

Habitat conservation & regeneration + community development

Integrated holistic land management & community development programme



Project type: Sustainable landscapes - REDD+

Protecting, restoring, and improving the management of ecosystems, including grassland and subtropical rainforest:

North Eastern Mountain Sourveld.

Area of high biodiversity value - Registered Natural Heritage site #167

Aim:

The project aims to protect the integrity of living systems (the biosphere), restore habitat, and improve connectivity between ecosystems by creating valuable skilled jobs in the local community and thereby creating the conditions for improved resilience, social security, and development opportunities.

- Protecting livelihoods and incorporating indigenous knowledge systems
- Introducing innovation and technology for capacity building and data monitoring
- Leveraging existing capacity in the region built by previous work programmes
- Integrating Education and professional training at several levels

Status of the land:

Privately owned land, community land and government-managed land

Project current status and timeframe:

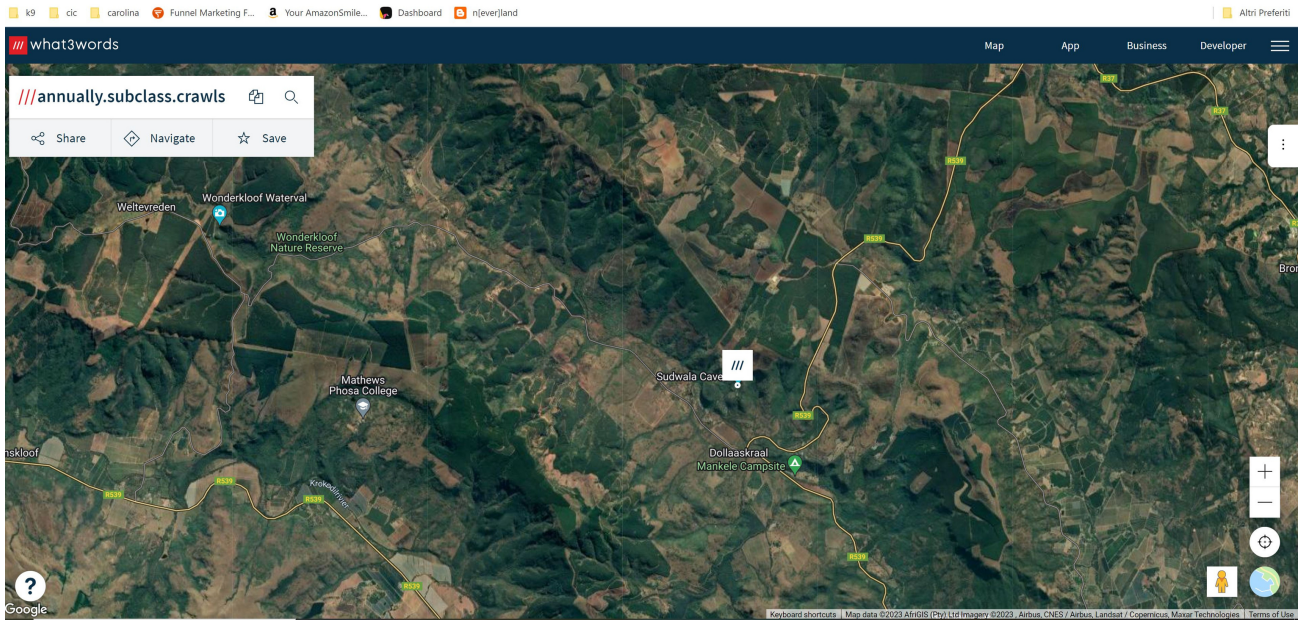
- Currently active on a small scale: privately funded + volunteer (incl. international WWOOF volunteers)
- FPIC (free, prior & informed consent) gained with local communities and stakeholders
- 3 yrs development + 7 yrs scale up, to continue indefinitely

Landscape threats

- Irreplaceable biodiversity is under several threats from multiple factors, not currently addressed.

