
# BOOK OF ABSTRACTS



## I. SESSION DESCRIPTION

ID: T13a

An Ecosystem Services approach to community-based Landscape Restoration and Sustainable Livelihoods development

### Hosts:



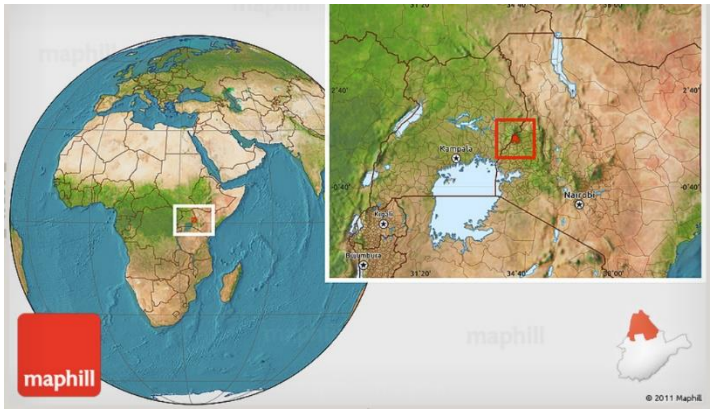
| | Title | Name | Organisation | E-mail |
|---|---|---|---|---|
| Host: | Dr. | Theo van der Sluis | MWARES Conservation Officer / WENR | theo.vandersluis@wur.nl |
| Co-hosts: | | Fiona Mutekanga | Kyambogo University | Fiona.Mutekanga@gmail.com |
| | | Laurie van Reemst | MWARES / WENR | Laurie.vanReemst@wur.nl |



### Abstract:

Watersheds worldwide provide crucial ecosystem services, such as the regulation of water flows, climate, the provision of food and raw materials, and nursery functions for wildlife and natural habitats. However, watersheds are increasingly under threat from degradation and over-exploitation of their natural resources. Farming practices are often not sustainable due to an increasing population pressure which leads to an over-use of land for crops and livestock that are not well suited for such (intensive) use. Intensification of cropping and large-scale cash crop planting (monocultures) contribute further to land degradation. Also deforestation and forest degradation puts increased pressure on the environment. Intensified land use has not only resulted in the gradual loss of biodiversity, but also in the diminution of the ability of these forest ecosystems to provide essential ecological services. When ecosystem processes and functions are drastically perturbed, various consequences with significant socio-economic impact follow. In the end communities suffer from a less resilient farming system, while biodiversity declines as a result of ecosystem degradation.


To reverse this trend, landscape restoration is essential, to conserve and restore the watershed's ecosystem services and establish resilient farming systems for sustainable livelihoods. Restoring or rehabilitating degraded landscapes through an ecosystem services approach, therefore, has received greater traction in the past years from research and sectors of the society. Important questions to answer are: how can the stakeholders be mobilized, from farmers to policymakers? What are current experiences with bottom-up landscape restoration? What are benefits from ecosystem restoration, and how can we use that in our communication to stakeholders in the landscape?

