

CASE STUDY:

Potential pathway to market

KAKHETI STEPPE

Photo credit: Khatia Basilashvili



Background

The restoration landscape consists mostly of an arid steppe ecosystem in Western Georgia, close to the border with Azerbaijan. This is a sparsely populated region lying between the Iori and Alazani rivers. The overall size of the project is 100,000 hectares. Semi-nomadic sheep farmers from multiple ethnic groups have historically used this area as winter pasture. The soil and vegetation are severely degraded due to grazing pressure, which has intensified in recent decades, and climate change.

The Endangered Landscapes Programme [project](#) works with herders in the area to [implement rotational grazing](#) to restore pastures. So far this has been done on about 8,000 hectares, with the goal of spreading the practice to 25,000 hectares. The project is developing maps detailing land ownership and livestock stocking rates, along with continuing monitoring of biodiversity and forage quality.

Partner organisations:

Sabuko, Birdlife Europe, Agency of Protected Areas of Georgia

The opportunities

Grasslands provide essential habitat for wildlife and their soils can be a considerable carbon sink, which is potentially more resilient than forests to climate risks such as fire (Dass *et al.* 2018). However, intense agricultural practices have left large areas of grassland in a poor condition or converted them to arable land. Practices such as ploughing and intensive grazing can reduce grasslands' ability to provide habitat for wildlife and their capacity to store carbon. Restoring

grasslands through reduced ploughing or rotational grazing schemes can improve ecosystem health and increase carbon sequestration into their soils (Chen *et al.* 2015; Brinkert *et al.* 2016). Pastures in Georgia are being grazed at high densities at a rate that prevents natural regeneration, and winter pastures in Kakheti Steppes area are especially overstocked. Climate change is expected to further decrease vegetation growth and increase soil erosion in Georgia's semi-arid steppes, putting them at risk of desertification (Ministry of Environmental Protection and Agriculture of Georgia 2021). Restoration through sustainable management could not only safeguard steppe biodiversity but also ensure communities have sufficient forage for their livestock.

[A recent study](#) looking into carbon sequestration potential in the area estimated that grassland restoration could sequester 6.1-12.2 tCO₂e per hectare over 20 years, adding to existing carbon storage, depending on the original condition of the grassland (United Nations Environment Programme 2022).

The project would like to explore possibilities of accessing private finance through carbon markets and understand what is required to sell carbon credits to fund expansion of habitat restoration in the area. The income could contribute to livelihoods of herders and encourage them to decrease grazing pressure through reducing herd numbers and enabling locals to access alternative income streams.

Although no grassland carbon projects currently exist in Europe, there are potential projects in development. For example, Fundatia ADEPT, in partnership with Operation Wallacea and RePlanet, are developing a combined biodiversity and carbon credit scheme for grasslands in Transylvania (Gherghiceanu 2022). Therefore, there could be interest in and opportunities for European grasslands projects soon.

The barriers

Although grassland restoration represents a significant carbon sink and benefits local wildlife, there are currently no examples of grassland restoration projects selling credits in Europe. Knowledge gaps still exist regarding the effect of grazers on steppe carbon. In addition, because most carbon is sequestered below ground, conventional ways of measuring soil organic carbon (SOC) are time-consuming and costly, while existing remote sensing approaches have important limitations and do not give consistently accurate results (Angelopoulou *et al.* 2019). This increases both the up-front cost of a grassland carbon project and the cost of subsequent verifications throughout its lifetime.

The region is of high biodiversity value and some the land has protected area status (Figure 1). In addition, the Georgian government has included the entire project area in the [Emerald Network](#), a program to identify and protect sites of European importance for biodiversity. Although Georgian legislation currently does not provide protection for Emerald Network sites or impose grazing limitations, this may change in the future. In this event, if project activities were required by law they may not generate additional climate benefits, making the project ineligible for carbon finance.

Pathway to the market

Are the restoration activities likely to help sequester carbon?



Is additional funding required to implement restoration



Does national legislation support carbon credit sales and define carbon ownership?



Is the government likely to claim ownership of carbon credits?

The steppe in the project area has varying levels of degradation, and carbon flux can vary. A 2021 [desk-based assessment](#) using the EX-ACT tool was completed for an area of about 42,000ha. It revealed that carbon sequestration potential of the grasslands is up to 12.2tCO₂e/hectare over the 20-year period. The steppes outside the assessment area are less degraded due to being partially in the Vashlovani protected area. More field and historic data would be required to determine where steppe restoration would generate the most emission reductions.

