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West and Central African Food Systems Transformation

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CO-DESIGNING INCLUSIVE LANDSCAPE MANAGEMENT PLANS TO TRANSFORM AGRIFOOD SYSTEMS

A TECHNICAL BRIEF

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Introduction

In recent years, the concept of landscape has gained significant attention in developmental research and environmental conservation. Pressure on the natural resources of a landscape in Sub-Saharan Africa from deforestation (FAO, 2020), land degradation (UNCCD, 2017), poor water management (Giordano et al., 2012), unsustainable mining (Hilson, 2012), wildlife poaching, and climate change (IPCC, 2014) is increasing due to human and naturally induced factors. The agrifood system is not able to use the huge potential of the landscape to feed its increasing population with these changes. The main challenge is the misconception in the practice and approach of landscape management. The current practices by development agencies are only focused on natural resource development neglecting the inclusivity of socio-ecological and participatory concepts (Reed et al., 2015).

Glossary

Inclusive landscape management: is the integration of social and ecological systems, local participation, and sustainable resource use within landscapes by the local government and/or other implementers.

Landscape: is a physical boundary such as watersheds or any administrative boundary that recognizes the interconnection between resource systems and people.

Resource Systems: The combination of environmental assets and land management practices within a designated territory, such as farmland or agroforestry zones.

Resource Units: These are specific components within a resource system, like individual crops, livestock, or water bodies, and their spatial-temporal availability.

Governance System: The institutional structure overseeing resource management, involving government agencies and traditional bodies.

Users: Individuals or entities utilizing land and water resources for livelihoods or other purposes.

Regional or Local Experts: Stakeholders including user representatives, socially excluded groups and governance skilled in fostering collaborative landscape planning.

Researchers: Act as knowledge brokers, disseminating valuable information on land management, indigenous wisdom, and ecosystem services to support evidence-based decision-making by local and national actors.

A wide range of different terms and concepts have been used to refer to natural resource management in the landscape. For example, Watershed Management (FAO, 2003), Integrated Water Resources Management (GWP, 2018), Sustainable Landscape Management (Burgi et al., 2017), and Socio-Ecological Landscape Management (Karrasch et al., 2017). The socio-ecological landscape management approach is currently gaining wide acceptance because of its inclusivity through the integration of social and ecological systems and its co-design approach through a participatory concept. The inclusivity and co-design approach is highly relevant in agrifood systems because it promotes collaboration among stakeholders, innovation of interventions, resilience to risks, sustainability of resources, and community satisfaction.

This technical note aims to explain a framework that outlines the inclusive landscape management plans by local governments and other implementers. It was developed based on the work of Karrasch et al., (2017) and as adapted in (or developed for) the CGIAR Initiative on West and Central African Food Systems Transformation (TAFS-WCA).

Co-design Pathways for ILM

The pathway is to co-design adaptive inclusive (socio-ecological) landscape management plans that are one health-sensitive, promote sustainable intensification, and are embedded in local and national governance systems. In the co-design process, the objectives are developing an appropriate landscape management plan in which ecosystem functions, social processes, and land management are coupled and integrated within the existing government system. This coupling process is defined as socio-ecological or inclusive landscape management. In the inclusive landscape management plan (ILMP), the socio-ecological system comprises a resource system, resource units, a governance system, and users. The process in the co-design step includes consideration of current situations and alternative scenarios defined based on sustainable intensification (SI) domains and indicators: productivity, economic, social, human well-being, and environment (Musumba et al., 2017). Here institution is included as the sixth element. The domains are used by regional or local experts and researchers to define current situations and future scenarios. The design process (Figure 1), defined in the steps below, is iterative, incorporating the perspectives of all stakeholders, piloting, and learning through monitoring, and evaluation.

Steps in Co-designing Landscape Management Plan

Step 1: Narrative Development

The first step is to define adaptive socio-ecological landscape management, called the **development of the narrative**. It is a general goal and principle, without spatial dimensions, to design inclusive landscape management to improve the current state. It discusses the sustainability of the current situation/condition of land management in defined landscapes and outlines future land management with identified stakeholders in the targeted landscape. This process needs a space for action that should be selected and defined with local stakeholders where there is a socio-ecological landscape challenge, where the local government and communities need a solution for proper land and water resource management to improve food, income, and nutrition, and where the local government can integrate into its plan. The knowledge broker (researcher) provides information on the current state of the landscape and its socio-ecological system based on secondary information. Finally, the key stakeholders define a target landscape with a narrative.