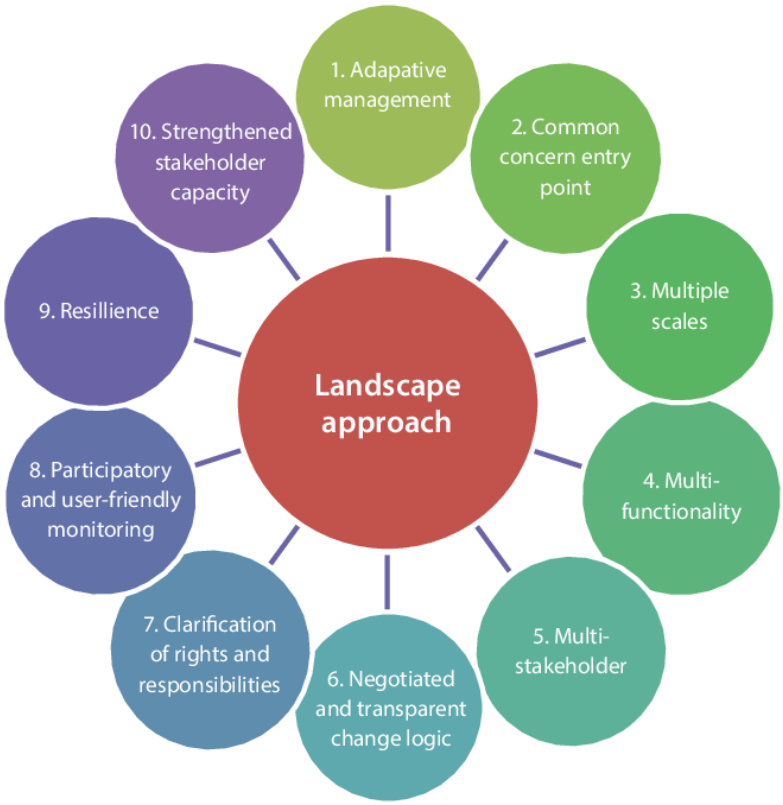



The MWARES project focuses on the Manafwa watershed in Eastern Uganda. The watershed originates from the Mount Elgon National Park and then flows through a densely populated area, providing all kinds of ecosystem services along the way. The goal of "The MWARES" project is to restore resilience and stimulate stewardship of the Manafwa watershed.

Mount Elgon is a national park straddling the border of Uganda and Kenya. The highest point of the park is .. m. The national park is preserved for its important nature values, endemic plant species, and some wildlife. However, increased population pressure leads to encroachment on the park by communities bordering the park. This is a result of the increasing population. However, also unsustainable farming practices that deplete the soils, and not taking preventive measures to protect the soils such as planting trees and digging trenches to regulate run-off water.

The project follows the 'landscape approach' (Sayer et al., 2013). The landscape approach gives due consideration to: (1) different stakeholders, sectors and scales in a landscape (2) adaptive and participatory management of change processes; and (3) social learning and capacity building. All 10 criteria of the landscape approach are presented in fig. 2 (Sayer et al. 2013). Important characteristics of this approach within the MWARES project are: adaptive management; resilience, in the group and landscape, working at multiple scales with a multistakeholder approach,

participatory monitoring and in particular continuous learning and strengthening stakeholder capacity.




Sayer, J., Sunderland, T., Ghazoul, J., Pfund, J.-L., Sheil, D., Meijaard, E., Venter, M., Boedhihartono, A. K., Day, M. , Garcia, C., Van oosten, C. and Buck, L.E. (2013): Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land uses, Proceedings of the National Academy of Sciences, 110(21), 8349-8356.

Keywords: Sustainable land management, landscape restoration, PIP, landscape approach, ecosystems, stakeholders


### Goals and objectives of the session:

- Explore how landscape restoration is realised through bottom-up processes and stimulating local initiatives
- Share knowledge and experiences in conservation work and landscape planning.

### Planned output / Deliverables:

- A summary report will be prepared from the session and all presentations;
- Papers will be collected for a special issue of the journal LAND, with selected articles from the session https://www.mdpi.com/journal/land/sectioneditors/Landscape_Ecology

### Related to ESP Working Group/National Network:

Thematic working group: TWG 13 – Role of ES in Ecosystem restoration

## II. SESSION PROGRAM

**Date of session:** Thursday, 9 June 2022

**Time of session:** 11:30 – 13.00, 14:00 – 15:30, 16:00 – 17:30

### Timetable speakers

| Time | First name | Surname | Organization | Title of presentation |
|---|---|---|---|---|
| 11.30–11.40 | Theo | Van der Sluis | WENR / MWARES project | Landscape restoration and ecosystem services. A short introduction |
| 11.40–11.55 | Hosea | Opedes | WENR / MWARES project | Unmanned Aerial Vehicles (UAVs) for monitoring soil and water conservation practices in the Upper Manafwa Watershed |
| 11.55–12.10 | Laurie | Van Reemst | WENR / MWARES project | Measuring empowerment at household level to sustain ecosystem services |
| 12.10–12.25 | Doreen | Misenya | WENR / MWARES project | Mindset change as a strategy for stimulating farmers' conservation efforts: an exploration of the PIP visioning tool for landscape restoration in the Manafwa Watershed, Eastern Uganda |
| 12.25–12.40 | Joyce | Lunyolo | Makerere University | Assessing the spatial distribution of landslides and the effectiveness of local interventions in the upper Manafwa Catchment, Mt. Elgon Region |
| 12.40–13.00 | – | – | – | Discussion |
| 14.00–14.15 | Peter | Van der Meer | Van Hall Larenstein | The role of state forests in sustaining honey production: a case study from Nyamagabe District, Rwanda |


