who have signed up to the floodline service will have greater awareness of their general level of flood risk and advanced information about flooding episodes.



Notes: Data is not publicly available at present and is provided directly from SEPA.

- The total number of floodline users has increased since

Source: SEPA (unpublished data)

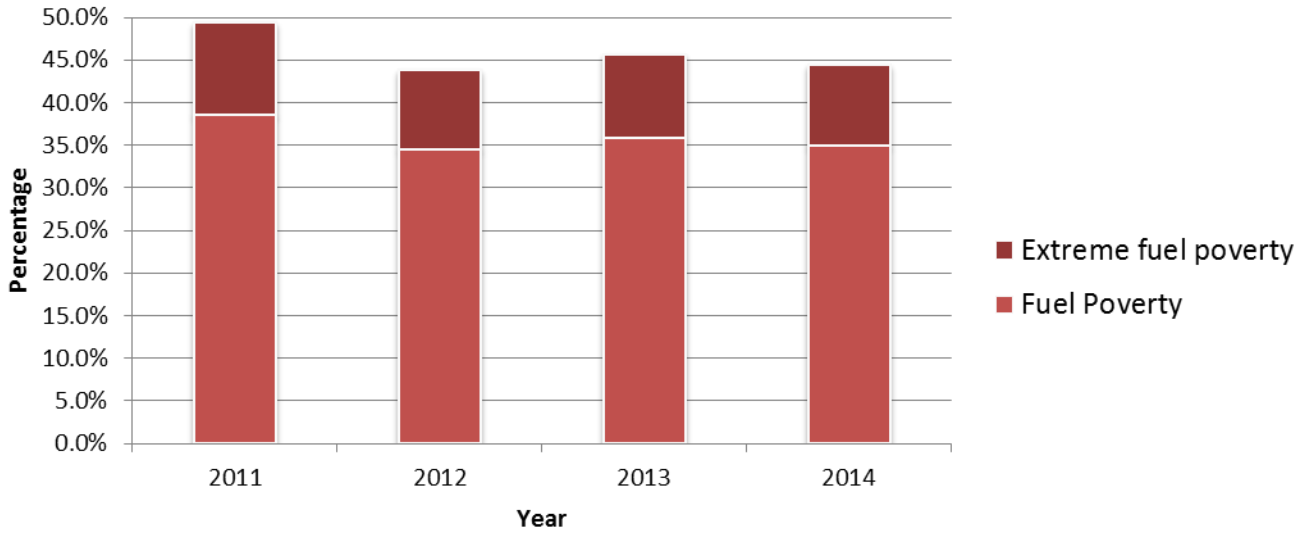
3. Resilience of the population to changes in temperatures

Indicator	Data series	Source	Trend	Implication
Number of households in fuel poverty	2003/04-2013 (New model from 2010)	Scottish Housing Condition survey	⇩	The percentage of households in fuel poverty and extreme fuel poverty has decreased slightly since 2011 but remains high.
Number and percentage of population aged over 75	1971 - 2015	National records of Scotland	⇧	Both the total number and percentage of the Scottish population aged over 75 has increased over time. This is increasing the total number and proportion of the population that is particularly vulnerable to both heat and cold.

3. Resilience of the population to changes in temperatures

Number of households in fuel poverty	⇩	Rates of fuel poverty are slowly decreasing according to the data presented below, but there is little change between 2011 – 2014 and a small time series, so this indicator cannot yet be given a green RAG score.

Percentage of fuel poor and extreme fuel poor households in Scotland, 2011 - 2014



