



Entry Points for Mainstreaming Ecosystem-based Adaptation

The Case of South Africa

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Acronyms

CARA	Conservation of Agricultural Resources Act
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science and Technology
DWS	Department of Water and Sanitation
EbA	Ecosystem-based Adaptation
EPWP	Expanded Public Works Programme
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IKI	International Climate Initiative
MTSF	Medium Term Strategic Framework
NEMA	National Environmental Management Act
NFA	National Forestry Act
NLEIP	Ntabalenga and Laleni Ecological Infrastructure Project
NTCSA	National Terrestrial Carbon Sinks Assessment
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SPLUMA	Spatial Planning and Land Use Management Act
UBCEG	Upper Breede Collaborative Extension Group
UEIP	uMngeni Ecological Infrastructure Partnership
WWAP	World Water Assessment Program

Executive Summary

Ecosystem-based adaptation is viewed as one of the principle ways in which countries can respond to climate change. The concept is scientifically sound and implementation often produces a broad set of ecological, social and economic co-benefits. Yet uptake of the concept varies considerably around the globe. In certain countries, for example, South Africa, the concept has gained significant traction while in other regions there is little uptake of idea.

With the intention of understanding how EbA can be expanded at a global scale, GIZ has commissioned a set of country-scale studies to first understand why certain countries have taken up the concept with gusto and others have not. Furthermore, what has been the process to date, what were the entry points and who were the pivotal parties? The second goal is to understand how EbA can be further expanded in each country in the future. To answer these questions, a comprehensive review of existing policy and strategy was made, which was followed by a set of interviews with parties located in government as well as private sector organisations who have often led on-the-ground activities to date.

A key emerging question is: “what set of policies and measures does it take for EbA happen” and more specifically, “what is required for it to happen in a South African context in a way that is truly effective, cost efficient and sustainable over time?”

The successful realisation of EbA can be broadly considered as the implementation of required policies and measures at scale, in a manner that is comprehensive and rational, taking into account social, economic and ecological trade-offs. In terms of time scale, the full realisation of EbA not only includes immediate opportunities, but the continual consideration of ecosystem approaches over time. In terms of spatial scale, EbA generally only makes sense in terms of effectiveness and efficiency, for example, at the scale of a catchment or landscape.

While recognising recently published EbA strategies and guidelines, the assessment identified potential entry points at four levels of governance:

- 1. Setting the national agenda through policy and strategy.** Whereas South Africa has a substantial policy and strategy foundation, practitioners repeatedly emphasised the need for enhanced inter-department planning and implementation of national programs
- 2. Spatial planning at a catchment scale.** There is a clear and urgent need to replicate and scale up existing efforts, as catchments represent a crucial level of governance and a significant window of opportunity to create entities that lead participatory planning and EbA development.
- 3. Implementation of on-the-ground activities.** Practitioners repeatedly identified the need to create coordination and management capacity at a catchment scale. The entity would facilitate development, management and monitoring over time. A second opportunity that was repeatedly shared is the need for enhanced cooperation with the mining industry. Planners noted that the mining priorities often supersede others and that a more constructive engagement is required with the Department of Mineral Resources as well as mining companies.
- 4. Sustaining implementation through required supporting functions.** Interviewees identified a common set of supporting functions deemed necessary for effective implementation of EbA: (i) **Extension services** that educate and support land managers, (ii) **Monitoring, reporting and verification** to plan and then track progression; (iii) **Applied research** on land rehabilitation and halting drivers of degradation, (iv) **Improved communication** to sustain a community of practice in the country.

I. Introduction

There is remarkable variation in the degree to which ecosystem-based adaptation has been adopted around the globe. Whereas the fundamental concept of ecosystem-based adaptation (EbA) is viewed as scientifically sound and one of the principal ways in which countries can respond to climate change, the level to which countries have adopted EbA differs substantially. In certain countries, such as South Africa, there is good support for the concept, initial national strategies have been developed and early on-the-ground activities are already being rolled out. However, in other countries there has been little uptake of the idea with few developments so far.

In this context, GIZ has commissioned a set of country studies to firstly understand:

- Why certain countries have taken up the concept with interest and enthusiasm and others have not;
- In countries where EbA has gained traction: what has been the process to date; what were the entry points and who were the pivotal parties; whether they are representatives of the public or private sector and how EbA is currently governed; and
- How EbA has been integrated into national policy, strategy and implementation.

The second goal is to understand how EbA can be further expanded and mainstreamed in each country. Here, we present a set of five case studies to illustrate how implementation may occur and to draw early pertinent lessons. Thereafter, we describe four main entry points for future expansion of EbA, with detailed consideration of key barriers and opportunities.

