



International
Carbon
Registry

AgroEcology_Italy

“Reducing GHG Emissions and Increasing Carbon Sequestration in Italian Agriculture”

This project is dedicated to empowering Italian farmers through the adoption of regenerative agricultural practices, including tree planting and agroforestry. We provide vital financial incentives and expert guidance to overcome adoption barriers. By championing sustainability, we significantly contribute to mitigating greenhouse gas emissions and combatting climate change, while transforming Italy's agricultural landscape for a more sustainable future.



By Alberami s.r.l.

Project summary

Basic Information	
Name of developer	Alberami SRL Società Benefit
Address	Via Padre Bernardo Paoloni, 10, Lecce, 73100, Italy https://goo.gl/maps/fb8PgA5yqjn24uB47
Contact person(s)	Francesco Musardo
Title	CEO
Telephone	+39 351 821 4474
Email	f.musardo@alberami.it
Website	www.alberami.com
Sectors/type	
Scopes of the methodology/project type	<input type="checkbox"/> 1. Energy (renewable/non-renewable) <input type="checkbox"/> 2. Energy distribution <input type="checkbox"/> 3. Energy demand <input type="checkbox"/> 4. Manufacturing industries <input type="checkbox"/> 5. Chemical industry <input type="checkbox"/> 6. Construction <input type="checkbox"/> 7. Transport <input type="checkbox"/> 8. Mining/Mineral production <input type="checkbox"/> 9. Metal production <input type="checkbox"/> 10. Fugitive emissions from fuels (solid, oil and gas) <input type="checkbox"/> 11. Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride <input type="checkbox"/> 12. Solvents use <input type="checkbox"/> 13. Waste handling and disposal <input checked="" type="checkbox"/> 14. Afforestation and reforestation <input checked="" type="checkbox"/> 15. Agriculture <input type="checkbox"/> 16. Carbon Capture and Storage/Carbon Dioxide Removal
Type	<input type="checkbox"/> Carbon removal/sequestration <input type="checkbox"/> Avoidance/reduction <input checked="" type="checkbox"/> Mixed
Project activities	
Estimation of the first project (year):	2022
First project impacts (t CO ₂ -e):	8044 tCO ₂ -e by year 2, growing to over 1m tCO ₂ -e/annum by year 10.
First vintage:	2022
Location of application:	Italy (Regions of Basilicata, Calabria, Puglia, Sicilia, Campania, Abruzzo, Molise, Sardegna, Lazio, Toscana)
Telephone	+39 351 821 4474
Email	f.musardo@alberami.it / info@alberami.it

Summary description of project activities

AgroEcology_Italy “Reducing GHG Emissions and Increasing Carbon Sequestration in Italian Agriculture” (the ‘Project’) is an agriculture & agroforestry carbon removal & sequestration project run by Alberami SRL Società Benefit, an Italian environmental-tech startup based in the Italian city of Lecce, in the southern region of Puglia.

The project is a Grouped Project format defined by the ICR and ISO 14064.02, with multiple landowners and numerous Project instances situated in Italy, its purpose is to promote, assist and encourage farmers in the implementation and use of sustainable agriculture practices ranging from reducing their reliance on synthetic fertilizers and pesticides, to increasing organic matter in soil and recycling of organic matter.

At the heart of Alberami’s mission is the goal to mitigate carbon emissions while boosting the prosperity of local landscapes and communities through sustainable, scientifically-supported methods. The project adheres to the International Carbon Registry standards under ISO 14064-2 and incorporates the LIFE C-Farms methodology, benefiting from collaborations with Italian universities, research institutions, and industry partners. This methodology, co-financed by the 2020 LIFE Programme of the European Commission (LIFE20 PRE IT/017), is complemented by elements from Verra’s VM0042 v2.0: A Verified Carbon Standard (VCS) for improved agricultural land management (ALM), and the CDM’s AR-AMS0007 methodology for small-scale afforestation and reforestation under the Clean Development Mechanism (CDM) of the United Nations Framework Convention on Climate Change (UNFCCC). These methodologies quantify emission reductions from agroforestry, afforestation, and reforestation activities, including carbon stocks and fluxes, ensuring a robust and verifiable approach to carbon reduction and environmental enhancement. The project aims to achieve the following objectives:

Carbon Emission Reduction

The primary objective of our project is to actively contribute to the reduction of carbon emissions in the atmosphere. By strategically adopting regenerative agricultural practices, we disrupt the status quo of conventional land use, effectively curbing the release of harmful greenhouse gases that fuel climate change. Through this approach, we not only align with global climate targets but also strive to exceed them by embracing cutting-edge methodologies.