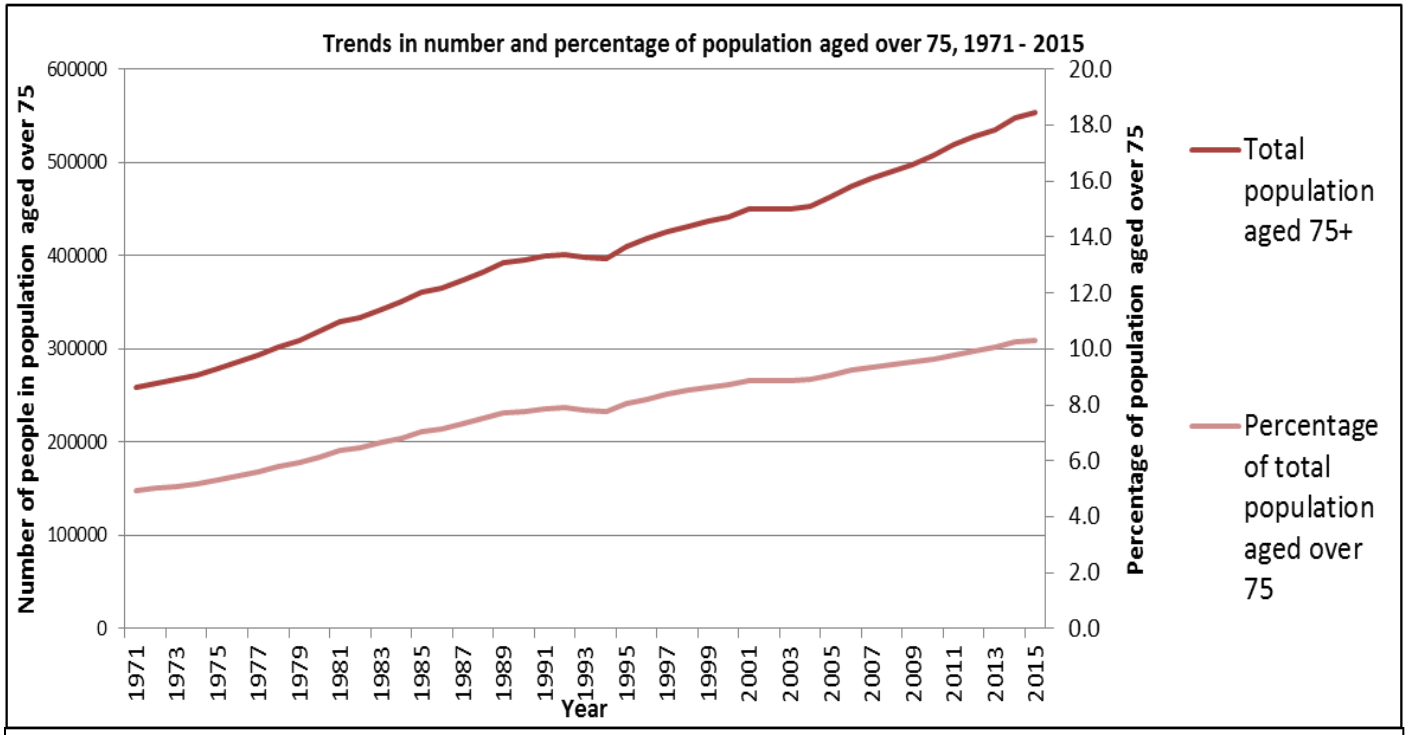
Notes: This data shows a different trend from previously published data that suggested fuel poverty levels rose between 2011 and 2014. The methodology for estimating the number of fuel poor households changed in 2014. The new method uses an updated BREDEM12 model to estimate energy requirements, includes modelled effects of the Warm Home Discount and more accurate information on fuel prices.

- The number of households living in fuel poverty is not the same as number of people exposed to cold, but is often used as a proxy indicator as it provides an indication of the population that is at risk of not being able to heat their homes to a sufficient standard in cold weather.

Source: Scottish Housing Condition Survey (2014)

3. Resilience of the population to changes in temperatures

Number and proportion of Scottish population aged over 75	⇧	People aged over 75 are more at risk of health effects in hot and cold weather compared to the general population, in part due to a reduced ability to thermoregulate.



Notes:

- Both the number and percentage of the population aged over 75 has increased between 1971 and 2015. This trend has led to an increase in both the size of the vulnerable population and the proportion of the Scottish population at risk.

Source: National records of Scotland

4. Resilience of people to pathogens, air pollution, UV radiation

Indicator	Data series	Source	Trend	Implication
Background UV levels	?	?	?	Background UV levels are an indicator of exposure to UV radiation. They do not provide a complete picture however, as people are also exposed to UV levels overseas when they travel.
Percentage of time spent outdoors (exposure to UV radiation)	?	?	?	We do not yet have a good indicator to determine how the amount of time spent outside (both at home and abroad) is changing. Spending more time outdoors has many health benefits but can also increase exposure to UV radiation and outdoor air pollution.
Number of people with chronic respiratory conditions	?	?	?	It is estimated that there are between 6 and 9 million people with chronic respiratory conditions in the UK, but data are not available to plot a trend or provide information specific to Scotland. People with existing respiratory illnesses are more vulnerable to health impacts during episodes of high air pollution.

5. Public understanding of climate related risks

Indicator	Data series	Source	Trend	Implication
Public awareness of flooding, heat, cold and UV	?	?	?	A survey could help to show where guidance and advice would be most useful.

6. Recovery from extreme weather events

Indicator	Data series	Source	Trend	Implication
Time it takes for people to return to their homes after a flood	?	?	?	These data are not systematically collected though case study information is available.