METHODOLOGY

The study was carried out by conducting a comprehensive review of existing policies, followed by a broad suite of interviews with entities located within national, provincial and local government together with leading private sector organisations that have led much of the early implementation in the field. South Africa has significant expertise and experience in the conceptual development, implementation and governance of EbA as well as ecosystem-based mitigation, ecosystem services and ecological infrastructure, which we sought to draw upon. Ecological infrastructure refers to naturally functioning ecosystems that deliver valuable services to people, such as water and climate regulation, soil formation and disaster risk reduction. We express our sincere thanks to all interviewed parties who shared their expertise and time. It is greatly appreciated.

Ecosystem-based adaptation and related concepts such as disaster risk reduction has the potential to reduce the broad range of climate change impacts and can be implemented in a number of forms, from the restoration of montane forests to the sustainable management of mangrove swamps. For the purposes of this report on EbA in South Africa, we have decided to focus on the theme of 'resilient water services that are provided by well managed landscapes'. It is a concept that has gained significant traction in South Africa, where the impact of climate change on water availability and the prevalence of droughts and floods is expected to be profound. It is often cited as a principal response measure in national policy and is a domain in which the country has much experience in implementation and governance.

II. Climate change and water services in South Africa

Human-driven climate change is expected to have a profound effect on ecosystems and human society across sub-Saharan Africa (Niang et al. 2014). In South Africa, predicted changes in climate are not necessarily consistent across the whole country. Whereas it is expected to become warmer and drier in the interior and western parts of the country, the eastern seaboard below the Drakensberg Escarpment is expected to become wetter over time (Fig 1). In addition, rainfall seasons are expected to become shorter and more intense, with increasing frequency of extreme rainfall events. These changes are briefly summarised here, but we encourage readers to review the South African Risk and Vulnerability Atlas for a more detailed consideration of the subject.

Long-term trends and especially the increase in extreme rainfall events is expected to result in an escalation in floods

and drought, presenting a clear risk to human society and both rural and urban economies. The ability of ecosystems to provide water services in a resilient manner will, therefore, become of greater importance over time. Yet, many important water source areas across the country are heavily degraded and many of them are home to poorer communities (Fig 1, Mararakanye and Le Roux 2011, WWF 2013). It is in these areas, often along the greater Drakensberg Escarpment and eastern seaboard, where the restoration and management of landscapes has the ability to decrease the vulnerability of society to climate change, while improving ecosystem services and conserving important biodiversity areas. Taylor et al. (2016) provide a detailed assessment of the importance of these escarpment areas to the provision of water services, both locally and to downstream economies, including climate change and governance considerations.

