

# Future projections for water scarcity in Scotland: Impacts on the distilling sector



IMAGE: THE JAMES HUTTON INSTITUTE

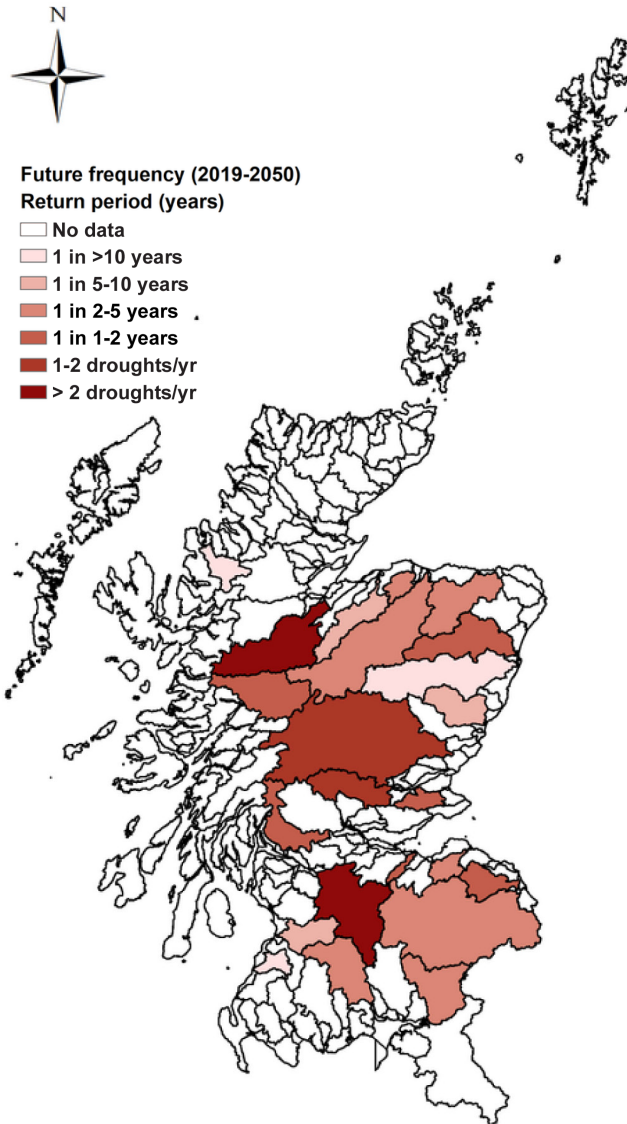
## What are the future projections?

Projections to 2050 indicate the frequency and duration of significant surface water droughts may double. Some catchments, such as the Spey, are projected to experience a drought every two years (Figure 1).

In Eastern and Central Scotland, groundwater recharge during spring, summer and autumn is projected to decrease by up to 50% in the far future (2050-2079), making aquifers more vulnerable to long-term depletion. Abstractions from high-storage aquifers will be more resilient to projected increases in the frequency and duration of drought (Figure 2).

