Restoration Education Workshop Report

NAIROBI, SEPTEMBER 2022

Pan-African Network

Summary

The Global Landcapes Forum (GLF), together with the International Union of Forest Research Organizations (IUFRO) and Wageningen University and Research (WuR) brought together 25 participants for a hybrid workshop in Nairobi on Restoration Education for the Pan-African region.

The participants represented eight African universities and colleges, as well as members of GLF, WuR, IUFRO, CIFOR-ICRAF scientists, GLFx Chapters, and Youth in Landscapes (YIL) Restoration Stewards.

The workshop achieved its key aims, resulting in the outline of a blueprint for the "Restoration Education" curriculum based on key concepts and principles for restoration and its processes.

Furthermore, possible delivery mechanisms to integrate this blueprint into existing curriculum based on collectively decided principles of transformative education were defined.

Figure 1: Hybrid sessions of the workshop.

Introduction

During the past year several online workshops and meetings were held with the workshop participants to initiate the design and development of restoration education.

The results included a Call to Collective Action for Restoration Education, and following a scoping workshop, and an initial blueprinting exercise, the Restoration Education concept note was published.

The Pan-African Restoration Education Network was initiated to act upon the call to collective action and features representatives of African universities interested in or already engaging in Restoration Education.

With the commitment of the network, GLF and WuR organized a face-to-face three day workshop on the CIFOR-ICRAF Campus in Nairobi, Kenya, which was concluded by the Restoration Summit at GLF Africa.

The collectively defined objectives of the workshop were the following:

- Define, based on principles of transformative education, the key concepts and principles for restoration and its processes;
- Define the course content for integrating restoration education across African educational institutes and organizations; and
- Define the delivery mechanisms for integrating restoration education content through the principles of transformative education.

Workshop participants from the Pan-African network were predominantly university staff who represent their institute in a wider international network.

These participants have a direct responsibility in curriculum design, and the ability to decide on the introduction of new education modules or curricula.

Additional participants, such as CIFOR-ICRAF, WuR, and IUFRO scientists, as well as YIL Restoration Stewards represent partner institutes with transdisciplinary experience in research and field-studies, as well as a diverse youth network who specialise in on-the-ground action, all of whom are ready to support the development of 'Restoration Education' in Africa and beyond.

The participants

- **Mercy Derkyi** (University of Energy and Natural Resources, Ghana)
- **Esther Ekua Amfoa Amoako** (University of Development Studies, Ghana)
- **Adejoke Olukemi Akinyele** (University of Ibadan, Nigeria)
- **Steve Makungwa** (Centre for Applied Systems Analysis, Malawi)
- **Richard Nasasira** (Integrated Polytechnic Regional College Kitabi (IPRC Kitabi), Rwanda)
- **Avana Tientcheu Marie Louise** (University of Dschang, Cameroon)
- **Tabitha Mugo** (Moi University, Kenya)
- **Bessy Eva Kathambi** (University of Nairobi, Kenya)
- **Kimberly Merten** (GLF)
- **Sai Varun Tumuluru** (GLF)
- **Cora van Oosten** (GLF, Wageningen University)
- **Tossa Harding** (Wageningen University)
- **Bram de Groote** (Wageningen University)
- **Eva Makandi** (Restoration Steward, LOAH)
- **Khalil Walji** (CIFOR-ICRAF)
- **Imelda Ingumba** (CIFOR-ICRAF)
- **Mieke Bourne** (CIFOR-ICRAF)
- **Leigh Winowiecki** (CIFOR-ICRAF)
- **Laura Mukhwana** (CIFOR-ICRAF)
- **Samuel Olajuyigbe** (University of Ibadan - virtual)
- **Leonard Chibbwana** (Centre for Applied Systems Analysis - virtual)
- **Verina Ingram** (WuR - virtual)
- **Madelon Lohbeck** (WuR - virtual)
- **Janice Burns** (IUFRO - virtual)
- **Michael Kleine** (IUFRO - virtual)

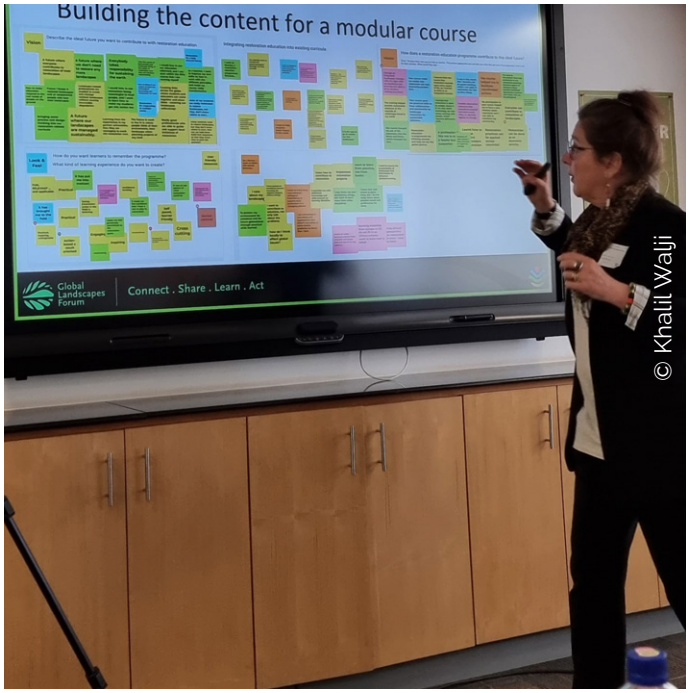

Figure 2: Dr Cora Van Oosten opens the workshop.

