

Component 3: Direct Landscape-level interventions & on-the ground implementation

Work Package 4 (lead EWT): Restoration of proposed and established Biosphere Reserves

CONTRIBUTING: UNESCO, CSIR, C4ES, UNDP, UNEP

Dr Ian Little
Head of Conservation



South Africa the 12th biggest source of greenhouse gases in the world!

Largest CO2 and Greenhouse gas emitter in Africa.

South Africa emitted **435 million metric tons** of carbon dioxide (MtCO2) emissions from fossil fuel combustion and industrial purposes in 2020. More than 85% of which is from the energy sector (coal power).

We therefore, support an urgent shift to a more diverse energy mix in South Africa, provided that this does not result in new or additional forms of ecologically unsustainable environmental degradation and risk to biodiversity.

Solar power production alone in South Africa is supposed to reach 8,400MW by the year 2030. It is estimated that 3,000km² of land used for solar electricity is required to meet South Africa's demand.

Johannesburg, South Africa, 29 October 2018 – A groundbreaking analysis of satellite data reveals the world's largest NO2 air pollution hotspot is over Mpumalanga Province



How does the EWT currently contribute to climate adaptation



Adaptation: adapting to life in a changing climate – involves adjusting to actual or expected future climate. Includes ecosystem restoration (rehabilitation) and Nature based Solutions.

- Carbon Sequestration
- Sustainable Land management
- Improved habitat Management (within and outside PAs)
- Rehabilitation / Restoration
- Diversification of income
- Smart Agriculture
- Protected Area Expansion in climate sensitive areas

PROTECTED AREA EXPANSION

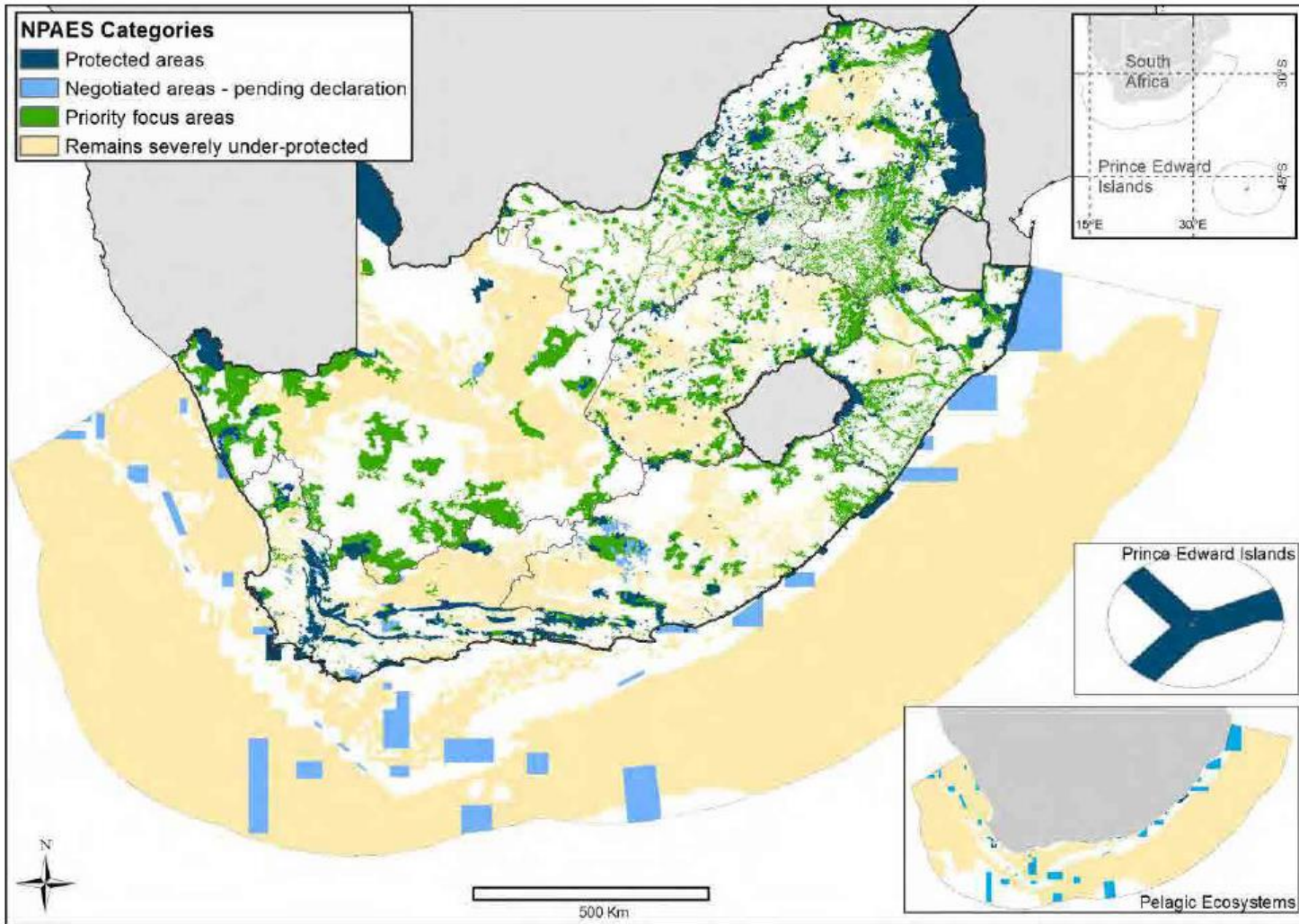


Figure 11: Current protected areas, areas under negotiation and collated priorities from provinces and protected area agencies. Intact areas of ecosystems which are likely to remain severely under-protected (i.e. Not or Poorly Protected) after implementation of the negotiated and priority areas are indicated.

TYPE OF AGREEMENT	LEGAL MECHANISM	DESCRIPTION
BIODIVERSITY STEWARDSHIP CATEGORY 1: PROTECTED AREAS		
Nature Reserve or National Park	National Environmental Management: Protected Areas Act (Act 57 of 2003)	<ul style="list-style-type: none"> Suitable for sites with highest biodiversity importance Binding on property: declaration of Nature Reserve, and a title deed restriction Binding on landowner: contract with landowner usually for 99 years/in perpetuity** Considered to be part of South Africa's protected area estate, and contributes to meeting protected area targets
Protected Environment	National Environmental Management: Protected Areas Act (Act 57 of 2003)	<ul style="list-style-type: none"> Suitable for declaration over multiple properties Less restrictive land use than Nature Reserve or National Park Binding on property: declaration of Protected Environment. Optional title deed restriction. Binding on landowner Considered to be part of South Africa's protected area estate, and contributes to meeting protected area targets
BIODIVERSITY STEWARDSHIP CATEGORY 2: CONSERVATION AREAS		
Biodiversity Management Agreement	National Environmental Management: Biodiversity Act (Act 10 of 2004)	<ul style="list-style-type: none"> Less restrictive than protected area declaration Must have a Biodiversity Management Plan (in terms of Biodiversity Act) on all/part of the property Binding on landowner: contract with landowner for a minimum of 5 years, or longer in 5 year increments
Biodiversity Agreement	Contract law	<ul style="list-style-type: none"> Less restrictive than protected area declaration Binding on landowner: contract with landowner for a minimum of 5 years or longer
Conservation Servitude	Property	<ul style="list-style-type: none"> Less restrictive than protected area declaration Binding on landowner: notarial deed registered at the Deeds Registry for a minimum of 99 years or in perpetuity Binding on successor in title Provides management conditions particular to the area in question
Business, Industry and Biodiversity initiatives		
Conservation agreements		