Society theme – Business scorecard

Adaptation priority	Is there a plan?	Are actions taking place?	Is progress being made?
7. Business impacts from extreme weather	Amber	Green	Amber
8. Business opportunities from climate change	Amber	Amber	Amber
9. Supply chain risks	Amber	Amber	Amber
10. Water demand by industry	Amber	Green	Grey

7. Business impacts from extreme weather

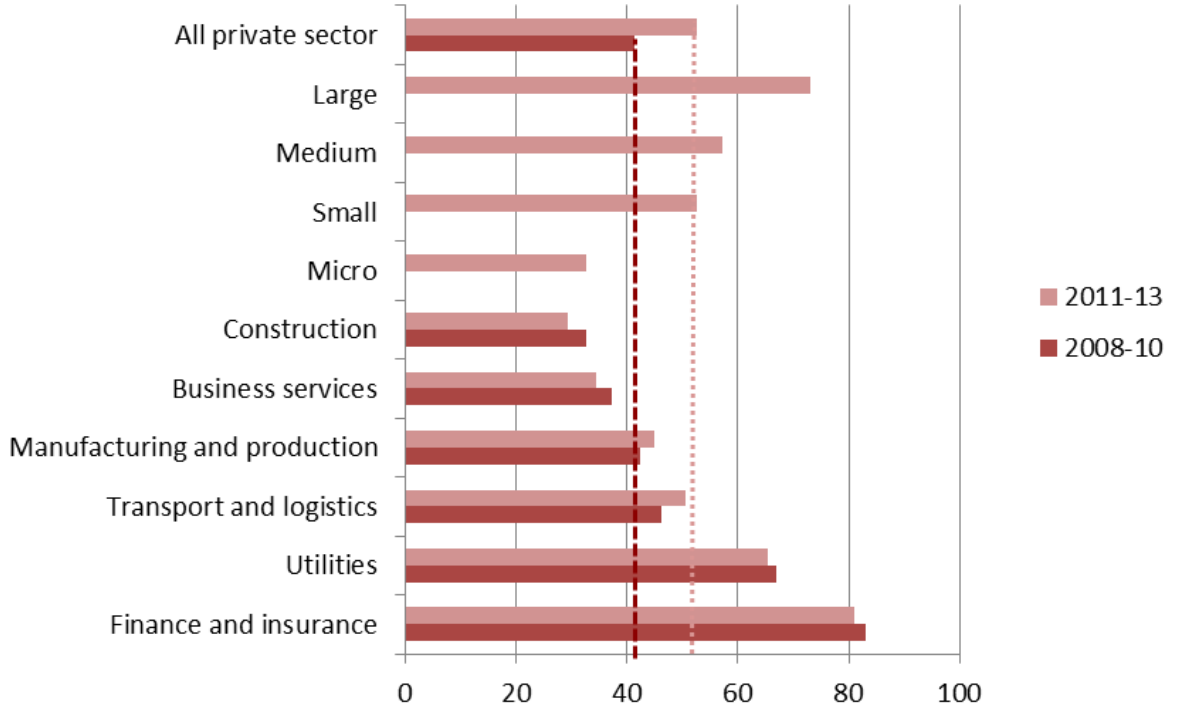
Indicator	Data series	Source	Trend	Implication
Number of UK businesses with business continuity plans in place	2011-2013	Chartered Management institute	⇧	**(UK).**There has been a slight increase in the number of businesses with business continuity plans in place.
Weather related insurance claims	1989-2014	Association of British Insurers	⇔	**(UK).** Data show no clear trend.
Number of non-residential properties at risk of flooding	?	?	?	Total number of properties is available but research into the breakdown between non-residential and residential is ongoing. The number of non-residential properties currently at risk is available but there is no time series.
Rate of development of non-residential properties in areas at risk of flooding.	?	?	?	Data are not available.
Uptake of flood warnings	?	SEPA	?	Approximately 1,900 Scottish businesses have signed up to SEPA's Floodline service. Trend data are not available.
Area of permeable paving installed in commercial projects	?	?	?	Data are not available.

7. Business impacts from extreme weather

Proportion of businesses with business continuity plans in place (%)

⇧

Businesses with business continuity plans that cover flooding will be able to respond and recover more quickly when a flood occurs.



Notes: Results are based on responses to a survey of CMI members. The survey sample varies from year-to-year. In 2013 637 responses were received. Due to year-to-year variation, results for each year of the survey have been averaged over a three year period.