| Time | First name | Surname | Organization | Title of presentation |
|---|---|---|---|---|
| | | | University of Applied Sciences | |
| 14.15–14.30 | Jean | Hugé | Open University of the Netherlands | Applying a 'One Health'-lens to uncover neglected mangrove ecosystem services |
| 14.30–14.45 | Simegn Birhan | Tessema | University Of Gondar | Analyzing the Perceived Prioritized Forest Ecosystem Services under the Participatory Management: A case of Maksegnit District, Amhara Regional State, Ethiopia |
| 14.45–15.00 | Nangware | Msofe | The Open University of Tanzania | Assessing the societal benefits of the Mngeta wildlife corridor restoration program in the Kilombero valley floodplain |
| 15.00–15.15 | Maximin | Djondo | IHE Delft Institute for Water Education/ Wageningen University | Participatory Cultural ecosystem services mapping and valuation in Lake Nokoué (Benin) |
| 15.15–15.30 | – | – | – | Discussion |
| 16.00–16.15 | Ntlakala | Selamolela | University of Johannesburg | Mind the gap: A review of literature linking human ecosystem to human health, wellbeing and livelihoods services in Southern Africa |
| 16.15–16.30 | Jean Claude | Nyamweru | Wageningen University | Identification of context-relevant sustainability competencies needed to be fostered for effective change-agents for sustainable agriculture in Burundi |
| 16.30–16.45 | Matt | Smith | Joint Nature Conservation Committee | Ecosystem services and nature-based solutions for people, nature and climate: Real wins for Africa? |
| 16.45–17.00 | Nico | Favretto | University of Leeds | … |
| 17.00–17.15 | – | – | – | Discussion<br><br>Round table & facilitated discussion including online participants |


## III. ABSTRACTS

*Abstracts are ordered based on the session program. The first author is the presenting author unless indicated otherwise.*

*1. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

### Application of Unmanned Aerial Vehicles (UAVs) for monitoring PIP farmers' implementation of Soil and Water Conservation Practices in Upper Manafwa Watershed.

*Presenting author:* Hosea Opedes
*Other author(s):* Sander Mücher, Frank Mugagga, Shafiq Nedala,
*Affiliation*: Soil Physics and Land Management group, Wageningen University, The Netherlands
*Contact*: hosea.opedes@wur.nl

Watersheds host diverse ecosystems and provide associated services. In Uganda, watersheds are threatened because of intensifying population pressure and poor farming practices. Most conservation interventions have explored approaches of reducing local communities' overdependence on national parks although it is challenging to monitor progress given the nature and complexity of these landscapes. Drones (UAVs) have been documented to provide reliable & cost-effective data for evidence-based monitoring, and tracking progress with regard to decision making in conservation & landscape restoration. Through farmers participatory approach (PIP), implemented by Manafwa Watershed Restoration Project, a section of farmer innovators have been trained on several Soil and Water Conservation (SWC) practices geared towards, among others; restoration of degraded landscapes and mitigating over exploitation of park resources.

This study demonstrates the application of a UAV for monitoring the level of transfer of learnt skills into selected farmers' fields and quantifies the number and size of existing SWC practices. To document the impact of the PIP project, meter squares in farmers' fields were purposively selected in the Upper Manafwa Watershed. Annual drone campaigns were conducted before


(2020) and after (2021) the farmers' trainings using Phantom 4 Pro V2 and ArcGIS Pro. Acquired data was used to characterize and quantify predominant SWC activities using FRAGSTAT to calculate; patch density, Percentage land, number of patches, mean patch area and overall core area. Key Informant Interviews were conducted to explore farmers' SWC practices.

Findings indicated that majority of farmers' fields did not have SWC practices in 2020 compared to 2021. The dominant SWC practices were making trenches and planting napier grass barrier strips due to their ease of establishment. Therefore, drones can effectively contribute to monitoring farmers' implementation of SWC practices at relatively low costs and decision making using outputs in a shorter time.

