

BENCHMARKS Soil Health Serious Game Brief

Organisation	Earthwatch Europe
Department	Innovation
Commission	BENCHMARKS Soil Health Serious Game
Summary	Development of a serious game to inform and engage about the importance of soil health
Value	60,000 to 70,000 €
Estimated duration	31 months (December 2023 to July 2026)
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Timetable	Proposal deadline: 30 th November 2023 Consultant selection: December 2023 Contract completion: July 2026

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Background and overview

The [BENCHMARKS](#) project was launched on 13 February 2023, bringing together 29 partner organisations from across Europe, The European Commission, The Joint Research Centre and representatives of the business and land management sectors, at Wageningen University. BENCHMARKS is a 5-year transdisciplinary research project focused on monitoring soil health across Europe.

A joint assessment undertaken by the Soil Health and Food (SH&F) mission board and the Joint Research Centre (JRC) states that 60-70% of soils in Europe are currently considered unhealthy due to pollution, excess nutrients, compaction and soil degradation (A Soil Deal for Europe, European Commission, 2022a).

The European Commission SH&F mission has set the goal to have 75% of European soils healthy or significantly improved by 2030, in line with a new EU law on the protection of Soil Health. The private sector too, is proposing explicit visions of sustainable food systems, such as the 1000 landscapes for 1 billion people (1000 landscapes, 2022), the 100-million farmers platform of the World Economic Forum (World Economic Forum, 2022) and the Regen10 initiative of the World Business Council on Sustainable Development (WBCSD, 2022).

The BENCHMARKS project

Measuring the success of these public and private initiatives through the harmonised monitoring of European soils is an essential, but enormously complex task. It requires coherent yet context-specific monitoring on multiple scales, for multiple land uses, across all EU Member States. BENCHMARKS will work together with stakeholders (farmers, foresters, urban planners, value chain representatives, researchers, local governance and policy makers) from across 24 contrasting landscapes to define how to monitor soil health across Europe, while also considering the local context of land management.

The goals of the BENCHMARKS project are to:

1. Provide a clear, easy-to-use tool for evaluating soil health, which is transparent, harmonized, and cost-effective.
2. Define appropriate indicators that are relevant to the assessment of soil health for a range of land uses and climatic zones across Europe.
3. Develop a soil health dashboard appropriate for use at a range of scales (field to European) for agricultural, forestry, and urban settings.
4. Contribute to improving existing European policies and regulations related to soil health.

To contribute towards these goals, as part of work package 4: Evaluating soil health through indicator measurements, a gamification approach of soil health in different land uses will be generated to support discussions with land managers and other stakeholders.

Aims & objectives

The overall aim of the BENCHMARKS serious game is to **educate** potential stakeholders regarding the evaluation of soil health, the indicators that help to do this, and the potential impact soil health can have. To achieve this aim, there are 3 specific objectives the game should target:

1. To **educate stakeholders** (land managers, local communities, the public, industry, policy and decision makers, teachers and students) on the importance of soil health, and the tools and indicators (and associated measurements) that are used to evaluate it.
2. To highlight how soil health and indicators are related to **different urban land uses** (private gardens, shared spaces, industry, urban farming, parks and recreation), and how different approaches to this land use can improve or degrade soil health.
3. To raise **awareness of other stakeholders' points-of-view**, to understand the effects of soil health and actions on other parts of society, and to foster discussion and collaboration between stakeholders.

Of course, the BENCHMARKS serious game will not be the first to address environmental issues, either online, offline or physical. Examples such as [Beyond Blue](#) and [Dirty Matters](#) have attempted to educate players on issues ranging from water and waste management, conflict resolution, cultural awareness, environmental and wildlife education, and soil health. To achieve this, and perhaps due to the similarities with the objectives previously listed, most existing serious games have taken the role-playing game (RPG) or resource-management approach.

Whilst there are no objections to the BENCHMARKS serious game involving similar mechanics, solutions that involve more innovative approaches will be welcomed.

The BENCHMARKS project is a [Research and Innovation Action \(RIA\)](#), and as such is tasked with establishing new knowledge and/or to explore the feasibility of a new or improved technology, product, process, service, method, tool or solution. This remit stretches to the serious game to be developed, and as such an additional core objective is:

4. To incorporate **citizen science methodologies** and data into the core design and player-mechanics of the game.

Citizen science, described as the practice of public participation and collaboration in scientific research to increase scientific knowledge, has often used gamification techniques to increase engagement, participation and motivation. However, such techniques have to date been relatively simple, such as leader boards, levelling-up, and rewards-based incentives. Therefore, to truly embed the activities of citizen science (data collection, validation, visualisation etc.) into the mechanics and narrative of a game would represent a step forward in both serious games and citizen science gamification.

To achieve this objective, consideration would need to be given to:

- Mobile and web application suitability
- Geospatially tagged data – its entry, validation and upload
- Interface design – considering both playing as an individual and group dynamics
- Player credentials, privacy, data protection
- Soil education

Such issues could prove complex when developing the BENCHMARKS serious game, so consideration should be given to time and cost constraints when tendering possible solutions.

Method of delivery

The developer selected should propose an appropriate method of delivery in order to meet the serious game aims and objectives, but it is anticipated that the successful delivery of this contract will include:

- Workshops and/or semi-structured meetings with key persons at Earthwatch and the wider BENCHMARKS consortium (especially work package 4 partners) to understand the BENCHMARKS project objectives, agree the serious game methodology, and define the game requirements.
- Serious game design sessions with potential end-players and stakeholders – the developer should propose appropriate approaches to design development to achieve the game aims and objectives.
- Interim and final reporting on game design and implementation aligned with the project's wider reporting schedule (please see details of outputs and deliverables in subsequent sections of this brief).