Increasing biodiversity importance

Increasing support from conservation authority

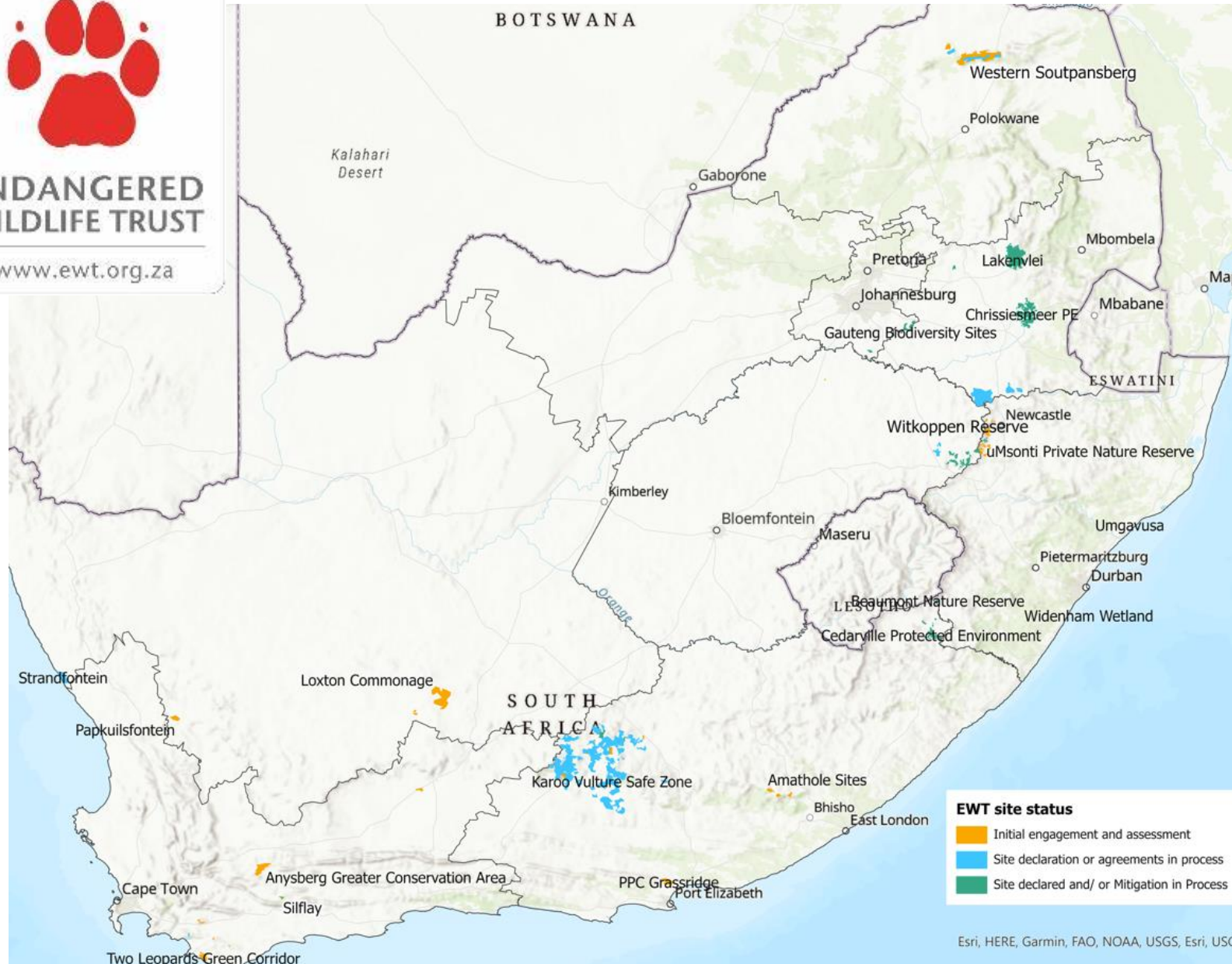
Increasing commitment to conservation





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Map of the EWTs protected area expansion initiatives

Through the biodiversity stewardship programme we are assisting to conserve more than 185 properties (over 139,000ha) in the last 10 years

We are actively working on a further >85,000ha

In all instances we are promoting improved management of sites using a multi-pronged approach.

Strategic Water Source Areas-

- Supports at least 60% of the population
- All major cities in SA rely on these SWSAs:
 - Gauteng gets about 65% of its water from these areas;
 - Bloemfontein 70%;
 - Cape Town and eThekweni about 98%
- 67% of the economy relies on these areas:
 - 70% of irrigated agriculture rely on SWSAs

Bankable links to large corporate downstream water users

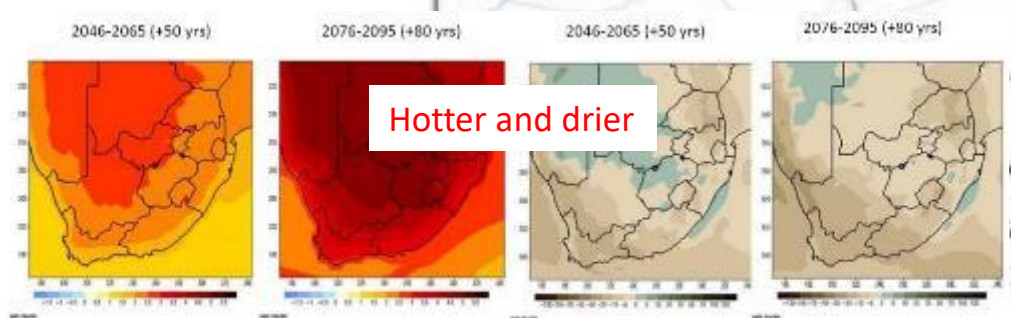
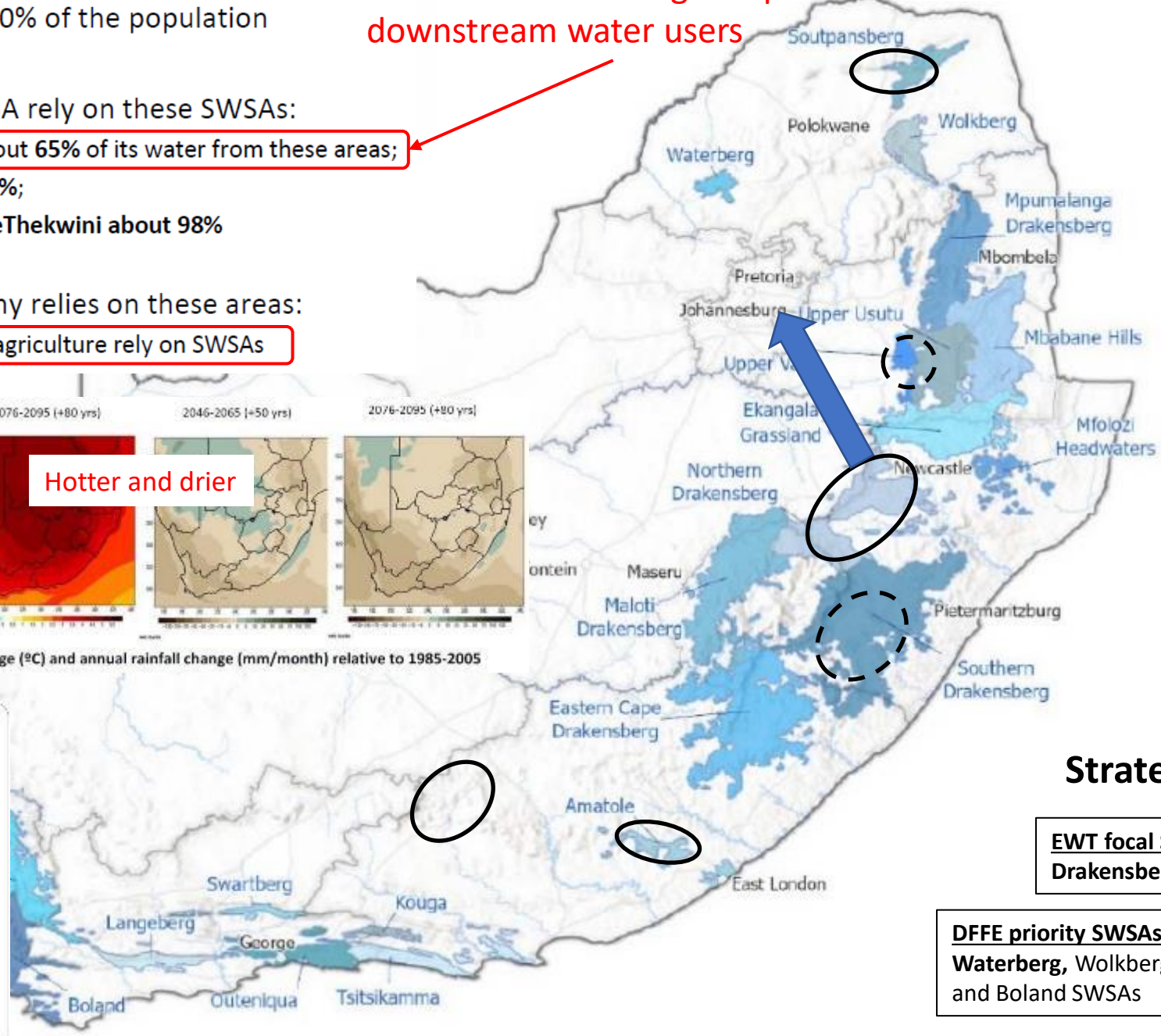


Figure 37 Annual temperature change (°C) and annual rainfall change (mm/month) relative to 1985-2005



Makhadu LM: 516,000 (0.43%) people
 15.7% access to piped water
 89.4% access to electricity
 36.7% unemployed

Free State LMs: 48K-335K people
 30.6-31.9% access to piped water
 74.9-89% access to electricity
 25.3-41.8% unemployed

KZN LMs: 132K-363K people
 45.4-68% access to piped water
 75.4-87.2% access to electricity
 37.4-43% unemployed

KwaSani LM: 13,000 (0.85%) people
 42.9% access to piped water
 75.4% access to electricity
 16% unemployed

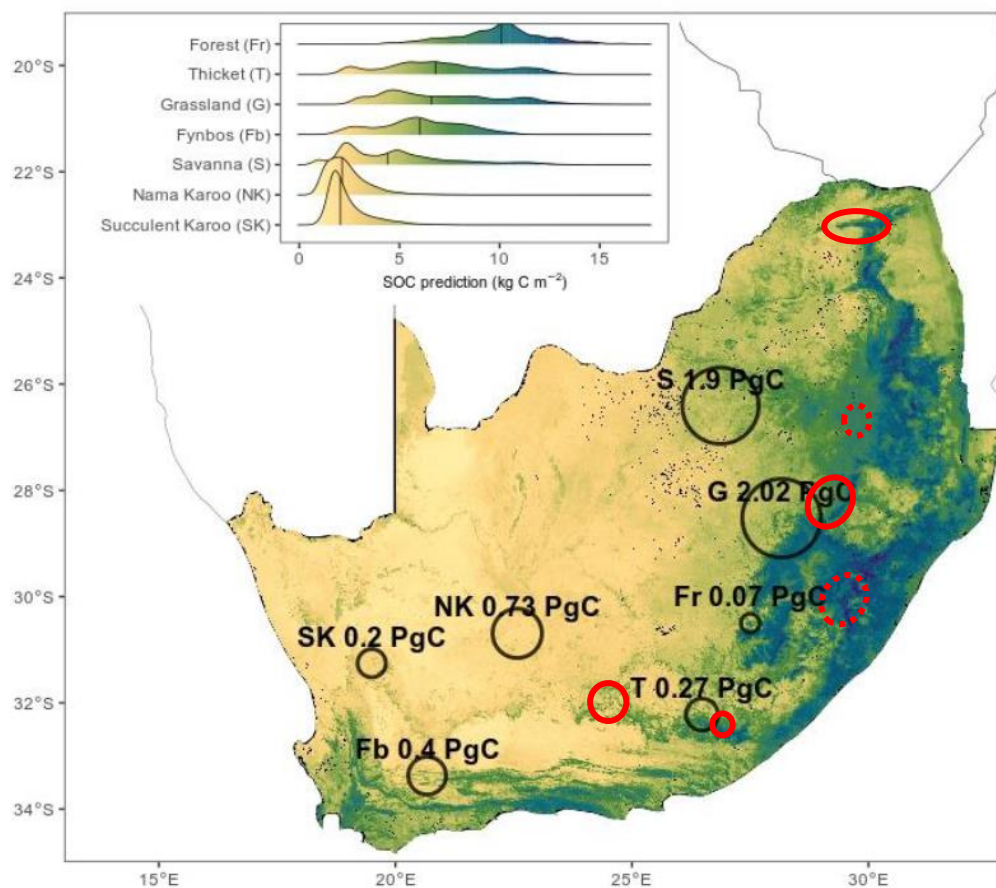
Strategic Water Source Areas

EWT focal SWSAs: Northern, Southern & Enkangala Drakensberg, Waterberg, Amathole, Soutpansberg

