SUSTAINABLE LAND MANAGEMENT AND CHALLENGES OF ISLAND REGIONS

CASE STUDY: CABO VERDE ISLANDS

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INTRODUCTION

- Land degradation in many Island countries has become an emerging concern due to its negative impact on agriculture and food security
- Cabo Verde, like most island states, has **limited land resources**: 4033 km² of which only 10 % is arable, and >90% low input rainfed farming.
- Extensive land degradation ➔ negative consequences for the livelihood and the environment
- Efforts to reverse and prevent land degradation have focused on massive implementation of SWC measures ➔ positive impacts
- However, **land degradation is still high and productivity low**, at national level
- To achieve future food security, the management of land in a sustainable manner will be the challenge, through proper nutrient management and appropriate soil conservation practices.
- **Research & innovation** are required to avoid further degradation of soils and to produce sufficient **safe and nutritious food for healthy diets**.

Current SLM practices: rainfed farming

- **SWC measures - watershed & national scale**
  - **In field** (Terraces, stone walls, contour ridges, vegetation barriers)
  - **Off field** (Torrent control (check dams, water collecting dams, afforestation)

Current SLM practices: irrigated farming

- More efficient irrigation systems:
  - Drip irrigation
- Terraces in steep slopes
- More efficient land preparation
- Crop diversification/ intercropping






Drivers of soil degradation and major soil threats

- ***Water Erosion***: heavy rainfall events ⇒ Flash floods
- ***Soil fertility loss / imbalance:*** Intensive cultivation, inadequate replenishment of soil nutrients through organic or inorganic fertilizers
- ***Low soil OM or C content*** (High rate of organic matter decomposition, lack of crop residue))
- ***Extensive drought*** → Lack of soil cover → exacerbate runoff and erosion
  - Removal of crop residue from farmlands (animal feed and fuel)
- ***Inadequate farming practices*** on steep slopes
- ***Salinization*** due to both natural and human-induced (irrigation with saline water, sea water intrusion)
- ***Sealing / impermeabilization*** of good agricultural soils: urbanization, road construction

Challenges to achieving SLM

- *High human pressure on land/soil resources* (inadequate agriculture practices, overgrazing, collection of fuel wood, increasing population, rural poverty)
- *Exploitation of soil materials* for construction
- *Weak land tenure*: most land users are not owners → low investment in good soil management
- Lack of *systematic and harmonized soil information system* or database (ex. updated, digital soil maps)
- *Weak awareness on need for SLM* for all stakeholders, particularly decision makers and general public
- *Decreasing funds* allocation for SSM / Low investment in targeted soils research
- Shortage of *technical capacity/training/knowledge management*

Addressing soil threats that hamper SSM (VGSSM, 2016)

- Minimize soil erosion
- Enhance soil organic matter content
- Foster soil nutrient balance and cycles
- Prevent, minimize and mitigate soil salinization and alkalinization
- Prevent and minimize soil contamination and acidification
- Preserve and enhance soil biodiversity
- Minimize soil sealing
- Prevent and mitigate soil compaction
- Improve soil water management

PRIORITIES FOR SLM (1)

- Addressing soil degradation as major factor in food insecurity, making efforts to rehabilitate degraded lands and making them productive
- Guiding and enabling implementation of sound SLM practices (focus on soil health/fertility) towards food security
- Develop update and disseminate harmonized soil information
- Adoption of multidisciplinary approach for identifying, prioritizing, testing, evaluating and implementing appropriate SLM practices and tools to inform decision makers
- Involvement of end-users in targeted soil research and in finding solution for local problems

PRIORITIES FOR SLM (2)

- **Addressing climate change and developing resilience towards adaptation through targeted soil research on practices that promote soil cover, moisture retention and nutrient uptake):**
  - ✓**Integrated soil fertility management**
  - ✓**Conservation agriculture system**
  - ✓**Precision agriculture**
  - ✓**Adequate soil water management**
  - ✓**GIS/geospatial and remote sensing technologies: important for successful transition from traditional resource management to sustainable development**
- **Research capacity building and development in all soil related applications** for existing and new generations of experts

CONCLUDING REMARKS

- With the limited and threatened soil resources, particularly in island regions of Africa, it is crucial to implement SLM as key to more sustainable agriculture, food security and healthy soils
- How to attain land degradation neutrality in agricultural soils and assure agriculture sustainability when dealing with poor small smallholder farmers?
- Is land/soil degradation neutrality ***(SDG 15.3) attainable*** in island states and Africa, in general?
- Research should focus on strategies to facilitate sustainable land and resource management,
  - adapting current management systems to cope with climate change, variability and associated shocks and stresses
- The FAO voluntary guidelines on the implementation of SSM can be a useful tool to support countries towards SLM

Thank you for your attention!