Threat	Key Stakeholders	Example / details	Impact
Alien Invasive - IAP	Government, Conservation orgs, Local communities, forestry	Lantana Camara, bugweed, Ageratum, Pine, Eucalyptus, detailed studies available	Loss of Habitat, Biodiversity loss (both Fauna & Flora) Genetic diversity loss, ecosystem services loss, loss of ecosystem resilience, impact on water security, soil degradation.
Bush Encroachment	Government, Conservation orgs, Local communities, forestry	Due to Fire management practices, reduced services provided by large herds of herbivores	Grassland degradation, increased fire risk, loss of biodiversity and habitat, leading to further nitrogen phosphorus and nutrients cycle imbalance.
Poaching	Community at local and global scale, wildlife authorities, Government, traditional health practitioners	Cable snares, deliberate poisoning, illegal trade of protected species, use of firearms and night vision	Loss of biodiversity, unconscionable cruelty, increase of illegal activities, increased firearms risks - Flora & Fauna on the Red list including Cycad (Humulus), Red Duiker, Oribi, Sykes Monkey (Samago).
Monoculture Forestry	Businesses, government, financial partners (CSR), certification bodies, forestry, local & global community	Pine & Eucalyptus (IAPs) Documentaries on YouTube	Loss of biodiversity & genetic diversity, water depletion, habitat fragmentation, radical land use change, soil degradation, wildlife-human conflict, Climate change
Roads & fences for Industry & Infrastructures	Industry, settlements, farms	Habitat fragmentation & roadkill	Habitat loss, loss of ecosystem integrity, biodiversity sink, restriction and obstruction of migratory corridors, blocks to river access
Toxic mine residues	Government, health department, local	Legal & illegal operations leading to acid mines drainage	Land & water pollution,(rivers to sea), air pollution, long-term hazards and contamination

communities, tourism,



Budget - Central Escarpment Restoration / Conservation Project

Capacitating a 'Company' consisting of 3 'platoons' of 24 members each, equipped and supported by management staff, would be able to bring approximately 40000 hectares of high conservation value habitat in restoration / conservation status over a 10-year period.

PILOT Project Draft Budget - 10 yrs, 40000 hectares of high conservation value

Staff	93 Employees, Management, Support and Field Ranger Staff	\$ 9500000
Operations	Field Operations, Base maintenance and administration	\$ 6000000
Equipment	Field Vehicles, operations and general equipment	\$ 1000000
Infrastructure	housing for 93 people, maintenance workshop, HQ and training centre	\$ 1500000

Facilitation	5% Local Project Facilitation / Reporting / Driving	% 900000
Total		\$ 18900000

Notes:

- Budget in US\$
- Includes all operations, infrastructure, equipment and administrative costs for a 10 year period.
- The budget caters for one 'Company' consisting of 3 'platoons' of 24 members each, and management of support staff. Total number of staff 93 people.
- Pilot project would be able to bring approximately 40000 hectares of high conservation value habitat in restoration / conservation status over a 10 year period.
- The 'Pilot Project' would be replicated by at least x3, (3 companies constituting a battalion) able to bring approximately 120000 hectares of high conservation value land into restoration / conservation status over a 10 year period.
- Air support would be a consideration when moving beyond the pilot project.

