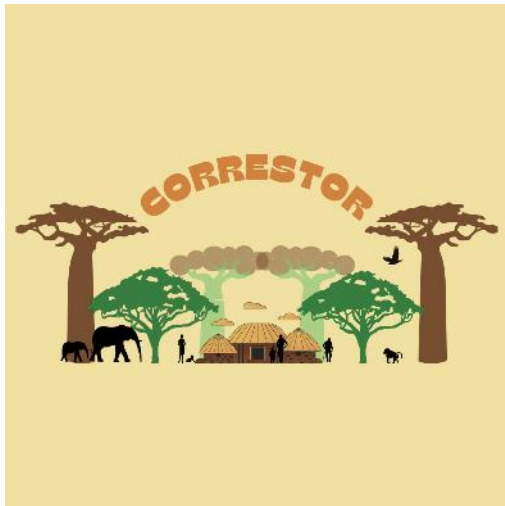CORRESTOR

What evidence is required for (corridor) restoration interventions in human-inhabited landscapes,……. and how do we include these in the restoration management process?

Third workshop. Final workshop of the CORRESTOR project.

Karibuni

Agenda

1. Introduction

- Project context & objectives
- Workshop objectives
- Key results from AGRISYS to inform restoration

2. Focussed sessions

- Co-development of a synthesis plan
- Restoration and policy contexts
- Identification of capacity strengthening needs
- Co-design of this knowledge exchange platform on

3. Closing remarks

- Synthesis report
- Future visions

1. Introduction

The Bonn Challenge is a global effort to bring 350 million hectares of the world's deforested and degraded land into restoration by 2030. Within Africa, the African Forest Landscape Restoration Initiative, AFR100 aims to restore 100 million hectares of land in Africa by 2030.

Wildlife corridors are being lost at escalating speed and corridor restoration for habitat connectivity is a priority conservation goal. In Tanzania, 24 corridors are critically threatened. Three of these crossed the Kilombero Valley and were vital routes for wildlife.

Post-CBD 2020 targets: connectivity plays a major role 'well-connected systems of protected areas and other effective area-based conservation measures'

1. Introduction

Point 16. Decides to establish, under the provisions of Article 21 of the Convention, at its sixteenth meeting, a Global Biodiversity Fund

Point 19 Emphasizes the need for capacity-building activities and the effective sharing of knowledge, in order to support all countries, especially developing countries
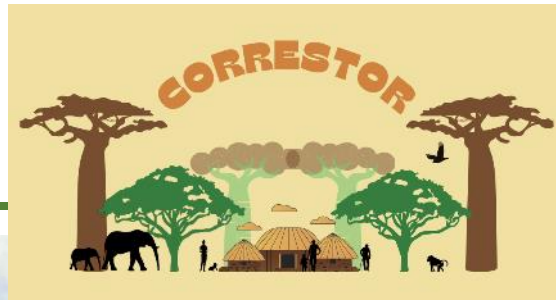
Point 22 Reaffirms expectation that Parties and other Governments will ensure that the rights of indigenous peoples and local communities are respected and given effect

