

Adapting traditional farm buildings to a changing climate

Practical Guide



The likely pace, pattern and magnitude of climate change is uncertain, but there is general acceptance that changes in Scotland will include wetter winters with more intense rainfall and hotter, drier summers. We can also expect more high winds, winter storms and wind driven rain.

Many old farm houses and outbuildings exist and are still in everyday use and with good maintenance and some adaption they can be made more resilient to the effects of climate change and serve a useful purpose for many years to come.



This practical guide looks at adaption of traditional farm buildings to cope with climate change.

Building structure and fabric

More high winds and winter storms - any older building will have survived through plenty of storms during its lifetime but in order to ensure that this continues regular maintenance is necessary. Increased frequency of stormy weather could quickly accelerate deterioration of the building fabric. Slates and other roof coverings may need additional fastenings when repair or replacement is carried out to reduce the risk of damage.

More frequent intensive rainfall and wind driven rain - can lead to progressive wetting of walls or water being blown under roof coverings. Good detailed finishing of repairs and refurbishments can ensure that risk is minimised. Prompt repair and maintenance of gutters and rainwater goods will reduce the risk of water penetration. Increasing gutter sizes during refurbishment may be necessary.

Hotter drier summers - may result in greater thermal stress and cracking of hard materials. Repairs should be made with flexible materials.

Our Practical Guides cover five useful topics:

1. Use energy and fuels efficiently
2. Renewable energy
3. Lock carbon into soils and vegetation
4. Making the best use of nutrients
5. Optimise livestock management

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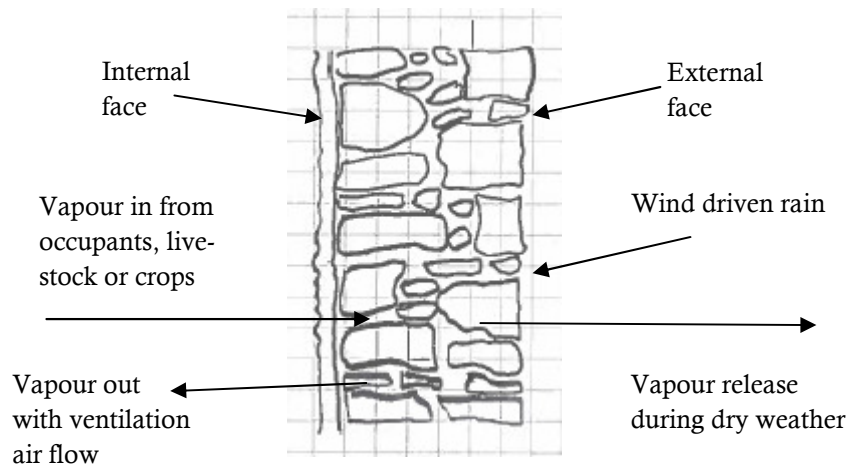


Traditional buildings

Internal environment

Warmer winters - could lead to higher internal humidity and an increased prevalence of insect and fungal attacks. Improved ventilation will be required especially where buildings are used to house livestock. High internal temperatures could result in discomfort to occupants and/or warping of timber elements. Considerations should be given to shades or canopies.

Water vapour - Traditional building materials and methods allow for vapour transfer through the building fabric. Repairs and upgrades using cement renders or added insulation which includes a vapour barrier can disrupt this process. Blocking of chimneys or other openings can also reduce ventilation. Where these alterations have been made it may be necessary to increase ventilation by other means.



Lime bonded stone wall

Exterior drainage

Wet ground conditions will encourage dampness to rise up through solid walls and floors. Good exterior drainage is important to prevent the immediate vicinity of buildings from becoming waterlogged. Where impervious surfaces exist around a building it is important that these drain freely, preferably to a soakaway, to avoid increasing the flood risk in local watercourses. Good maintenance of rainwater fittings will help. In some old buildings rainwater is discharged to the ground in the vicinity of the building and re-routing it away to a soakaway will reduce the risk of waterlogging of the ground and dampness rising through the structure.

Building services

When considering measures to adapt buildings for climate change, the incorporation of features that will reduce the carbon footprint of the building and to otherwise limit any negative environmental effects makes good sense. Where additional ventilation is required for example, passive techniques should be considered ahead of mechanical ventilation.

Where there is a demand for water from the building or from other facilities on the farm, the option of harvesting rainwater from suitable roofs exists. Some older roofs may be unsuitable where there is a risk of contamination, depending on what use the water is to be put to.

There may also be an opportunity to generate some on-site electricity by installing solar panels. Care should be taken to ensure the structural suitability of a building to accept the additional weight and potential wind loading from panels and that suitable fixings are chosen so that the weather tightness of the roof is not affected.

Permissions and warrants

Depending on the extent of any alterations planned or the status of the building concerned, planning permission or a building warrant may be required. Consultation with the local planning authority is recommended before going ahead with any upgrading work.