<p>Stakeholder Groups:</p> <ul style="list-style-type: none"> ● Social & Environmental / Community & Habitat (incl. indigenous people, biodiversity, visitors) ● Employees, board members, volunteers, supporters, researchers ● Suppliers & service providers (incl. Partner orgs. such as NGOs) ● Investors, Sponsors, other financial partners (incl. Grant orgs.) ● Future Generations (incl. Class born 2000) ● Relevant Governmental Authorities at all levels ● Business and Industries, IUCMA (Inkomati-Usuthu Catchment Management Area) 	<p>Fair & safe employment: labour intensive & skill building</p> <p>Capacity building: skills, knowledge, access, capacitated teams, equipment</p> <p>Harnessing existing capacity in the local indigenous community</p> <p>Technology & Innovation</p> <p>Youth & citizens education</p>
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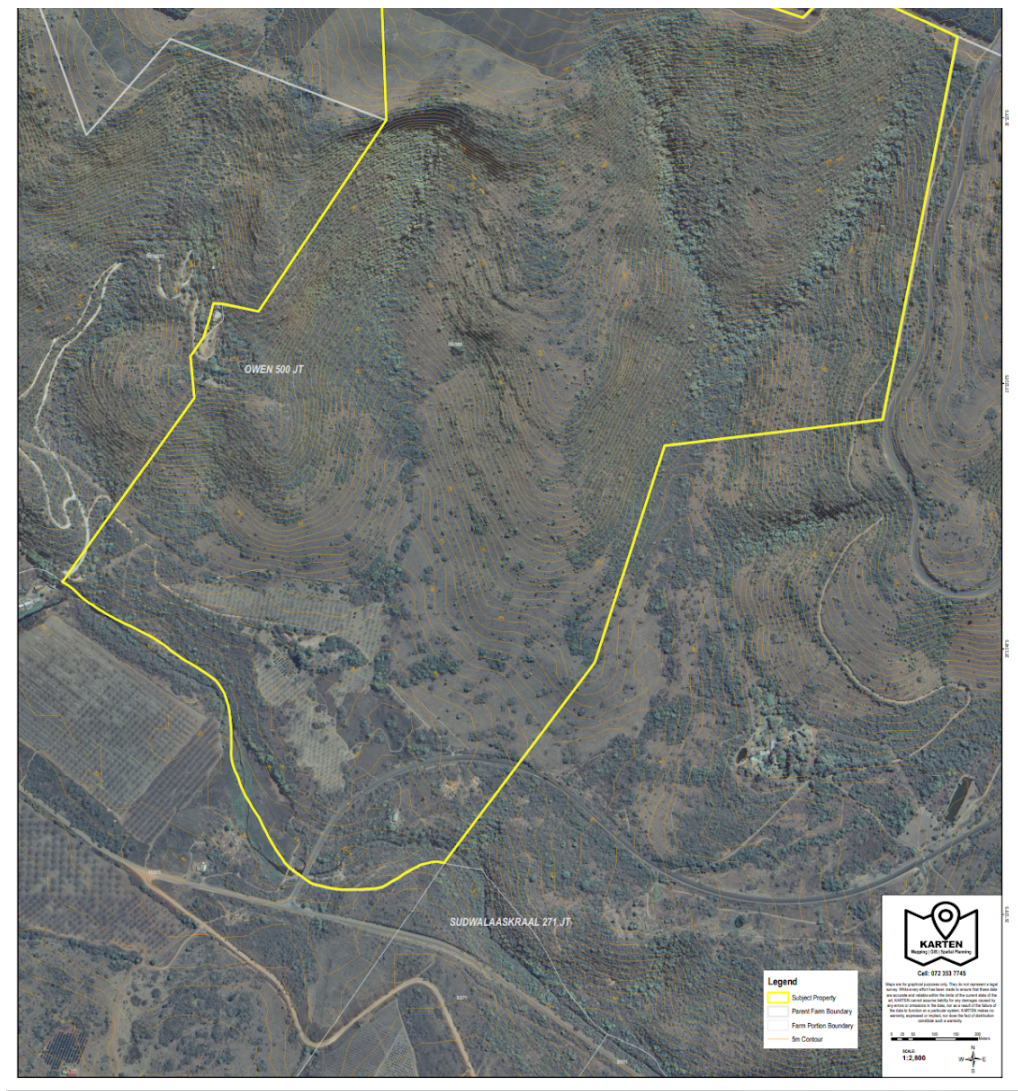


Image above: current area and proposed HQ operational base location

Innovation & technology in monitoring

- Technologies are an integral part of the programme, including global broadcasting and virtual offices (clubhouse) and utilization of remote sensings such as Nasa Satellite data, thermal imaging, IoT, drones and biodiversity recording applications (global database, community of experts)

Capacity building, local resources, indigenous knowledge integration

- Local capacity built by previously funded programmes, including HEAL (14.000 cable snares removed over a 10 yrs period), river maintenance, waste removal & management activities
- Cofounder of the South African Water Caucus Network, Mpumalanga Water Caucus & the Mpumalanga Environment Youth Network; active member of the Global Forest Coalition; active collaboration with traditional healers network

Traceability, Transparency, Verification

W3W + iNaturalist, GeoLocation of images, independent/citizens voluntary upload

Remote sensing and satellite data. The use of satellite data & drone monitoring is being explored with several partners in particular through Nasa ARSET and Copernicus L.R.F.

The Species Threat Abatement Restoration (STAR) metric uses IUCN Red List of Threatened Species data to estimate the potential reduction in species extinction risk that could be achieved at a site

Traceability and transparency of sponsored adoption through NFTs (options being evaluated and developed)

The use of iNaturalist by WWOOF volunteers, tourists and workers will provide an additional layer of independent verification and useful, specific geolocated data (high-detail biodiversity monitoring over time); satellite and a range of remote sensing imaging provide data on a wider scale.