msaada wa fedha

Uwezo wa Uwezo

Heshimu jamii

1. Introduction

Synthesize, map and evaluate

Inform restoration process

Co-develop & co-produce

Trade-offs

Mitigation

Tolerance

Tree species
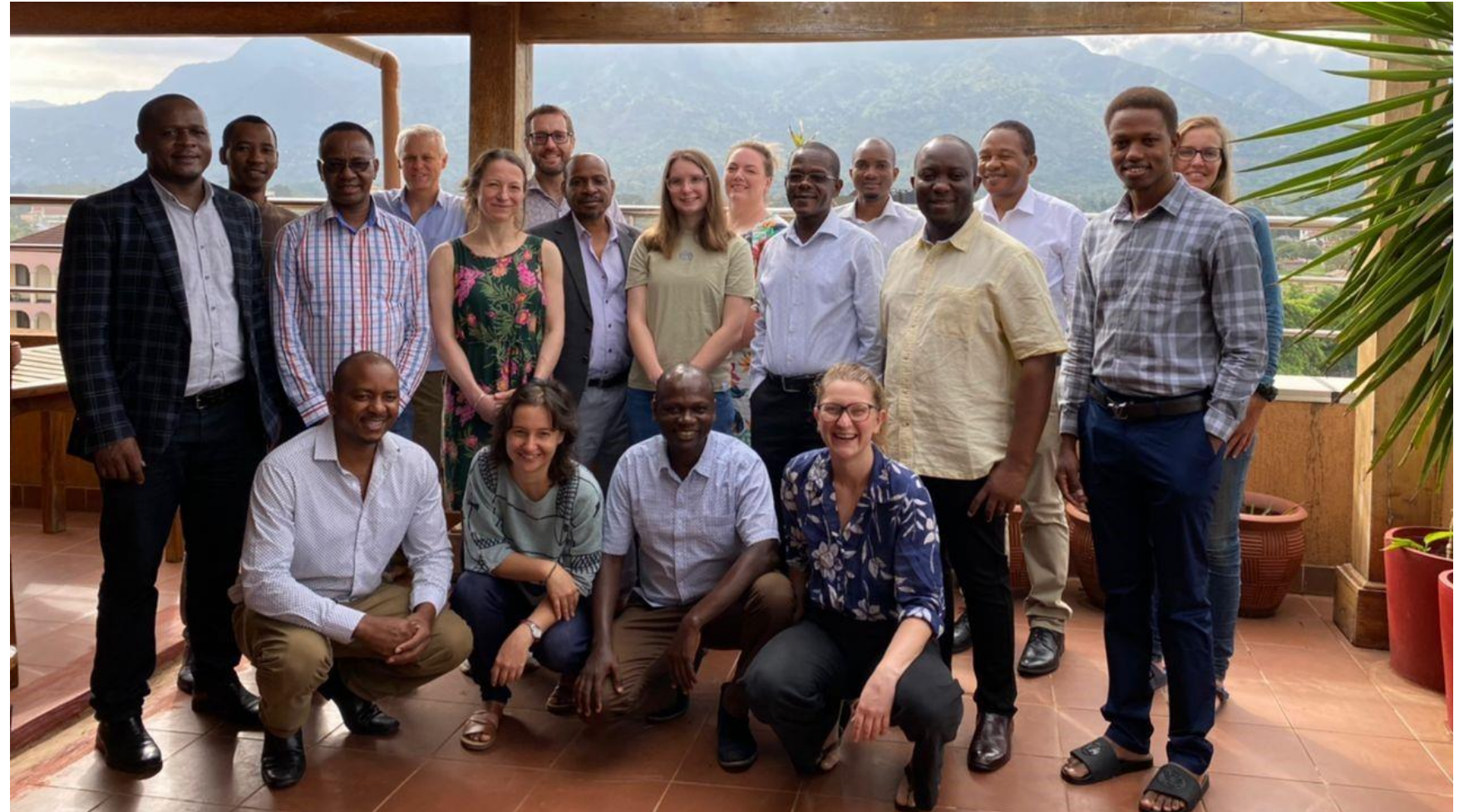
Management

Location

Guidance / Practice

Policies & contexts

Management plans

1. Introduction

Workshop 2
February 2022
Morogoro

1. Introduction

1. Introduction

Where to plant and what to plant?

Restoring trees on and around farmed land

Knowledge gaps/Data needs		
Tree – Site Matching: ecology, crop health/yields	Dataset	Reforest Africa: climate, soil, dispersal, function (pioneer, late successional), services (charcoal, firewood), native/invasive
Drought and flood risk management	Dataset	To be determined: James Hardwick, Zarah Pattinson
Potential for cash cropping	Investment	Cashew, Teak
Potential for biopesticides	Experiments	Ben Kelly: sugarcane aphid on sugarcane
Bamboo		Fodder/livelihood opportunities versus risks for biodiversity, riverside erosion and thus land loss (soil – root interactions)
Disservices	Fieldwork	To be established: disservices (pests, shade) – depending on crop type

1. Introduction

Where to plant and what to plant?

Restoring trees on and around farmed land
Restoring trees along rivers/creeks

Knowledge gaps/Data needs		
Tree – Site Matching	Dataset	
Buffer width	Fieldwork	Social-ecological determinants. To be established. Ecological components: surveys. Social components: focus groups. Farmer walks. Trade-offs between values and disvalues.
Buffer composition	Fieldwork	
Water health	Fieldwork	
Erosion risk	Fieldwork	Proposal in review with Deo, Zarah, Susannah – NGS and NERC

1. Introduction

Where to plant and what to plant?