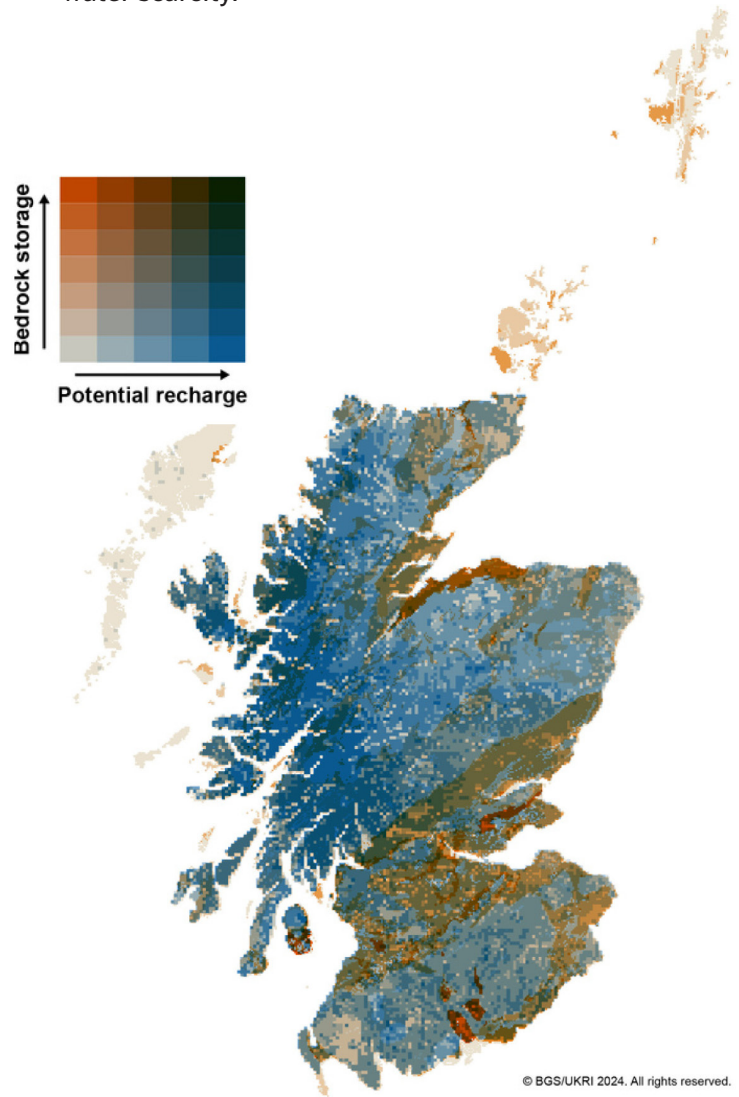
### SURFACE WATER

**Figure 1:** Projected future (2019-2050) number of droughts in a sample of 23 catchments in Scotland. Darker colours indicate drought events. Catchments in white were not included in the analysis.



### GROUNDWATER

**Figure 2:** Groundwater security: areas with high groundwater storage and potential recharge (darker colours) will be more water secure; areas with low storage and recharge (paler colours), e.g. parts of Aberdeenshire, will be more vulnerable to future water scarcity.



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## How is water used by the sector?

The distilling sector relies on the supply of quality surface and groundwater for production and cooling purposes during the distilling process.

To produce 1 litre of pure alcohol, roughly 66 litres is required for cooling, 27 litres for boiling, 19 litres for mashing, and 2 litres for cleaning ([see ref](#)).

## What are the future risks?

Increasing frequency and duration of significant drought events could lead to reduced water abstraction, resulting in the need to halt production.

1 day of lost production may lead to a loss of up to £150,000 per day ([see ref](#)). Drier summers may have indirect impacts on barley yields, increasing costs.

Reducing groundwater levels and recharge rates would increase abstraction costs, while also reducing the volume of water available for production.

## What are the adaptation options?

Measuring water use can help identify areas for improved water use efficiency and increase resilience.

Technologies such as thermal and vapor recompression to reduce abstraction demands for water coolant.

Nature based solutions, such as leaky barriers\* and wetlands, can be adopted to hold back water in streams, increasing infiltration and groundwater recharge ([see ref](#)).

Sector	Measuring water use	Land management such as leaky barriers	Vapor recompression technologies
Distilling	●	●	●

● High uptake potential

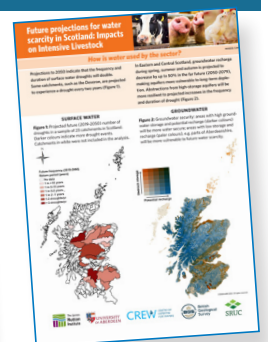
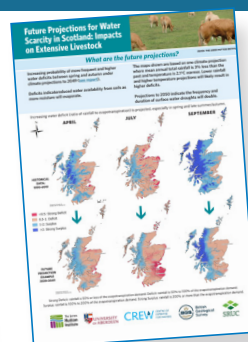
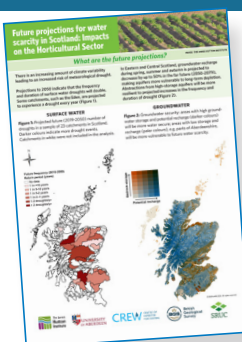
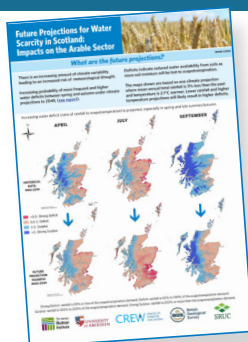
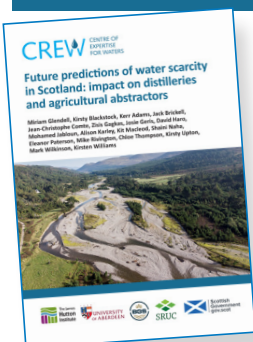
● Lower uptake potential

Other adaptation measures may be available. Uptake potential will vary from farm to farm.



\*Image: A leaky barrier by Martyn Roberts

## More Information



PROJECT MAIN REPORT



ARABLE INFOGRAPHIC



HORTICULTURAL INFOGRAPHIC



EXTENSIVE LIVESTOCK INFOGRAPHIC



INTENSIVE LIVESTOCK INFOGRAPHIC