Funding and revenue streams

Stream	who / what	type	target / strategy
Grants & Funding	Government & Institutions		
Tax reduction	businesses	Charitable funds	
Research & conservation grants	on-site research, remote data		Foundations & research institutions
Carbon credits	Land preservation & restoration		Business & Personal
Biochar & enriched biochar	Biochar for soil regeneration & soil fertility enhancement	Negative Emission Technology (NET) carbon sequestration; added value Enriched biochar	Land regeneration Regenerative farming
Biodiversity Units [BU] Biodiversity impact credits	tbc	Biodiversity Impact certificates Debt-for-Nature swops Outcomes-based bonds Government programmes Grants	Voluntary Positive Impact Credits Carbon markets Mine rehabilitation Regional/National Governments Conservation funds
Business partnerships	CO2 offsets, commissions on sales	PR & media marketing SCR	Bcorp, Economy for the Common Good (ECG), WeAll economy
Nature-based	partnerships with	Traceability of supply	Biodiversity, Water catchment

enterprise	local businesses that support the enjoyment of the natural ecosystems (ecoTourism & eduEntertainment)	chains, access to markets, circular economy, reporting and compliance	Waste remediation, Tourisms, Harvested products Mining remediation Conservation orgs Carbon sequestration
Product Transformations, added value	Mobile transformation units for added value products	Added value products: biochar & enriched biochar, Essential oils, plant nurseries	Regenerative farming sector, health, wellbeing, culture & lifestyle sector
Professional skill training	Ecology & Land restoration	Survey, Media & reporting skills, IPs, educational workshops, training programs	Ecology, advocacy, literacy, Speakers & communications, media production, hospitality sector
Traditional healers	Initiatives & products	Services for health, forest harvesting, habitat expansion	Local community
3x3m sq adoption of land identified with W3W (What 3 Words)	Individuals & businesses	PDF certificates + additional content	PR, sponsorship & crowdfunding
W3W adoption with NFTs	Static & dynamic NFTs	Royalties on resales	Business & Investors, asset creation
Patreon	individuals	Community building	Individuals

Organisational Team - expertise and previous programmes

- GeaSphere is an NGO with a wealth of expertise and a historical track record of activities in collaboration with civic society, local communities and international environmental networks, registered in 2003. GeaSphere is supported by a multidisciplinary board of directors and an established international advisory board and working partnerships.

Locations: HQ in South Africa; partner locations including USA, UK, Dubai, Germany.

[Website under construction](#)

Expert collaborations and international educational partnerships include:

- Global Forest Coalition - Global
- World Rainforest Movement - Global
- African Network for Water and Sanitation (ANEW)
- International Paper network (IPN) - International
- B.A.C.H.I. CIC (ethological wellbeing, biophilia) - International, UK
- Clubhouse Sustainability Network - Global
- Irish Woodland League (Indigenous knowledge & forests) - Ireland, UK
- The I Will Project - Aquaponics systems education - USA

- The Honeycombe CIC (Beekeeping, Health & microbiota) - Wales, UK

- in conversation with universities biology and ecology department for further scientific advisors

Media publications include audio (live broadcasting and podcasting), magazine articles and video documentaries

South Africa: Proposed Central Escarpment Reserve – [An Alternative Model Of Natural Resources Management](#)

Soo Sustainable - [Forest issue](#)

GFC - Forest cover - [article on biomass](#)

New Frame - Tree Switch [article](#)

End Water Poverty [Disposable Diapers - A Growing Threat to African Rivers](#)

Huffington Post - [Baby Diapers are Hiding Some Dirty, Dangerous Secrets](#)

