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GREEN SECTION RFEG

GOLF COURSE 2030 SPAIN

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1. INTRODUCTION

Golf Course 2030 was initiated by The R&A in 2018. The R&A governs the sport of golf worldwide, outside of the USA and Mexico, on behalf of over 36 million golfers in 143 countries and with the consent of 156 organisations from amateur and professional golf. The R&A is committed to investing in developing golf and supports the growth of the sport internationally, including the development and management of sustainable golf facilities. The R&A continues to lead the Golf Course 2030 initiative, supporting stakeholders to develop the initiative in their own country or region and investing in research, education and other activities to prepare the sport for what may be challenging times ahead.

This document has been put together as a national response from Spain to The R&A's lead in the Golf Course 2030 initiative. The main objective of Golf Course 2030 is for industry stakeholders to agree on a roadmap that secures optimal golf course condition and playability for current and future generations by addressing challenges from, and taking opportunities presented by, the changing climate, resource constraints and regulation. The roadmap needs to meet strategic needs at regional, national and local level, and the operational needs at golf facility level.

The remit for Golf Course 2030 is the condition and playability of the main in-play areas on the golf course, from tee to green, including fairways, bunkers, green approaches and surrounds, and the primary rough. However, the roadmap will also need to highlight any impact of outcomes on biodiversity, the local community and the multi-functional capacity of the green space.

Golf Course 2030 seeks to bring the golf industry together to clearly identify the challenges and opportunities facing those developing, designing, building and managing golf courses with regards to the changing climate, increasing resource constraints, and the regulations agenda.

Golf Course 2030 centres on a range of realistic scenarios, from business as usual to, effectively, a doomsday prediction of disruption from extreme weather, water scarcity, high resource costs and limited chemical availability. In this challenging environment it is impossible to see how we can maintain the playing conditions we enjoy today without technological breakthroughs, and changes in attitudes and behaviours amongst many of the sport's stakeholders, including golf club owners, golfers, managers and greenstaff.

In addition to the production of the roadmap, Golf Course 2030 aims to prepare the sport for what may be difficult times ahead; to help ensure that current strategies and solutions are effective; to uncover new solutions which can mitigate some of the challenges; and to make the most of opportunities that arise to enhance course condition and playability.



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1.1. WHAT IS OPTIMAL COURSE CONDITION AND PLAYABILITY?

Optimal course condition and playability is a subjective and variable term. It reflects the potential for any golf course to provide year-round access to firm playing surfaces which are fit for purpose. The potential of any course will be limited by many factors. Optimal condition and playability could be considered as:

Optimal course condition and playability = Potential x [Site conditions + Design + Construction + Resources (machinery, manpower, materials) + Quality of Decision-Makers/Management + Weather + Golf Objective + Amount of golf/maintenance traffic + Revenue + Regulation]

The Golf Objective in this equation reflects the target market of the course and this can range from Championship standard (challenging), through Recreational standard (appealing to all golf handicaps), to Beginner standard (introductory level to the sport, with limited challenge), or any combination of these standards.

Optimal performance delivers the potential of a course for as much of the year as possible and as consistently as possible.

The optimal performance in terms of the condition and playability of any golf course will vary through fluctuations of the limiting factors, e.g. seasonal weather. Different types of courses will be more or less prone to some of the fluctuations, e.g. thanks to their natural drainage qualities, links will tend to retain greater consistency in terms of optimal performance than will parkland through periods of wetter weather.

1.2 DRIVERS

There are three main drivers impacting on course management:

1.2.1. Climate

Spain is located in the temperate zone of the planet, with a diversity of local climates due to its varied orography. There are four main climates of Spain: Atlantic, Mediterranean, Mountain and Subtropical, with notable differences between one and another. In Spain, according to data for 2016-2017 from AEMET (State Meteorological Agency), the precipitation values have been alarming. Rainfall levels for the hydrological year fell by 15 percent (from 648 millimeters on average to 551 millimeters). If we add that the month of August 2017 was the sixth warmest of the 21st century, it leads to a negative conclusion: drought. The hydrographic basins of the northwest region of the peninsular are holding less than 40% of their capacity and those regions that normally suffer water stress have around 10% of their capacity.

According to the Ministry of Environment, 74% of Spanish soil is in the process of desertification and it is expected that 20% of what is now safe will be at risk in 50 years. Andalucía, Extremadura, Castilla-La Mancha and Levante already have a large proportion of soil susceptible to degradation.

1.2.2. Resources

The availability of many important resources for golf course management are limited. The achievement of lower consumption of key resources must be a priority objective and this applies to:



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- water
- pesticides
- energy
- fertilisers.

The predictions of increased temperatures and decreased precipitations means that there will be an increase in electricity demand. Water and energy are two essential resources for the development and management of golf courses. The current situation for both is one of shortage.

1.2.3. Regulation

Spain faces regional and local challenges in this regard.

Pesticides: In the Spanish registry there are very few products that have low toxicity, which is a requirement for use in Spanish legislation. There are only three products allowed for use in turf: the fungicide *Azoxystrobin* to combat disease, the growth regulator *Trinexapac-ethyl*, and the herbicide *Pedimenthalin*.