The participants

The workshop took place over three days and covered three main areas of designing and implementing restoration education. A summary of the three days is detailed below:

Day 1 - Knowledge and content for restoration education:

- Defining restoration principles and key concepts of restoration for education;
- Understanding the capacities needed for multiple stakeholders for landscape restoration; and
- Collectively defining the content including learning objectives and expectations and key topics.

Day 2 - Delivery of transformative restoration education

- Define principles of transformative education for landscape restoration; and
- Define learning activities to deliver and integrate content across institutes and organizations.

Day 3: Restoration education summit

- Restoration education summit at GLF Africa; and
- Setting the agenda for implementing restoration education.

Restoration: a multidisciplinary concept for education

Restoration can be a tool for achieving diverse landscape goals by developing mosaics of complementary, productive land uses. It is a human activity and process with multiple social and ecological goals (both divergent and complementary and characterizable on a continuum from eco-centric: focussing on ecological functionality to anthropocentric: focussing on enhancing human wellbeing and socio-cultural-economic values). It also focuses on different scales: forests, ecosystems and landscapes (Figures 3, 4).

Restoration goes far beyond the act of planting trees, and foresters can no longer claim to be the only ones who can restore - thus the term "landscape restoration" implies a planned, multi-stakeholder process in degraded landscapes, over long time scales with different (ecosystem) services and benefits accruing to different stakeholders over time. Restoration can be seen from multiple and different disciplinary, stakeholder, and community perspectives. A glossary to aid interdisciplinary curriculum development can be found in Mansourian (2018).

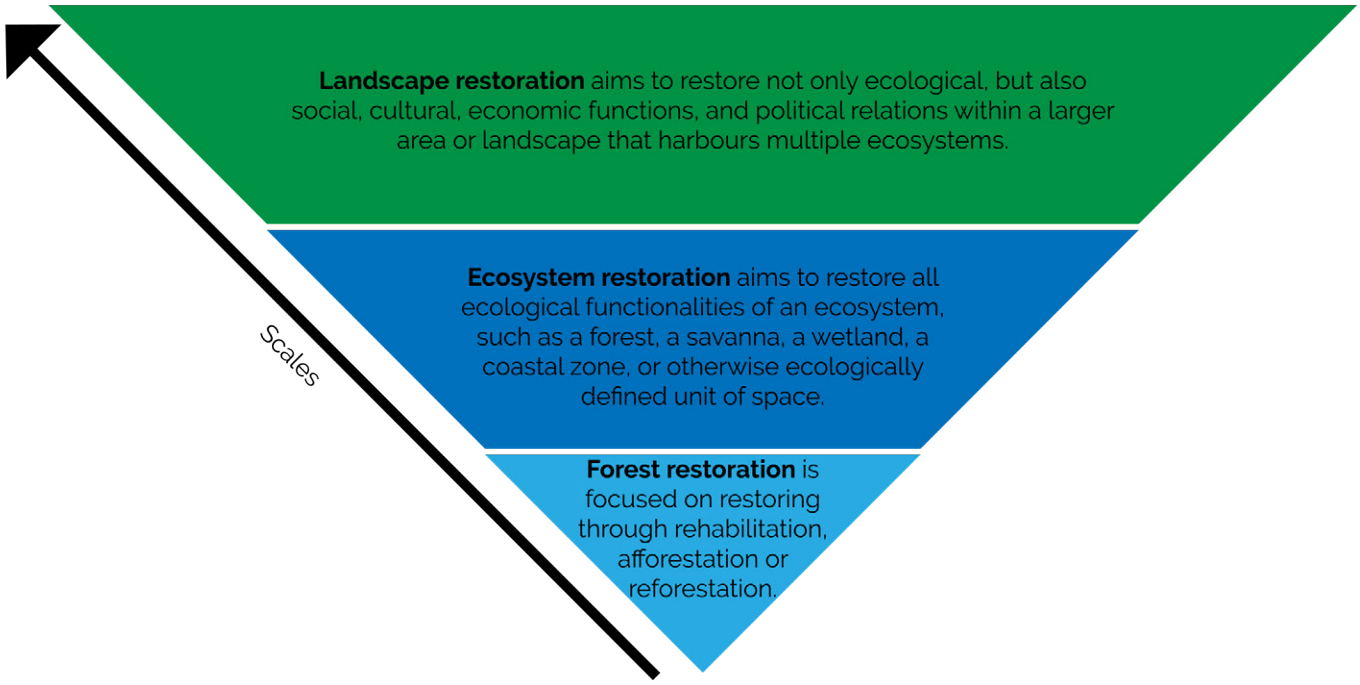

Figure 3: From forest restoration to landscape restoration, inspired by: WWF (2022), Info FLR (2022), RECOFTC (2022), ITTO (2022), and Mansourian (2018, 2021).