[Geosphere Africa YouTube](#) channel

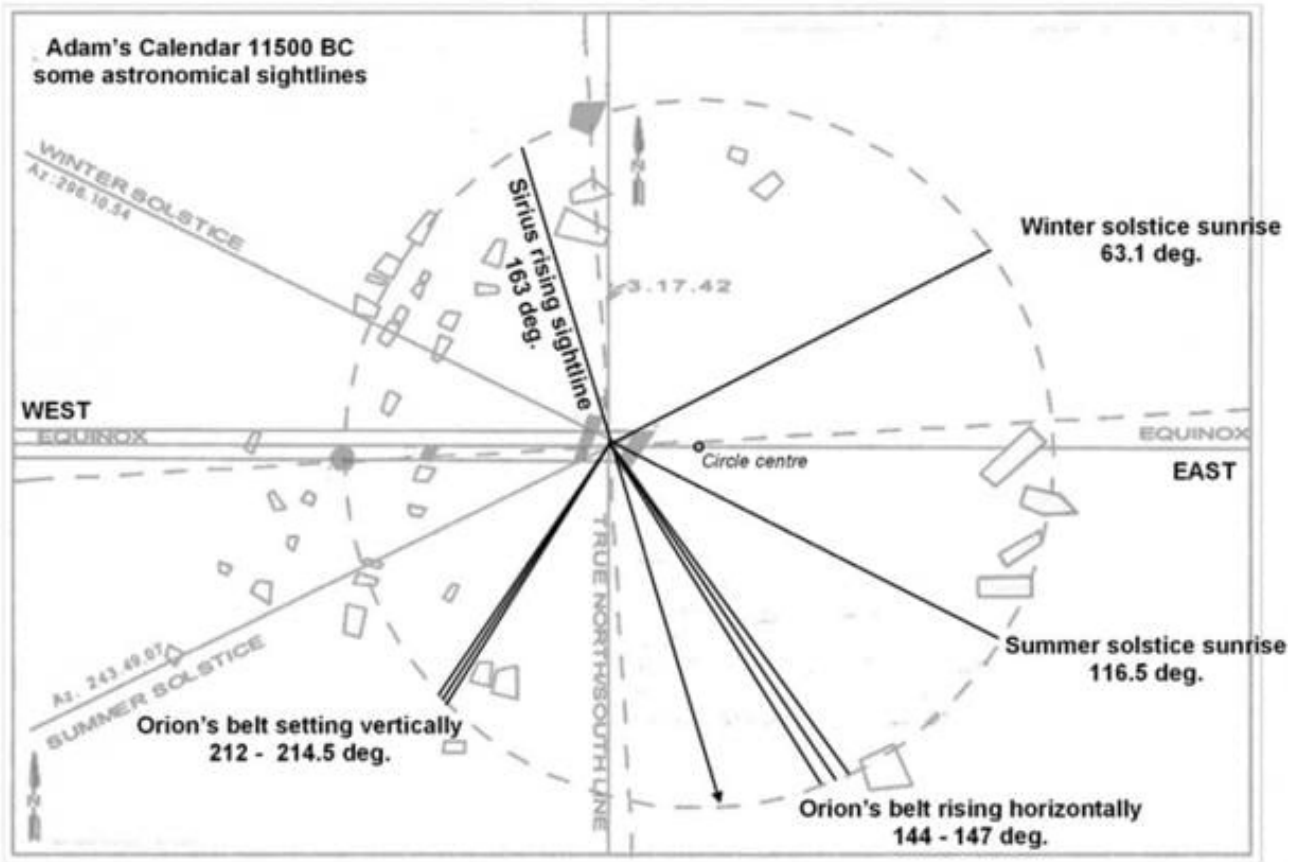
Social media channels include Facebook, Clubhouse, Email lists, Twitter, Telegram & WhatsApp groups



HERITAGE ecoTOURISM

The opportunity to value Natural & Cultural Heritage for sustainable tourism development in the area:

Adam's calendar - "the Stonehenge of the South"





Report compiled for and in close collaboration with GeaSphere by B.A.> C.H.I. Community Interest Company reg. UK 12215388

- Winter/ Spring 2023

Annex - ADDITIONAL PIECES OF INFORMATION

- **Biochar - CO2 & Soil Regeneration**
- **Land & Habitat - specifics**
- **Wildlife** - reduction in species extinction
- **Sustainable development goals - indicators digest**
- **Notes on definitions and classifications**
- **Regenerative economy - principles**

About Biochar

NET Negative emissions technology [Net-Rapido Tracking-greenhouse-gas-removals.pdf](#)

Enriched Biochar - inoculated with microbial life and returned to the soil for increased fertility is an added-value product for soil restoration and regenerative farming. Advisory partners <https://circlearcarbon.com/pages/our-process>

Land: habitat

Terrain: Eastern Escarpment Region

The Escarpment Region represents a valuable area of savanna biome of eastern South Africa and contains a high level of biological diversity including many Red Data and orange listed species of conservation concern, and many endemic species. Habitats are sufficiently represented to ensure that the high biodiversity can be conserved and restored. The low human density ensures that some areas of unspoiled wilderness and open spaces have been unspoiled and can help regeneration and rewilding efforts to expand. The vegetation is dominated by different veld types, the two dominant forms being Sour Bushveld and mixed Bushveld which are typical savanna vegetation types. Sourveld is one of the most threatened veld types.

Karst

Karst is a type of landscape where the dissolving of the bedrock has created sinkholes, sinking streams, caves, springs, and other characteristic features.

North Eastern Mountain Sourveld

- Riparian and subtropical forest
- Bushveld

Sour Bushveld characterized by Transvaal Beech (*Faurea saligna*), Common Hookthorn (*Acacia caffra*), Wild Seringa (*Burkea africana*), Sliver Cluster-leaf (*Terminalia sericea*) and African Wattle (*Peltophorum africanum*) on the deep sandy areas; steep slopes, cliffs and bare rock with trees also including the Paperbark false-thorn (*Albizia tanganyicensis*) and Velvet bushwillow (*Combretum molle*); river-bank and freshwater habitats including karst and riparian, characterized by Transvaal red milkwood (*Mimusops zeyheri*), Tinderwood (*Clerodendrum glabrum*), and several types of Wild Fig (*Ficus thonningii*).

