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Climate Change – it’s all just hype, isn’t it?

This article explores why climate change is something that all golf clubs should be thinking about, and makes some suggestions about what practical things you can do to minimise the potential impacts on your business.

A lot of my friends are bored with climate change. It’s something that appears on the news whenever there’s not much else to report on, or when there’s a natural disaster somewhere. What difference does it make if our summers are a bit warmer, a degree or two can’t make any difference, can it? It seems to me that the potential real impacts have been over-shadowed by the political arguments about whether Man is in any way responsible, or whether it’s an entirely natural phenomenon. This worries me, as it risks missing opportunities to take actions to minimise the risks which are beginning to become more apparent.

There are many phrases thrown into the arguments, and the one you’ll hear most frequently is “global warming”. The climate change deniers will tell you that the climate and temperature of our planet has always changed, and that what we experience now is entirely natural. Whilst those pressing for reductions in carbon emissions will tell you that the link between carbon dioxide levels in the atmosphere and the onset of the Industrial Revolution is as clear as day. My background as a geologist tells me that, to a large extent, both sides are right. But they both seem fixated on arguing about whether it’s happening or not, and why, rather than thinking about what plans we should be making in case it is. This is what I’m going to explore in this article.

But first, let’s look at a few facts. Yes, climate has been changing continually over the 4½ billion years since our planet came into being, but the level of CO₂ in our atmosphere has increased by 40% since the Industrial Revolution. It is now at a level unmatched for over 30 million years, long before man appeared on the scene, and when the world was a very different place. So I’m not convinced by the argument that it doesn’t matter because it’s been this high before. And if you look at UK climate data for the last 100 years, you’ll see that average temperature has risen by about 1 degree centigrade, that sea levels have risen between 20 -30 cm around the UK coasts (depending on where you are), and that summer rainfall has increased steadily over the past 15 years (with 2012 being the wettest summer for over 100 years).

The key question arising from all this is “If climate change is happening, does it matter? What effect does it have on me?” My view is that it makes much more sense to use this

as a starting point for thinking about what we can do to ensure that our golf courses remain playable if it is happening, than to take the ostrich position and assume it's nothing to worry about. I'd rather develop contingency plans that can be put in place when needed, rather than have to react later when potential options may have disappeared.

Climate modelling carried out for the UK shows that the trend is towards hotter summers (but often with extreme weather events) and warmer and wetter winters, often with more intense downpours. Flash floods are more likely, and river flooding, especially in winter, is likely to become more frequent. The floods which swamped the course at Aldwark Golf Club in Yorkshire in 2000 highlight the damage which can be done. Coastal areas, especially low-lying ones, are likely to be more susceptible to flooding and erosion during major storm events. We can all remember the severe storms which devastated parts of the golf course at Golspie in Scotland in December 2012.

So, what sorts of things should golf clubs start to think about? The main areas relate to:

- Water availability and restrictions on usage
- Drainage
- Diseases, weeds and pests
- Flood risk
- Extreme events

My advice to clubs is to set up a process within the club to consider each of these, and decide what short or longer term plans may be appropriate to manage or mitigate any risks identified. It may be a good idea to check if any club members have relevant professional or personal interests which could assist the process, and your agronomist is also likely to be a source of information and advice. The Scottish Golf Environment Group website has a useful document on climate changes and golf courses (<http://www.sgeg.org.uk/publications.html>) which goes into a lot of detail on all aspects of golf course management relevant to climate change pressures. Extensive information is also available on the website of the Golf Environment Organisation, under the Sustainable Golf section (http://www.golfenvironment.org/sustainable_golf).

So let's look in more detail at the issues set out in the bullet list above.

Water availability and restrictions on usage. Warmer drier summers put increased pressure on water resources which are already stretched. As the UK population continues to grow, competition for water will increase, and golf clubs are likely to find that prices rise, and also that there may be limitations put on the amounts which can be used for irrigation. Clubs with their own borehole and abstraction licence are unlikely to be immune to this, as experience shows that abstraction licenses can be modified. So,

it would be wise to reflect on what your club could do if you found that the amount of water available to you was reduced. You might need to think about the area irrigated, the frequency of irrigation and amounts of water used, and perhaps whether you are using the most appropriate grass species for the climatic conditions on your site. Do you use moisture meters so that irrigation is targeted, or do you have a set programme for irrigation? Do you collect rainwater and recycle it for use on the site? Do you have an irrigation reservoir? Water availability is going to be one of the biggest pressures faced by golf clubs in the future, and responding to it will take time, so the sooner you start to think about it the better.