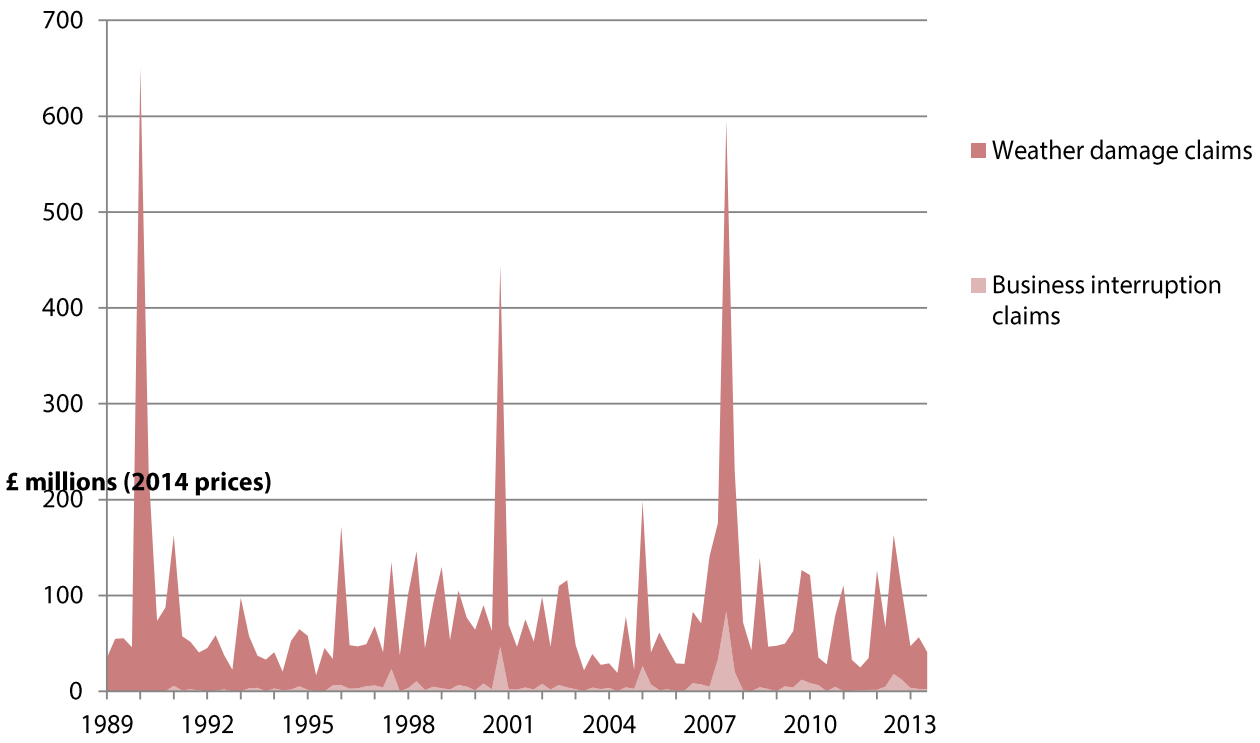
Please note: This is for the UK due to a lack of specific evidence for Scotland.

- The proportion of businesses with business continuity plans has increased from 41% in 2008-10 to 53% in 2011-13
- Uptake is highest amongst larger companies and finance, insurance and regulated sectors. It is lowest amongst businesses in the construction sector
- Four-fifths of businesses that have implemented business continuity plans report the benefits exceed the costs, suggesting further increases in uptake may be beneficial

Source: Chartered Management Institute (2013) *Weathering the storm: The 2013 business continuity management survey.*

7. Business impacts from extreme weather

Weather related business insurance claims	⇔	**(UK).** Data show no clear trend.



Notes: Figures shown are quarterly insurance claims by business customers reported by ABI members. These have been converted into 2014 prices using the HMT GDP deflator (as of March 2015).

Please note: This is for the UK due to a lack of specific evidence for Scotland.

- Weather damage insurance claims by business customers averaged £81 million a quarter between 1989 and 2012 (in 2014 prices).
- Business interruption claims by business customers averaged £5 million a quarter over the same period (in 2014 prices).
- Insurance claims peaked in 1990, 2000 and 2007 following major storms and flooding.