Anthropogenic: Industrial Agriculture, monoculture tree farms and mining operations

Human-modified land types include cattle farms, irrigated fields for nuts and citrus cultivation and other crops as well as small-scale human settlements and villages. Currently, people mainly practice poultry and livestock farming, nuts and timber crop production.

Area of Geodiversity significance and of Archeological interest - ecoTourism developments

- Ancient mines, prehistoric settlements and Adam's calendar ('The Stonehenge of the South')
- Outdoor activities, include horse riding, hiking, wildlife safari, and rock climbing.
- Cultural & entertainment sectors

The land restoration project helps a balance to be struck between the pressures of agribusiness and tourism, the need to generate direct benefits to the local communities and the conservation of natural assets. Striving to maximise ecosystem integrity is the goal of this project which was set up after several years of consultation with all stakeholders concerned.

A series of technical action plans that have been elaborated on, among which also environmental education programs play an important role.

The area has been inhabited for hundreds of thousands of years and the Adam's Calendar is one of the most important and undervalued heritage sites in South Africa. Tourism could become a major source of income as would switching over to game farming for rewilding.

Wildlife

Wildlife Red List of Threatened Species

Species Threat Abatement Restoration (STAR) metric uses IUCN Red List of Threatened Species data

<https://www.iucnredlist.org/assessment/star>

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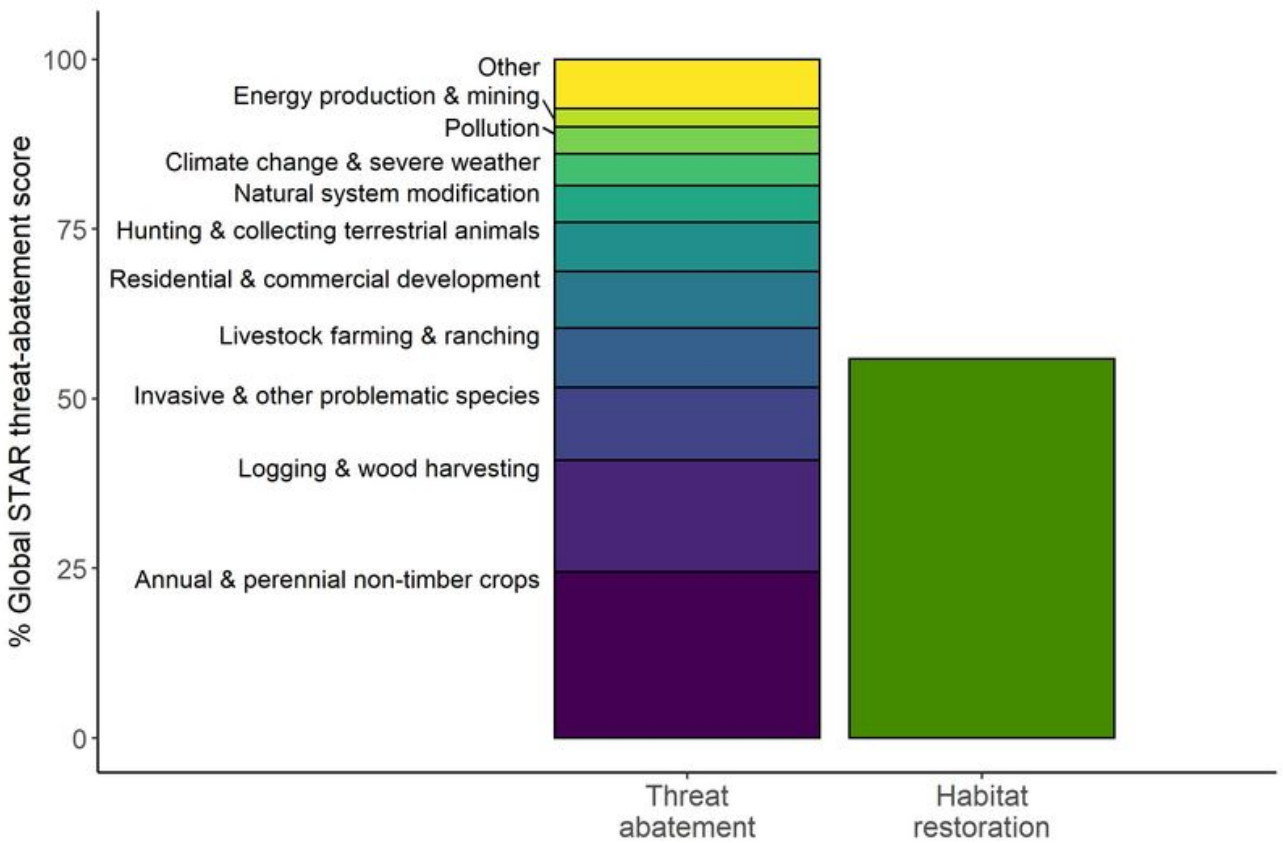


