Project Idea Agriculture – TT Senegal

1. Project Title	**Improving Soil Fertility to Strengthen Climate Adaptation and Boost Agricultural Productivity**
2. Climate Justification	In Senegal, climate change is an undeniable reality, marked by rising temperatures and declining rainfall (Fall et al., 2024; Camara et al., 2022; CSE, 2010). Out of the country's 19.6 million hectares of land, approximately 12.7 million hectares – or 65% – are affected by various forms of degradation. The most severe is water erosion, impacting 77% of degraded land, followed by human-induced factors such as deforestation, agricultural expansion, and mining (11%), with the rest attributed to chemical degradation and wind erosion (World Bank, 2008). According to the INP (2013), around 2.5 million hectares of arable land are degraded across Senegal's six agro-ecological zones. This land degradation is expected to negatively affect agricultural productivity, public health, economic development, and environmental sustainability. Findings from the UNILEAD project confirm a significant decline in millet yields by the end of the century: up to -75% under scenario SSP585, -50% under SSP245, and -25% under SSP126. Soil degradation alone—impacting key crops like rice, millet, and maize, which together cover 45% of cultivated land—accounts for an annual loss equivalent to 2% of Senegal's GDP (Sow et al., 2016). In 2007, related financial losses were estimated at 550 billion CFA francs, or roughly 8% of the national GDP (ELD Initiative & UNEP, 2015; Maka Seck, 2016). To mitigate these effects and restore productivity, adaptation strategies proposed by GTAgCC (2025) include: ● Soil fertilization ● Improved irrigation systems ● Adjusting the agricultural calendar
3. Objectives and Expected Results	
3.1. Main Objectives	Enhancing the resilience of agricultural stakeholders to climate change through an integrated approach to sustainable soil management, with the goal of achieving food and nutritional sovereignty in Senegal.

3.2. Specific Objectives (Outcome)	Promoting the resilience of agricultural stakeholders to climate change through an integrated approach to sustainable soil management. The specific objectives of the project are to: ● Characterize and map soil types across the country; ● Combat and mitigate soil degradation caused by deforestation, desertification, erosion, and salinity; ● Strengthen the technical and institutional capacities of national soil analysis laboratories; ● Strengthen the capacities of stakeholders throughout the soil fertility knowledge transfer value chain and across socioeconomic factors; ● Strengthen the capacities of agricultural stakeholders in integrated soil fertility management and sustainable fertilization practices; ● Equip soil laboratories to regularly monitor and assess soil fertility status. The ultimate goal is to develop sustainable soil management systems that contribute to achieving food and nutritional sovereignty in Senegal.
3.3. Expected results (Outputs)	▪ Soils are characterized and mapped ▪ Soil degradation is combated and mitigated ▪ The capacities of national soil analysis laboratories are strengthened ▪ Stakeholder capacities are strengthened along the knowledge transfer value chain on soil fertility and across all socio-economic factors ▪ The capacities of agricultural stakeholders are strengthened in integrated soil fertility management and sustainable fertilization practices ▪ The capacities of soil analysis laboratories are strengthened for better monitoring of soil fertility status.
4. Alignment with National and Sectoral Priorities	This project is aligned with national policies and strategies: ● NDC ● Country Program ● Agriculture PNA ● Agricultural Sector Development Policy Letter (LPSDA) ● National Strategy for Food Sovereignty (2024-2028)