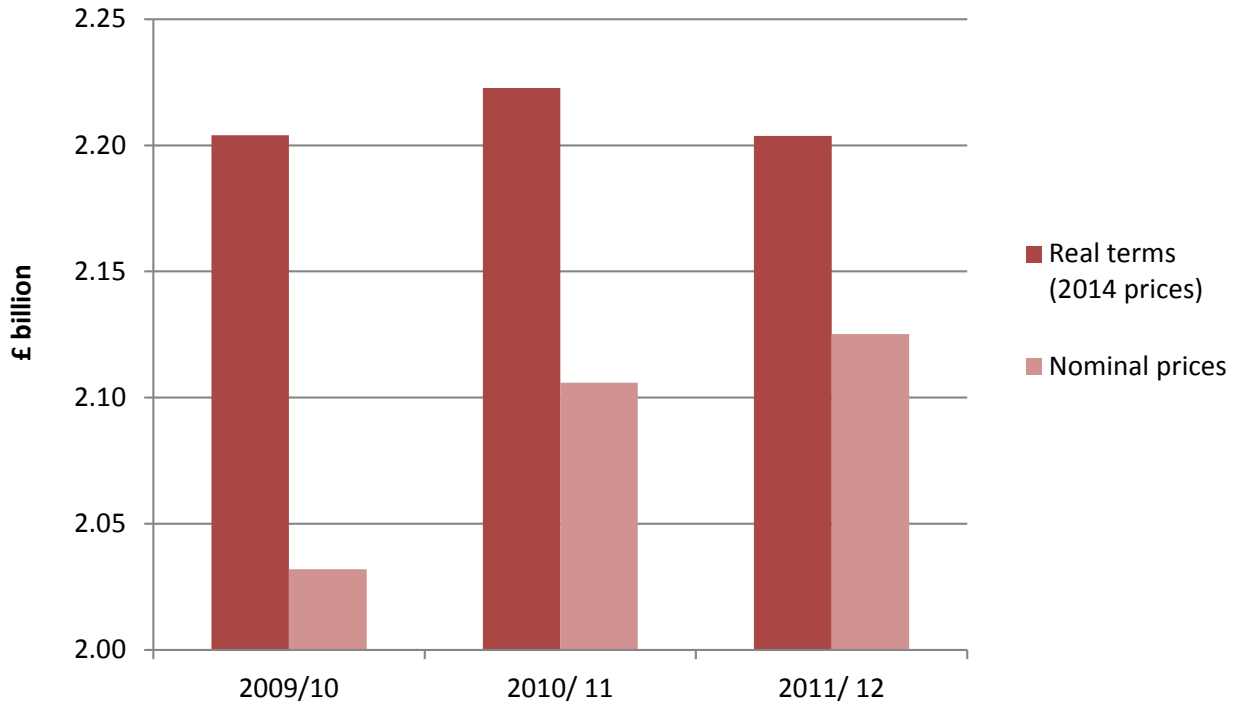
Source: ABI (2014) Unpublished

8. Business opportunities from climate change

Indicator	Data series	Source	Trend	Implication
Sales of adaptation goods and services	2009/10 to 2011/12	K-Matrix for Defra	⇔	**(UK).** Shows businesses may not be taking full advantage of increased demand for adaptation goods and services
Patents registered by UK companies for water-related adaptation measures	1990 to 2010	Grantham Institute at LSE	⇧	**(UK).** Indicates increased capacity of businesses to develop ideas which could be converted into commercial opportunities

8. Business opportunities from climate change

Sales of adaptation goods and services	⇔	Shows businesses may not be taking full advantage of increased demand for adaptation goods and services



Notes: Sales of adaptation goods and services have been estimated through market research by K-Matrix. The sales figures presented relate to activity that can be directly attributed to increasing resilience to a changing climate. K-Matrix have also estimated the size of the broader 'resilience' market, which is much larger than the figures presented here. Sales have been converted into 2014 prices using the HMT GDP deflator (as of March 2015).

Please note: This is for the UK due to a lack of specific evidence for Scotland.

- Sales of adaptation goods and services grew by 2.6% per annum between 2009/10 and 2011/12. However, in real terms they remained constant over the short period of time data are available
- The Greater London Authority will soon be publishing a report with updated figures taking into account a wider variety of adaptation goods and services

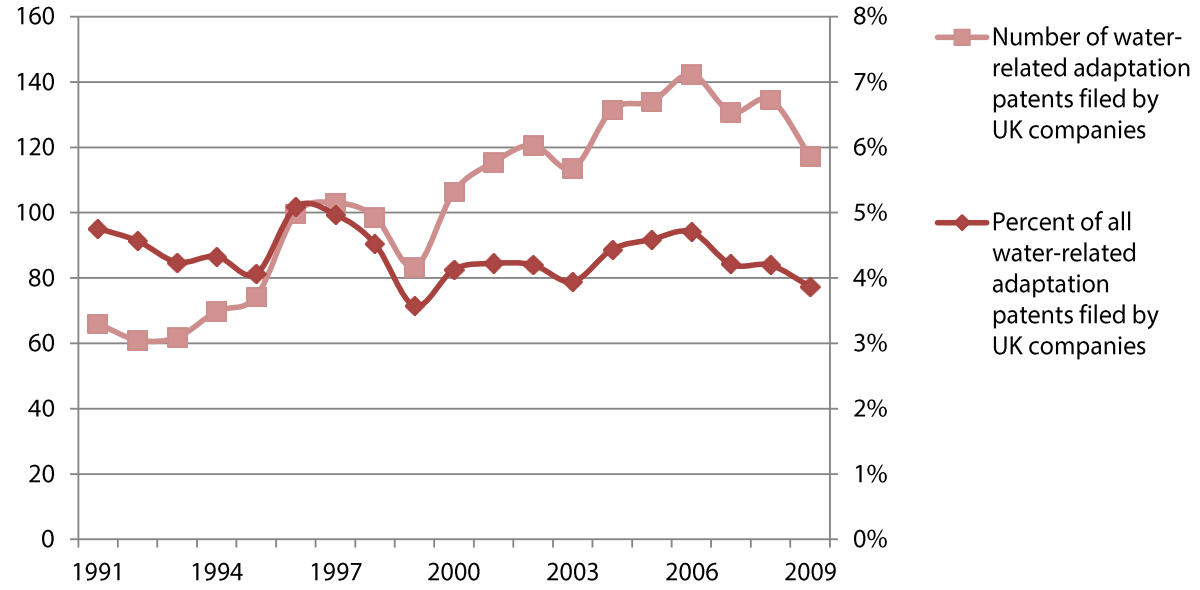
Source: K-Matrix (2013) for BIS and Defra *Adaptation and resilience (climate change) report for 2011/12*