Figure 1. The contribution of different threats to the global STAR threat-abatement score, and the potential contribution of habitat restoration. The global STAR threat-abatement score represents the threat-abatement effort needed for all Near Threatened and threatened amphibian, bird and mammal species to be reclassified as Least Concern. The STAR restoration score quantifies the potential contribution of habitat restoration to reducing overall species' extinction risk. Figure taken from [Mair et al. \(2021\) Nature Ecology & Evolution](https://doi.org/10.1038/s41559-021-01511-1).

Source: <https://www.iucnredlist.org/assessment/star> retrieved March 2023

Sustainable Development Goals (SDGs)





SDG relevance, interactions and synergies

Intro - context

SDG interactions refer to interdependencies between the Sustainable Development Goals (SDGs) belonging to the 2030 Agenda for Sustainable Development (United Nations 2015).

Action towards one goal (i.e. SDG or target) impacts the performance of one or more others.

Identifying multipliers and virtuous cycles

Since the early stage of their conceptualization (D. Griggs et al. 2013; D. Griggs et al. 2014; LeBlanc 2015), the SDGs were designed to be interconnected and indivisible, reflecting the necessarily linked challenges facing humanity:

to alleviate poverty and ensure human prosperity while protecting the planet and its resources, thus balancing the three (social, economic, and environmental) dimensions of sustainable development.

This integrated approach inevitably points to the need to address potential trade-offs between different goals of development.

For the international community to navigate inherent SDG trade-offs effectively and maximize synergies beneficially, it must make intentional use of the interactions between different – and potentially conflicting – goals and targets.

Nature-based projects

Nature-based projects have many strengths and complexities that require a holistic assessment.
How to assess projects for quality and longevity?

Holistic assessment looks across carbon, biodiversity and people to measure a project's full potential aiming to maximise synergies between goals while navigating trade-offs.

SDGs

We can identify individual SDGs as systemic “buffers” and/or “multipliers” of co-benefits (positive interactions) and trade-offs (negative interactions). This enables us to distinguish the different systemic roles of the SDGs and to classify them into four categories.

Description

Simplified description

Buffers of both co-benefits and trade-offs	Buffers
Buffers of co-benefits but multipliers of trade-offs	Multipliers of trade-offs
Multipliers of both co-benefits and trade-offs	Critical multipliers
Multipliers of co-benefits and buffers of trade-offs	Multipliers of co-benefits

Table: Twofold systemic roles of the SDGs in terms of both co-benefits and trade-offs, revealing four categories of buffers and multipliers.



Considering that all SDGs are interconnected and interdependent, this project focuses on a number of specific indicators and seeks to maximise the collateral beneficial effects cascading upwards to contribute, directly or indirectly, in short, medium and long-term to all other goals, by the application of knowledge and system thinking, by design and iterative applications.

Digested SDGs reference table. For full-text version please see the official UN website.

15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	15.a.1 (a) Official development assistance on conservation and sustainable use of biodiversity;
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<p>15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation</p>		<p>and (b) revenue generated and finance mobilized</p> <p>15.b.1 (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments</p>
<p>15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities</p>		<p>15.c.1 Proportion of traded wildlife that was poached or illicitly trafficked</p>