Enhancing Carbon Sequestration

Central to our strategy is the amplification of carbon sequestration in both soil and biomass. We recognize the potential of nature’s inherent mechanisms to store carbon, and we harness this potential through meticulous soil management, the implementation of agroforestry activities, and the thoughtful planting of trees. These actions not only remove carbon from the atmosphere but also enrich ecosystems, yielding benefits that reverberate through generations.

Empowering Farmers and Communities

Our vision extends beyond ecological benefits. We are dedicated to empowering farmers and local communities with a new paradigm of sustainable prosperity. By facilitating the creation and sale of carbon credits within the voluntary carbon market, we create a transformative opportunity for farmers to access additional income streams. This economic empowerment cascades into improved livelihoods, rural development, and the revitalization of communities in the face of changing agricultural landscapes.

Catalyzing Holistic Change

Our project’s scope encompasses not just carbon reduction, but an all-encompassing shift toward a more resilient, regenerative, and harmonious coexistence with nature. By embracing agroforestry practices, restoring degraded land, fostering biodiversity, and cultivating partnerships with local stakeholders, we

catalyze a holistic change that transcends carbon capture and engages in the broader endeavor of sustainable development.

Agricultural practices have been shown to have a significant impact on climate change through the sequestering of carbon and the storage of carbon in well-managed soils. This project aims to support Italian farmers in adopting sustainable land management practices that can contribute to mitigating greenhouse gas emissions and combatting climate change. By providing financial incentives and guidance, this project aims to overcome barriers to the widespread adoption of these practices and promote sustainable agriculture. The Project also aims to bring together agricultural, industrial, and services companies to promote sustainable farming's excess CO₂ sequestration capacity on the international voluntary carbon market. Through its own farming protocol, which includes technical guidelines and specific project management activities, the Project aims to regenerate carbon in soils and increase the biomass of agriculture ecosystems to restore key ecological systems, resulting in both economic and environmental benefits.

Agricultural practices in Italy, including the widespread use of synthetic fertilizers, have been shown to contribute to GHG emissions and the loss of soil carbon stocks. While the country has made significant progress in the adoption of organic farming practices, there is still potential for the introduction of more sustainable practices within a carbon farming framework to further reduce GHG emissions and improve soil health. This project aims to support Italian farmers in adopting such practices in order to mitigate GHG emissions and improve the sustainability of the country's agriculture sector.

Intensive agricultural practices, such as those commonly used in the farming sector in Italy, can contribute to the degradation of soil and water resources. Tillage, for example, can increase erosion, damage soil structure, and lead to the loss of topsoil and its associated carbon and nutrients. Additionally, research has shown that approximately 20% of the nitrogen applied in agriculture accumulates in water bodies and oceans, leading to eutrophication, algal blooms, and declines in biodiversity. Agricultural nitrogen losses can also contribute to acid deposition in the region.

However, the adoption of regenerative agriculture practices can help to mitigate these negative impacts and restore soil and water resources. For example, reduced tillage and the retention of crop residues on the soil surface can reduce erosion, while the use of living winter cover can absorb residual nutrients that may otherwise be lost through leaching and runoff. Studies have also shown that regenerative agriculture practices can reduce agricultural runoff and improve the health of aquatic ecosystems.

By promoting regenerative agriculture practices, this initiative aims to address the degradation of soil and water resources and enhance ecosystem function and biodiversity in the farming sector in Italy.

A new approach to Farming

The proposed sustainable and regenerative farming practices aim to harness carbon credits through a holistic approach that emphasizes soil health, biodiversity conservation, and responsible resource management. These practices include organic farming principles, minimal tillage techniques, year-round soil greening with cover crops, integration of native trees and plants, creation of buffer strips, sustainable pruning residue management, the addition of organic matter and natural amendments, significant reductions in synthetic fertilizers and pesticides, recycling of agro-industrial organic matter, orchard expansion or intensification, and the conversion of annual cropland into permanent pasture. By combining these strategies, farmers can not only reduce their carbon footprint but also promote a more sustainable and resilient agricultural ecosystem.

To ensure the cost-effectiveness of operators engaged in carbon removal activities and their distinctiveness compared to conventional practices in Italy, the project developer strongly recommends (it is a participation's pre-requisite) the adoption of a combination of at least three practices from the list presented in Table 1. It should be noted that the specific practices chosen may vary among different land parcels. Furthermore, this list will be periodically updated to accommodate new best practices deemed suitable for carbon farming and storage. The inclusion of any additional best practice will be subject to assessment by the scheme owner to determine its merit.