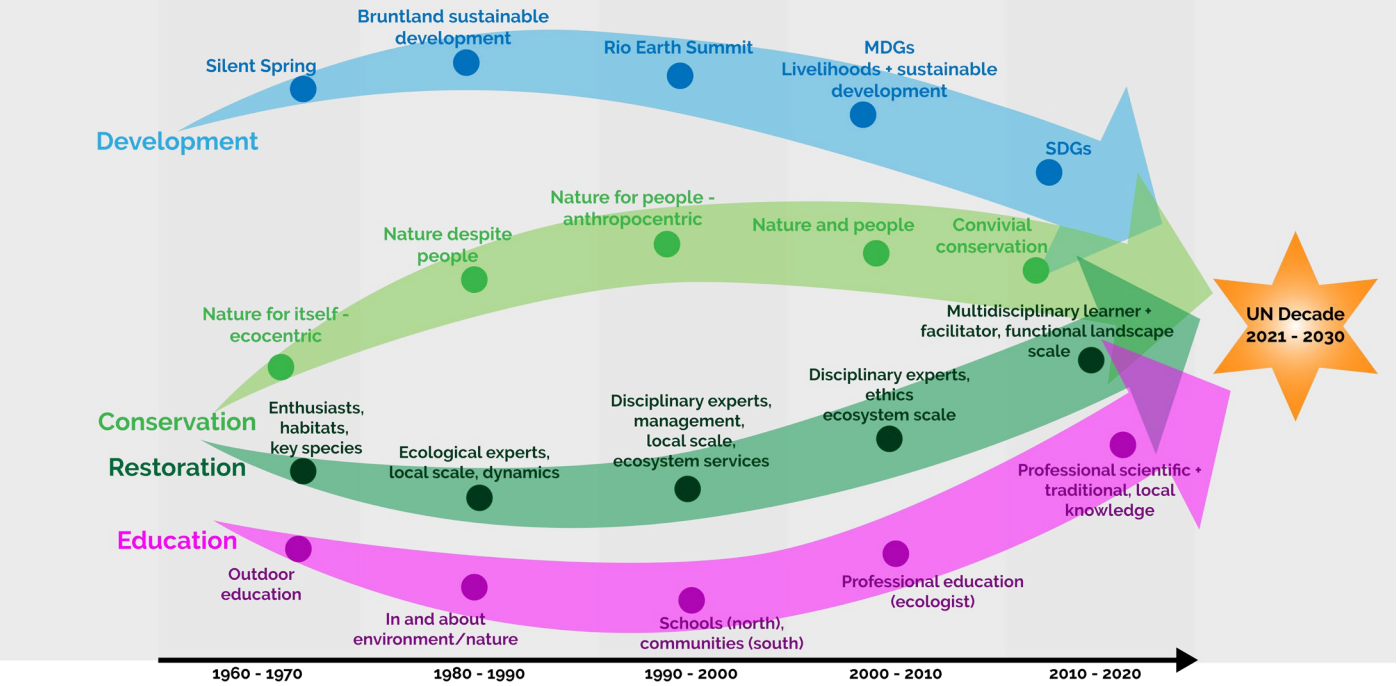

Figure 4: Historical perspectives - changing views, inspired by: Mace (2014), Isabell et al. (2017), Scoones (2016), Carter & Simmon (2010), Martin (2022), and Buscher & Fletcher (2019)

10 Principles for Landscape Restoration

1. **Global contribution:** Landscape restoration contributes to the United Nations sustainable development goals and the Rio conventions;
2. **Broad engagement:** Landscape restoration promotes inclusive and participatory governance, social fairness, and equity from the start and throughout the process and outcomes;
3. **Many types of activities:** Landscape restoration includes a continuum of restorative activities;
4. **Benefits to nature and people:** landscape restoration aims to achieve the highest level of recovery for biodiversity and ecosystem health;
5. **Addresses causes of degradation:** Landscape restoration addresses the direct and indirect causes of ecosystem degradation;
6. **Knowledge integration:** Landscape restoration incorporates all types of knowledge and promotes their exchange and integration throughout;
7. **Measurable goals:** Landscape restoration is based on well-defined short-, medium- and long-term ecological, cultural, and socio-economic objectives;;
8. **Local and landscape contexts:** Landscape restoration is tailored to the local ecological, cultural, and socioeconomic contexts, while considering the larger landscape;
9. **Monitoring and management:** Landscape restoration includes monitoring, evaluation, and adaptive management throughout and beyond the lifetime of the project or programme; and
10. **Policy integration:** Landscape restoration is enabled by policies and measures that promote its long-term progress, fostering replication and scaling-up.

These principles are adapted from FAO, IUCN CEM and SER (2022) and build upon work on the principles introduced by Sayer et al (2013) and the six guiding principles for successful FLR from Info FLR (2022), and GLF (2021).

Conceptual Framework for Restoration Education

Under this conceptual framework (Figure 5), restoration education:

- Emphasizes coupled social and ecological systems;
- Emphasizes telecoupled disturbances of landscapes, drivers of landscape degradation, drivers of restoration, the distant interactions between governance arrangements, and the telecoupled impacts on people and environment in a landscape; and
- Is an overarching framework to guide curricula, which enables the recognition and explanation of empirical realities and practices. It can empirically guide research in finding recurring patterns (what works, what doesn't, and understanding why). In this way, curricula can be built around the different elements of the framework and dive into them in depth.