*Keywords*: Drone, Mount Elgon, PIP Approach, Restoration, Soil and Water Conservation

*2. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Measuring empowerment at household level to sustain ecosystem services

*Presenting author:* Laurie van Reemst

*Affiliation*: Wageningen University & Research, the Netherlands

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The degradation of landscapes through unsustainable farming practices leads to declining ecosystem services: decreasing agricultural productivity and food security in the highlands of rural Uganda. Research suggests that environmental degradation could be halted through stimulating farmer's own motivations, choices, and actions, based on self-determination and agency, which are part of an empowerment process. Approaches that include the facilitation of empowerment in efforts to restore farming landscapes, have therefore a high potential for impactful change in restoring ecosystem services, especially when this is done at household level. Analyzing empowerment linked to farm management, however, is complex and often does not reflect the context specific meaning of empowerment, since this is often based on pre-set indicators. The goal of this study is therefore to create a tool for measuring context specific empowerment at household level. To do this, semi-structured interviews were held with 20 households in Bududa district in Uganda. Data was analyzed to find patterns and basic


themes, that reflect important local-indicators for empowerment. The outcome of this evaluation is used to create a tool that links the qualitative analysis of empowerment at household level to quantitative output. This allows us to measure the context specific meaning of empowerment at household level, to further analyze 1) how local-empowerment can be stimulated and 2) to measure the change in local-empowerment and its effect on improving ecosystem services in the landscape. Our results suggest a way forward to stimulate behavioral change in degrading landscapes.

*Keywords*: Empowerment, Rural Households, Landscape, Behavioral change

*3. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Mindset change as a strategy for stimulating farmers' conservation efforts: an exploration of the PIP visioning tool for landscape restoration in the Manafwa Watershed, Eastern Uganda

*Presenting author:* Doreen Misanya

*Other author(s):* Aad Kessler

*Affiliation*: Wageningen University and Research, the Netherlands

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Many local communities entirely depend on ecosystems for their livelihood. However, the health of these ecosystems continues to deteriorate and external intervention mechanisms have not yielded much change. These communities tend to lack a sense of ownership and the motivation to care for and protect their ecosystems. They continue to destroy the ecosystem as long as they are not caught and they utilize ecosystem services without feeling any connection with it. Ecosystems are like a common good that everyone can benefit from but not necessarily obliged to sustain. In this article, we explore the contribution of the PIP visioning tool as a transformative learning intervention within the PIP approach, for nurturing motivation of local conservation efforts among farmers in Bududa District, Eastern Uganda. We investigate into farmers' 'aha' moments during the farmers' visioning processes at household and at


community level, and how these processes contributed to a mindset change towards conservation actions.

Using a qualitative approach, we carried out semi structured interviews with 3 farmer generations as espoused in the PIP manual thus; farmer innovators (PIs), generation 2 farmers (G2s), and generation 3 farmers (G3) whilst sampling out 6 farmers from each generation. The PIs were purposively sampled while the G2 and G3 farmers were selected through snowball sampling. We also carried out 3 focus group discussions with PIs and also made observations around households and farms of farmers who participated in the interview. Additionally, we carried out interviews with the Junior Agronomists (JAs – farmer trainers) to understand farmers learning processes and how these processes motivated farmers into action.

Findings indicated that for most farmers, the visioning processes was a major turning point in their attitudes and actions towards the watershed as it; raised their awareness of their current watershed situation, raised their awareness about a possibility of restoring their watershed, and provided an opportunity for them to make plans for action. Conclusively it was a 'mindset changing' process in which most farmers agreed to take responsibility and responsive actions to restore their watershed.

*Keywords*: Mindset change, transformative, learning, motivation, visioning

*4. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a – An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Assessing the spatial distribution of landslides and the effectiveness of local interventions in the upper Manafwa Catchment, Mt. Elgon Region.

*Presenting author:* Joyce Lunyolo
*Other author(s):* Dr. Denis Nseka, Dr. Isaac Mugume
*Affiliation*: Makerere University, Uganda
*Contact*: lunyolojoy@gmail.com

