Nature-based Solution protocols

Restauration of critical areas

The restoration of critical areas plays a fundamental role in conservation y recovery of our valuable natural ecosystems. You will discover the key steps involved in the restoration process, the benefist that could be achieved and the potential limitation that could will be arise. This comprehensive approach seeks to strengthen adaptation and mitigation in the face of climate challenges, promoting restoration of critical areas as a key task to protect that biodiversity, maintain ecosystem services and guarantee long-term sustainability.

Integration with international agreements

Sendai: Goal 3 – strengthen inclusive policy implementation through community engagement to improve livelihoods.

Description

The restoration of critical areas with native species is based on Ecosystem-based adaptation (EbA) approach, which combine the restoration of degraded ecosystem with the promotion of ecosystem services to face climate change. Through the strategic plantation of native species, the aim is improve the resilience of ecosystems, soil conservation, regulate water flow and increase carbon sequestration.

Place of implementation

It is advisable to prioritize degraded areas that have experienced a significant loss of native vegetation. In addition, it is important to consider accessibility and logistics, such as the existence of nearby roads and water sources. Agroforestry zones can also be integrated, such as the distribution of native trees within coffee crops as shade and live fences to delimit the areas.

Beneficiaries (~#)

Local communities by improving their quality of life and strengthening their resilience. Farmers and ranchers receive economic benefits and society in general benefits from conserving biodiversity and protecting the environment for future generations.

Social and economic co-benefits

Indirect economic benefits

- Improves ecosystem services such as water resources or protection against disasters.
- Ecosystem services benefit communities by reducing costs associated with floods, droughts, and crop failure.

Creation of educational spaces

Restoration of critical areas provides opportunities for environmental education and ecological awareness.

Employment generation

The restoration of critical areas entails the creation of employment in activities such as plant nurseries, sowing, maintenance and monitoring of the projects.

Carbon capture and storage

Trees absorb carbon dioxide from the atmosphere as they grow, helping to mitigate climate change by acting as carbon sinks.

For more information visit
www.cityadapt.com

Threats Addressed

- Extreme heat
- Intense rainfall
- Sudden temperature changes
- Landslides

Main climate impacts addressed

Soil degradation

Hotspot restoration focuses on addressing soil degradation caused by intensive agricultural activities and deforestation, looking for restore soil health and quality.

Loss of biodiversity

The restoration of critical areas has as its main objective the reintroduction of native species and the restoration of habitats, which helps to stop the loss of biodiversity and promote the recovery of natural ecosystems.

Water Scarcity

Promotes water infiltration into soils, recharging aquifers and addressing long-term water scarcity.

Implementation methodology

Phase 1. Site evaluation

1 Evaluation and planning

Conducts a comprehensive assessment of the degraded area to understand its current condition and determine restoration objectives. Considers factors such as soil type, climate, hydrological conditions and resource availability.

Phase 2. Implementation

2 Selection of native species

For effective restoration, native species suitable for the local ecosystem must be identified and selected, considering their adaptability to changing conditions and their contribution to biodiversity. In addition, it is important to establish a plant nursery with species extracted from local seed trees, keeping in mind the specific objective of the restoration. For example, evergreen species are established in coffee plantations to avoid problems with the crop, deciduous ones can be located in fences or landscapes. Careful selection will ensure effective tree integration.

3 Selection of native species

To adequately prepare the ground, it is necessary to carry out a series of fundamental actions. These actions include removal of invasive species, removal of debris, and correction of drainage problems.

These measures are essential to ensure an environment conducive to the restoration of critical areas. In addition, correcting drainage problems helps ensure that water flows properly and prevents pooling that can harm the growth of native species.

4 Planting hole

The process of hollowing out the ground of 30 x 30 centimeters. The density varies according to the situation of the area where the selected species will be established. In open or degraded areas, a distance of 10 to 18 meters betweenntrees is recommended. On the other hand, in borders or fences of paddocks, the optimal distance is 5 to 10 meters.

These spacing parameters ensure proper species distribution and allow each tree enough space to grow and develop optimally.

5 Sowing

Carry out tree planting following specific guidelines for each species. Be sure to provide optimal soil and irrigation conditions to encourage plant establishment and growth.

In order to ensure the success of the planting, fertilizers such as 16-48-0 or organic amendment with a high nitrogen and phosphorus content can be used to enhance root growth.

6 Maintenance and monitoring

Regularly monitor the restoration to ensure long-term success. This involves implementing maintenance practices such as weed control, proper watering, and protection against pests and diseases. In addition, it conducts continuous monitoring to assess progress and make adjustments as necessary.

7 Community participation

Encourages the active participation of the local community in all stages of the restoration process. This includes awareness raising, training and collaboration in planting and maintenance activities.

Limitations

1 Resource availability

The lack of necessary financial, material and human resources could hinder the implementation of restoration projects.

2 Access to quality seeds and native plants

Availability and access to high-quality seeds and native plants could be limited, affecting the ability to carry out effective restoration.

3 Land ownership and tenure

Problems related to land ownership and tenure can create obstacles to the implementation of restoration projects, due to the need for proper access to critical areas.

4 Land use conflicts

Conflicts related to land use could make it difficult to restore critical areas, as different interests and activities may be in competition.

5 Climatic and soil conditions

Climatic and soil conditions could affect restoration success,as certain native species may require specific conditions togrow and develop properly.

6 Community participation

Although community participation is essential for the restoration of critical areas, it can be challenging to achieve active and engaged community participation in these projects.

1. Characteristics such as texture, altitude, climatic characteristics, topography, hydrology, sun exposure must be taken into account. To identify the species and density suitable for the terrain.
2. Agroforestry systems such as the cultivation of coffee or cocoa, which also require the presence of trees in order to provide shade for the optimal development and production of the crop.
3. Required: hoe, duplex shovel, pruning shears, wheelbarrow, machete, backpack pump, buckets, pickaxe.

Costs and inputs

- The cost of each activity will depend on the situation of the land and the objectives to be achieved.
- In a degraded area without the presence of trees at the time of sowing, it can be intensified to 900 plants/Ha that when it grows, the amount due to competition between them and environmental difficulties will decrease.
- In agroforestry system, because a main crop is already present, the density decreases by 70 plants/Ha.
- Added to the cost of the trees, labor must be added for the preparation of the land, planting, fertilization together with the necessary equipment and supplies.

Indicators

Implementation	• Number of trees planted • Number of intervened hectares
Quantitative impact	• Number of families benefited

References

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