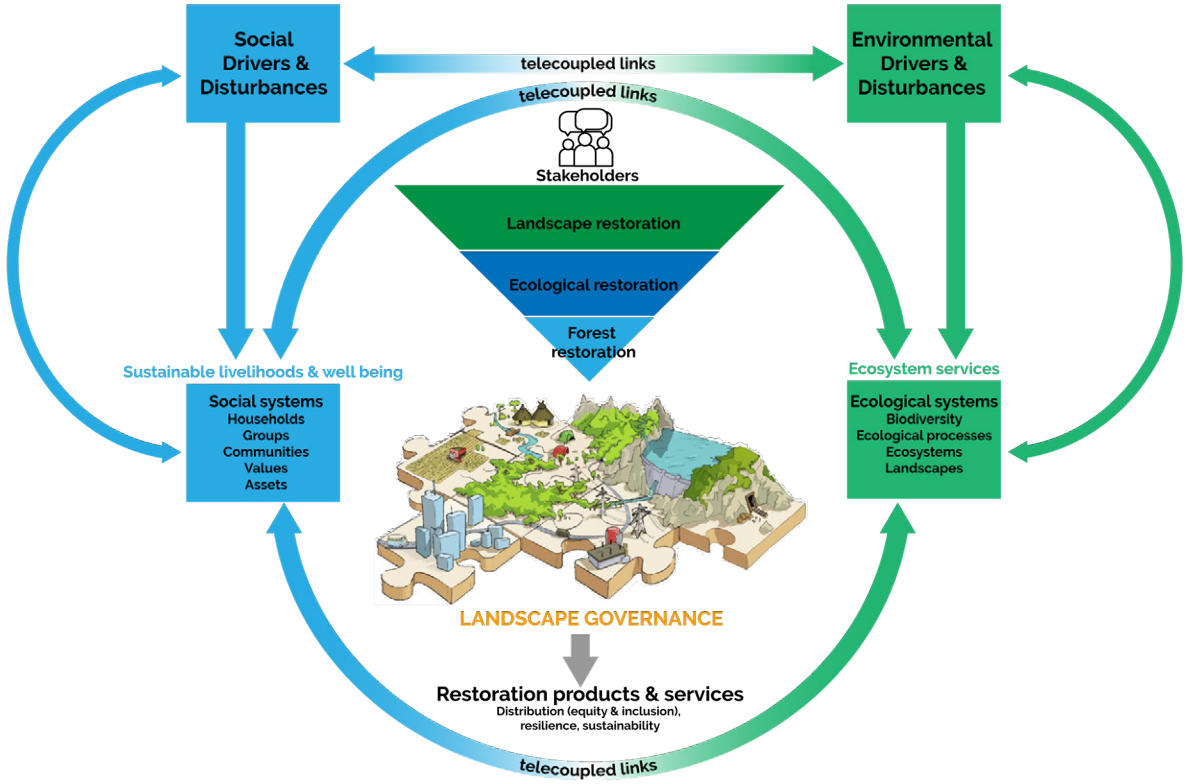

Figure 5: the conceptual framework for Restoration Education developed by Dr Verina Ingram and Dr Madelon Lohbeck (WuR).

The Learner and their needs

The "Global Capacity Needs Assessment" carried out by the UN Decade's Task Force on Best Practice outlines the results of a survey of 1,331 participants and serves to highlight some of the key gaps and needs to sustain restoration at a global scale. It outlines a recommendation to develop capacities of not only individuals but also organizations across scales and sectors, with focus placed on four specific areas:

1. **Financing** - Enhancing financial components and enabling the mobilization of finances for restoration projects across stakeholder groups;
2. **Inclusive stakeholder engagement** - targeting not only the private sector, but instead focusing efforts on improving the capabilities of governments, NGOs, and others at the international, national, subnational and local levels for engaging with various sectors and actors;
3. **Technical skills** - improving the technical skills of all stakeholder groups across all phases of a restoration activity; and
4. **Policy** - to improve the limited capacities at the international and national levels for developing national-scale policies and legal frameworks that are all inclusive and effective in targeting those conducting ground-level restoration.

Further, multiple capacity needs assessments carried out by GLF, IUFRO, and WuR detail numerous gaps across global, national, and local levels in stakeholders that exist across the governmental, non-governmental, and research sectors.

The outcomes of these needs assessments found that key capacity gaps cover a wide range of topics from stakeholder engagement to implementation (Figure 6).

To break these capacity gaps down further is to recognise that they exist not only within a frame of landscape restoration, but also one of landscape governance, and thus involve overcoming both a substantive and process challenge through, for example, better knowledge on the social-ecological and economic landscape dynamics, or the ability to effectively broker landscape governance arrangements.

Restoration education aims to be holistic in its tackling of the wide variety of capacity gaps identified across sectors and scales. It also aims to acknowledge that the need to build capacities at a large scale involves an assortment of prospective learners. Because each of these learners has different individual needs, they have been grouped into three prospective groups whose needs align, and can each be fulfilled through the completion of the restoration education course as laid out in the blueprint.

These prospective learner groups include:

- Decision and policy makers,
- Practitioners, and
- Early career individuals and students.

Within this group, decision and policy makers often lack in-depth knowledge about the wide variety of restoration practices that can be envisioned through a landscape approach. While they can often be sectorally educated or simply process experts, such gaps in their backgrounds may leave them lacking a broader view on the complexities that exist within a landscape which needs restoration.

Similarly, practitioners actively engaged in restoration activities may also be largely educated in a specialization such as forestry, meaning that the activities that they carry out exist within a specific sector, scale, or type of ecosystem. However, this means that they often need a broader understanding of a landscape and ecosystem which can then help them drive landscape restoration in their own particular case.