The risk and vulnerability of landslide occurrence is increasing in the upper Manafwa watershed. This has greatly impacted on the landscape through the presence of landslide scars, which has enormously affected people's livelihoods, whose dependence is on agriculture. This


study therefore investigated the spatial distribution of landslides and perceptions of people on the level of effectiveness in the rehabilitation and re-utilization of landslide scars.An investigation was conducted to map landslides, identify existing local interventions, factors influencing their adoption, and to establish the effectiveness of the local interventions as perceived by the local people. Field investigations were conducted to identify landslides. Household interviews, key informant interviews as well as focus group discussions were administered. Landslide scars were geocoded (mapped) to show their spatial spread while a five point Likert scale method was adopted and used to survey the opinions of survey participants regarding their perceptions of the effectiveness of local interventions. Pearson correlation was used to determine the relationship between the local interventions and factors that influenced their adoption. Descriptive statistics were used to summarize survey responses and Chi-square tests were used to test the statistical significance of the established relationships. Overall, Positive and negative linear relationships were achieved between different adoption factors alongside the local interventions. Afforestation, mixed farming were the dominant interventions adopted, while run off channels, artificial fertilizers were the least adopted. Grass striping, run off channels, mixed farming, organic manure were perceived as the most effective while artificial fertilizers, agroforestry and afforestation as the least effective interventions in the re-utilization of the landslide scars. The study thus recommends long term sustainable landslide scar rehabilitation measures e,g. afforestation, cut offs in addition to the perceived short term interventions such as grass striping, organic manure and mixed farming.

*Keywords*: Landslide scars, local interventions, scar rehabilitation, landslide scar re-utilization, landslide landscape

*5. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## The role of state forests in sustaining honey production: a case study from Nyamagabe District, Rwanda.

*Presenting author:* Peter van der Meer

*Other author(s):* Desire Mushimiyimana


*Affiliation*: van Hall Larenstein University

*Contact*: peter.vandermeer@hvhl.nl

The government of Rwanda granted access to beekeepers to use state forests to increase their honey production to solve the problem of low honey production that was caused by bees' mortality resulting from the pesticides used in agricultural plantations. In this study we investigate how honey is collected from Nyungwe National Park, and whether it has an effect on the environment. We also investigate the value chain chain of the honey, including processing and marketing. We assess the economic viability and contribution to local development of honey production from state forests for KUAGA cooperative's beekeepers in Nyamagabe District of Rwanda. Through interviews with selected stakeholders and a widespread survey (n = 30) we describe the economic contribution of state forests to honey production, the main processing techniques and standards of honey produced, the main markets, the income, and the economic autonomy and the transferability of farms and skills in beekeeping. We also describe which associated (illegal) activities take place in the forest by beekeepers, and discuss what their impact on honey production and other ecosystem services can be. We conclude with recommendations on how to improve the value chains of honey for the involved beekeepers cooperatives so that local livelihoods are further developed and long term use of honey production and other Ecosystem Services from the forest in Nyungwe National Park is ensured.

*Keywords*: Rwanda - beekeepers - honey production - value chain development - environmental impacts

*6. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Applying a 'One Health'-lens to uncover neglected mangrove ecosystem services

*Presenting author:* Jean Hugé

*Other author(s):* Maarten Vanhove, Cosmas Munga, Farid Dahdouh-Guebas

*Affiliation*: Open University of the Netherlands

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Mangrove ecosystems provide multiple benefits to humans (to communities living in or close to mangroves, but also to people living further away, e.g. by storing large amounts of 'blue' carbon). Multiple studies have highlighted the ecosystem services provided by mangroves, while some studies also mention possible ecosystem 'disservices' such as mosquitoes carrying disease.

Mangroves management regimes vary across the Western Indian Ocean coastlines, yet all mangrove management stakeholders, from local communities to officials, make their day-to-day decisions based on various forms of knowledge. Scientific knowledge, indigenous knowledge, experience-based knowledge all need to be combined to support informed mangrove management, and to help navigate trade offs.

The 'One Health' concept, which stresses the complex intertwining of ecosystem health, human health and animal health, provides an interesting and novel approach that may contribute to guide future mangrove management. The three dimensions of 'One Health' co-exist and interact in a shared world with shared risks and benefits. Our multidisciploinary team posits that a One Health perspective could contribute to more sustainable, collaborative mangrove management in the WIO Region.

In order to explore the potential of One Health for mangrove management, we conducted a survey among mangrove management experts in Kenya, which focuses on which taxa could be used as indicators to highlight and showcase the relevance of One Health in a mangrove setting. We present the findings of this survey, with a particular attention for macro-invertebrates as indicator taxa in mangroves, as these taxa may indicate human-caused environmental degradation. We also outline the next steps of our project, which aims at engaging with local communities, at first along the Kenyan coast where our team has extensive experience in the participatory mapping of mangrove ecosystem services.