The Kakheti Steppes project is working with several herders to implement rotational grazing. Herders are generally interested in these techniques, though some landowners are against this type of collaboration. Others would like to seek alternative livelihood strategies but feel like they have no choice but to continue current practices to make enough money. Additional funding may be required to expand rotational grazing over other land parcels in the area, and to show the herders an opportunity for additional revenue streams.

Georgia's government does not have legislation pertaining to voluntary carbon finance or a dedicated department that could support a carbon project. Awareness about carbon markets in its private sector is also low. However, improving grazing management is highlighted as a key recommendation by Georgia's environment ministry in its most recent [national communication](#) to the UN Framework Convention on Climate Change (UNFCCC). The [UNFCCC focal point in Georgia](#) may be a useful source of information and potential guidance.

Georgia's updated [Nationally-Determined Contribution \(NDC\)](#) was published in 2021. The country is committed to cut its greenhouse gas emissions by at least 35% of 1990 levels and is not likely to struggle to achieve this due to post-Soviet economic collapse in the 1990s. It has not yet developed a greenhouse gas inventory. Therefore, at the moment it is unclear how carbon flux of its natural pastures

will be accounted in the NDC, or how Georgia is likely to record any corresponding adjustments to avoid double-counting in the event that emission reductions are sold to a buyer in a different country.



Can ownership of carbon credits be agreed between all stakeholders?

Land ownership and use in the area is fragmented and poorly documented. Most pastures are state-owned and leased to sheep herders. Lease holders can also sublease land unofficially, even though this is prohibited in protected areas. Leasing agreements can be as long as 50 years and as short as one year. Some of the pastures are privately owned. Most herders are not organized nor have a representative body, partly due to many belonging to the Azeri minority ethnic group. However, there are community structures in Samukhi district. To be registered with a carbon standard, the carbon project would have to provide proof of continuity of land ownership or lease during the project's lifetime and agreements regarding the ownership of carbon credits generated on that land. This may be possible if enough herders are identified with sufficient land under ownership or long-term lease that are interested in participating in rotational grazing. Many standards allow for the creation of such group projects, but the stakeholders would have to agree how the revenues from carbon credits are divided.



Are there existing methodologies for the restoration project's activities and ecosystems?

Compared to forests, the rate that at which grasslands sequester carbon under different environmental conditions and land use is not as well understood. For this reason, there are not many methodologies that have been approved by carbon standards which quantify carbon sequestered by grasslands under varying use. A quick overview of existing methodologies is given in Table 1. The initial assessment suggests that the interventions and ecosystems of the Kakheti Steppes project may be eligible for registration with a carbon standard under some existing methodologies.



There are many considerations for determining whether a potential carbon project within the Kakheti Steppes will bring enough income by itself to fund planned outcomes.

Will a carbon project be financially viable?

- Availability of data about steppe carbon and historic land use to inform baseline calculations
- Availability and cost of tools and methods to measure carbon in the field for baseline calculations and verification
- Size of participating land parcels: larger area generates more credits
- Risk of not achieving planned climate benefits due to unplanned events. These may include climatic events, fire, pests and disease, herders not implementing rotational grazing, change in land use or legislation, migration of wild grazers, and errors in initial calculations and predictions
- Potential future price of carbon credits

