

Adapting new 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.

When planning new farm buildings, the effect of these changes on the building, on farming practices and on the different demands that could be placed on the building during its lifetime should be considered.



This practical guide looks at the effects of climate change that should be considered when planning a new farm building

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

For more Practical Guides, Case Studies, information on our Focus Farms and ideas to benefit your farm, visit www.farmingforabetterclimate.org

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Siting

Stronger winds/more frequent storms - consider exposure to the prevailing wind to minimise the risk of structural damage and avoid unpleasant or unsafe conditions for livestock and staff.

Hotter summers - Avoid areas with stagnant air for livestock housing to improve ventilation.

Wetter winters/more intense events - avoid sites that may be liable to flooding with changing weather patterns. Pick a site where natural drainage from the surrounding land falls away from the building if possible or ensure that adequate land drainage exists or can be installed to minimise the risk of flooding during extreme events. Consider opportunities for running drainage from roofs and impermeable surfaces to sustainable drainage systems to avoid increasing the flood risk from local watercourses. Access routes to and from the building should be convenient for its purpose and also be free from restrictions in extreme weather.

Websites

www.farmingforabetterclimate.org

www.fas.scot/

www.agrecalc.com

New farm buildings

Consider future needs

The effects of climate change will take effect over time and therefore a bit of forward thinking is necessary to consider possible changes to your business over the lifetime of the proposed building. Possible changes that could affect the specification of a building include;

- Increased housing periods for livestock.
- Changes to stocking rates and livestock breeds.
- Changes to the growing season.
- Different crop types and varieties.
- Different or increased prevalence of pests and diseases.
- Changing balance between crops and livestock.

Livestock building capacity should take account of storage requirements for bedding and fodder for any extended housing period, including any changes to stocking densities, types or breeds of livestock. Waste handling and storage capacity also needs to be considered. Availability of land for spreading slurry and farm yard manure may be more limited and longer storage periods may be necessary.

Fodder and crop storage buildings may need a greater degree of flexibility to accommodate different crops and cropping patterns.

Building structure and fabric

Stronger winds/more frequent storms - The design of a new structure should take account of possible increased structural loading from high winds or from build up of snow. Cladding materials and fixings should be suitable for anticipated higher wind speeds. Options for providing windbreaks to open sided buildings during certain times of the year could also be considered.

Hotter summers - Selection of cladding material and colour can have an affect on the solar gain within a building.

Environment

Hotter summers/milder winters - higher ventilation requirements should be catered for in a new livestock building and this also should be designed in order to repel extreme rainfall events. The use of passive ventilation or automatically controlled natural ventilation is preferable to using fans. The incorporation of rainwater harvesting into roof drainage could help meet water demands from the building. There may be a greater need for cooling of stored crops or intensive livestock and provision for this should be included in the building layout. Increased prevalence of pests may occur and features to exclude them or discourage their entry to buildings should be included.

Building services - Natural lighting should be provided where possible to minimise energy use and low energy light fittings used where artificial lighting is necessary. There may be an opportunity to include renewable energy generation such as solar photovoltaic panels on the roof to minimise the energy demand from new buildings.

Permissions and warrants

Depending on the type, size and location of the building planned and the local planning policies planning approval and a building warrant may be required. Consultation with the local planning authority is recommended at an early stage.