DFFE priority SWSAs: Northern, Southern, EC, Mpumalanga, Waterberg, Wolkberg, Maloti, Amathole, Tsitsikamma, Enkangala and Boland SWSAs

Mapping soil organic carbon stocks and trends with satellite-driven high resolution maps over South Africa

Zander S. Venter^{a,b}, Heidi-Jayne Hawkins^{c,d}, Michael D. Cramer^d, Anthony J. Mills^e



First national-scale map of SOC stocks at 30-m resolution.

Total national SOC stock of 5.6 Pg C in natural areas.

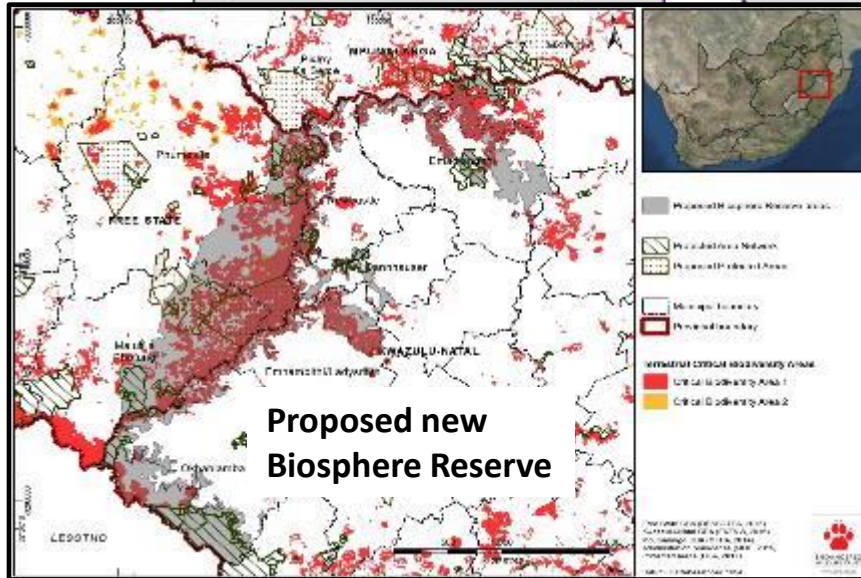
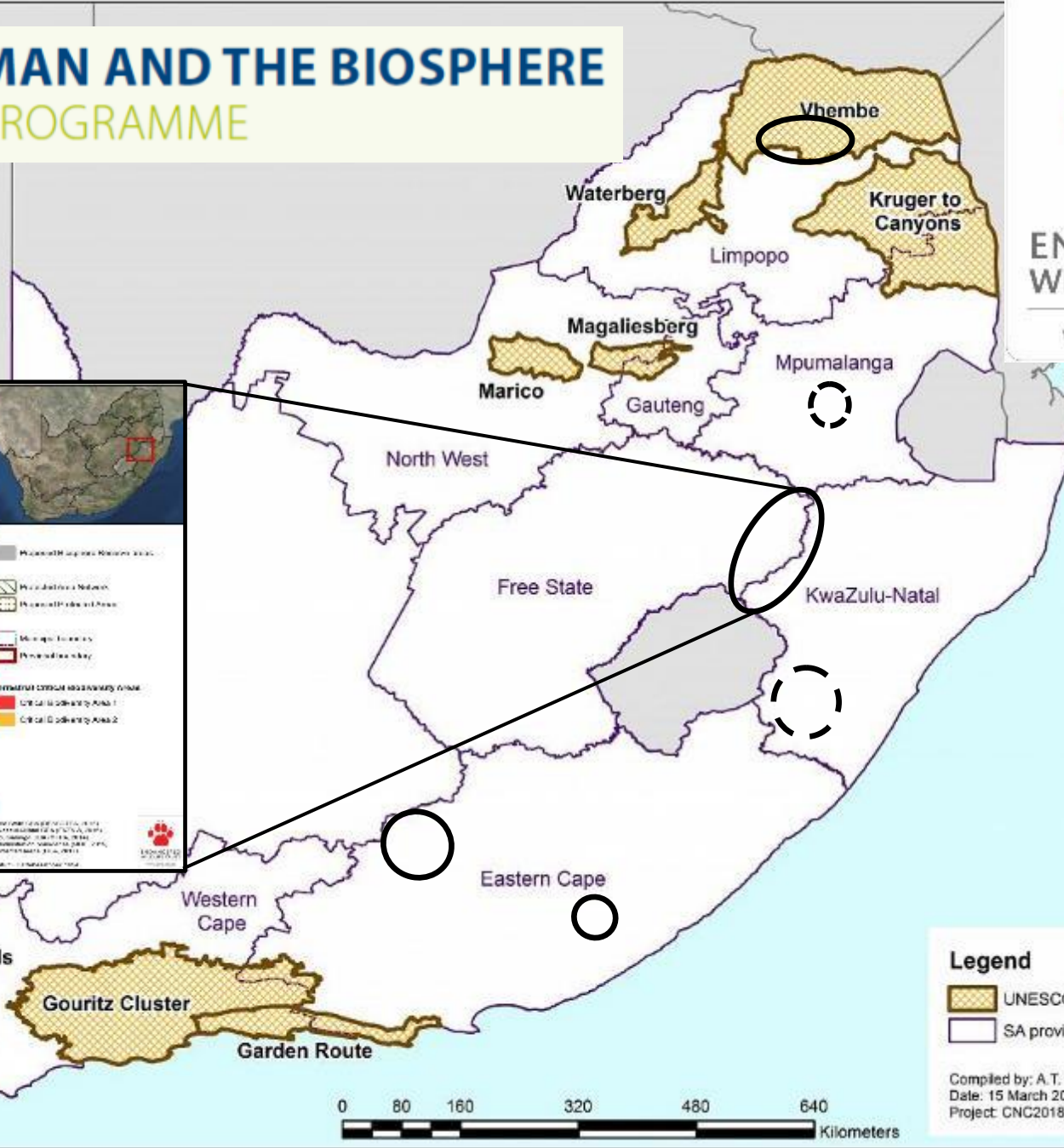
Per biome stocks vary depending on climatic, morphometric and biological variables.

MAN AND THE BIOSPHERE PROGRAMME



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Legend

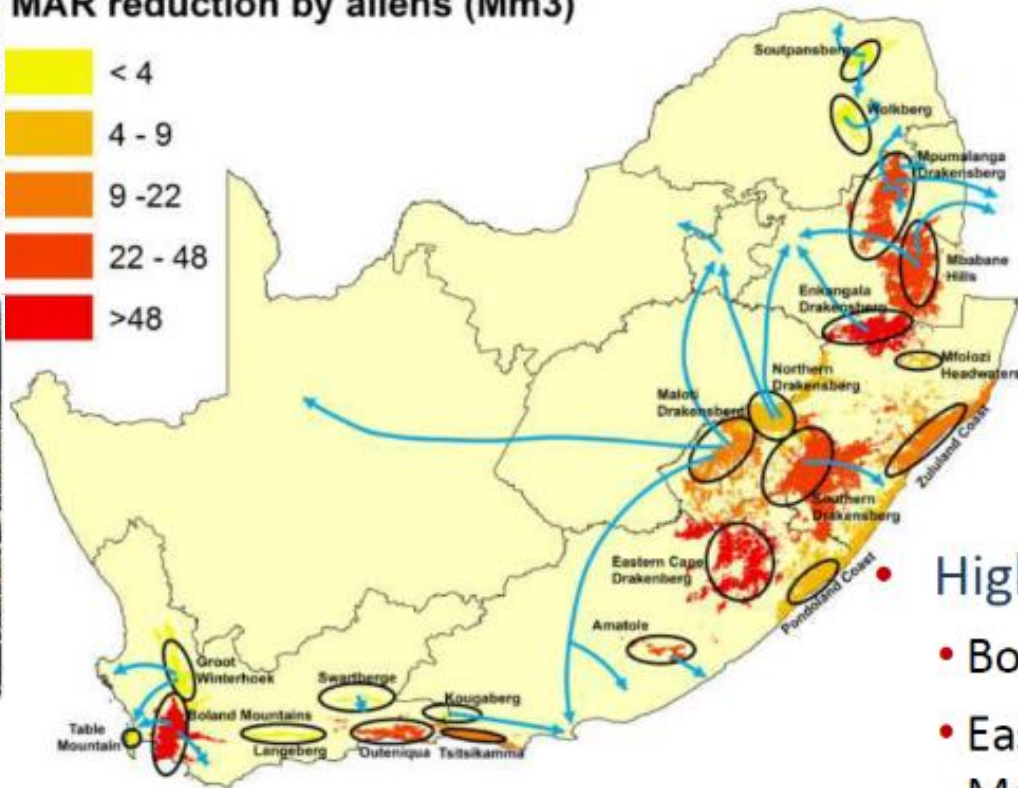
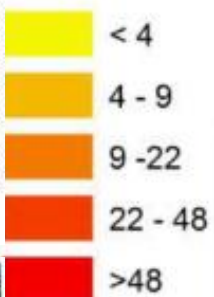
- UNESCO Biosphere Reserves
- SA provinces

Compiled by: A. T. Forsyth
Date: 15 March 2018
Project: CNC2018_1055



Invasive alien plants (*Pine, eucalypt & black wattle*)

MAR reduction by aliens (Mm³)



- Use 460 Mm³/year
- Greater than EThekweni's annual water requirements
- Highest losses
 - Boland Mountains
 - Eastern Cape, Enkangala, Mpumalanga Drakensberg

- Important to engage with the water reconciliation data on towns in water deficit



Figure 8: *Eucalyptus spp* removal along the water course is underway, using the cut stump method (chainsaw followed by chemical application shoulder sprays/knapsacks) on the McDonald property.