Water: Currently, most golf courses use recycled water for irrigation that has been subject to tertiary treatment. The price of water is very high and limited, because the precipitation in the central and southern part of Spain is not very abundant.

Energy: its consumption means that the gases expelled to generate energy are responsible for climate change. The use of renewable energy sources, such as solar panels benefits the environment as this system is not a producer of pollution.

1.3 FUTURE SCENARIOS

To produce a roadmap that secures optimal golf course condition and playability for current and future generations, there needs to be a consideration of what might be. The drivers for adaption pose many potential scenarios. Presented here are three 2030 scenarios, from business as usual to a potential doomsday prediction of extreme weather, water scarcity, high resource costs and no chemical availability. These scenarios should be related to the current optimal performance of golf courses. It should also be borne in mind that there is a sliding scale between the two extremes cited in scenarios 1 and 3:

Scenario 1. Limited change from the environment that now exists as alternative technologies, management solutions and behavioural change address the challenges posed by climate, resources and regulations and optimal golf course condition and playability is secured.

Course condition and playability is comparable to that available today. Drivers for change are weak and opportunities to enhance the potential of golf courses, their performance and environment will not be realised. There could be extra costs for golf businesses that position themselves as early adopters of new technologies, which may be passed on to the customer, so golf could be more expensive.

Scenario 2. Severe restrictions in the availability and use of synthetic chemical plant protection products, together with 50% less water being available for irrigation compared with current levels. Alternative technologies, management solutions and behavioural change partially address the challenges posed by climate, resources and regulations.



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More months of the year will see greater course closure due to extreme weather events, notably flooding, and more damage and scarring to turf from water and pesticide restrictions, related to hotter summers and wetter winters.

The condition and presentation of surfaces will see periodic troughs, with golfers having to accept a different style of golf and course performance, notably in terms of reduced green speed. There is also the prospect that course condition will improve as turf naturally adapts and firmer surfaces become the norm. Golfers will appreciate and enjoy the seasonal change in course appearance and playability.

There will be increasing pressure on golf facilities to survive as the cost of maintenance increases. This will lead to opportunities for a greater flexibility in course design, e.g. fewer holes, less maintained turf, and an increase in diversification to provide multi-functional green space.

Golf businesses will need to spend more on new technologies and more expensive resources to sustain course condition and playability. Golf will be more expensive to play. Golf facilities will also see a decline in income as deteriorating conditions reduce the attractiveness of the sport, though those that embrace the opportunities for a different type of golf and diversification of land use will thrive.

There will be some course closures, notably those wholly reliant on water and synthetic chemical plant protection products to keep a grass cover, and this will impact on the contribution of golf to the local, regional and national economy.

Scenario 3. The banning of all chemical plant protection products and fertilisers, together with 75% less water being available for irrigation compared with current levels. Alternative technologies, management solutions and behavioural change fail to address the challenges posed by climate, resources and regulations.

There will be longer periods of course closure, damage from extreme weather events and disease/pest/weed incidence and the high cost of resources results in loss of customers and permanent closure of many facilities. There are serious consequences for the contribution from golf to the local, regional and national economy.

The combination of hotter summers and less water being available means that only those with sustainable sources of water for irrigation can retain a reasonable cover of grass. Only those that can afford course renovation, a secure water supply and significant levels of extra labour or automation of certain maintenance practices will be able to cope with these pressures and, even in such situations, golf will be regularly played on inferior surfaces compared to what we enjoy today. The use of artificial turf increases for those that can afford it as the problems in managing natural turf become insurmountable.

2. PROCESS

The process for achieving the objective of Golf Course 2030 includes:

- identifying national challenges and opportunities for securing optimal course condition and playability presented by the changing climate, resource constraints and regulation



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- agreement between key industry stakeholders on the priority issues facing the security of optimal course condition and playability in Spain and on the target audiences that need to be engaged through the process
- agreement between key stakeholders on a plan of action to address the priority issues through activities such as research, education and communications
- agreement between key stakeholders on the process of managing the Golf Course 2030 initiative and monitoring its success.

2.1. Organisation: There are a number of different organisations that need to be engaged with Golf Course 2030 On the international and regional stage there is The R&A and the EGA. In Spain, the Royal Spanish golf federation, the Spanish association of golf course managers, the Spanish association of greenkeepers, the Spanish association of owners of golf courses are key industry stakeholders. Key government actors would be at the national level (MAGRAMA) and at the local level (Councils of autonomous communities).

2.2. Issues: Water use restrictions, restrictions on the use of phytosanitary products, energy Consumption and production of gases responsible for climate change.

2.3. Action plan: This will be the roadmap for activities on priority issues, e.g. research, case studies, education, communications, and this will be refreshed as and when necessary. The initial plan is to undertake demonstration projects that show how:

(i) golf practice areas for intensive use can be developed with minimal management resource inputs (notably water, pesticide and fertiliser).