In doing so, we aim to strengthen linkages between ecosystem monitoring & policy-relevant issues such as mangrove conservation.

*Keywords*: mangroves, One Health, Kenya, Indian Ocean, neglected ecosystem services

*7. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development


# Analyzing the Perceived Prioritized Forest Ecosystem Services under the Participatory Management: A case of Maksegnit District, Amhara Regional State, Ethiopia

*Presenting author:* Simegn Birhan Tessema

*Other author(s):* Dipti Mayee Nayak

*Affiliation*: University Of Gondar, Ethiopia

*Contact*: simu.22birhan@gmail.com

The participatory forest management (PFM) approach, as a policy decision, was introduced in Ethiopia in the1990s in order to combat forest resource degradation and ensure decentralization in management. The success of forest resource conservation through PFM depends on the benefits received and the importance of forest resources and ecosystem services attached by the local communities. Hence, this study examines the perceived prioritized direct and indirect benefits of forest ecosystem services across wealth groups and membership status in Kulkal Ber forest, which is located in Maksegnit District, Amhara National Regional State, Ethiopia. Primary data are collected from 352 households in three peripheral forest villages through face-to-face interviews. Chi-square, Kruskal -Wallis and Mann-Whitney tests are conducted to explain significant association in the forest use and the importance of forest ecosystem services with wealth groups and membership status, respectively. Perceptions on use, priority, and trends of services are analyzed using descriptive statistics. The results show that provisioning ecosystem services are essential for subsistence and cash uses. A significant difference is found in the perceived importance of provisioning, regulating, and supporting services across wealth groups. But no significant difference is found on the importance of cultural services across all wealth groups. The perceived importance of direct and indirect benefits of forest ecosystem services vary between membership statuses. The wealth and membership status of the local communities may affect the forest resources either positively or negatively. Future management decisions must consider these factors in forest governance sectors of the population with suitable interventions.

*Keywords*: Forest Ecosystem services, Perception analysis, PFM, wealth category, Sustainable forest conservation


*8. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

# ASSESSING THE SOCIETAL BENEFITS OF THE MNGETA WILDLIFE CORRIDOR RESTORATION PROGRAM IN THE KILOMBERO VALLEY FLOODPLAIN

*Presenting author:* Nangware Msofe

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Current wildlife corridor restoration programs are characterized by a participatory project design with a vision of co-creating spaces of mutual benefit for animals and humans living along the corridors. Mngeta corridor is amongst corridors found in Kilombero Valley Floodplain in Southeastern Tanzania that link Kilombero Nature Reserve and Udzungwa Scarp catchment forest reserve. The ongoing restoration program within the Mngeta wildlife corridor is managed by Africa Wildlife Foundation (AWF) employing Restoration Opportunity Assessment Methodology (ROAM) approach that offers participatory, capacity-building, empowering, and income-generating mechanisms to restore degraded landscapes especially forests beyond protected areas. This study therefore aimed at assessing the societal benefits of this restoration program based on the ecosystem services approach. The study employed GIS analysis, household questionnaire survey, key informant interview, focus group discussions, livelihood scoring exercise, and social transect to examine land allocation and human settlement, demographic characteristics, livelihood strategies, and dependencies on the ecosystem of households inside and outside the Mngeta corridor area upon village land. The results show that 90% of households reside inside the corridor and the remaining percentage reside outside but farm within the corridor. The demographic characteristics showed an increasing trend, with the increase in immigration of pastoralists and agro-pastoralists from other parts of Tanzania. Moreover, an average of 6.5 households adopt livelihood strategies most frequently being involved in agriculture and livestock keeping, whereas 85% of households depend on wood, in form of fuelwood and charcoal as a source of fuel. The future security of these livelihood activities is inherently linked to provisioning, regulating, and supporting ecosystem services, which in turn influence overall human well-being in this wildlife corridor. Based on these results


a fair return of the AWF program that aims at restoring wildlife corridor natural resources will secure household livelihoods, resettlement upon village land, given a suitable political climate.