5. Responses to Climate Investment Criteria (used the 6 GCF criteria)	**- Effectiveness and Efficiency** Efficient soil resource management requires accurate monitoring of indicators such as carbon and nitrogen levels, which are highly sensitive to climate variability. This proposed intervention can address several key climate change mitigation and adaptation challenges by introducing a range of practices. These include soil mapping and characterization, enhancing carbon storage, and rehabilitating saline soils by planting resilient, salt-tolerant tree species. The initiative also promotes sustainable agricultural techniques such as intercropping, crop rotation, fallowing, mulching, and conservation farming. Additional measures involve encouraging composting integrated with biogas production, adopting precision fertilization through microdosing, supporting assisted natural regeneration, and promoting the use of organic fertilizers enriched with beneficial microorganisms like mycorrhizal fungi and nitrogen-fixing bacteria. **- Paradigm-Shifting Potential** This project adopts a transformative approach by fostering strong collaboration with key stakeholders – including private sector actors, research institutions, farmer organizations, and NGOs – actively engaged in sustainable soil fertility management. **- Country Needs and Ownership** Senegal's Nationally Determined Contribution (NDC) identifies agriculture and forestry as priority sectors for climate action. In the forestry sector, the NDC aims to restore land and promote sustainable forest management by reducing bushfires, curbing forest degradation, and freeing up overexploited forest areas. For the agriculture sector – particularly in relation to soil health – the NDC outlines key mitigation strategies, including: converting 99,621 hectares of farmland to assisted natural regeneration (ANR) and 4,500 hectares to compost use by 2030; promoting the use of organic manure and enhanced compost through livestock-linked biogas production; transforming 28,500 hectares of irrigated rice fields to System of Rice Intensification (SRI), which utilizes biofertilizers and reduces water use, fertilizer application, and methane emissions. Additionally, the goal is to expand the ANRNAS (Assisted Natural Regeneration and Natural Agroforestry Systems) to 498,105 hectares and compost application to 14,400 hectares. - **Coherence in financing the fight against climate change** In response to land degradation, Senegal has implemented national climate strategies and a Sustainable Land Management (SLM) framework. These instruments aim to prioritize, coordinate, and guide current and future SLM investments across public and

	private sectors, engaging stakeholders at all levels – from local communities and decentralized government services to civil society and NGOs. For instance, the National Strategy for Food Sovereignty (2024–2028) targets improved productivity in the primary sector. Within this strategy, specific measures are aligned with strategic orientations 1 and 3 of the national program to combat deforestation and land degradation through actions like carbon sequestration. Additionally, the National Strategic Investment Framework for SLM plays a key role in building a portfolio of SLM and resilience-focused programs while fostering dialogue and investment to advance land restoration, food security, and community resilience. Senegal has adopted key policy frameworks to support the sustainable management of degraded lands and the transformation of its agricultural sector. Among these is the ratification of the United Nations Convention to Combat Desertification (UNCCD) in 1995, through which the Government of Senegal committed to preventing and reducing land degradation, as well as restoring degraded and desertified areas. Additionally, the adoption of the Agro-Sylvo-Pastoral Orientation Law in 2004 reflects a strategic focus on enhancing livelihoods through agriculture, livestock farming, and sustainable natural resource use. **- Gender and Equity** Gender – understood as the socially constructed roles and responsibilities assigned to women and men within specific cultural and spatial contexts – has been intentionally integrated throughout the development of this research proposal to promote equitable and inclusive development. From the project identification phase, both women and men participated in analyzing challenges and shaping solutions, ensuring their voices are reflected in project design. During implementation and monitoring, gender will remain a central focus through: (i) the active participation of women, men, youth, and persons with disabilities in research activities; (ii) the integration of gender criteria in the selection of trainees; (iii) the application of evaluation tools that include gender-sensitive indicators; and (iv) the development of tailored gender-specific recommendations. - **Sustainability potential** This project is designed to be sustainable by meeting key conditions that ensure its long-term impact beyond the implementation period. The sustainable land management practices promoted through the project will contribute to limiting land degradation and restoring soil fertility. In addition,

	awareness-raising and capacity-building activities targeting extension agents, service providers, and producers will help embed these practices at the local level. The strong involvement of local stakeholders and authorities throughout the project cycle will further ensure ownership, continuity, and integration of the project's results into local development efforts. To ensure effective dissemination and uptake of the project's outcomes, targeted measures will be implemented to communicate results to local communities. Knowledge and skills developed through the project will be transferred via structured feedback workshops, which will serve as platforms to share findings and promote sustainable land management practices. These sessions will bring together a diverse group of stakeholders, including leading producers, agripreneurs, agricultural startup leaders, academic and administrative authorities, and smallholder farmers –particularly women and youth. Inclusive participation will be ensured by facilitating the involvement of persons with disabilities. In addition to workshops, the project's results will be disseminated through practical fact sheets and publications in peer-reviewed scientific journals.
6. Proposal for an institutional arrangement	Steering Committee (LBA, UCAD, DA, DCCTEVF) UGP : LBA, UCAD, DA, DCCTEVF, CNCR, DAPSA AE : LBA IE: LBA, UCDA, DA Implementing partners: UCAD, DA, DAPSA, CNCR, final beneficiaries
7. Target Groups	Vulnerable people, especially small farmers, women and youth
8. Final Beneficiaries	Farmers, local authorities, producers, agri-preneurs, women's associations, agricultural start-up managers, academic and administrative authorities
9. Duration of Implementation	5 years
10. Location	Senegal
11. Total cost	35.000 USD