

# Scottish (Managed) Sustainable Health Network (SMaSH)

## Report

### Sustainability Briefing: Water, climate change and public health

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## Water and climate change

Climate change is predicted to have a significant effect on global water resources, through complex effects on the water cycle and extreme weather events (1-3). A range of direct impacts are possible, including reduced availability of drinking water, greater pressure on water resources, increased water temperatures, increased heavy rainfall, more flooding and drought, increased sea levels and changes in aquatic ecosystems (1, 2, 4, 5). This could lead to increased pressure on existing water management and treatment infrastructures (2, 5), negative impacts on biodiversity and food production (which uses very large quantities of water) (6) and political instability (3, 6). In addition to climate change, population growth and global economic development will place further pressure on water resources (4).

The UK and Scotland may be relatively protected from some of these impacts, but are still likely to see increased heavy rainfall, flooding, drought, increased sea levels, reduced water quality and impacts on water infrastructure, as well as indirect impacts arising from global changes, for example through increased food prices (7, 8).

## Implications for health

The link between water and health is clear. We all need an adequate supply of safe water and access to effective sanitation for health and survival (1). At present unsafe drinking water and a lack of sanitation cause significant mortality globally, with billions of people lacking access to safe drinking water (9). Whilst progress has been made in the provision of safe water and sanitation, climate change could set back this progress (9).

Globally, climate change could affect health through scarcity of freshwater, reduced water quality, increased waterborne diseases (e.g. diarrhoeal disease), increased pollution and chemical contamination of water supplies, and malnutrition, as well as negative health consequences of extreme weather events and adverse socioeconomic impacts (1, 3, 5).

The UK and Scotland are likely to be protected from many of these health impacts, owing in part to our existing water infrastructure (7). However, potential negative health impacts of flooding, which may disproportionately affect elderly people, have been identified in the UK (7). These include injuries, mental health problems and impacts on water infrastructure. Water quality may be adversely affected by flooding and changes in water flow, and water treatment systems will need to be able to adapt to this (8). Of particular concern in the UK and Scotland may be the impact of climate change on the quality and safety of private water supplies, which do not benefit from the treatment given to mains water supplies (7). In addition, recreational water quality could decrease and algal blooms may increase with changing temperatures, although the public health impact of this may be limited (1, 7, 8).

## SMaSH's view

The provision of safe water and sanitation is a critical service that must be implemented and maintained in order to protect public health.

Addressing the impact of climate change on water resources will require both adaptation of existing water and environmental systems, and mitigation against climate change. In

Scotland, adaptation work is underway through Scottish Water, SEPA and other agencies, including new activity to manage the risk of floods (8, 10, 11). This work faces the challenge of maintaining existing water infrastructure and systems, whilst adapting to the impact of climate change. The NHS will also need to undertake adaptation measures to manage the risks of flooding and pressure on water supplies. Approaches to mitigate against climate change, through reductions in carbon emissions, are also required to reduce the overall impact of climate change on our environment and water resources. Whilst adaptation and mitigation activities may protect our water resources, the impact of any activities on water and energy resources should also be considered. For instance, adapting to decreased water resources by using desalination plants would use large amounts of energy (12).

The public health impact of climate change related effects on water resources should be monitored to ensure that existing systems are coping and that emerging negative health impacts are identified. In addition, routine health surveillance of extreme weather events should be established and used to help identify interventions to reduce negative health effects of these events.

Activities to protect the environment may have a positive health effect – so called health co-benefits. For example, developments in water infrastructure that improve green spaces and natural habitats may have a positive impact on health (8). These health co-benefits should be actively sought, maximised and evaluated, wherever possible.

### **Additional resources**

Scottish Water -

<http://www.scottishwater.co.uk/about-us/corporate-responsibility/climate-change>

SEPA - <http://sepa.org.uk/water.aspx>

Adaptation Scotland - <http://www.adaptationscotland.org.uk/1/1/0/Home.aspx>

ClimateXChange - <http://www.climatexchange.org.uk/>

CREW - <http://www.crew.ac.uk/>

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