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Synergizing sustainability: Community-led agroforestry and agroecology practices

INTRODUCTION

The Sustainable Land Management in target landscapes of Central Angola project (ZAEC) is an initiative of the Ministry of Culture, Tourism, and Environment, Angola. Funded by the Global Environment Facility and executed with technical assistance from the FAO, the project engaged 130 participants from two farmers' field schools, with 78% being rural was part of the project, various Sustainable Land Management (SLM) technologies have been introduced in the Ngunga and Lomanda II sectors, Chipipa commune in the Huambo province of Angola. The agroecological strategies employed sought to align cultivated areas with native ecosystems by integrating ecological processes. The overarching goal is to minimize adverse impacts on the environment while promoting ecological balance, thereby enhancing the sustainability and resilience of long-term food production.

A piloting of selected SLM practices by the project was conducted by establishing two experimental agroforestry plots - one in each selected sector under investigation each covering an area of 0.5 hectares. The SLM practices were implemented through the collaboration of members from four farmers' field schools, who engaged in the planting of six fruit tree species well-suited to local conditions: lemon, loquat, avocado, guava, passion fruit, and papaya trees.

Agroforestry monitoring in Chipipa, Huambo

Drip irrigation system on papaya tree

RATIONALE

Land degradation affects agricultural productivity and the livelihoods of rural communities. Conventional practices such as excessive use of agrochemicals, deforestation, and monoculture have contributed to soil degradation and loss of biodiversity in the Ngunga and Lomanda II areas.

Agroecology is a holistic approach that integrates ecological, social, and economic principles in food production, promoting environmentally friendly and resource-conserving agricultural practices. However, the survey conducted in these areas found low adoption of agroecological practices due to a lack of local knowledge about SLM technologies, limited access to resources, and institutional support.

On the other hand, farmers face increasing challenges such as climate change and economic pressures. Adopting SLM practices aligned with agroecology can enhance farmers' resilience, making them less reliant on external inputs and more adapted to local conditions, as well as better equipped to cope with the impacts of climate change.

The identification of SLM technologies plays a pivotal role in improving resource efficiency, preserving biological diversity, and promoting social and economic equity. To achieve this, the piloting exercises were instrumental in promoting farmers' resilience. These exercises involved identifying and analyzing existing barriers, leading to the facilitation of context-specific solutions. The outcomes of the piloting phase are expected to foster the widespread adoption of SLM technologies within agroforestry, incorporating agroecological approaches.

Soil covered with pruning residues

DESCRIPTION

The piloting phase spanned from 2022 to 2023 and involved following stages:

(I) Identification of key stakeholders (formal and informal) and individuals within and outside each community, exploring their relationships and associated importance.

(II) Conducting transects to assess local biophysical data, including soil, water, and vegetation.

(III) Identification of the main land use types within each study area.

(IV) Identification of the primary SLM technologies suitable to be employed in the communities.

The overarching goal is to benefit 200 direct beneficiaries in the localities of Ngunga and Lomanda II. The preliminary assessment revealed the significance of the Ngunga River spring, leading to the reconstruction of a reservoir with a storage capacity of 24,000 m^3 of water. This reservoir is crucial for meeting water demands during critical periods, such as the dry season (May-August) and drought periods (January-February), mitigating water supply constraints for irrigation. These constraints negatively impact agricultural productivity, restricting cultivation opportunities throughout the year.

The SLM technologies identified and implemented during agroforestry establishment include targeted pruning, intercropping, *Zaï Hole*, incorporation of crop residues, drip irrigation system using PET bottles, and the use of mulch.

OUTCOMES

The piloting highlights the promising advantages of implementing SLM technologies:

0.5 ha selective pruning: Native trees canopy balance for biodiversity, sunlight penetration to lower layers

Intercropping of 6 fruit trees: Promoted increased biodiversity and pollination

313 *Zaï Holes*: Improved water and nutrient retention and infiltration in the soil

Incorporation of Crop Residues: Increased organic matter, improving soil fertility and structure

Drip Irrigation System using 313 PET bottles: Enhanced water infiltration and reduced soil water wastage

Mulching: Assisted in soil thermal regulation, reducing water evaporation, and protecting seedling roots

As a result, lemon, loquat, avocado, and guava species reached and average height of 1.2 m, while passion fruit and papaya species achieched 0.9 m. Each plot now sustains a population desnity of 313 diverse fruit trees,

Irrigation system with pet bottles

EMPOWERMENT

The active participation of 101 women in the main SLM practices during the agroforestry installation is noteworthy, and their constant monitoring was crucial for the apparent success. Through this involvement, women acquired knowledge and skills in SLM technologies, strengthening their role as agents of change in rural communities, promoting the appreciation of women's roles in sustainable land management, and fostering gender equality within the communities.

Prepared by Filipe Mutumba, André Sinela, Jose Caela, Sérgio Kussumua, Nilton André, Luís Miápia, Rashed Jalal and Cesar Pakissi in support to Sustainable Land Management in target landscapes of Central Angola (GCP/ANG/055/GFF), Food and Agriculture Organization of United Nations, Huambo, Angola.