The serious game and its design will need to consider language requirements and possible translation issues, as the BENCHMARKS project represents several countries across the European Research Area.

Involved parties will include:

- **Earthwatch project coordinators** – delivery staff at Earthwatch responsible for working on the BENCHMARKS project and the tasks associated with the serious game.
- **Work Package 4 partner representatives** – staff from other BENCHMARK partner organisations who are part of work package 4 and its tasks and deliverables.
- **Wider BENCHMARKS consortium representatives** – staff from other consortium partner organisations beyond work package 4, for instance the project coordinators at Wageningen University, and case-study leads.
- **Case-study participants** – The BENCHMARKS project involves several case-study sites across Europe, representing the different land-uses considered. At these sites, various soil indicator measurement and citizen science activities will take place, and so the participants involved will be key end-users of the serious game and therefore should be involved in its design.

Whilst this commission will end towards the completion of the BENCHMARKS project (Autumn 2026), the implementation of the serious game should allow BENCHMARK partners, and specifically Earthwatch staff, to continue to support and sustain the game beyond the developer's involvement. Sustainability considerations should also include all front and back-end services, platforms and infrastructure used – with an aim of achieving an open-source and free-to-use solution.

Contract management

The commission will begin in December 2023, and will be completed by 31st July 2026 (approx. 31 months).

The overall budget for the development is 60,000 to 70,000 €, inclusive of VAT or other taxes.

The payment schedule will be in instalments aligned to the deliverables of the project, and in agreement with all parties.

Earthwatch will be the primary point of contact for the management of this contract and will facilitate all connection with participants and stakeholders from the BENCHMARKS consortium where appropriate.

Outputs & deliverables

The outputs and deliverables for this commission will be determined in collaboration with the appointed developer as appropriate to their proposed method but should include:

- Serious game concept and accompanying documentation (update of design proposal following developer selection)
- Interim reports at 6-month intervals (format to be determined in consultation with developer)
- Serious game prototype and documentation (for user-testing and feedback)
- Final serious game and documentation (including coding and infrastructure descriptions and instructions of use)
- Final report, code-base, installation and support documentation (format to be determined in consultation with developer)

The serious game developer should take a collaborative and consultative approach and provide updates on progress outside of formal reporting when appropriate.

The content and structure of formal reports and game designs should be agreed with Earthwatch in advance of writing and drafts should be shared for comment prior to finalisation. The developer will be required to provide regular updates on work in progress and communicate the final deliverables through appropriate means, for example through wire-frame interface designs, and alpha or beta software demonstrations.

This work will be undertaken confidentially, the primary audience being Earthwatch, and other BENCHMARKS consortium partners. Findings and outputs from the serious game design will also be shared more widely with case-study stakeholders and other audience as deemed appropriate by Earthwatch.

Timeline

The expected timeline for completion of the commission is:

Evaluation activity	Date	Deliverables
Consultant selection	November – December 2023	Project Initiation Document
Progress updates	Ongoing, ways of working to be agreed on appointment	To be agreed on appointment
Serious game concept and documentation	January 2024	Structure and format agreed
	February 2024	Draft for comment and revision
	March 2024	Final for submission and sharing with BENCHMARKS consortium
Serious game prototype and documentation for testing	May 2024	Structure and format agreed
	June 2024	Draft for comment and revision
	July 2024	Final for submission and sharing with BENCHMARKS consortium

Evaluation activity	Date	Deliverables
Final serious game deployment and documentation	January 2026	Structure and format agreed
	April 2026	Draft for comment and revision
	June 2026	Final for submission and sharing with BENCHMARKS consortium
Closure	July 2026	Final deployment version, documentation and supporting infrastructure as appropriate

The detailed timeline will be agreed with the selected developer on appointment.

Research ethics

We expect the consultant to adhere to the Social Research Association (SRA) ethical guidelines. We do not anticipate that the research will require a Research Ethics Assessment however assessments can be completed as appropriate if you believe your proposed method for the evaluation raises ethical issues.

Data protection

The developer and development actions must comply with all requirements of UK and European Data Protection Laws and should ensure appropriate research consents from user-testing actions or any data collection processes.

Procurement process

Developers are required to submit a proposal outlining how they will meet the requirements of the brief. The proposal should include:

- A detailed methodology for achievement of the serious game aims
- Initial ideas/wire frames etc. of a possible approach and solution
- A detailed timeline for delivery of the serious game concepts and development stages
- Staff allocated to the game development activities
- Budget breakdown showing allocation of costs to game development activities

Proposals will be assessed against the following criteria:

Assessment criteria	Weighting
The proposal demonstrates a clear understanding of the objectives of the serious game and sets out an approach that is appropriate to achieving these objectives	35%
The proposal provides evidence of relevant experience in the development of serious games and their deployment	25%

Assessment criteria	Weighting
The proposal outlines methods that are appropriate for the requirements, budget and timescale set out in this brief	25%
The proposal includes a realistic and feasible project plan, with clarity over roles and responsibilities for each member of the team	15%

Proposals should be submitted to James Sprinks at jsprinks@earthwatch.org.uk by 30th November 2023