This includes not only a more holistic and nuanced understanding of the social, cultural, and economic functions, as well as the political relations which exist within any landscape, but also the development of core competencies to implement restoration at a landscape level rather than restoration which is limited to within their prior education or area of focus.

Early career individuals and students who are just learning restoration must be exposed to a more multi-disciplinary perspective.

This can not only enable their holistic development, but empower a restoration mind- and skillset which can be useful across the sectors and professions that they situate themselves in.

The transdisciplinary and action-oriented lens presented in the blueprint is designed to empower any person within the target audience with a more integrated landscape mindset needed to drive inclusive restoration across landscapes and sectors, resulting in the creation of 't-shaped' landscape professionals by the end of the program.

Through the creation of a greater understanding of restoration across the scales that exist within a landscape, the blueprint can enable policy and decision makers to make more well-informed and holistic policy suggestions and creating a more holistic assessment of restoration policy options based on various landscape contexts taking into account the various stakeholders and also ensuring some level of economic viability.

Similarly, it can broaden the scope of restoration that practitioners who have a specialized education may have not considered before, and offer early career individuals and students with a more rounded curricula that embeds landscape restoration into their every-day.

By catering to these learners, the restoration education blueprint targets a wide range of capacity gaps in an effective way, ensuring all learner needs are adequately met and capacities for landscape restoration across sectors and scales can be developed holistically.

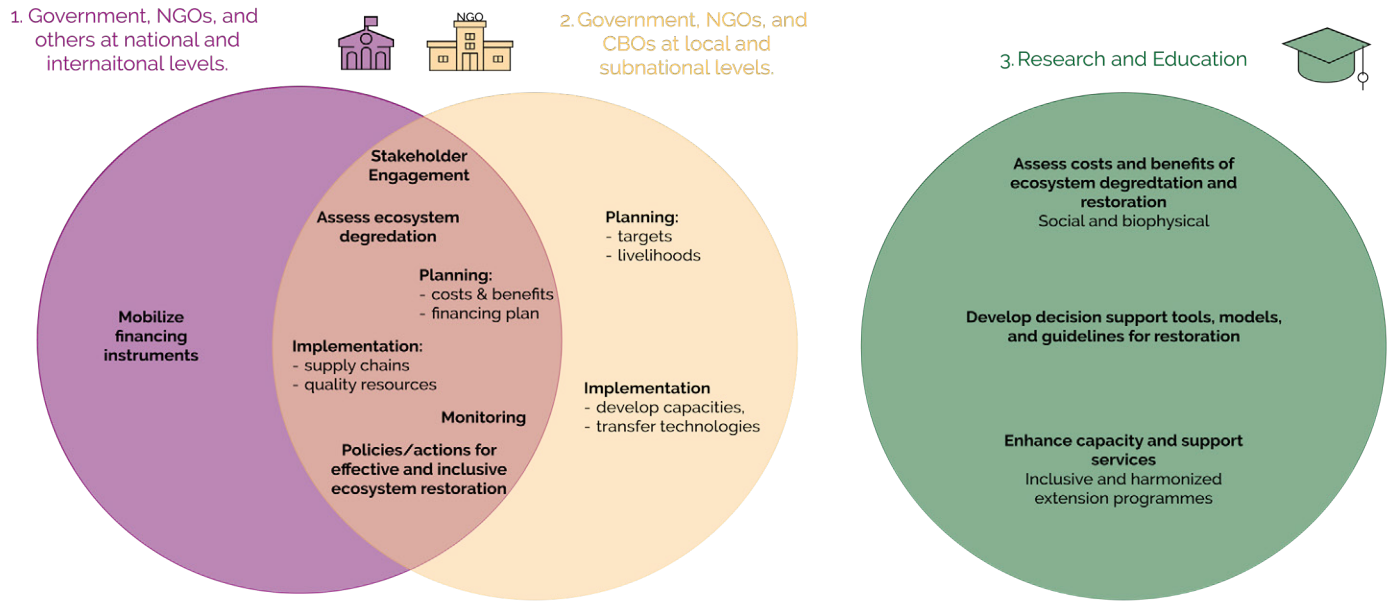

Figure 6: Key capacity gaps across some stakeholder groups adapted from Chazdon (2021).

The T-Shaped Professional

As the practice of landscape restoration is built on multiple disciplinary insights, a restoration education curriculum needs to be interdisciplinary by default.

Disciplines relevant to landscape restoration may be forestry, natural resources management, land- and water management, economic science, social science, landscape design, and more.

However, building an interdisciplinary curriculum is difficult. In essence, a truly interdisciplinary approach to education would have to be built on multiple scientific epistemologies, which may not be compatible (Arts et al, 2017).

An interdisciplinary curriculum may therefore end up as an 'everything-but-nothing' curriculum that will not help the graduate to sketch a clear profile and get a job.

Therefore, Restoration Education will adopt a 'modest' interdisciplinary and collaborative model which builds on the concept of the T-shaped professional (Figure 7; Oskam, 2009; Uhlenbrook et al., 2012; Arts et al., 2017).