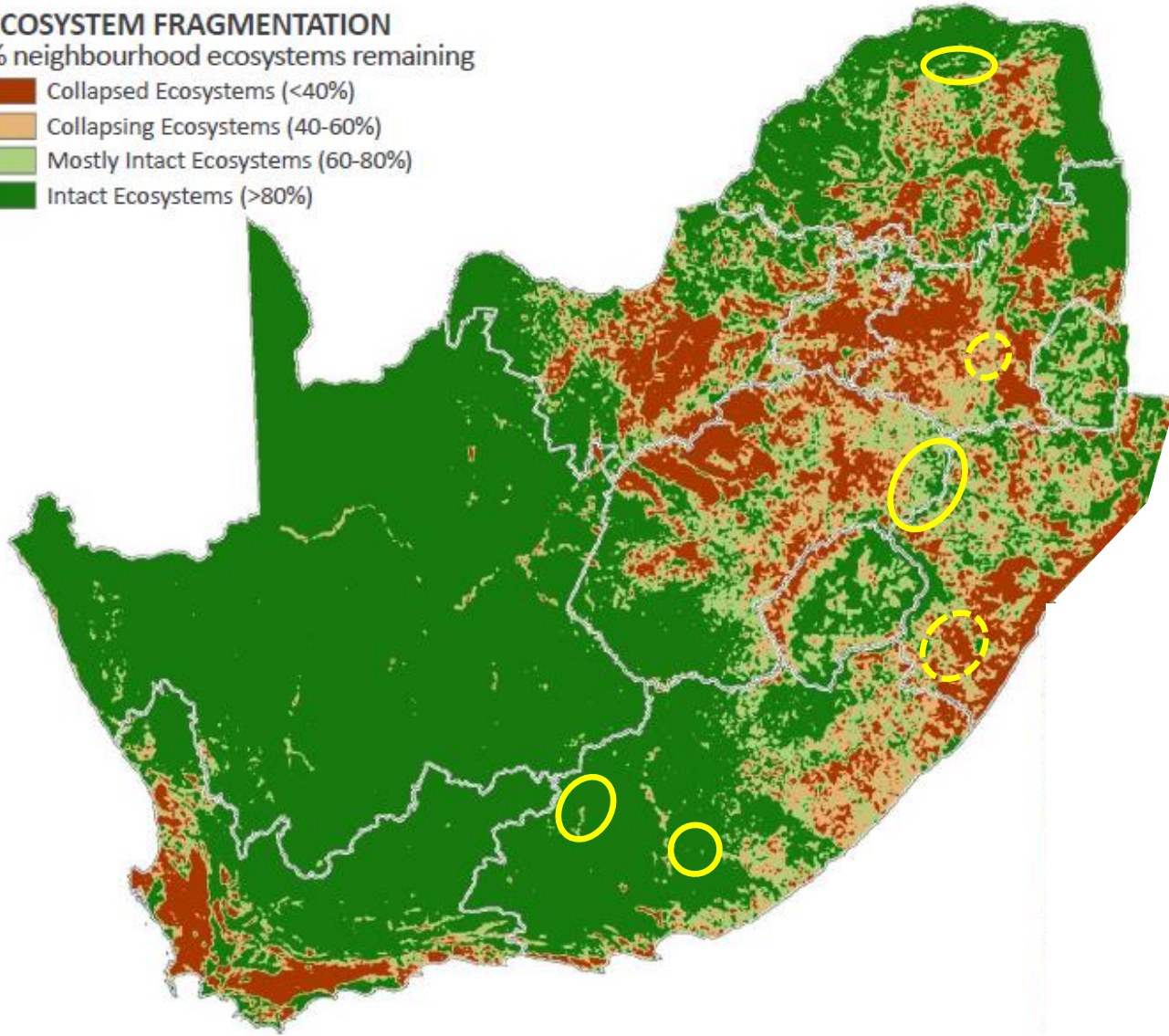
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ECOSYSTEM FRAGMENTATION

% neighbourhood ecosystems remaining

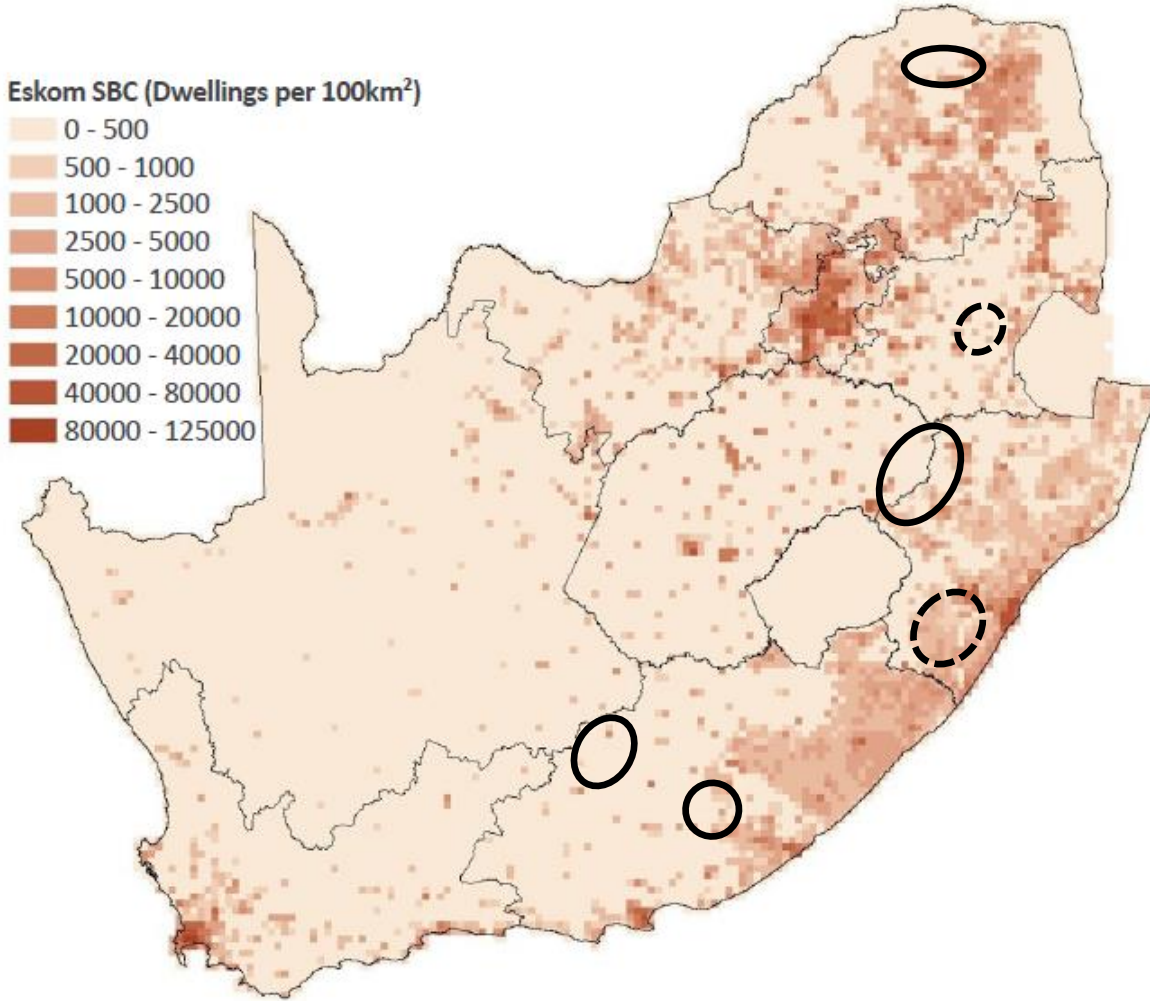
- Collapsed Ecosystems (<40%)
- Collapsing Ecosystems (40-60%)
- Mostly Intact Ecosystems (60-80%)
- Intact Ecosystems (>80%)



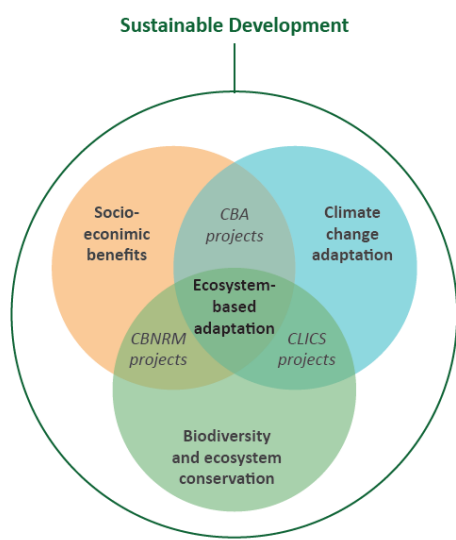
Population density

Eskom SBC (Dwellings per 100km²)

