Terms of Reference
Expert Services – Pedologist (Soil Scientist)

Project: CARBONICA (Horizon Europe, Project No. 101087233)
Contracting authority: National Extension Agency (NEA), North Macedonia
Assignment duration: 4 person-months (total)
Location: Field sites across North Macedonia and remote work for reporting

1. Background

CARBONICA aims to establish a regional Excellence Hub and to develop, test, and scale carbon-farming solutions. NEA requires an external pedologist to provide a scientifically based assessment of soil organic matter and soil organic carbon (SOC) status across representative sites in the national ecosystem. The assessment will support pilot validation, Academy training materials, and policy recommendations.

2. Objective of the assignment

Provide a scientifically robust, transparent, and actionable assessment of soil organic matter and SOC through representative sampling, accredited laboratory analyses, interpretation of results, and dissemination to target groups (farmers, advisors, project partners).

3. Scope of work and specific tasks

The expert will work in close coordination with the CARBONICA project team and will perform the following tasks:

A. Preparatory phase (Deliverable 1: Sampling Methodology & Plan)

1. Review available soil, land-use, and crop data.
2. Propose and justify a sampling design (stratified by vegetation/land-use: arable, orchards, grassland, forest, etc.), including minimum sample numbers per stratum and sampling depths.
3. Define sampling methodology and field protocols in accordance with relevant ISO standards. Specify exact laboratory methods to be used for SOC and organic matter determination (e.g., Walkley-Black, Loss on Ignition, dry combustion/elemental analysis) and QA/QC procedures.
4. Prepare field forms, chain-of-custody forms, sample coding scheme, and a schedule for fieldwork and laboratory analyses.

B. Field activities (Deliverable 2: Field dataset and photos)

1. Organize and implement representative field soil sampling according to the approved plan.
2. Record soil profile descriptions where applicable and georeference all sampling points (GPS coordinates).

3. Collect disturbed (and where required undisturbed) samples from defined depths.
4. Ensure correct labeling, packaging, and transport to the laboratory; maintain chain-of-custody.
5. Maintain full field documentation and photo records.

C. Laboratory analyses (Deliverable 3: Laboratory results and QA/QC certificates)

1. Prepare samples (drying, sieving, homogenization).
2. Determine organic matter and SOC using the agreed methods; include replicates, blanks and standards as part of QA/QC.
3. Provide laboratory certificates, method descriptions, detection limits, and uncertainty estimates. Systematize laboratory data in a structured format.

D. Data analysis, interpretation, and reporting (Deliverable 4: Draft and final technical report)

1. Perform statistical and spatial analysis of SOC and organic matter variability; compare results across vegetation/land-use types and depths.
2. Prepare tables, graphs and maps (GIS) where applicable.
3. Produce a Draft technical report — T0 + 10 weeks.
4. Produce the Final technical report and data package incorporating comments — T0 + 12 weeks.

E. Dissemination (Deliverable 5: Presentation materials and stakeholder session)

1. Prepare presentation materials (PowerPoint) summarizing methods, key results and practical recommendations for advisors and farmers.
2. Present findings at one workshop (in person) and participate in Q&A. Contribute a short text for project communication materials.

4. Deliverables, timing and acceptance

All deliverables must be submitted in Macedonian and English (where applicable). Deadlines are relative to the contract start date (T0).

1. **Sampling Methodology & Plan** (Word + PDF) — **T0 + 2 weeks**.
2. **Field dataset and photo documentation** (GPS points, field forms, chain-of-custody) — **within 2 weeks after fieldwork completion**.
3. **Laboratory results and QA/QC certificates** (spreadsheet + lab certificates) — **within 4 weeks after sample submission**.
4. **Draft technical report** (including tables, graphs, maps, interpretation and recommendations) — **T0 + 10 weeks**.
5. **Final technical report and data package** (raw data, processed data, GIS files, photos) **— T0 + 12 weeks**.
6. **Presentation materials and stakeholder session delivery** — **T0 + 12 weeks**.

5. Qualifications and experience

- Advanced university degree (MSc or PhD) in Soil Science, Pedology, Agronomy or related field.
- Minimum **5 years** of professional experience in soil sampling and laboratory analysis, including SOC determination.
- Proven experience in designing stratified sampling schemes and in statistical analysis of soil data.
- Experience with GIS mapping of soil data is required.
- Proven experience with ISO standards for soil sampling and SOC analysis is an advantage.
- Excellent report writing skills in English and working knowledge of Macedonian are desirable.
- Prior experience in EU projects or work with farmers is an advantage.

6. Duration, workload, and location

- Total effort: **4 person-months** (can be distributed across fieldwork, lab coordination and reporting). Exact schedule to be agreed with NEA.
- Fieldwork will take place at selected sites in North Macedonia. Travel within the country is expected.

7. Budget, travel and expenses

- Payments will be made in accordance with the signed Contract. The gross remuneration rate for the assignment is 2.100,00€ per person-month. The contract covers 4 person-months.
- Expert fee includes travel, per diems, laboratory costs, and any other costs incurred to deliver the services described in this ToR.
- Payments will be executed through the author's agency, in line with NEA's internal financial procedures.

8. Data management, ownership, and confidentiality

- All raw data, processed data, maps, photos and reports produced under this contract are the property of NEA and CARBONICA project partners. The expert must deliver data in editable formats (CSV/Excel for tables; shapefile/GeoJSON for GIS; high-resolution JPG/PNG for photos; Word/PDF for reports).
- The expert must follow GDPR and national data protection rules for any personal data collected.
- NEA and CARBONICA may use results for dissemination.

9. Quality assurance, permits and health & safety

- The expert must implement QA/QC procedures and maintain the chain-of-custody for samples.
- If fieldwork requires access permissions or permits (private land, protected areas), the expert will coordinate with NEA to obtain them.
- The expert must follow health & safety rules during fieldwork and ensure safe working practices for any assistants.

10. Reporting and supervision

- The expert will report to the NEA coordinator (Zlatko Sireta) and coordinate with the CARBONICA technical team.
- NEA will review and approve the sampling plan and deliverables according to the schedule above.

11. Payment schedule (suggested)

- **30%** on contract signature and approval of the Sampling Methodology & Plan.
- **30%** on the delivery of laboratory results and submission of the Draft technical report.
- **40%** on acceptance of the Final technical report, full data package, and delivery of the dissemination presentation.

Payments will be executed through the author's agency and in accordance with the signed Contract and NEA internal procedures.

12. Application and selection

- **Application package:** Candidates must submit a completed Application Form Template and a CV.
- **Selection basis:** Selection will be based solely on the information and statements contained in the submitted CV.
- **Eligibility screening:** CVs will first be screened for compliance with the minimum qualifications stated in the ToR (degree, minimum 5 years relevant experience). Only CVs that meet the minimum eligibility will proceed to scoring.
- **Evaluation method (based on CV content):** The Evaluation Committee will score each eligible CV against the following CV-based criteria and weights:
    - Academic qualifications (MSc/PhD in relevant field) — 50%
    - Relevant professional experience in soil sampling, laboratory methods, and GIS mapping — 50%
- **Scoring rules:** Scores will be derived exclusively from statements, dates, and descriptions present in the CV.
- **Award:** The highest-scoring CV will be recommended for contract award.