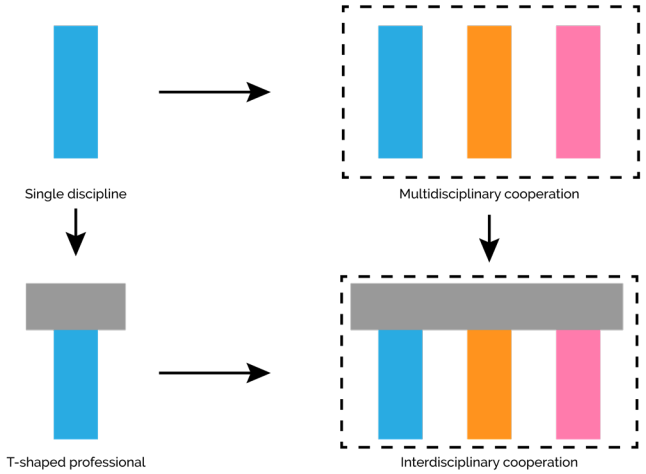

Figure 7: the single disciplinary professional versus the T-shaped professional adapted from Oskam (2009).

A T-shaped professional (Figure 8) is one who is able to demonstrate expertise in a specific disciplinary field, while also being able to work with professionals across scientific domains as well as with actors beyond science.

Whereas experts trained in a single scientific domain generally tend to focus on their own 'siloed' domain, the T-shaped professional is trained in more than one discipline, and tends to be more open-minded and able to operate in interdisciplinary teams.

In addition, the T-shaped professional has acquired the professional and social skills to truly work together in transdisciplinary teams, having the communication skills to communicate with non-academics, practitioners and otherwise knowledge holders across their professional or personal domains.

Such a combination of disciplinary knowledge and professional/social skills offers an attractive perspective for young professionals and organisations engaged in restoration practice (ibid.).

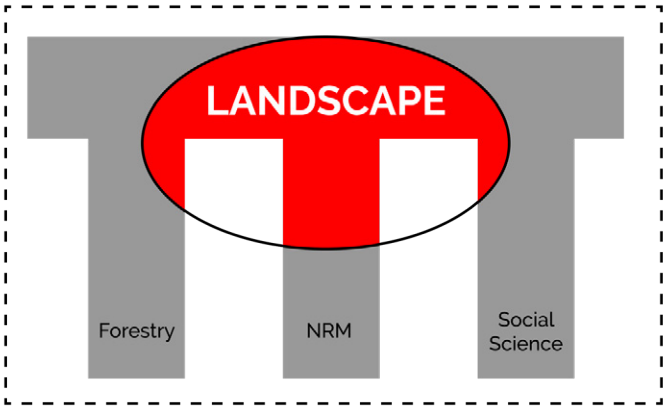

Figure 8: the T-shaped landscape professional, combining single disciplinary fields with generalist landscape skills adapted from Arts et al. (2017).

The Blueprint for Restoration Education

The purpose of writing a blueprint is to define the main learning parameters that form the basis of your course or curriculum.

The blended learning jukebox framework (Figure 9) was adopted to guide the blueprinting process to lay out the essential aspects of what one aims to achieve in the course:

- the target audience of learners and their needs;
- the key learning outcomes and topics;
- delivery mechanisms and learning modalities;
- the expected duration, rhythm of the course; and
- the summative assessment.

The blueprinting for restoration education curriculum resulted in 6 overall learning outcomes and their overarching mission, with each learning outcome representing one course.

The duration, study load and rhythm for each module is detailed in Table 1.

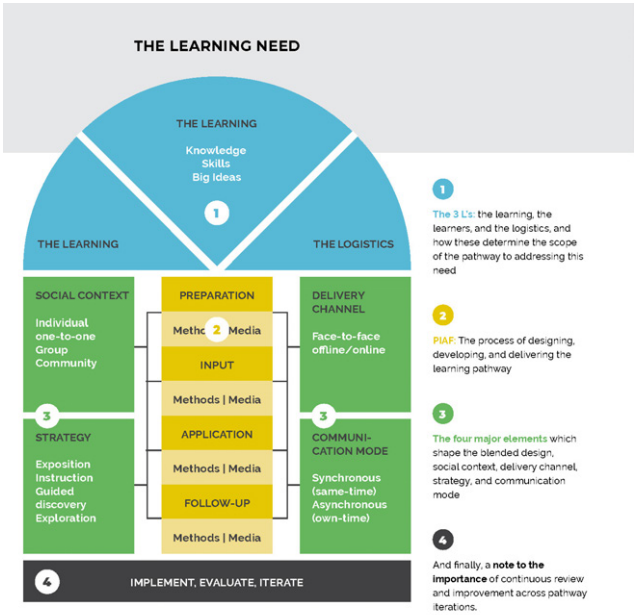

Figure 9: The Blended Learning Jukebox Model adapted from Skills Journey (2020).

Groups for each learning outcome subsequently defined sub-learning outcomes, topics and learning activities based on Bloom's taxonomy for learning objectives and following the PIAF process of designing, developing, and delivering the learning pathway (Figure 10).

The full blueprint detailing each learning outcome is currently undergoing expert review, and will soon be available on the Restoration Education page.