- 0 - 500
- 500 - 1000
- 1000 - 2500
- 2500 - 5000
- 5000 - 10000
- 10000 - 20000
- 20000 - 40000
- 40000 - 80000
- 80000 - 125000



Within each of the priority areas we will identify low hanging fruit like Meat Naturally opportunities, agric EbA, Protected area expansion, wetland rehab, Alien Invasive Plant clearing, Carbon trading, Improved burning and grazing, municipal links and provincial extension training, Wildlife ranching, green economy and Eco-tourism development etc etc

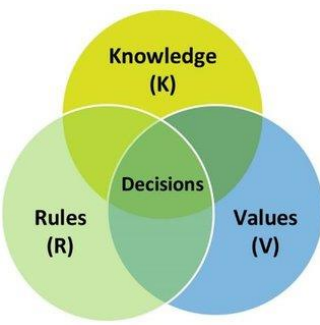
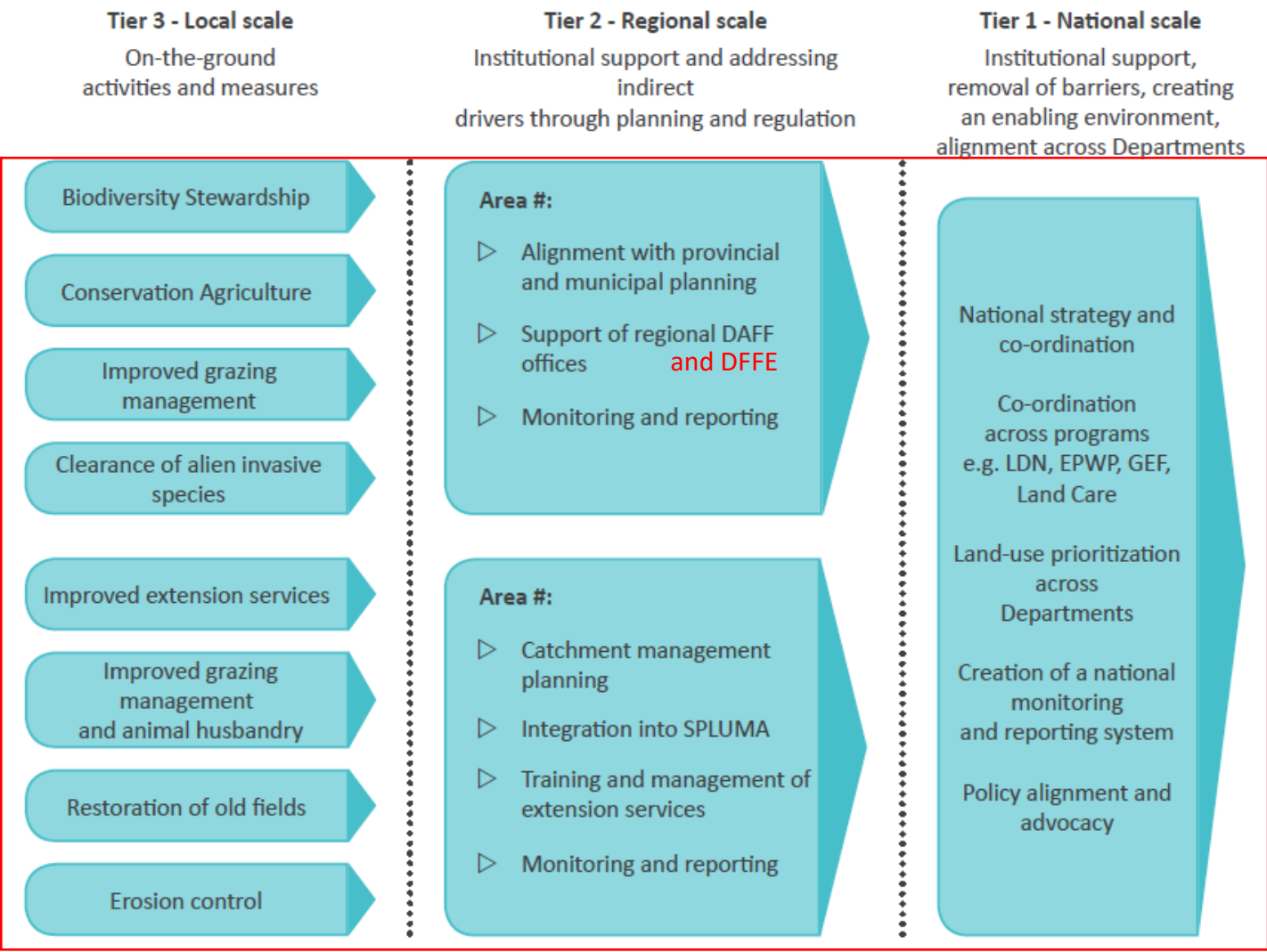
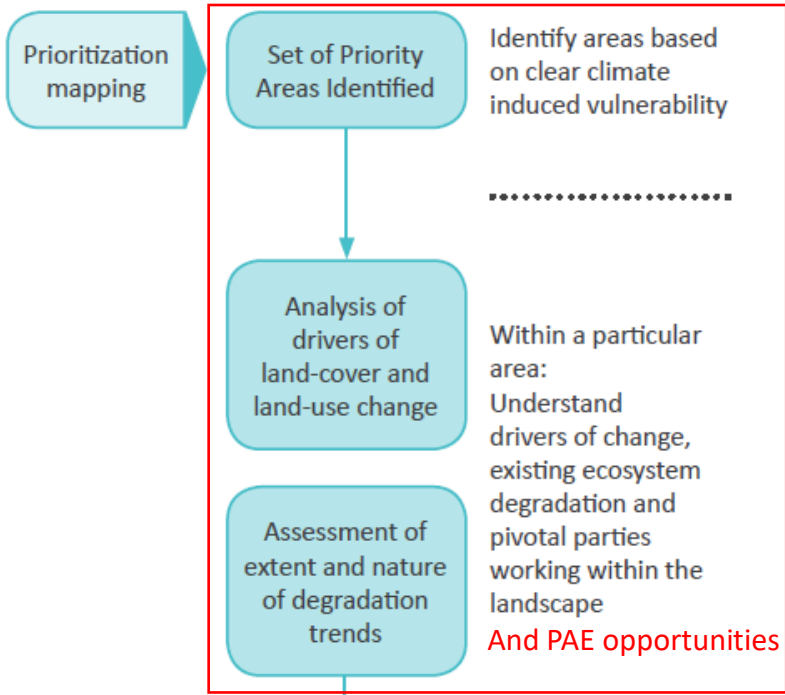


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Conservation Standards – results chain

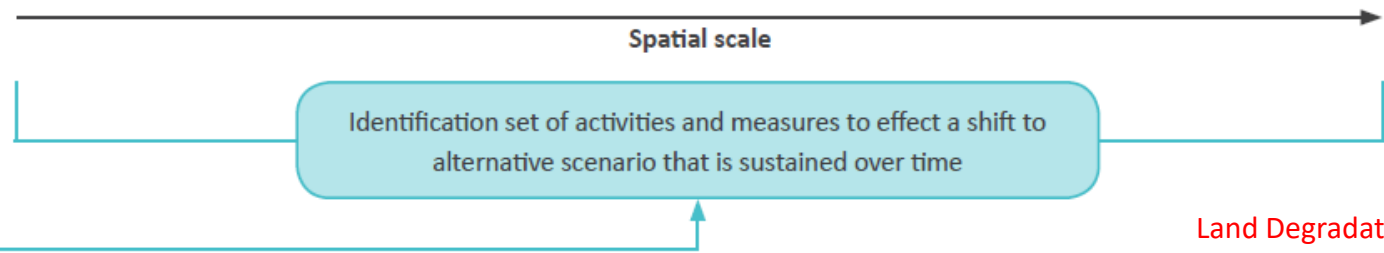
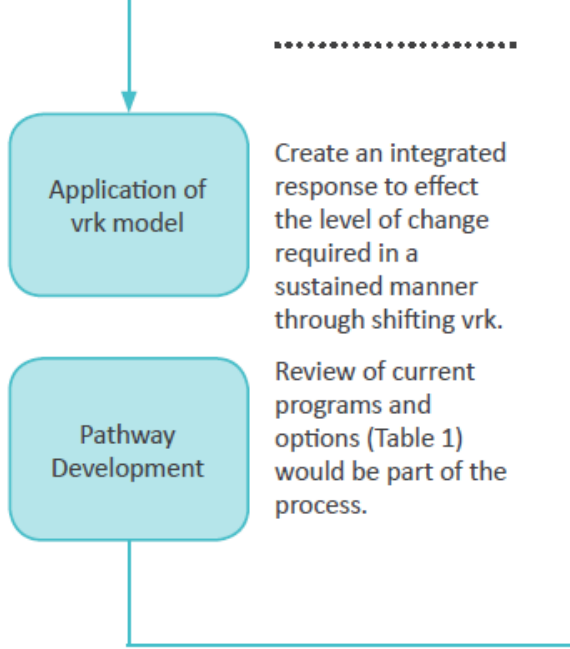


Table 4: Typical activities implemented in each tier. (The lists are meant to be illustrative and not exhaustive)

Tier 1: National scale in range and implemented by national government

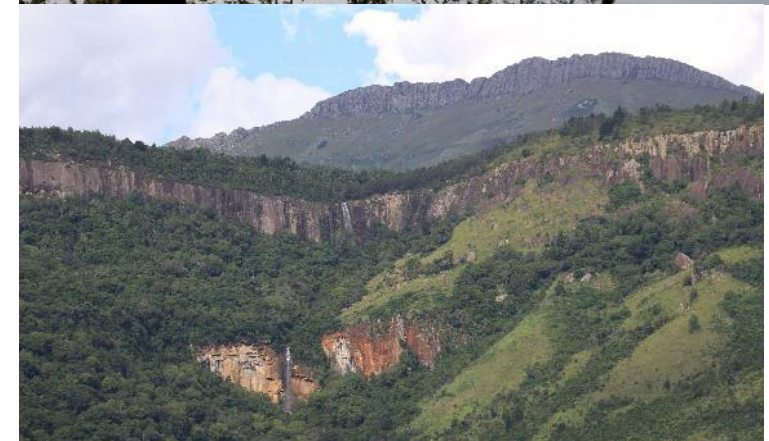
- ▷ National strategy and co-ordination of programmes.
- ▷ Engagement and alignment with other national departments that influence land use and the health of ecosystems (e.g. DALRRD, DMRE, DWS).
- ▷ Co-ordination across natural resource management programmes (e.g. EPWP, Land Care and Degradation Neutrality (LDN), Global Environment Facility (GEF).
- ▷ Creation of a national monitoring and reporting system.
- ▷ Creation of an incentive model for appropriate land management.