Step 2: Resource Unit Assessment

After locating the specific sites, competing resource systems are identified for the boundary where the landscape is defined. Regional or local expert groups from respective resource systems within the selected landscape should be established. The experts who manage the competing land uses are important not to miss. In addition, any socially excluded or marginalized group should be part of this group to get representation. Local experts with the guidance of researchers will create inventories of critical land use elements and ecosystem services. Indicators for subsequent evaluations will also be established during this phase using the sustainable intensification (SI) domains and indicators (Musumba et al., 2017). Any existing available tools such as Drivers-Pressure-State-Impact-Response (DPSIR, Atampugre et al., 2022) without neglecting the consideration of Gender Equality and Social Inclusion (GESI), citizen science, and earth observatory such as remote sensing and modeling through multi-criteria decision support system (e.g. for water risk assessment) are helpful in co-establishing the status and progress of landscape management.

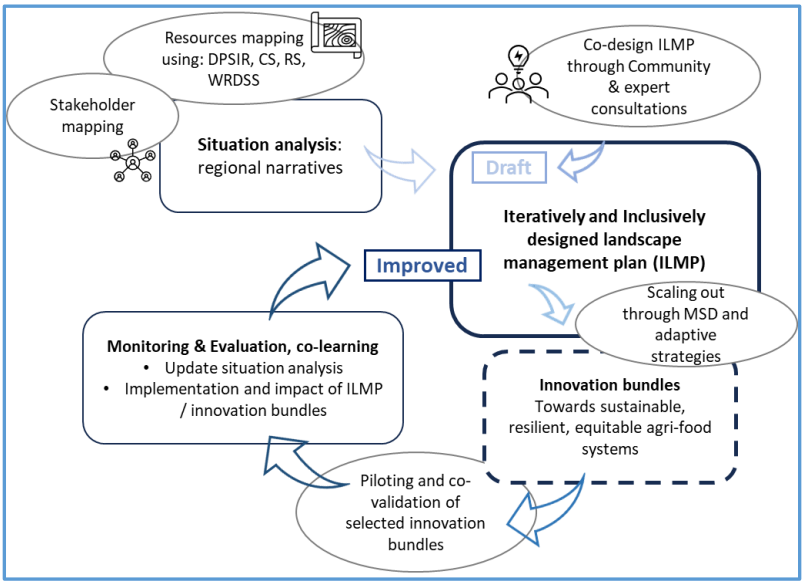
*In the **DPSIR process**, stakeholder meetings, semi-structured interviews to understand current land management practices, or focus group discussions with specific sectors on specific topics including gender and socially excluded groups could be done and help to define the narrative by identifying the status of the landscape for each domain of sustainable intensification.*

*With the assistance of **remote sensing (RS) and water resources decision support system (WRDSS)**, the identification of resource systems and resource units such as a list of land use elements in the targeted landscape (e.g., cultivated land, forestry, mining land, flood areas) helps to quantify current states. Here it is better to focus on a list of land use elements supposed to change or manage their spatial extension between the current and proposed scenarios. Water resources decision support systems assist in identifying water risk areas or ecological assessments for agrifood systems so that expert groups get information to make decisions.*

*Likewise, a list of locally relevant ecosystem services could be listed with regional experts. In this step, indicators useful for later step evaluation shall be defined based on the needed ecosystem service outputs. **Citizen scientists (CS)** could be engaged to collect information on important ecosystem services such as water quantity, water quality, biodiversity, and others. The citizens will inform the expert group about the status of the ecosystem with the support of a knowledge broker.*

