



## RESEARCH PROJECT

<b>Project title:</b>	CARBON PAR Estimating the carbon status of land used by Icelandic golf courses
<b>Project start date:</b> 1 January 2020	<b>Project completion date:</b> 30 March 2024
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	2020	2021	2022	2023	Total
STERF	150	300	0	0	450
Other sources	345	156	171	276	948
<b>Total</b>	<b>495</b>	<b>456</b>	<b>171</b>	<b>276</b>	<b>1.398</b>

### Project objectives

- Estimate CO<sub>2</sub> loss and carbon storage from land use of cultivated and managed areas on Icelandic golf courses, in total and by facility.
- Discuss if/how the estimation process can be streamlined further.
- Determine what is required in terms of funding, time and other resources to produce similar estimates for other Scandinavian countries.
- Identify marked trends, if any, revealing or suggesting how golf facilities can, in a general sense, easily improve their carbon status from land use without negatively influencing the playing experience.

### Project summary and status January 2024

The development of some golf courses has involved wetland drainage or the use of previously drained wetlands. Through this, many clubs have unintentionally caused large emissions of greenhouse gases, since emissions from golf courses on drained organic soils can be very high, while courses on mineral soils can sequester carbon. Grass can sequester considerable levels of carbon. Furthermore, managed grasslands, or turf, can sequester more carbon than unmanaged. This indicates that well located golf courses, thoughtfully planned, designed and built, have a reasonable chance of becoming net carbon sinks.

To estimate the carbon status of land used by all golf courses within the Golf Union of Iceland, a variety of methods were used, including mapping, references to national soil databases, soil sampling, interviews, and analysis. Perimeters of various golf course land use elements, such as fairways, managed roughs and native areas, were drafted up in GIS and CAD-software, using underlying georeferenced aerial photographs. Each golf course area was broken down into 3-4 basic

soil types. Soil samples were collected from a selection of golf facilities and analysed by dry combustion, delivering %C and %N content.

Collection of soil samples from all 60 golf course sites was completed in November 2022. Laboratory analysis was completed in May 2023. Interpretation of results and development of a scoring system for carbon sequestration and/or land use emissions on each golf course are underway.

Preliminary results indicate considerable sequestration potential in mineral soils, although depending on land use history, and some emissions hotspots in organic soils.