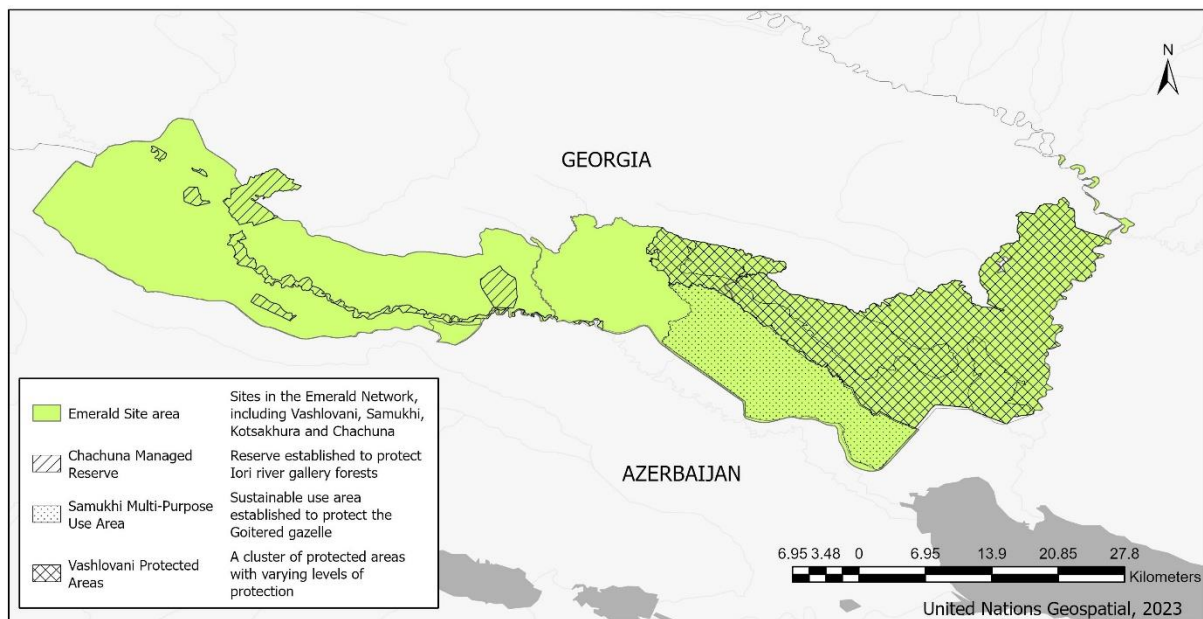


Figure 1. Map of project area with existing state protected area status sites and Emerald Network sites. Data provided by the Kakheti Steppes project.

Table 1. Overview of methodologies for grassland carbon projects.

Name of methodology	Key requirements	Examples of projects	Eligibility of Kakheti Steppes
VCS VM0026 Methodology for sustainable grassland management	<ul style="list-style-type: none"> -Grassland is degrading under baseline scenario. Tool to ID degrading grassland. -Area is subject to grazing and dung is unmanaged -Precipitation is less than evapotranspiration most of the year and leaching is unlikely -Project will not increase use of fossil fuels and fuel wood from non-renewable sources for cooking/heating -Project will not include land use change 	<p>Great Plains regenerative grazing (US) – sustainable grazing management at ranches, 13,000 ha</p> <p>Guoluo grassland sustainable management (China) – seeding grassland and introduction of sustainable grazing, 160,500 ha</p>	Yes
VCS VM0032 Methodology for adoption of sustainable grasslands through adjustment of fire and grazing	<ul style="list-style-type: none"> -grasslands are grazed and/or subject to fires -livestock is kept within project area and boundaries can be enforced -there is no mechanical vegetation removal, soil tillage or import of fertilizer 	<p>Soil carbon improvement through grassland management (South Africa) (under development) – increase of rest and rotation on pastures by fencing smaller pastures, 70,000 ha</p>	Yes
Plan Vivo grasslands (planned)	<p>Plan Vivo general requirements:</p> <ul style="list-style-type: none"> -projects are community-owned and 60% of income from carbon credits goes to the community 	<p>Project in Mongolia which developed its own methodology</p>	Unclear. Further assessment required when the methodology is available
Regen Network Grasslands generating CarbonPlus credits	<ul style="list-style-type: none"> -managed grazing 	<p>Projects in Australia</p>	Unclear. The standard is very new and projects seem to focus on ranchers.
Gold Standard Soil Organic Carbon Framework Methodology and planned Grassland module	<p>Broad framework for activities consisting of improved agricultural practices.</p> <p>The standard is further aiming to develop a module for Improved Grassland Management projects that will define activity-specific eligibility and requirements.</p>	None	Unclear. May be relevant after a grassland module is published.

Conclusions

While activities implemented by Kakheti Steppes may be eligible under some existing methodologies, there has been no field data collected regarding soil carbon in Kakheti steppes. More research would be required on how best to collect soil data and on existing data on land use and land degradation in the area.

The project needs to monitor for changes in legislation and policy regarding land use in the area to determine whether protected area status could make activities ineligible on the voluntary carbon market.

Mapping the land's legal status, leasing conditions and stocking rates will be key in determining which land parcels could participate in a carbon project.

Engagement with herders using the land may lead to opportunities for them to collaborate and create more formalised groups. This can facilitate sustainable pasture use and create possibilities for registering a community project under the Plan Vivo standard.

Further reading:

[Iori River Valley - The Endangered Landscapes Programme](#)

[Iori River Valley – Climate Change Mitigation Potential](#)

[Restoring Gallery Forest and Grasslands in the Iori River Valley, Georgia \(project report\)](#)

[Kakheti Steppes - The Endangered Landscapes Programme](#)

[Facing the Desert - YouTube movie about Chachuna](#)

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Disclaimer: The boundaries and names shown and the designations used on the maps in this document do not imply official endorsement or acceptance by the United Nations.

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