*Keywords*: Ecosystem services, Ecosystem service approach, ROAM approach, Human well-being, Livelihood activities

*9. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Participatory Cultural ecosystem services mapping in Lake Nokoué (Benin)

*Presenting author:* Maximin Djondo

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Despite the fact that cultural ecosystem services provide several non-material benefits to human well-being, they have been disregarded in management planning. Indeed, generating spatial data for cultural values in particular, continues to be a challenge due to the fact that these values are abstract and difficult to analyse and quantify. It's true that, previous research has made significant strides in mapping and quantifying ecosystem services (ES) with the goal of elucidating various elements of ecological change and economic value; however, these choices may overlook the critical role of those who directly benefit from this environment. Thus, involving these stakeholders in the ES assessment elicits information about their relationships and perspectives of ecosystem services and their community. For the first time in Benin, we designed and implemented a spatially explicit participatory mapping of the whole spectrum of cultural ecosystem services perceived by individuals living in a cultural landscape like the Nokoué Lake. The findings are the product of a mix of mapping activities and organized interviews with 350 people, which were analysed using statistical and geographic information system (GIS) approaches. According to the findings, respondents connect several cultural services and different sites with their own identity. With this method, five major types of cultural ecosystem services hotspots were identified across the lake, each with a distinct cultural value: fisheries, cultural heritage, spiritual and religious, hunting and recreation and Ecotourism. We conclude that, the development of sustainable freshwater ecosystem management methods relies heavily on spatially explicit information on cultural ecosystem services that takes into account the diverse views of local communities and provide baseline information for their integration into decision making processes.


*Keywords*: Cultural ecosystem services, PPGIS, public participation, Lake Nokoué

*10. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Mind the gap: A review of literature linking human ecosystem to human health, wellbeing and livelihoods services in Southern Africa

*Presenting author:* Ntlakala Selamolela

*Other author(s):* Prof. Waller Musakwa, Prof. Stefan Zerbe

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Ecosystem services impact human wellbeing through manufactured, human, and social capital. By understanding the connections between ecological and social systems, humans and ecosystems can operate more sustainably. A better understanding of the connections between environmental and social systems will make humans and ecosystems more capable of functioning sustainably. It is crucial for any discipline to assess the relevant literature. In this way, existing knowledge and knowledge gaps are mapped and analysed, thereby further developing the knowledgebase. It is the aim of this study to explore literature that relates ES to human health and livelihoods. The spatial scope for this review is Southern Africa.

This study follows the systematic literature review (SLR) process, designed to collect evidence on a topic based on the pre-specified eligibility criteria and provide answers to the formulated research questions using the PSALSAR Framework. This method has six basic steps: research protocol (where the research scope is defined), search (the research database used to gather literature was internet-based SCOPUS and the general web of science), appraisal (inclusion and exclusion of literature based on set criteria), synthesis (data is extracted and organised), analysis (results are analysed and reported in the literature) and reporting results (informing public of the results and the procedure taken to attain) (PSALSAR).

This paper has identified several themes within the ecosystem services scope in Southern Africa, such as its relation to health, wellbeing, and livelihoods that are not extensively analysed and researched. Results show that the leading country in terms of literature output in Africa is


South Africa, with approximately 70 thousand publications on ecosystem services, less than 1% of what is published globally. This is a similar trend as seen with publications from Africa, which contributes only 2% of the global output on ES literature output."

*Keywords*: Ecosystem services, Human Health, Livelihoods, Wellbeing

*11. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Identification of context-relevant sustainability competencies needed to be fostered for effective change-agents for sustainable agriculture in Burundi

*Presenting author:* Jean Claude Nyamweru

*Other author(s):* Harm Biemans, Aad Kessler, Willy Marcel Ndayitwayeko,

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Burundi is facing a context of high population pressure where land holding per household is less than 0.5 hectares. Unsustainable agriculture practices on steep slops leads to high land degradation and high soil erosion. Ultimate consequences are food insecurity and extreme poverty in rural areas. Interventions aiming at addressing this sustainability challenge have been “conflict-resolution”, “short-term”, “top-down” and “incentive” based.

Though it is worldwide know that education can play an important role in the efforts to achieve sustainability, agricultural education in Burundi fails to shape competent sustainability change-agents; there is inadequacy between the training offers and real context problems. The aim of this study was to identify context-relevant competencies needed to be fostered for sustainable agriculture change-agents in Burundi. The Delphi technique was to gather views from 28 experts.