8. Business opportunities from climate change

Patents registered by UK companies for water-related adaptation measures

⇧

Indicates increased capacity of businesses to develop ideas which could be converted into commercial opportunities



Notes: Water-related adaptation technologies include supply-side (e.g. storage and desalination) and demand-side (e.g. water efficiency and greywater use, crop irrigation improvements such as control of watering and drought-resistant crops, and reducing leakage from pipes) technologies to conserve water. The PATSTAT database was used for the analysis. The figures have been averaged over three years to remove year-to-year variability in patent registrations.

Please note: This is for the UK due to a lack of specific evidence for Scotland.

- Patent activity provides an indication of the capacity of the UK to develop ideas which could in turn be converted into commercial opportunities
- The number of water-related adaptation patents registered by UK companies in the UK and globally nearly doubled between 1900 and 2009
- The share of all water-related adaptation patents registered by UK companies has remained fairly constant over the past decade

Source: Conway, D., Dechezleprêtre, A., Haščič, I. and Johnstone, N. (2015). *Invention and diffusion of water supply and water efficiency technologies: insights from a global patent dataset*

9. Supply chain disruptions

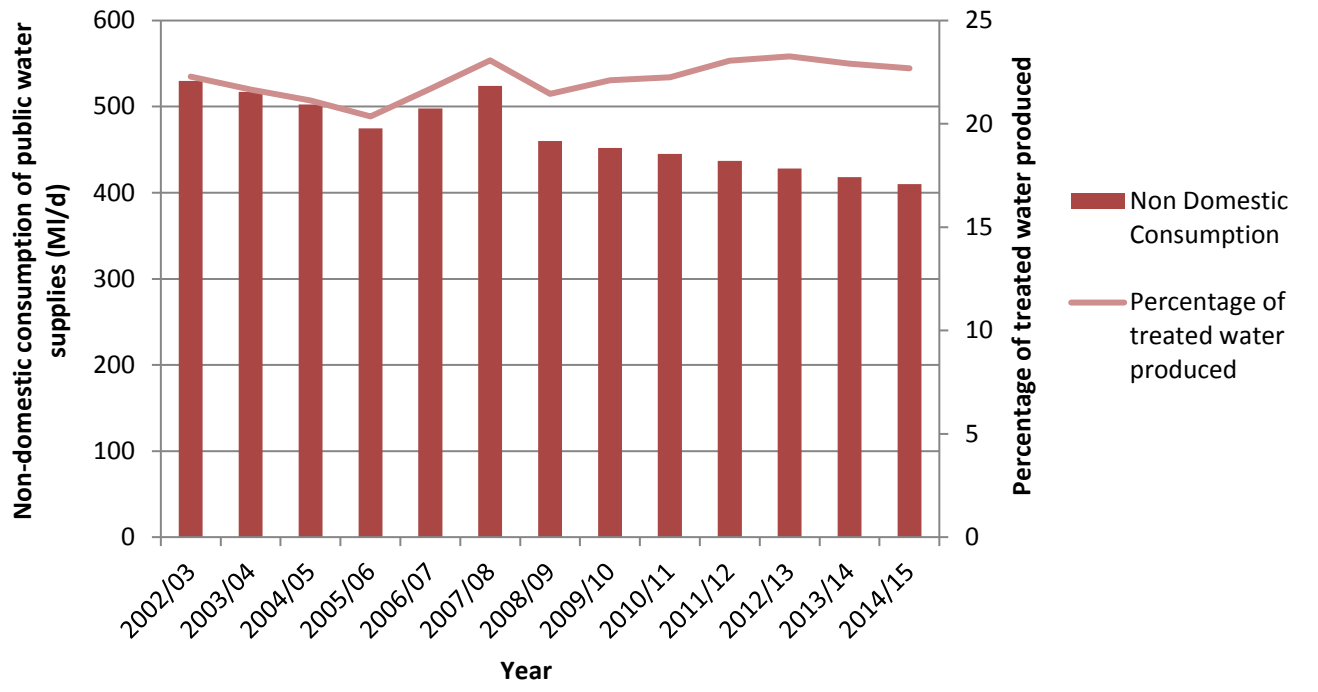
Indicator	Data series	Source	Trend	Implication
There are currently no indicators for this adaptation priority that are collected on a consistent basis over a sufficient period of time. The ASC's assessment of progress in this area has been based on various sources of evidence from academic literature, research reports, case studies and data collected through surveys.				