The eligibility conditions set forth in this project encompass essential sustainability criteria aimed at preventing the generation of adverse externalities in relation to other environmental factors, including but not limited to biodiversity, eutrophication, climate change, and other carbon pools.

MRV Strategy & Transparency

Our MRV (Monitoring, Reporting, and Verification) strategy employs a powerful combination of soil sampling, advanced remote sensing technologies, and blockchain integration. By merging these three approaches, we achieve a comprehensive and accurate understanding of carbon sequestration dynamics within our agroecosystems. Soil sampling provides us with direct measurements of soil carbon content, allowing us to assess sequestration rates at a granular level. Simultaneously, remote sensing offers a broader perspective, enabling us to track vegetative health, land cover changes, and biomass accumulation. The integration of blockchain technology ensures the security and transparency of data throughout the credit creation and utilization value chain. This synthesis of on-the-ground data, satellite-derived insights, and blockchain-enabled transparency empowers us to precisely quantify carbon capture, validate our practices, and ensure the credibility of our environmental impact claims.

The Project's Goals and Potential

To date, the AgroEcology_Italy project has received interest from approximately 5,000 farmers in all regions of Italy. Of these, 250 farmers are currently registered on Alberami's platform, representing a total farming area of approximately 3,000 hectares, primarily consisting of traditional olive groves.

However, the project has since its inception expanded its scope to include a variety of woody perennial crops, including fruits, almonds, walnuts, citrus orchards, vineyards and annual crops with the goal of improving their carbon sequestration capacity and sustainability.

The Project plans to expand to a minimum of 25,000 hectares of cultivated land within the first two years and aims to increase this by an additional 25,000 hectares each year, with a target of covering at least 200,000 hectares by 2030.

The project is expected to generate a total of 51,420,69 tCO₂e over a 45-year period (2022-2066), with an average annual reduction of 1,142,682 tCO₂e. Initial monitoring has already confirmed the effective sequestration of 8,044 tCO₂e across 67 farms who manage a combined area of 1,474.89 hectares from January 2022 to December 2023, demonstrating alignment with the project's ambitious environmental objectives. Furthermore, an additional 1,367 farmers have committed to adopting similar practices as soon as the project expands in 2024.