Drainage. Wetter winters, as well as the greater frequency of extreme rainfall events at any time of the year, put huge pressure on drainage systems and on the playing surfaces in general. It is wise to think about how effective your drainage systems are in dealing with the current situation, and then to reflect on how capable it would be in dealing with greater volumes of water. You may find that additional drainage capacity is needed. However, there may be practical issues which make this a difficult challenge, especially if your drains flow to watercourses that are themselves susceptible to flooding. But it's better to discover this sooner rather than later. You may also want to think about golfer impact on surfaces which are wetter for longer periods, and what this could mean for traffic management, and for repair work. This whole area could be one where some professional guidance from a drainage engineer or a golf course architect could be required.

Diseases, weeds and pests. Turfgrass which stays wetter and softer for longer periods is more susceptible to a range of fungal diseases and pests, especially if greens have significant thatch layers. Cultural practices which produce dryer and firmer playing surfaces tend to support swards which are more resistant to diseases and pests, but if you are not in a coastal or heathland area this may require considerable effort. Consideration of how you would respond to a greater risk of fungal diseases under a wetter climate scenario is a critical part of a long term plan for any golf course in the UK, especially at a time when greater restrictions on usage of chemicals on golf courses is spreading across Europe. Encouraging your greens staff to share experience and learning through contacts with other greenkeepers and through BIGGA is always a good idea. Worm castings are a related problem which seems likely to get worse under a wetter winter scenario, especially in the absence of licensed chemicals to control worms in the UK.

Flood risk. Weather events which are more extreme, especially rainfall, are becoming more frequent, with serious problems arising every year through flash flooding or river flooding. These are difficult situations to plan for, as by their very nature they can occur anywhere, and very quickly. The greatest challenge is that many such events originate off-site, but impact on adjacent areas or places some distance downstream from the source of the problem. So there is only so much that you as a golf club can do to protect

against them. It is not technically difficult to assess potential volumes of water which could be generated on your site, or to assess the capability of your drainage systems to remove it (although you may need the services of a drainage engineer), but it is much more challenging to know what to do if you are close to a flood-prone river. However, it is certainly something worth thinking hard about. Coastal flooding is potentially an issue for courses close to the sea, and the best action here is to engage with the local authority and the agency responsible for sea defences, to determine what the Shoreline Management Plan for the area says. If you are within or adjacent to a Site of Special Scientific Interest (SSSI) you would be wise to make contact with Natural England, Scottish Natural Heritage or Natural Resources Wales to explore the options which may be possible.

Extreme events. Climate modelling in the UK indicates that phases of intense rainfall, high temperatures, or powerful storms, are all likely to become more frequent and more extreme in the future. Issues relating to water and flooding have been discussed earlier, but you would also be wise to consider the potential for wind damage, especially if your course has large mature trees. There are potential safety issues, as well as the risk that the landscape and appearance of the golf course could be affected through loss of features which characterise the course.

General observations. To set all this in context, it would be wise to find out about the climate change predictions for your area, to help you prepare for the sorts of challenges which you could face. It would then be appropriate to think about the range of operational practices which you carry out, to judge how well they would stand up to the sorts of climatic changes which could affect your course. I suggest you think about challenging your Green Committee to consider the potential impact of climate change on your golf course, drawing on any relevant professional expertise that exists amongst your club members. Your greens staff are also likely to be an important source of expertise.

Even if you are a climate change sceptic, my view is that it still makes sense to ask yourself whether, if all the possible worse case scenarios did come to pass, your club would be able to respond quickly enough to adapt and stay in business. My advice is that it is better to plan ahead, so that you are able to adapt and mitigate any impacts which occur. As Benjamin Franklin observed so sagely, “failing to prepare is preparing to fail.”