Restoring trees on and around farmed land
Restoring trees along rivers/creeks
Restoring trees in wildlife corridors

Knowledge gaps/Data needs		
Interactions with elephants	Dataset	To be determined. Preferred versus avoided species: dataset exist with STEP. Monitor elephant and tree survival before and after.
Values for people	Dataset	

1. Introduction

Where to plant and what to plant?

Restoring trees on and around farmed land
Restoring trees along rivers/creeks
Restoring trees in wildlife corridors
Restoring tree cover/increase tree cover within PAs

Agenda item 1

Knowledge gaps/Data needs		
Interactions with elephants	Dataset	To be determined. Monitor tree growth and tree cover.
Values for people	Dataset	To be determined. Sustainable extraction levels?

1. Introduction

Policy framework needs

Land Act: Tree ownership rights
Buffer width regulations along creeks: Flexibility, composition

1. Introduction

Evidence based planning of restoration for people and biodiversity

Birds and mammals

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Birds –indicators for conservation & ecosystem services/disservices

- Three threatened bird species

Ploceus burnieri (Kilmbero Weaver)

Polemaetus bellicosus (Martial eagle)

Cinnyris rufipennis Rufous-winged sunbird

shared between small holder farm and grassland

unique to grassland

unique to forests
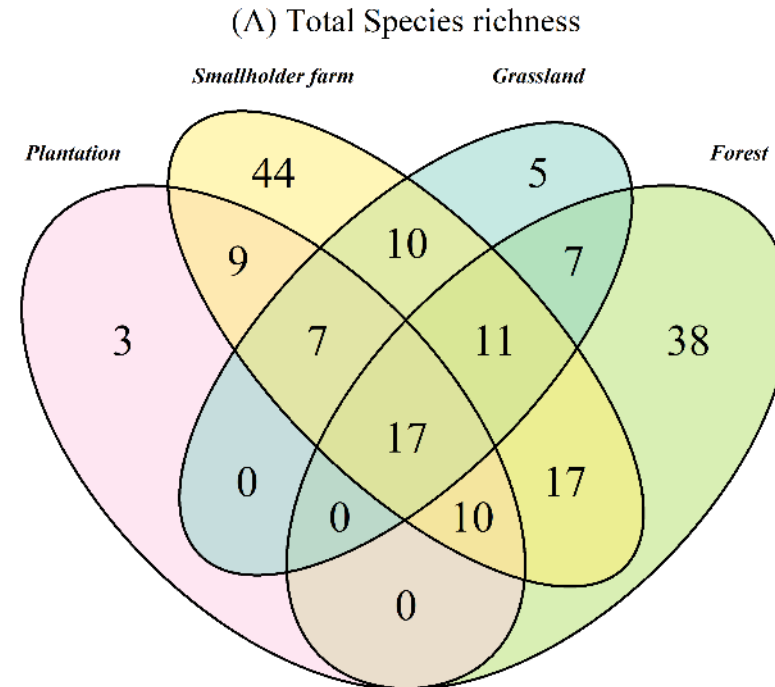
(Λ) Total Species richness

2019 - 2022

Agronomic potential of natural capital:
- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

- Species only found in forests: more species with

More forest in 250 m window %

- But higher total richness with

Less forest in 250 m %   Closer to forest   Closer to rivers

1. Introduction

Evidence based planning of restoration for people and biodiversity

Birds –indicators for conservation & ecosystem services/disservices

- Species only found on crops: more species with

Less forest %	Closer to rivers	Away from plantation

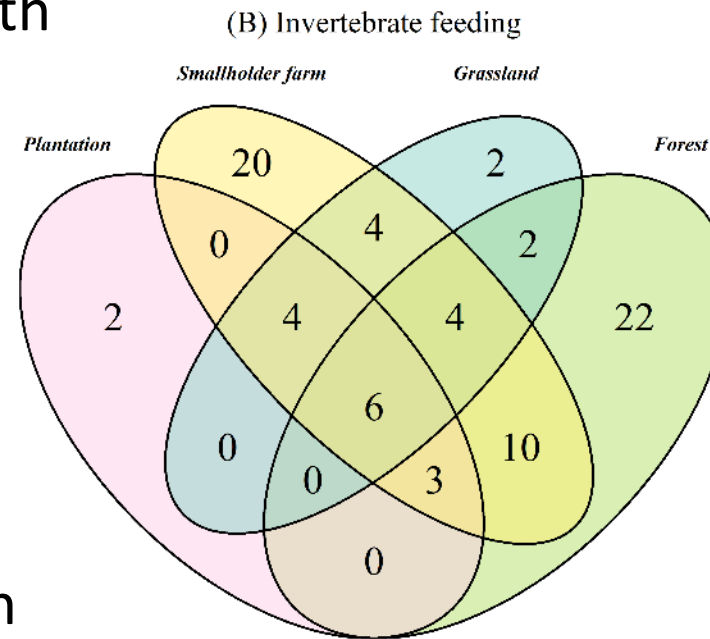- Invertebrate feeding species, more species with