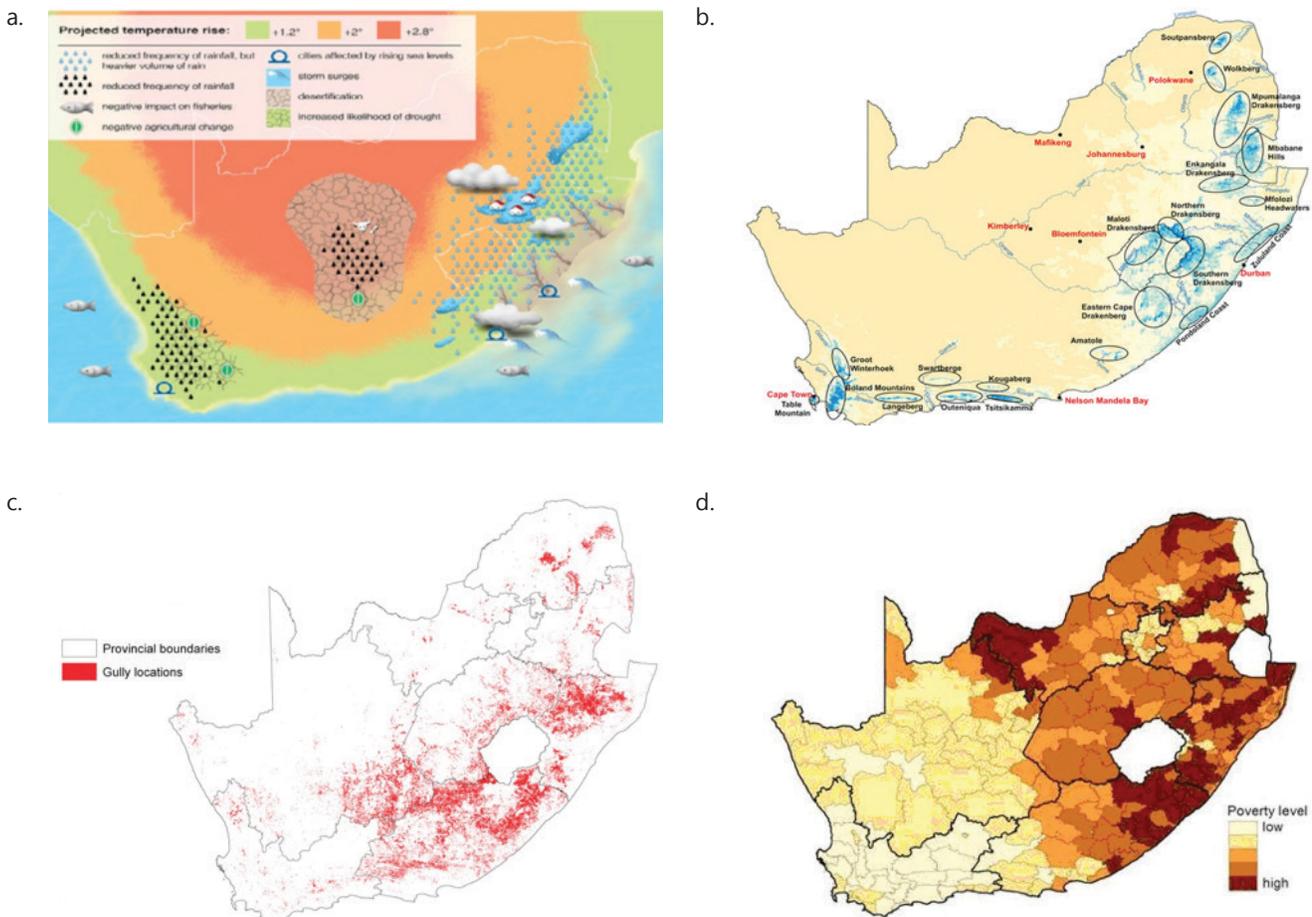


Figure 1. a) A simplified representation of climate change projections across South Africa (DEA 2012), b) 8% of the country's land-area contributes 50% of the water in our rivers (WWF 2013), c) the distribution of significant erosion gullies across the country (Mararakanye and Le Roux 2011), d) the level of poverty in each municipality (Stats SA).

NATIONAL POLICIES AND STRATEGIES RELEVANT TO EBA

South Africa is viewed as being progressive in its response to climate change. Following early ratification of the Kyoto Protocol in 2002, the country published a National Climate Change Response Strategy in 2004 and has since gradually developed a substantial scientific, policy and strategy foundation on which to base future activities and measures. A National Climate Change Response White Paper was published in 2011 and a National Climate Change Adaptation Strategy is about to be finalised following an extensive consultation and review period.

Responses to climate change are often strongly shaped by other national policies and strategies. For instance, prior to the development of climate change specific policy, South Africa had a suite of forward-thinking environment related acts that acknowledge the importance of natural ecosystems and their sustainable management over the long-term (CARA 1983, NWA 2008, NEMA 2002). Table 1 summarizes policies and strategies with relevance to the natural resources sector and that have preceded the climate change and EbA policy process in South Africa. More recently, the National Development Plan 2030, one of the country's main strategic policies, states:

*“Long-term planning to **promote biodiversity and the conservation and rehabilitation of natural assets** is critical, and should be complemented by a strategy for assessing the environmental impact of new developments as an important*

*component of overall development and spatial planning. Where damage cannot be avoided or mitigated, and where **the social and economic benefits justify the development, a commensurate investment in community development and the rehabilitation and conservation of biodiversity assets and ecosystem services is required.**” (NPC, n.d: 2018).*

Generally, there is strong policy support for the principles of EbA, as shown by the development of two strategy documents that provide guidelines for EbA in South Africa, as well as a strategic framework and overarching implementation plan. Particularly the Strategy Framework and Overarching Implementation Plan (2016-2021) provides an extensive review of international and national that are pertinent to the realisation of EbA. This review is limited to national policy, but several EbA-related policies and strategies have been developed at provincial and municipal scales as well.

It is important to note that, while there is strong policy support for the principles of EbA and no particular policy or strategy that halts the implementation of EbA, there are policies that may indirectly affect the realisation of EbA in certain areas of the country. This is discussed further in Entry Point 1 below.

Table 1: A list of South African policies and strategies with relevance to EbA.