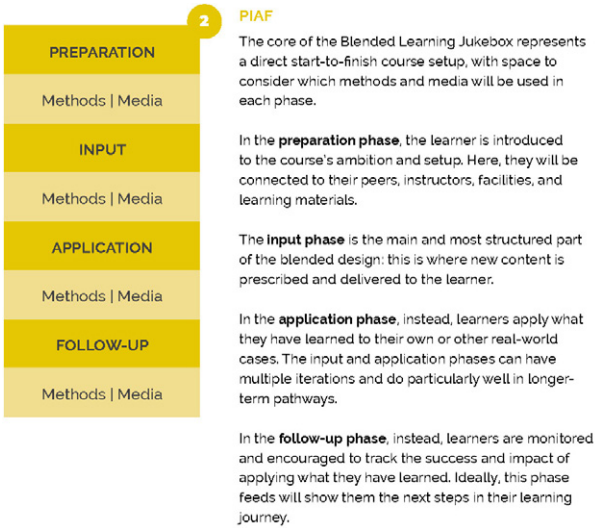

Figure 10: A description of PIAF from WCDI Advisory et al. (2022).

The restoration education curriculum was designed to specifically address the learning and capacity needs of the three target groups: decision and policy makers, practitioners and early career individuals and students.

These learners are all envisioned to play a key role as t-shaped landscape professionals in facilitating the design and implementation of restoration initiatives.

The restoration education curriculum therefore addresses the process and substantive capacities needed to analyze landscape dynamics and contexts, and co-create and strengthen inclusive landscape partnerships for restoration, while catalyzing opportunities to enhance landscape governance crucial for the success of landscape restoration activities.

The curriculum further addresses the design and application of adaptive and resilient landscape restoration initiatives that are economically viable and contribute to the social development strategies within the landscape. The participants in the workshop represented a wide range of restoration skills, experiences and capacities who critically reflected on the need for the restoration curriculum to be applicable, 'contextualize-able' and landscape specific.

During the blueprinting process for each overall learning outcome tools and guides were defined to facilitate the learner's ability to apply restoration on-the-ground. A preliminary outline for a toolkit for landscape restoration was developed to complement the restoration curriculum. The tools defined ranged from guides on multi-stakeholder processes, communication and advocacy tools to project planning and implementation frameworks and models.

Concurrently, the participants reiterated that educators and existing educational modalities were not designed to facilitate the on-the-ground practice and process of restoration, nor facilitate the transdisciplinary mindset needed to accelerate or initiate sectoral transformation.

Participants concluded that restoration education needs to be embedded within wider principles of transformative education that would influence the way in which restoration is taught.

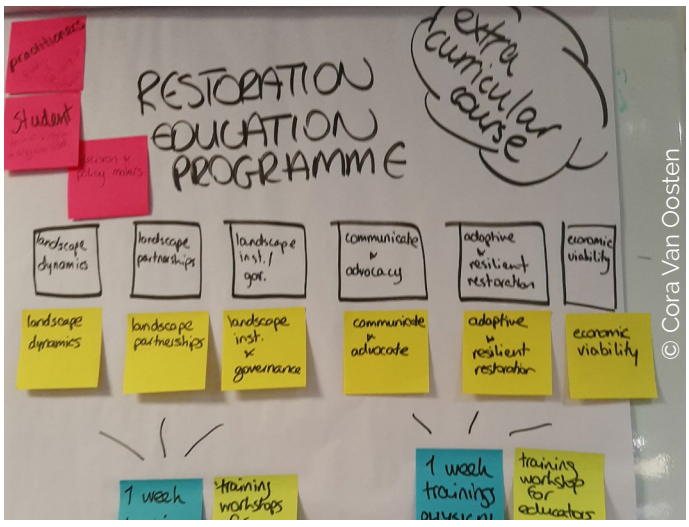

Figure 11: Group poster laying out the design of the overall restoration education course structure.

Table 1: Course details

Programme title	Restoration Education for Landscape Transformation
Duration	3-6 weeks per learning outcome.
Study load	4-8 hours of synchronous and asynchronous study load per-week.
Rhythm	3x3 model, or mixed theory and group work.
Mission of the Course	To empower people with an integrated landscape mindset and the skill sets (both technical and process) to drive decision making processes to incentivize the stewardship of landscapes through inclusive restoration.
Learning Outcomes (Overall)	1. Analyse landscape dynamics and contexts 2. Co-create and strengthen inclusive landscape partnerships for restoration 3. Catalyse opportunities to enhance landscape governance 4. Communicate and advocate for landscape restoration across sectors, scales and disciplines 5. Design and apply adaptive and resilient landscape restoration 6. Develop economically viable landscape restoration initiatives
Target audience	• Decision and policy makers • Practitioners • Early career individuals • Post-graduate students
Summative Assessment	TBD
Feel of the course	Transformative, action-based, transdisciplinary

Transformative Education Principles

Mezirow (2006) describes transformative learning as a "learning that transforms problematic frames of reference to make them more inclusive, discriminating, reflective, open and emotionally able to change".

Transformation refers to a form of change that "is the outcome of a process that includes consciousness and a broadening of perspective. It is an irreversible kind of change because it is not possible to "unsee" what we have learned to see (Biester & Mehlmann, 2020).

Transformative education can be seen as a form of facilitation that enables transformative learning. Translating this into the context of our Pan African curriculum, the group identified the following principles as being key to the development of a transformative restoration education curriculum:

- **Transdisciplinary:** includes different types of knowledge and perspectives, from academic to practitioner to indigenous;
- **Actionable:** linked to the tasks and responsibilities of a restoration professional;
- **Value-based:** mind-set shift, clear understanding of what norms, values, and beliefs support landscape restoration, and which do not;
- **Systems thinking:** holistic, working with complexity and uncertainty, dynamic situations, need for diversity of perspectives and knowledge to understand;
- **Life-long learning**: attitude, how to continue learning beyond formal education; and
- **Experiential learning:** based on concrete experiences.