Same as for total richness but very low predictive power

- Seed/plant feeding species: more species with

Less forest %	Closer to forest	Models: 63% Variability explained

(B) Invertebrate feeding

Plantation   Smallholder farm   Grassland   Forest

2019 - 2022

Agronomic potential of natural capital:
- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Mammals –indicators for conservation & ecosystem services/disservices

- 10 threatened species

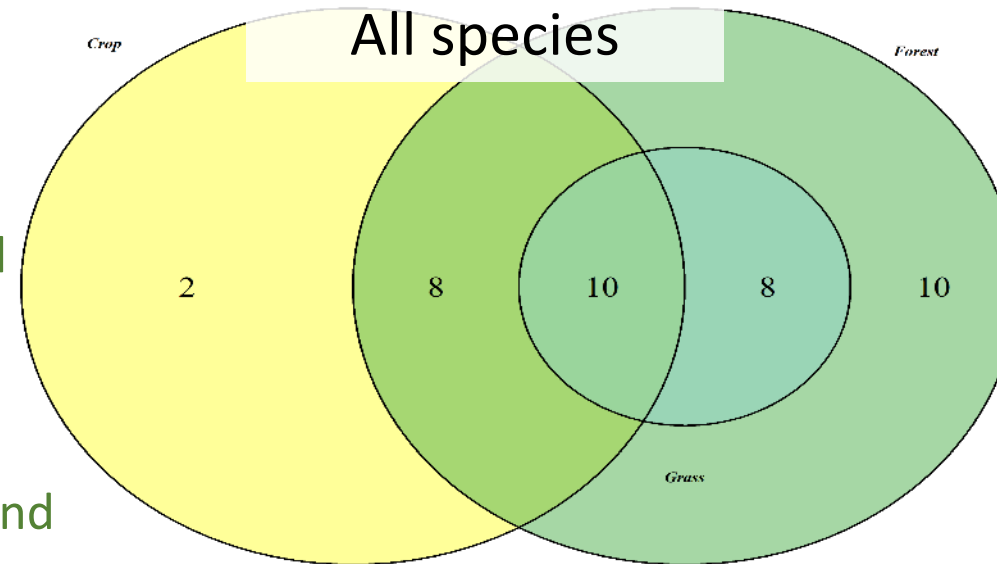Colobus angolensis, Piliocolobus gordonorum
Only observed in forests

Panthera pardus
Shared between forests & grassland

Cercocebus sanjei, Loxodonta africana, Hippopotamus amphibius,
Shared between forests, grasslands & cropland

All species

2019 - 2022

Agronomic potential of natural capital:
- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

- Higher species richness (driven by herbivores) with

| More forest in 250 m % | Farther from rivers | Farther from roads |

| Higher variability in canopy closure in % (500 m window) |

1. Introduction

Evidence based planning of restoration for people and biodiversity

Mammals –indicators for conservation & ecosystem services/disservices

- Higher number of threatened species (maximum at given location: 3; 40 % variability explained) with