Tier 2: Pertaining to a particular province and led by provincial government and conservation agencies

- ▷ Integration of EbA into land-use planning at provincial and municipal scales.
- ▷ Enforcement of existing rules and regulations (permit system – National Environmental Management Act, 1998 (Act No. 107 of 1998) NEMA; Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) CARA; National Forests Act, 1998 (Act No. 84 of 1998).
- ▷ Extension support to land custodians.
- ▷ Engagement with organised agriculture.

Tier 3: On-the-ground implementation at a landscape or catchment scale. Led by either government agencies or the private sector; typically developed in a bottom-up, context-specific manner

- ▷ Government natural resource management programmes e.g. EPWP, Land Care, Biodiversity Stewardship.
- ▷ Led and facilitated through local municipalities e.g. eThekweni Municipality.
- ▷ Implemented through organised commercial agriculture and plantation forestry entities.
- ▷ Facilitated through the Biosphere Reserve Programme e.g. the Gouritz Cluster Biosphere Reserve.
- ▷ Implemented through non-profit conservation or environmental organisations.



Biome	Category	Description	Biome	Category	Description
Grassland	OPTIONS	Alien plant management	Savanna	OPTIONS	Manage encroaching biomass (both indigenous and alien) for bioenergy generation/charcoal production
		Fire management			Switch to wildlife- and biodiversity-based land uses
		Spatial planning to minimise fragmentation, to ensure strategic conservation and to conserve pathways			Identification of Critical Biodiversity Areas for expansion of protected area network
		Protecting against overharvesting and over grazing		SERVICES	Carbon storage
	SERVICES	Carbon storage – especially as soil carbon			Fuel fire wood, timber, fencing posts
		Major area for crops, especially maize and forestry plantations			Livestock production, especially beef cattle farming
		Irrigated horticulture			Fuel fire wood, timber, fencing posts
		Provision of medicinal plants			Nature-based tourism, including hunting
		Important for cattle (both beef and dairy) and sheep			Water supply, some of South Africa's high yielding catchments occur in the savannah biome
		Major catchment areas for water provision			





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WP 4 – EWT led

Restoration of proposed and established
Biosphere Reserves (20%)

PART III: Direct Landscape-level interventions
and on-the ground implementation (45%)

Component 3: Direct Landscape-level interventions & on-the ground implementation (45%)

Work Package 4 (lead EWT): Restoration of proposed and established Biosphere Reserves – 20%

CONTRIBUTING: UNESCO, CSIR, C4ES, UNDP, UNEP



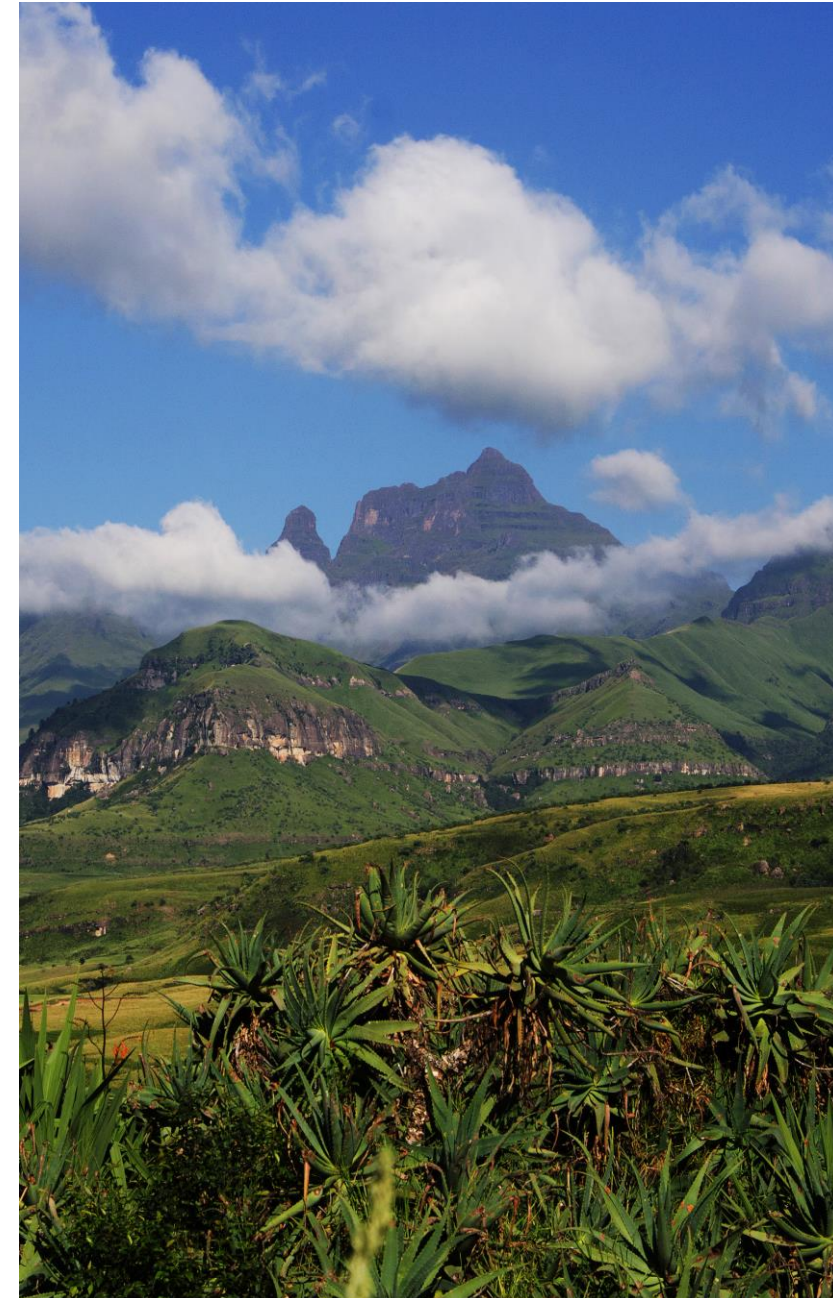
Planning phase activities

	Goals and activities	Preparation phase activities	Month 1	Month 2	Month 3
Activity 1	Protected Area expansion: security high biodiversity and water catchment areas.				
Sub-activity 1.a	Identify priority areas using strategic landscape	1. Identify internal personnel and logistics requirements			
Sub-activity 1.b	Negotiate declaration and management agreements for	2. Clarify input roles from consortium partners			
		3. Refine budget planning			
Activity 2	Establish a new Grassland Biosphere Reserve.				
Sub-activity 2.a	Coordinate input & buy-in from relevant stakeholders.	1. Gain clarity on submission requirements and identify roles and responsibilities.			
Sub-activity 2.b	Establish a new Grassland Biosphere Reserve.	2. Clarify input roles from consortium partners			
Activity 3	Implement targeted restoration actions including invasive alien plant (IAP) clearing and habitat rehabilitation.				
Sub-activity 3.a	Map areas requiring priority Invasive Alien Plant management.	1. Refine budget planning including equipment quotes.			
Sub-activity 3.b	Implement targeted invasive alien plant (IAP) clearing.	2. Initiate geographic prioritisation at a broad scale to facilitate logistics planning.			
Sub-activity 3.c	Develop Sustainable Land Management (SLM) plans and associated farmer training.	3. Coordinate internal meetings to prioritize focal areas and identify key stakeholders.			
Activity 4	Facilitate and embed cross-sectoral restoration plans.				
Sub-activity 4.a	Facilitate cross sectoral workshops within the focal	1. Plan and cost workshop timing and logistics			
Sub-activity 4.b	Develop strategic restoration action plans.				
Activity 5	Pilot & upscale restoration measures for land- water - socio-economic activities.				
Sub-activity 5.a	Identify suitable and scalable restoration measures in priority areas.	1. Update potential list of scalable solutions and estimate time and budget requirements.			
Sub-activity 5.b	Pilot priority measures including tried and tested solutions.				

Work Package 4: Preparation phase activities

(Contributing: UNEP, UNDP, UNESCO, CSIR and subcontractors).

- **Identify internal personnel and logistics requirements.**
- Field visit to **gain local understanding of current baseline condition** and regional opportunities for both protected area expansion and restoration.
- **Draft workplan outlining the planned input, roles and responsibilities** of each of the various consortium members.
- **Refine budget planning**, including sourcing of updated quotes for equipment.
- **Draft stakeholder map and initiate communication** (including an online workshop) to gain input & buy-in from relevant internal and external stakeholders linked to Biosphere Reserve development.
- Draft regional maps of the project **focal areas requiring priority Invasive Alien Plant management** and link these to the roles and responsibilities and the organogram.
- Coordinate **internal meetings to prioritize focal areas and identify key stakeholders.**
- **Draft a detailed operational budget** for the full five-year project.
- **Facilitate an introductory cross-sectoral workshops**, focused on restoration and protected area expansion planning within the focal areas.
- **Draft a conceptual model which identifies potential scalable solutions** and activities required to unlock these in priority areas.