(ii) renewable energy technology can be installed into a golf facility to reduce demand on the public supply, provide a cleaner source of energy, reduce energy consumption and reduce air pollution.

2.4 Practical action - *Guiding Principles for resilient and sustainable golf courses*

The main objective of Golf Course 2030 is the production of an industry roadmap that secures optimal golf course condition and playability for current and future generations by addressing challenges from, and taking opportunities presented by, the changing climate, resource constraints and regulation. There are, however, a number of fundamental, universal practical principles for golf course development and management which extend across the decision-making culture, agronomic practices, and broader considerations of golf's impact on and contribution to nature and local communities. The following is offered as a guide to those in decision-making positions.

1. Plan over the longer-term and operate under consistent policies, which are documented.
2. Prepare for future challenges. Consider the predicted impact of the changing climate (such as flooding, coastal erosion or drought), the availability and costs of vital resources and the constraints placed by regulation.



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3. Recognise the professionalism of well qualified course managers and their staff. They will play a vital role in securing optimal course condition and playability.
4. Safeguard the reputation and well-being of employees, employers, golf facilities and the sport itself through strict compliance with the law. Decision makers at golf facilities must support their greenkeepers in adhering to this policy.
5. Create the right environment to produce healthy turf, which is fit for purpose, with adequate access to light and air, and good drainage and a biologically rich growing medium. Select and manage for grass species best adapted to local conditions.
6. Water scarcity and cost are going to be increasing issues for golf. Golf courses should be designed, built and managed to conserve water, using the least required to produce healthy turf and firm playing surfaces. Where feasible, water for irrigation should be generated in situ, through recycling drainage, rainwater harvesting, irrigation reservoirs and other technologies. Where feasible, water derived from non-potable sources should provide the irrigation source. Grass selection should be targeted at species which are fit for purpose, but which require the least amount of irrigation water.
7. The trend is for increasing pressure on pesticide availability and use. It is likely that they will continue to be removed from use. Eliminate reliance on pesticides, identify and transition to alternative solutions to prevent and manage disease, pest and weed problems. Select and manage for grasses which are fit for purpose and which have the greatest natural resistance to disease infection, pest attack and weed ingress.
8. Fertiliser use is likely to be regulated as part of pollution prevention measures. Select grasses which are fit for purpose with minimal nutritional input and use products which offer the greatest protection to the environment.
9. Excessive organic matter accumulation creates weak turf, prone to stress and susceptible to disease infection, pest attack and weed ingress. Management practices used to control organic matter accumulation, e.g. various forms of scarification and top dressing, cause stress to turf. Select and manage for grasses which are fit for purpose, but which have a slow natural rate of organic matter accumulation and implement management practices, i.e. irrigation and fertiliser, responsibly in a manner which minimises organic matter build up.
10. Cutting height has a major influence on turf health and the requirement for maintenance, with over-close mowing inducing turf stress which requires greater water, fertiliser and pesticide inputs to correct. Mowing heights should be implemented to sustain grasses which are fit for purpose, but which are inherently healthy.
11. Energy derived from fossil fuels is going to become more expensive and golf facilities should be transitioning to cleaner, renewable sources of energy. Course design, construction and maintenance should be focused on energy efficiency,



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utilising grasses which are fit for purpose, but which require the least input of maintenance resource.

12. Disposal of waste to landfill will become increasingly expensive and socially unacceptable. Course design, construction and maintenance should focus on preventing waste and maximising reuse and recycling.
13. Biodiversity loss is a major global concern and golf courses have the potential to conserve and protect wildlife. Golf courses should be designed and managed to provide quality habitat for as wide a variety of native wildlife as possible.
14. Golf has a responsibility to wider society and the design, construction and maintenance of facilities should focus on making a positive contribution to local communities, such as by providing a multi-functional venue for wider community integration and recreation.
15. Objective assessment of the condition of playing surfaces, particularly the putting surfaces, on the golf course is required to monitor the impact of the challenges facing greenkeepers, the implementation of research outcomes and adaptations in management. This could include firmness, smoothness, trueness, reliability, speed, etc.
16. The recording of key resource metrics for course management, e.g. water, chemicals, energy, waste and biodiversity. Sustainability reporting on course operations is required on a facility, country, region and international level. This is necessary to monitor the impact of the challenges facing greenkeepers, the implementation of research outcomes, adaptations in management and compliance with regulations.

3. OUTCOME

1. More effective, sustainable and responsible use of water. Optimising play areas and using recycled water.
2. To reduce of risks and the effects that the use of phytosanitary products can have on human and environmental health and well-being.
3. Promote integrated pest management and alternative techniques to reduce the use of pesticides - choosing products with low risk and investigating other options to help reduce and / or replace the use of plant protection products.
4. Use of renewable energy at the golf facility to reduce electricity consumption and cost and to witness a reduction of CO₂ emissions.
5. Promote the playing of golf at more sustainable facilities.

Work is being done every day to present quality golf courses at a sporting, agronomic and environmental level, which can also provide quality environments that benefit wider society.

**Departamento Green Section
Real Federación Española de Golf**