BRAZILIAN GOVERNMENT

STANDING WITH THE BRAZILIAN PEOPLE

Brazil welcomes the opportunity to contribute to the Sharm el-Sheikh online portal under the Sharm el-Sheikh joint work on implementation of climate action on agriculture and food security, recognizing its important role in sharing information on projects, initiatives and policies for increasing opportunities for implementation of climate action to address issues related to agriculture and food security.

Recovery of Degraded Pastures areas in Brazilian Biomes

I. Introduction

This submission portrays the recovery of degraded pasture areas in Brazilian Biomes as a strategy for increasing food production sustainably, without resorting to deforestation and contributing to global food security. Due to its territorial size and favorable soil and climate characteristics for agriculture, Brazil is expected to play an increasingly large role in the supply of food and other agricultural products to the world. Besides that, because of restrictions on the opening of new areas, increased Brazilian agricultural production is expected to occur primarily through the restoration of low-productivity or degraded areas, including pastureland.

Brazilian animal production systems rely heavily on pastures, which occupy approximately 160 million hectares, of which approximately 105 million show signs of degradation, according to MapBiomas data (Mapbiomas, 2025). Pasture degradation is one of the main factors leading to low productivity in pasture-based livestock production systems. Pasture degradation causes environmental, social, and economic losses that can be seen at both the farm and regional scales. At the farm scale, pasture degradation reduces carrying capacity and animal performance, compromising the viability of the system with negative economic and social impacts. Furthermore, it favors soil degradation and biodiversity loss, with negative environmental impacts. At the regional scale, pasture degradation increases greenhouse gas emissions per unit of animal product, reduces biodiversity and can encourage deforestation.

Degradation affects both small producers and large properties, being more critical in some regions. The challenges are varied, involving factors such as inadequate pasture management, low-fertility soils, grazing pressure, weed, and climate change (Dias Filho, 2023). In many cases, there is a lack of technical knowledge for proper management and the adoption of available technologies.

In addition to restoring soil production capacity, recovery of degraded pasture areas contributes to mitigating greenhouse gas emissions, conserving biodiversity, and protecting water resources, and represents an opportunity to strengthen the Brazilian agricultural sector.

To this end, the National Program for the Conversion of Degraded Pastures into Sustainable Production Systems (PNCPD) was established, which aims to coordinate public policies to convert these areas into sustainable production systems.

Embrapa already has several assets and methodologies to address these challenges. Furthermore, it has been developing digital solutions to support decision-making in the field. The use of these technologies, however, is still limited by bottlenecks that need to be overcome through research, development, and innovation (RD&I) initiatives.

The proposed project's overall objective is to develop, implement, and make available strategies to recover degraded pastures areas in Brazilian biomes and improve its productivity, promoting the conservation of natural resources, the sustainability of livestock farming, and the mitigation of environmental impacts.

In this context, if the research institutions involved receive regular financing, and if medium and small farmers are provided with capacity building and access to low-cost technology and materials, the project will contribute to the recovery of degraded pasture areas in Brazil.

II. **The project**

Embrapa has been working in R&D for degraded pasture recovery since 1990. The present proposal was prepared to meet Embrapa's Call 07/2025, structuring a robust, regionalized R&D&I program aligned

with local needs, and its preparation began in early 2025. By integrating technical expertise and promoting producer participation, the aim is not only to recover degraded areas but also to prevent further degradation and strengthen the resilience of the national livestock industry.

The project will be implemented in partnership with Brazilian academic and research institutions, and rural extension agents. These entities possess the infrastructure for research, product development, and stakeholder engagement.

Implementation will involve partnerships with the productive sector and local governments. Priority will be given to small and medium farmers, which face the biggest challenges to recover degraded pasture areas due to the low access to technology and credit.

Implementation will start immediately after regular funding is granted, covering an initial four-year period. The project's actions will be divided into stages, beginning with the mapping and analysis of regional technologies and bottlenecks, followed by the development of solutions adapted to the soil, climate, and production contexts of each biome. Validation will be carried out under real-world conditions, focusing on sustainability, effectiveness, and economic viability.

Actions on each biome will be coordinated locally, and a technical scientific committee will be established to ensure the methodological consistency of the actions:

1. Prospect and analyze existing technologies;
2. Identify technological gaps;
3. Develop and adapt innovative methodologies and tools;
4. Validate the proposed strategies in the field;
5. Provide effective solutions to farmers and agricultural extension agents.
6. Support public policy makers and managers decision

This submission seeks to secure funding for the project (US$ 3 million). Additionally, partnerships with international research institutions, donors and investors will make it possible to expand the project.

The project will be aligned to Brazilian public policies focused on

recovery of degraded pasture areas. The ABC+ Plan aims to "promote adaptation to climate change and control GHG emissions in Brazilian agriculture, increasing the efficiency and resilience of production systems, considering integrated landscape management." Among other goals, the ABC+ Plan promotes the adoption of practices to restore degraded pastures on 30 million hectares and the adoption of Integrated Crop-Livestock-Forestry systems on 10 million hectares.

The National Program for the Conversion of Degraded Pastures into Sustainable Agricultural and Forestry Production Systems (PNCPD/Caminho Verde) was established by the federal government with the "purpose of promoting and coordinating public policies aimed at converting degraded pastures into sustainable agricultural and forestry production systems, with a view to fostering good agricultural practices that lead to carbon capture at a higher level than degraded pasture." Although the PNCPD/Caminho Verde targets are not officially established, the federal government is talking about converting 30 to 40 million hectares of degraded pastureland. The Brazilian Sustainable Taxonomy is a system that classifies which economic activities are sustainable. Its first edition, to be released in September 2025, describes agricultural practices for pasture-based animal production systems.

III. Scientific evidence

There is extensive literature on recovery of degraded pasture areas in the Brazilian biomes. A preliminary survey on the Web of Science retrieved 6,605 records related to the topic "pasture degradation" involving Brazilian authors from 1982 to 2022, dealing mainly with: land use; diagnosis and characterization of the degradation process; impacts of the degradation process and of pasture recovery, including carbon stocks and soil structure; and recovery strategies, including the adoption of integrated production systems.

Despite the large volume of scientific knowledge generated in Brazil, technicians and producers have difficulty integrating the available information on pasture degradation and identifying the best intervention alternatives for each particular situation. For that, scientific knowledge must be systematized and transformed into technological knowledge, often with the participation of technicians and producers who, at the end of the cycle, will apply the newly

generated knowledge to solve practical problems they face on a daily basis.

Since 1990, Embrapa has been developing technologies for degraded pasture recovery for all Brazilian biomes (Estratégias para Recuperação e Renovação de Pastagens Degradadas no Cerrado - Portal Embrapa; FPS - Fazenda Pantaneira Sustentável - Portal Embrapa; PLTecnologiasparaouso.pdf; Método Integrado de Recuperação de Pastagens - Mirapasto - Portal Embrapa; Infoteca-e: Estratégias de recuperação de pastagens degradadas na Amazônia brasileira; https://www.embrapa.br/en/tema-integracao-lavoura-pecuariaflorestailpf;https://www.alice.cnptia.embrapa.br/alice/bitstream/doc/984401/1/PLTecnologiasparaouso.pdf).

IV. Conclusion

The project represents a strategic investment with a high social rate of return. Its benefits extend beyond the productive sphere, contributing to: (i) the stabilization of rural communities; (ii) the reduction of pressure on preserved areas; and (iii) Brazil's competitive positioning in global agricultural markets. The systematic validation and transfer of technologies ensures that productivity and sustainability gains effectively reach the different productive strata.

V. References

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