10. Water demand by industry

Indicator	Data series	Source	Trend	Implication
Non-household use of public water supply	2008/09-2013/14	Scottish Water	⇩	There is a decreasing trend in the annual average volume of non-domestic water delivered per day between 2008-09 (466 Ml/d) and 2014-15 (403 Ml/d).
Water abstraction by industry from freshwater sources	?	SEPA	?	Data are not available.
Water use and intensity at food and drink manufacturing sites	2007, 2012 and 2013	WRAP	⇩	**(UK)** Reduces likelihood of supply deficits and impacts on food and drink manufacturing sites (23 sites out of 259, about 9%, were based in Scotland) Scotch Whisky Association report the industry reduced its net water use by 14% between 2008 and 2014.
Proportion of non-household users of public water supply with water meters	2008/09 to 2014/15	Scottish Water	⇧	All non-domestic customers in Scotland are metered unless it is not practicable to do so. In 2014/15 about 80% of Scottish Water connected non-household properties were measured (metered).

10. Water demand by industry

Non-household use of public water supply	⇩	There is a decreasing trend in the annual average volume of non-household water delivered per day between 2008-09 (466 Ml/d) and 2013-14 (410 Ml/d).



Notes: N/A.

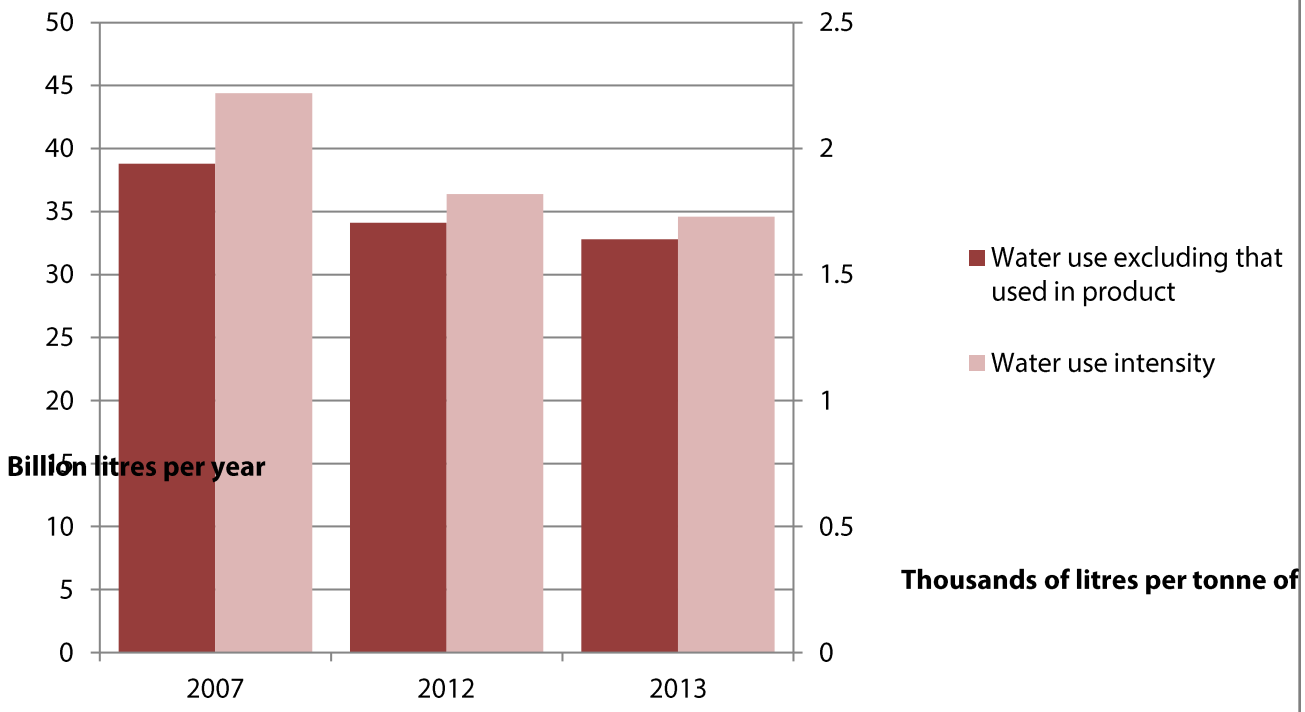
- Data are not available to determine if this decrease is due to improvements in water efficiency.