Findings revealed a list of 11 sustainable agriculture competencies that are considered context-relevant by the experts. Facilitator of change competence was found to be the most relevant competence, meaning that the competence should be a priority for vocational agriculture education curriculum design. Overall, other competencies like innovation and creativity, planning, system thinking, domain expertise, continuous learning, interdisciplinarity, and


leadership are mentioned as relevant as well. Stewardship, self-determination and engagement competencies are considered relatively less relevant.

Findings of this study are insightful for vocational agriculture schools' curriculum design for the education to be competence-based towards sustainable agriculture. The paper contributes to sustainability competence theory by taking the debate to the domain of vocational agriculture education for the context of Burundi.

*Keywords*: Sustainability competence, Sustainable agriculture, Change-agent, Vocational agriculture education, Burundi

*12. Type of submission: Abstract*

T. Thematic Working Group sessions: T13a - An ecosystem services approach to community-based landscape restoration and sustainable livelihoods development

## Ecosystem services and nature-based solutions for people, nature and climate: Real wins for Africa?

*Presenting author:* Matt Smith

*Other author(s):* Ms. Caroline Coogan, Mr. Mark Collar

*Affiliation*: Joint Nature Conservation Committee, United Kingdom

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Nature-based-Solutions (NbS) are actions which enlist elements of nature or natural processes to address human societal challenges and which deliver multiple benefits through public goods. UK Government tasked JNCC to develop an 'NbS Toolkit' that offers guidance to achieving a 'triple win' that enhances biodiversity, addresses climate change and reduces poverty, through implementation of NbS in the context of United Kingdom's Official Development Assistance programme.

JNCC will present the current state of knowledge and those principles identified as imperative to achieving effective and efficient delivery of NbS. The principles are formulated from the analysis of 2,934 NbS projects and 460 biodiversity indicators. The assessment seeks to improve our collective understanding of measuring performance of NbS on meeting biodiversity, social development and climate targets at the project and portfolio scale.


The presentation is the first opportunity JNCC will have to present findings and recommendations to colleagues based and working in the African continent. The objective is welcome views and opinions on the NbS toolkit and sense check the future direction of NbS projects in Africa with those who have a deep knowledge of how NbS can and should potentially work for people and nature across the continent. The overarching goal of the toolkit is to guide project design and ODA funding. It is therefore imperative to understand if, how and where effective NbS projects could bring wide benefits to Africa by enhancing ecosystem goods and services.

The audience will be asked to consider the following framing questions:

- Can Nature-Based-Solutions simultaneously achieving biodiversity, climate, and poverty-reduction policies?
- How can NbS projects that conserve and improve ecosystems be measured at the project and programme scale?
- What are the success criteria NbS project that successfully contributes to biodiversity, climate, and poverty-alleviation policies (the 'triple win') in Africa?

The toolkit is freely available https://jncc.gov.uk/our-work/nbs-toolkit/

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## How to mobilise landscape restoration actors through collaboration and multi-stakeholder engagement in Africa: lessons from practice

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A multitude of disturbances in ecosystem processes and interconnected socio-economic and environmental impacts are emerging across Africa as a result of escalating anthropogenic drivers of global and local change. Land use changes, infrastructural developments, changing weather


patterns, and population growth and mobility are transforming the continent's landscapes and social-ecological systems over time, shaping the livelihoods of the people dependent on these landscapes and the critical ecosystem services they provide. In pursuing pathways towards a more resilient future, with a view to restore or rehabilitate degraded ecosystems, collaborative and multi-stakeholder governance and management of landscapes have been promoted by government agencies, NGOs and conservation organisations. Meaningful collaboration can promote the inclusion of marginalised voices, ensure appropriate actions and responses aligned to local concerns and needs, and bring frequently disconnected actors, sectors, and government institutions together in pursuit of a common goal. However, there is no single way to achieve effective collaboration, and different landscape restoration projects have experimented with different entry points and engagement processes. This paper is grounded on a Special Issue published in the Land journal, which collates ten papers with case studies from five African countries (South Africa, Zimbabwe, Uganda, Kenya, and Madagascar), written by 56 authors from 29 organisations (including universities, research institutes, non-governmental and international organisations, and the private sector). Drawing on the expertise of these multiple partners in landscape governance and management in Africa, this paper summarises key upscalable lessons from practice for mobilising multiple actors in restoration approaches to support more resilient and equitable landscapes.

Keywords: Sustainable land management, landscape restoration, ecosystems, stakeholders