Prevent Degradation

Protected Areas & Improved Management

- SWSAs are degrading as a result of numerous threats.
- Formal protection is an effective means of preventing degradation.
- Creating stewardship sites on private or communal land creates the mandate for protecting that land in perpetuity.
- PAMPs: Improved management systems ensure that existing land-uses act more sustainably.
- Formal protection opens opportunities for sustainable financing such as voluntary carbon markets and tax incentives.

Other protected area options include contractual Conservation Servitudes or Conservation Agreements on communal land (both potential OECMs). The latter commits rural grazing associations to implementing improved rangeland management practices such as rotational grazing.



Restore Degraded Areas



Alien Tree Clearing & wetland rehabilitation

- Clearing of invasive alien trees allows the land to return to a natural functional state.
- Wetland rehab, brush packing and other erosion control measures allow topsoil to recover and prevent further erosion from occurring.
- These activities return water to the natural system and promote better functioning of the natural ecosystems.
- The water returns from these activities can be calculated as options for down-stream end-user offsets (PES).

Strengthening the Catchment Economy



Economic Opportunities, Jobs and Livelihoods

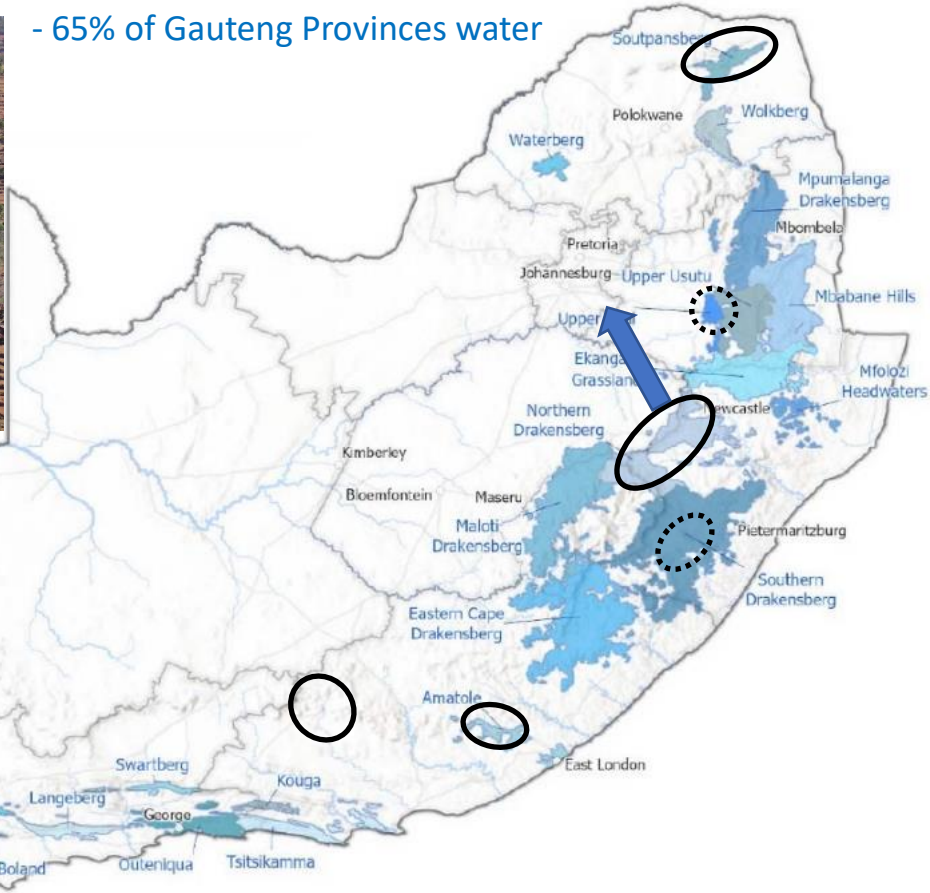
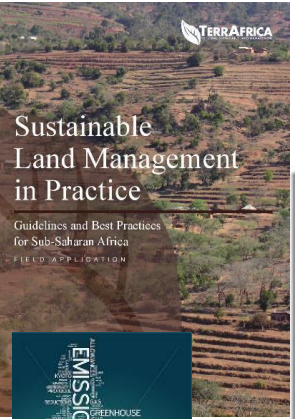
- The imperative to stimulate the economy and create jobs is stronger than ever post-Covid.
- Catchment management activities (e.g. alien clearing) creates many low skilled jobs.
- Protection and stewardship create the possibility of new tourism and business opportunities.
- Alien clearing creates secondary markets for biomass products e.g. charcoal, biochar.
- These activities strengthen the livelihoods of local people and improve their economic and environmental resilience.
- Creates the social and political capital to operate effectively.

Component 3: Work Package 4 (lead EWT): Restoration of proposed and established Biosphere Reserves



Strategic Water Source Areas – 10% land surface, 60% water supply

- 65% of Gauteng Provinces water



Protected area expansion actions:

- Initiate new protected area proclamation
- Strategic management planning
- Establish new biosphere reserve

Restoration actions:

- Strategic restoration planning
- IAP clearing (WP4&5)
- IAP wood by-products (WP4&5)
- Meat Naturally – sustainable grazing (WP3&4)
- Sustainable Land Management – integrated farm management training (WP4)
- Accessing carbon market (WP3)
- Water funds (WP5)
- IAP wood by-products (WP4&5)
- EPWP (WP4&5)
- Leverage govmt programmes
- Job creation
- Leverage SMMEs
- Climate resilience



OVERALL project impacts:

- Activities 1 & 2 contribute to 300,000ha enhanced
- Activities 1, 3 & 5 contribute to 100,000ha restored
- Activities 1,3 & 5 are scalable across all regions
- All sites can contribute to t CO2e sequestration targets

Leveraging impact through strategic partnerships

Meat Naturally (WP3&4)

SLM (WP4)

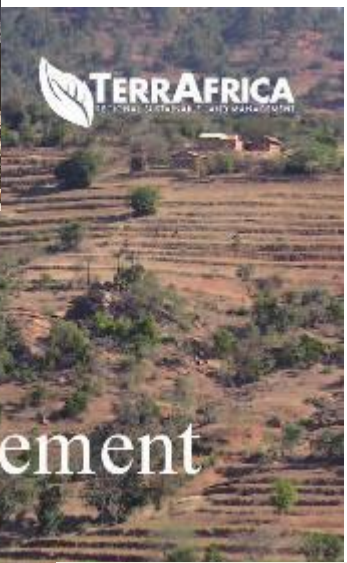
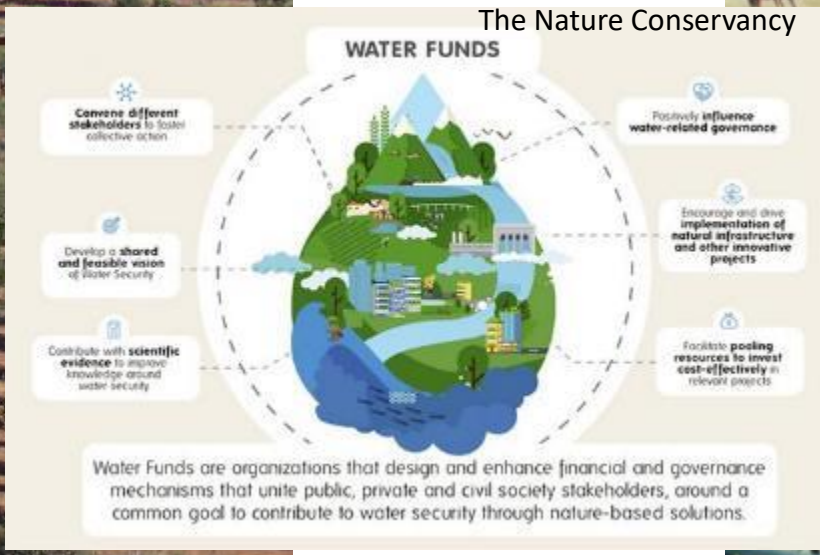
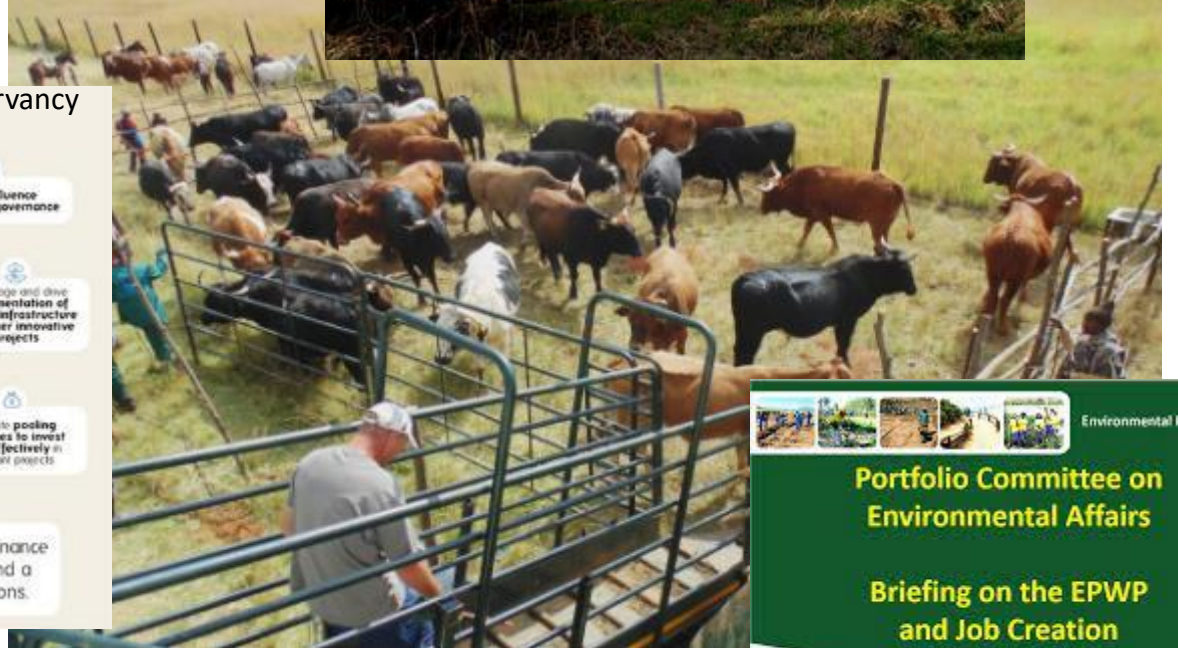
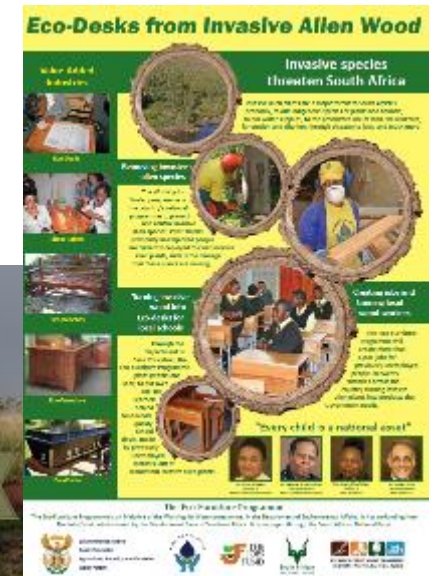
Accessing carbon market (WP3)