Source: Scottish Government. Key Environmental Statistics 2015.

10. Water demand by industry

Please note: This is for the UK due to a lack of specific evidence for Scotland.

Water use and intensity at food and drink manufacturing sites	⇩	Reduces likelihood of supply deficits and impacts on food and drink manufacturing sites



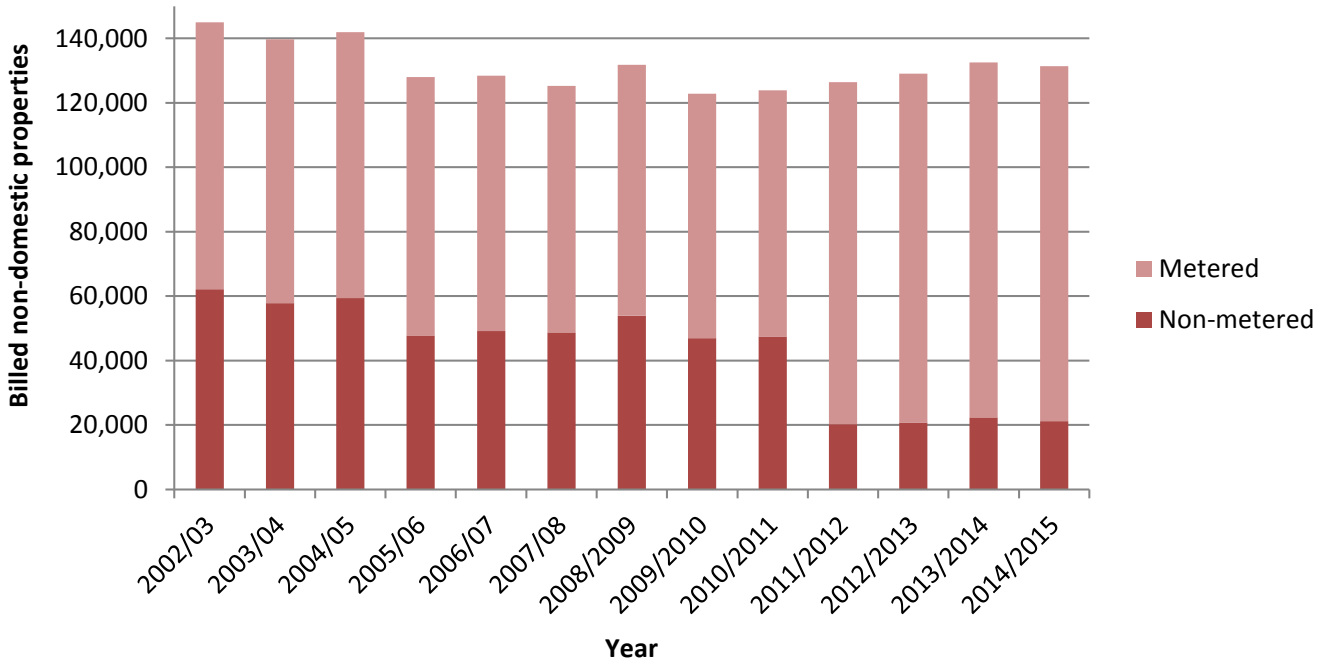
Notes: Figures are based on data provided by 254 of the 284 sites that are signatories to the FHC. Collectively, these account for around one-quarter of water used by all food and drink manufacturing sites in the UK. Water use (excluding that in product) is reported because this is the amount of water that can be reduced by implementing best practice on site, excluding changes in product.

- The Federation House Commitment (FHC) is a voluntary scheme developed to help food and drink manufacturers reduce water use at their sites to help achieve a water reduction target of 20% by 2020 against a 2007 baseline. This target was recommended by the Food Industry Sustainability Strategy
- Water use excluding that used in product at FHC sites fell by 16% between 2007 and 2013
- Water intensity, measured in terms of m^3 per tonne of product, fell by 22% over the same period. The larger reduction in water intensity relative to total water use reflects the increase in the level of production (in tonnes) over the period

Source: WRAP (2014) The Federation House Commitment Progress Report 2014.

10. Water demand by industry

Proportion of non-household users of public water supply with water meters	⇧	Ensures non-household properties face a price per unit of water they consume, encouraging water efficient behaviour



Notes: N/A.

- All non-domestic customers in Scotland are metered unless it is not practicable to do so.
- The bulk of the installations for the 'Full Business Metering Programme', were completed by the end of March 2009.
- Transitional phasing of the Full Business Metering programme came to an end on 1 April 2011.

Source: Scottish Water annual returns to the Water Industry Commission for Scotland

Adaptation Sub-Committee

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