<p>15.1 conservation, restoration and sustainable use of freshwater ecosystems and their services - forests, wetlands, mountains and drylands</p>		<p>15.1.1 Forest area as a proportion of total land area</p>
		<p>15.1.2 sites for terrestrial and freshwater biodiversity that protected, by ecosystem type</p>
<p>15.2 promote sustainable management of forests, halt deforestation, restore degraded forests + increase afforestation and reforestation</p>		<p>15.2.1 Progress towards sustainable forest management</p>
<p>15.3 combat desertification, restore degraded land and soil + strive to achieve a land degradation-neutral world</p>		<p>15.3.1 Proportion of land that is degraded over total land area</p>
<p>15.4 ensure conservation of mountain ecosystems, incl. biodiversity - enhance their capacity to provide benefits to sustain</p>		<p>15.4.1 Coverage by protected areas of important sites for mountain biodiversity</p>
		<p>15.4.2 Mountain Green Cover Index</p>
<p>15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity + protect and prevent the extinction of threatened species</p>		<p>15.5.1 Red List Index</p>
<p>15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources</p>		<p>15.6.1 legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits</p>
<p>15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna + address demand and supply of wildlife products</p>		<p>15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked</p>

15.8 introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species + control or eradicate the priority species		15.8.1 national legislation + adequately resourcing the prevention or control of invasive alien species
15.9 integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts		15.9.1 (a) targets in accordance / similar to Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020 - biodiversity strategy and action plans - progress reported; (b) integration of biodiversity into accounting and reporting systems - implementation of the System of Environmental-Economic Accounting

8.2 economic productivity through diversification, technological upgrading and innovation - focus on high-value-added and labour-intensive sectors		8.2.1 Annual growth rate of real GDP per employed person
8.3 Promote productive activities, decent job creation, entrepreneurship, creativity and innovation - encourage the formalization and growth of micro & SMEs		8.3.1 Proportion of informal employment in total employment, by sector and sex
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training		8.6.1 youth (aged 15–24 years) in education, employment or training
8.8 safe and secure working environments		8.8.2 Level of national compliance with labour rights - freedom of association and collective bargaining
8.9 promote sustainable tourism that creates jobs and promotes local culture and products		8.9.1 Tourism direct GDP

Notes on terms and classifications

REDD+ is an international policy framework that aims to create financial incentives for developing countries to undertake actions to protect and sustainably manage forests. These actions are not limited to reducing emissions from deforestation but also include reducing emissions from forest degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks.

Emission avoidance is associated with the protection or the non-exploitation of a carbon reservoir.

Reducing emissions from deforestation and forest degradation (REDD+) is often used synonymously with the term 'avoidance' or 'emission reduction through avoided deforestation'.

Forest refers to complex, diverse ecosystems providing habitat and ecosystem services, propagating genetic diversity, it is important to note that monoculture tree plantations, genetically modified trees and areas dominated by cloned individuals do not constitute a forest.

Regenerative Economy

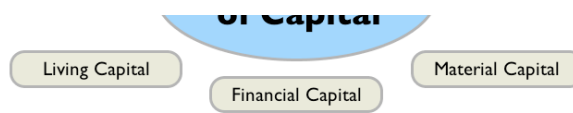
In recent decades, Global natural assets have significantly diminished. To restore nature's balance we need urgent, transformative action.



Protecting and increasing biodiversity resilience in the Sudwala region will benefit three major sectors of the local economy:

Agriculture: Farming benefits from pollinators and other ecosystem services, works in harmony with nature and therefore results in increases in wildlife; this in turn improves carbon sequestration, soil fertility and crop quality. It also reduces flooding, soil erosion, and pollution. Regenerative agriculture improves the health of wildlife and people alike.





Natural & Cultural Tourism: Eco-tourism provides opportunities to appreciate culture and experience 'nature', to run wildlife safaris, promote eco-friendly stay-cations, reconnect holidaymakers with activities in nature, and tap into a renewed appreciation of relaxing and observing nature, or to take an active role in protecting and caring for our habitat, the health benefit of which became particularly evident during the Covid-19 global lockdown [biophilic effects, circular health].

Forest Harvesting: Collaborative management of the old-growth forests for biodiversity gives local (indigenous) people more autonomy, enabling them to work smarter, utilise efficient mobile transformation units, diversify harvests, respect seasonalities, and then sell traceable and sustainable products on short or direct supply chain, for lower emissions, higher profits and healthier outcomes all along the lifecycle of the products.

Synergies and partnerships - WeAll economy, circular economies

There are already lots of brilliant environmental initiatives happening in the country – including rewilding, regenerative agriculture, reintroduction of keystone species, and permaculture. However, many of these initiatives are fledgling projects that need financial support, access to resources, route to markets and capacity building to fully maximise their potential for positive impact. Through capacity building and knowledge sharing the network becomes more resilient and effective.

Nature-based solutions adoption, health, resilience, education, innovation and social upliftment are among the significant collateral benefits upward cascading over time of this sustainable, regenerative, integrated land management and community development programme.

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