Figure 12: the principles of transformative education.

Transformative Restoration Education

Capturing all the above mentioned principles into a firm definition of transformative restoration education we came up with the following seven principles (to be finetuned over time):

1. Transformative restoration education is not problem focused (degradation) but solution focused (restoration), following a spatial and whole- system approach;
2. Transformative restoration education puts the learner in the centre, and enables the learner to compose his/her own learning pathway that matches with their aspirations and their context;
3. Transformative restoration education builds a positive learning environment where teachers and students motivate each other, and develop the knowledge, skills and attitudes to systemically 'think landscape';
4. Transformative restoration education empowers students to not only 'think landscape' but also 'act landscape', through interdisciplinary, experiential, and practice-based learning, through with actionable and applicable tools;
5. Transformative restoration education is open to students, professionals and practitioners from all age groups, to join at any time in their professional career or personal life;
6. Transformative restoration education requires teachers to change their role from expert to facilitator, guiding and supporting learners to accomplish the change that is needed in their landscape; and
7. Transformative restoration education encourages teachers, students and practitioners to question each other's values, attitudes and behaviour, develop critical mindsets and be agents of change.

Delivery Mechanisms

A certain level of standardisation in content and delivery is necessary in order to ensure that learners across Africa are receiving the same quality of restoration education that lives up to the standards and principles decided upon collectively.

This standardization also lays the foundation for potential accreditation in the future.

At the same time the programme needs to allow for sufficient flexibility for facilitators to adapt content and delivery to local contexts and diverse audiences.

The different components of the restoration education curriculum form a framework within which facilitators have the freedom and flexibility to adapt and adjust delivery and content. At the same time these components form the basis for delivery and content which ensures a level of standardisation. These basic components include:

- the curriculum blueprint with agreed upon modules, learning outcomes, and topics;
- The principles and key concepts of landscape restoration;
- The principles of transformative education; and
- An agreed upon set of assessment criteria for the programme and its modules.

To facilitate a good balance between standardization and contextualisation we have formulated additional pointers for delivery that complement the programme components described before, to provide additional guidance for facilitators. These are:

- To bring experiential learning into practice and ensure effective learning for different learning styles, delivery should be based on Kolb's learning cycle. where the learners' "experience" takes a central place and is used as as a starting point for learning, followed by reflection, attaching meaning, conceptualisation, and implementation through experimentation, which then provides new experiences as input for a new learning cycle.
- Programme delivery should furthermore follow the PIAF model (Figure 10), which focuses on application. Here learners are motivated to practice their skills in the real world and bring back their experiences to the programme in the follow-up phase as input for another learning cycle.
- Learning should happen through facilitation, where individual or group learning processes are guided and the learners learn from doing, experimenting, and engaging with others.
- A strong focus should lay on participatory learning in which the knowledge, experiences, and beliefs of learners are used as input for learning with and from one another.
- Finally, the methods and media for delivery should be blended. Blended here is used in the broadest sense, which includes blending social contexts, facilitation strategy, delivery channel, and communication modes. Blended facilitation employs an effective and strategic mix of methods and media for lower and higher level learning outcomes (from Bloom's taxonomy) and includes a balance of learning activity types (acquisition, discussion, collaboration, investigation, practice, production) to achieve the learning outcomes.

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Pan-African Restoration Education Network

The **Pan-African Restoration Education Network** now comprises of the following: **University of Ibadan** (Nigeria), **University of Energy and Natural Resources** (Ghana), **University of Development Studies** (Ghana), **University of Dschang** (Cameroon), **Lilongwe Univeristy of Agriculture and Natural Resources** (LUANAR, Malawi), **Centre for Applied Systems Analysis** (CASA, Malawi), **Youth In Landscapes Initiative** (YIL), **University of Nairobi** (Kenya), **Integrated Polytechnic Regional College Kitabi** (IPRC Kitabi, Rwanda), **Light On A Hill Organization** (LOAH, Nairobi), and **Moi University** (Kenya).

Global Landscapes Forum

The Global Landscapes Forum (GLF) is the world's largest knowledge-led platform on integrated land use, dedicated to achieving the Sustainable Development Goals and Paris Climate Agreement. The Forum takes a holistic approach to create sustainable landscapes that are productive, prosperous, equitable and resilient and considers five cohesive themes of food and livelihoods, landscape restoration, rights, finance and measuring progress. It is led by the Center for International Forestry Research (CIFOR), in collaboration with its co-founders UNEP and the World Bank and Charter Members.

Charter members: CIAT, CIFOR-ICRAF, CIRAD, Climate Focus, Conservation International, Crop Trust, Ecoagriculture Partners, The European Forest Institute, Evergreen Agriculture, FAO, FSC, GEF, GIZ, ICIMOD, IFOAM - Organics International, The International Livestock Research Institute, INBAR, IPMG, IUFRO, Rainforest Alliance, Rare, Rights and Resources Initiative, SAN, TMG-Think Tank for Sustainability, UNEP, Wageningen Centre for Development Innovation part of Wageningen Research, World Farmer Organization, World Agroforestry, World Bank Group, World Resources Institute, WWF International, Youth in Landscapes Initiative (YIL)

Funding Partners

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

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