Water funds (WP5)

IAP wood by-products (WP4&5)

EPWP (WP4&5)

- Leverage govmt programmes
- Job creation
- Leverage SMMEs
- Climate resilience



Sustainable Land Management in Practice

Guidelines and Best Practices for Sub-Saharan Africa
FIELD APPLICATION



THE KUNMING-MONTREAL GLOBAL BIODIVERSITY FRAMEWORK

Work package 4 directly aligns our conservation impact with 12/21 of the 2030 action targets.

Target 1. Ensure that all land and sea areas globally are under **integrated biodiversity-inclusive spatial planning** addressing land- and sea-use change, retaining existing intact and wilderness areas.

Target 2. Ensure that at least 20 percent of degraded freshwater, marine and terrestrial ecosystems are **under restoration**, ensuring connectivity among them and focusing on priority ecosystems.

Target 3. Ensure that at least 30 percent globally of land areas and of sea areas, especially areas of particular importance for biodiversity and its contributions to people, are **conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas** and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 4. Ensure active management actions to enable the recovery and conservation of species and the genetic diversity of wild and domesticated species, including through ex situ conservation, and effectively **manage human-wildlife interactions to avoid or reduce human-wildlife conflict**.

Target 6. ...**control or eradicate invasive alien species** to eliminate or reduce their impacts, focusing on priority species and priority sites.

Target 8. **Minimize the impact of climate change on biodiversity**, contribute to mitigation and adaptation through ecosystem-based approaches, contributing at least 10 GtCO₂e per year to global mitigation efforts, and ensure that all mitigation and adaptation efforts avoid negative impacts on biodiversity.

Target 9. Ensure benefits, including nutrition, **food security, medicines, and livelihoods for people** especially for the most vulnerable through sustainable management of wild terrestrial, freshwater and marine species and protecting customary sustainable use by indigenous peoples and local communities.

Target 10. **Ensure all areas under agriculture, aquaculture and forestry are managed sustainably**, in particular through the conservation and sustainable use of biodiversity, increasing the productivity and resilience of these production systems.

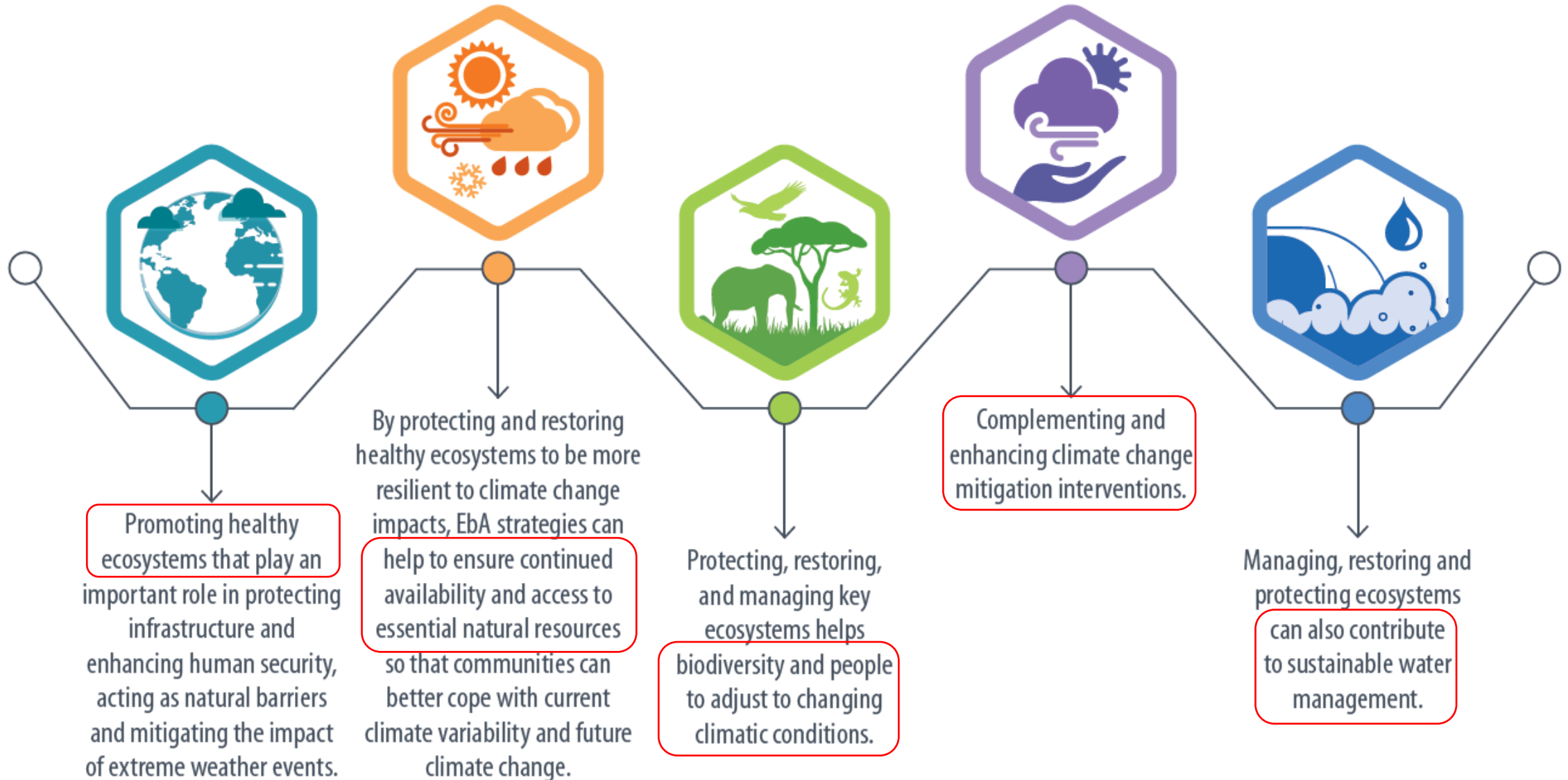
Target 11. **Maintain and enhance nature's contributions to regulation of air quality, quality and quantity of water**, and protection from hazards and extreme events for all people.

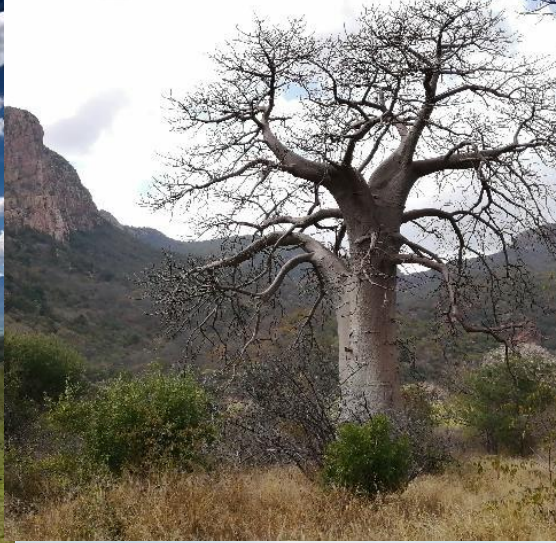
Target 14. Fully **integrate biodiversity values into policies**, regulations, planning, development processes, poverty reduction strategies, accounts, **and assessments of environmental impacts** at all levels of government and across all sectors of the economy, ensuring that all activities and financial flows are aligned with biodiversity values.

Target 20. **Ensure that relevant knowledge, including the traditional knowledge, innovations and practices of indigenous peoples and local communities with their free, prior, and informed consent, guides decision-making** for the effective management of biodiversity, enabling monitoring, and by promoting awareness, education and research.

Target 21. Ensure equitable and effective **participation in decision-making related to biodiversity by indigenous peoples and local communities**, and respect their rights over lands, territories and resources, as well as by women and girls, and youth.

THE POTENTIAL BENEFITS FOR IMPLEMENTING EbA





ReLISA field visit stakeholders:

Pretoria meetings

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