| More forest in 250 m % | Farther from roads |

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Trees – Shade

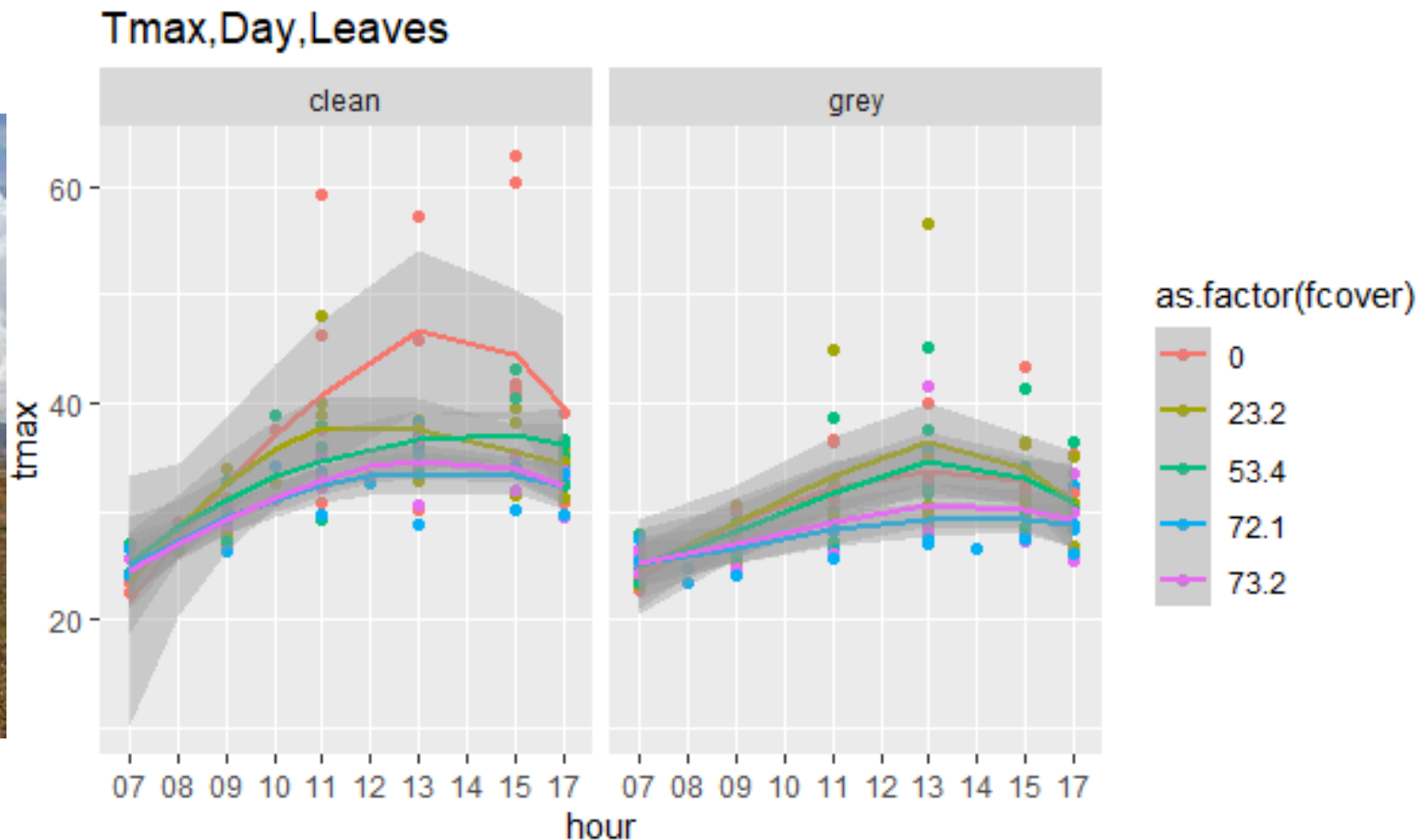2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Trees – Crops interactions

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Trees – Insects – Crop interactions

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Trees – People

Tmax,Day,Leaves

Wellbeing of farmers (female/male) on farms with different numbers of trees

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Evidence based planning of restoration for people and biodiversity

Natural capital – People

2019 - 2022

Agronomic potential of natural capital:

- Soil & Insects
- Mammals & Birds
- Crops
- Trees
- People

1. Introduction

Workshop 2/3 February 2022, Morogoro

Capacity training needs	
Botanic Garden	To be established: function as tool to teach tree planting and growing: species-site matching, native versus invasive species, values, climate change adaptation potential
Demonstration farms	To be established: function as tool to teach agroforestry – which trees to plant with which crops to produce healthy crops and resilient crop yields now and under climate change
Training of extension officers	How to farm for climate change adaptation, Advice on soil type and fertilisation/irrigation, advice on (bio)pesticides, Advice on agroforestry interventions
Design and monitoring	Of interventions, including sugarcane expansion and intensification, restoration within PAs restoration along rivers/creeks, restoration on farms/farm boundaries, infrastructure expansion. For biodiversity and wellbeing outcomes: sampling design, indicators, reports

1. Introduction

Where to plant and what to plant?

Creeks – Rivers
Rice fields – Sugarcane land
Width & Composition
Hydrology

1. Close research and knowledge gaps in restoration actions to make them evidence-based

It could be good to delineate what stakeholders would lead on what? So for instance, when someone reads this they are clear on suggests for them