Step 3: Co-design for Visualization and Documentation

In the third step, the expert group will be in action through a series of workshops to propose a plan for a mid- or long-term period that includes strategies, resources, responsibilities, and finances with the facilitation of researchers or other knowledge brokers. The engagement starts with a briefing of current challenges under each SI domain from step 2 through the researcher, and citizens. Then users and stakeholders will start defining their corresponding objectives or goals. If the listing of challenges is too many, users can be made to rank the most important challenges and focus on a few of the challenges to do the plan. This process can be done with multi-stage workshops such as starting only with users (with due consideration of GESI) at the grassroots first and then doing a second workshop with expert groups. In this step, art-based illustrations (or spatial mapping) of the proposed interventions in the landscape support the imagination of the plan and simplify the understanding of complex issues. The expert groups will do a map of the current situation (preferably in step 2) and do another spatial map for the future based on the proposed future plan. Based on the visualization of the current land uses and alternative landscape management scenarios from various groups of stakeholders, the final plan is produced. The final plan constitutes an illustration map with implementation millstones, the timeline of actions, collaboration and partnership identifications, capacity-building strategies, and conflict resolution mechanisms.



Designed by: Mirja

Figure 1: Iterative inclusive landscape management planning process to co-design

Step 4: Pilot and Validation

Some technological and innovation bundles identified during the co-design planning process in step 3 will undergo pilot testing, followed by a comprehensive co-validation process to assess applicability and effectiveness. In the fourth step, the co-validation process involves evaluation of the showcase of what works where, and what is continuously improved to satisfy the needs of local communities.

As part of the TAFS-WCA initiative, the following innovation bundles are piloted Farmers Led Irrigation Development, Farming Systems, Black Soldier Fly, and Flood Early Warning decision support tools).

Step 5: Impact Evaluation

In the fifth step, the piloted interventions, and the process of ILMP would systematically be evaluated using a sustainable intensification (SI) framework to capture any improvements in the different sets of socio-ecological objectives set during step 2. In addition, feedback mechanisms would be arranged through multi-stakeholder discussion groups, farmers' field and exchange visits, and farmer-to-farmer learning events.

Step 6: Scaling Out

The last step consists of **scaling out the process and interventions.** The scaling out is a complex process that extends the ILMP action to the wider landscape from the perspective of an inclusive, sustainable development plan to ensure the regular upkeep of a landscape and to guide and harmonize new changes brought about by social, economic, and environmental processes. The scaling out strategies starts with the key process of involving the local government as a facilitator from the onset, continuous engagement of key stakeholders, and presentation of the co-design process at the local and national level. For scaling any intervention bundles from the plan, any existing approach such as participatory innovation platforms, adaptive scaling strategies, a multi-sectoral platform, or food system accelerator challenge could be followed based on the type of innovation or technologies.

Conclusion

This framework aims to offer a cohesive and actionable roadmap for the inclusive, adaptive management of socio-ecological landscapes, aligning with TAFS-WCA's overarching goals of sustainable and resilient agrifood systems.

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About the CGIAR Initiative on West and Central African Food Systems Transformation

The **CGIAR Initiative on West and Central African Food Systems Transformation (TAFS-WCA)** aims to improve nutrition and food security within the context of climate change in West and Central Africa through nutritious, climate-adapted, and market-driven food systems. It consists of five work packages. Work package 3 (WP3), led by IWMI, is about **inclusive landscape management (ILM)**. This is based on the premise that equal access to, and proper use of, land and water resources is a prerequisite to building a healthy and productive environment for resilient agrifood systems and livelihoods. WP3 combines participatory tools and citizen science to co-develop and implement inclusive landscapes, owned by the communities, that enable sustainable scaling of bundled land, water, aquaculture, and climate-smart agronomic and digital innovations. WP3 proposes to (i) co-establish the status and progress of landscape management for sustainable intensification; (ii) design adaptive socio-ecological landscape management plans that are One Health sensitive and embedded in local and national governance systems; (iii) develop a near real-time water resources decision support system (WRDSS) to strengthen landscape resilience planning and investment; (iv) deploy context-specific integrated land, water, fish, crop and agronomic innovations at scale; and (v) deploy market-driven circular bio-economy innovations to reduce pressure on water and land resources while mainstreaming One-Health approaches in planned innovations. The WP3 is being implemented in six countries: **Ghana, Cote D'Ivoire, Nigeria, Rwanda, Burundi and the Democratic Republic of the Congo.**

https://www.cgiar.org/initiative/wca-food-systems-transformation/