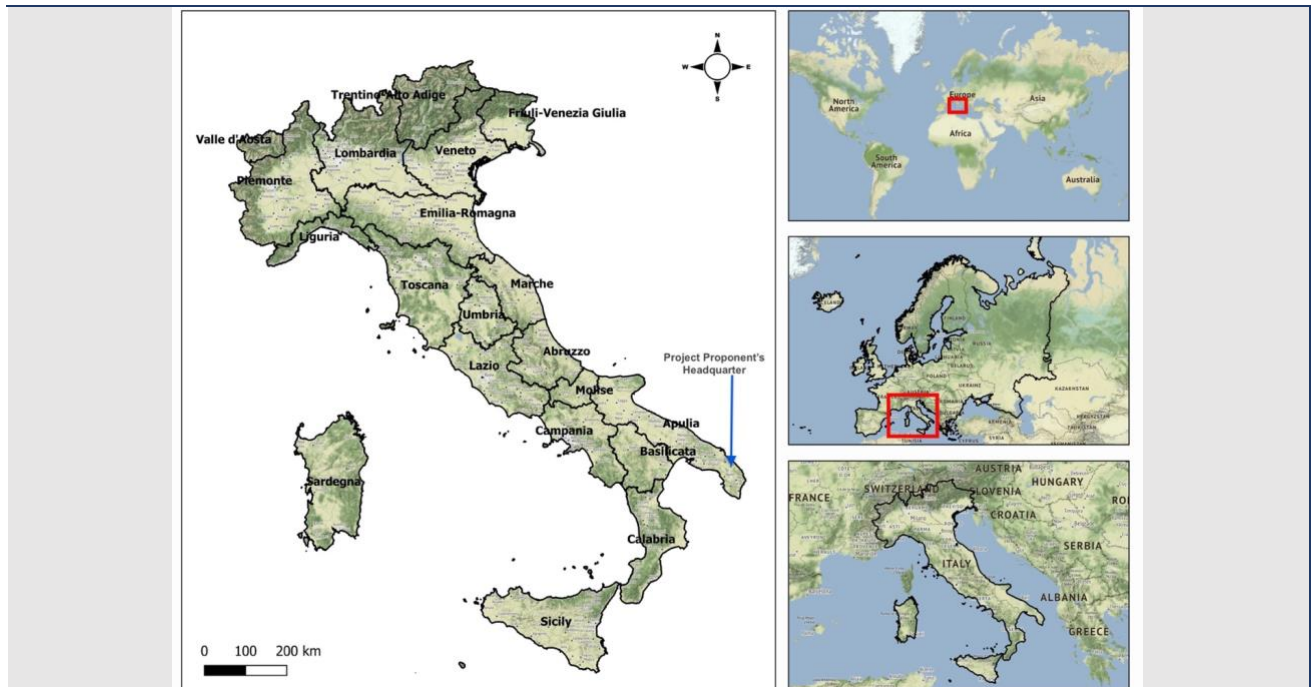


Figure 1 – the project geographical location

Project Co-benefits

Beyond its core mission of carbon sequestration, our carbon farming initiative delivers a spectrum of co-benefits that radiate across environmental, social, and economic dimensions. As we replenish soil health and rejuvenate ecosystems through innovative agroforestry practices, we pave the way for increased biodiversity, healthier watersheds, and improved air quality. This harmonious approach not only addresses the pressing challenges of climate change but also nurtures vibrant habitats for native flora and fauna. Furthermore, our project's ripple effect extends to local communities, where economic growth is spurred through job creation, increased livelihood opportunities, and strengthened rural economies.

The careful regeneration of a portion of the extensive 180,000 hectares of land previously affected by the *Xylella fastidiosa* bacterium in Puglia, Italy, reflects our dedicated commitment. This effort goes beyond environmental restoration; it also supports the livelihoods of the communities we work with. By revitalizing these lands, we signify a meaningful renewal—a revival seen in the restored ecosystems, rejuvenated surroundings, and the improved prospects for the people connected to these lands. Our approach to regeneration involves replacing ailing or deceased olive trees with a more biodiverse range of plantations.

This deliberate shift respects the 'natural genetic fabric' of the area, embracing diversity over the monocrops that proved vulnerable to issues like the one witnessed with *Xylella*. This more varied landscape not only enhances resilience but also enriches the local environment, fostering habitats that mirror the intricate balance of nature. Through these choices, we contribute to a thriving ecosystem that speaks to the heart of sustainability and the vitality of the region's natural heritage.

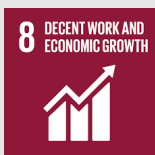
Project activities promoted through the AgroEcology_Italy Initiative align with a number of the United Nations' Sustainable Development Goals (SDGs):



SDG 1: (No Poverty) – Our project empowers Italian farmers with financial incentives and expert guidance to adopt sustainable land management practices, directly addressing SDG 1's goal of eradicating poverty in our project regions. This contributes to economic upliftment and fosters resilient, prosperous communities.



SDG 2: (Zero Hunger) – Our initiative aligns with SDG 2, by ensuring sustainable food production systems and putting in place resilient agricultural practices that boost output and productivity, support ecosystem preservation, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters, and gradually improve land and soil quality.



SDG 8: (Decent Work and Economic Growth) – Sustainable land management practices create new job opportunities. Carbon credits generated through the project provide a new source of income. This approach boosts economic growth, reduces waste, and creates dignified job opportunities for the community.



SDG 9: (Industry, Innovation and Infrastructure) - Through sustainable practices, technological innovation, climate-resilient infrastructure, and collaborative partnerships, we promote economic growth and inclusive industrialisation in rural areas. Our use of cutting-edge technologies enhances farming efficiency and supports grassroots innovation. Furthermore, our collaborative approach with various organisations promotes SDG 9's focus on partnerships.



SDG 12: (Responsible Production and Consumption) – The project promotes sustainable and regenerative farming practices to lower environmental impact and encourages resource-efficient techniques through financial incentives and advice, ultimately lowering waste and increasing efficiency.



SDG 13: (Climate Action) – by encouraging solutions that can diminish the sector's emissions of greenhouse gases into the atmosphere and increase resiliency to the effects of climate change.



SDG 15: (Life on Land) – by promoting sustainable land management practices it mobilizes and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems which in turn can help to protect and restore ecosystems and biodiversity in farming regions.



SDG 17: (Partnerships for the Goals) – The project brings together agricultural, industrial, and services companies to promote sustainable farming practices and sell excess CO2 sequestration on the international voluntary market. This partnership approach could help to accelerate progress toward the SDGs.



Figure 2 – Application of Trifolium repens Cover Cropping in an Olive Orchard in Puglia, Italy



Figure 3 – Newly Established Olive Orchard in Puglia, Italy with Xylella fastidiosa resistant variety