Year	EbA related policy and strategy	Lead Institution
1983	Conservation of Agricultural Resources Act	National Government
1998	National Water Act	National Government
2002	National Environmental Management Act	National Government
2004	National Environmental Management Act: Biodiversity Act	National Government
2010	New Growth Path Framework	EDD
2010	National Strategy for Sustainable Development and Action Plan	National Government
2011	National Climate Change Response White Paper	DEA
2011	National Biodiversity Assessment	DEA
2011	EbA adopting as a priority through the Nairobi Work Programme	NWP
2011	Green Economy Accord (2011)	National Government
2012	National Development Plan	National Government
2015	2nd National Biodiversity Strategy and Action Plan 2015-2025	DEA
2016	Strategic framework and overarching implementation plan for ecosystem-based adaptation in South Africa 2016-2021	DEA
2017	Guidelines for ecosystem-based adaptation in South Africa	DEA
2018	National Climate Change Adaptation Strategy (expected)	National Government

The Medium Term Strategic Framework (MTSF) is the Government's main strategic plan for the period 2014-2019. It includes a commitment to implement the National Development Plan, as well as the election manifesto of the governing party. The framework includes a set of fourteen outcomes that define delivery agreements (or areas of work) that involve all spheres of Government. Outcomes range from education, to health and rural development, to create a skilled workforce¹.

Outcome 10 of the framework, which focuses on "the protection and enhancement of environmental assets and natural resources", is particularly pertinent to realisation of EbA. Resilience to climate change is at the heart of the Outcome that seeks to halt the depletion of ecological infrastructure and restore healthy catchments that can regulate water flow and quality. Outcome 10 has five sub-outcomes, nearly all of which are related to an element of EbA:

- Sub-outcome 1: Ecosystems are sustained and natural resource are used efficiently
- Sub-outcome 2: An effective climate change mitigation and adaptation response
- Sub-outcome 3: An environmentally sustainable, low carbon economy resulting from a well- managed just transition
- Sub-outcome 4: Enhanced governance systems and capacity
- Sub-outcome 5: Sustainable human communities

GOVERNANCE

Due to the nature of natural resource management, the implementation of Outcome 10 falls under the mandate of several government departments. The Department of Environmental Affairs (DEA), the coordinating department with the Department of Water and Sanitation (DWS), Department of Agriculture, Forestry and Fisheries (DAFF), Department of Rural Development and Land Reform (DRDLR), Department of Mineral Resources (DMR) and the Department of Science and Technology (DST) responsible for certain EbA related actions. In addition to national departments, provincial departments and municipalities are mandated to effect certain actions as well as the South African National Biodiversity Institute (SANBI), conservation agencies, Land Care and the Expanded Public Works Programme. Coordination occurs through intergovernmental relations and intergovernmental mechanisms that include nine provincial departments and further partner organisations.

Coordination between departments and programmes (e.g. the Expanded Public Works Programme - EPWP) and across the three-tiers of Government (national, provincial and local) is crucial to ensuring a comprehensive approach to EbA that is sustained over the long-term. Outcome 10 includes the principal planning, implementation and supporting functions that are required, but the particular actions are assigned to different entities. Table 2 below illustrates the type of actions that need to be closely coordinated if EbA is to be realised.

Table 2: Outcome 10 actions relevant to EbA, responsible government agency and target. (Medium Term Strategic Framework (MTSF) 2014-2019)

Action - summary	Minister - lead	Target
Water resources protection	Department of Water and Sanitation	20% by 2019
Maintain or improve watershed services in key rural Strategic Water Source Areas	Department of Water and Sanitation, supported by Department of Environmental Affairs, Department of Rural Development and Land Reform, Department of Agriculture, Forestry and Fisheries	20 integrated interventions in each of 5 key rural Strategic Water Source Areas by March 2019
Expand conservation areas estate	Department of Environmental Affairs, provincial departments, South African National Biodiversity Institute, South African National Parks	13.2% of South Africa 30 additional stewardship sites
Integration of ecological infrastructure into land-use planning and decision making	Department of Environmental Affairs, Department of Rural Development and Land Reform, provincial departments, local authorities	100% of all spatial development frameworks (SDFs)
Research in climate services	Department of Science and Technology, Department of Environmental Affairs	Functional CC research network
Implementation of environment sector skills plan	Department of Environmental Affairs, South African National Biodiversity Institute, provincial departments	500 learners
Enhance compliance monitoring and enforcement across the sector	Department of Environmental Affairs, provincial departments	14750 compliance inspections conducted

¹ An introduction to the Medium Term Strategic Framework can be found at: www.gov.za/issues/key-issues

III. EbA case studies from South Africa

The following are a set of case studies selected to illustrate examples of EbA mainstreaming that has taken place at different scales, by various stakeholders and with different purposes. Table 3 summarizes the five case studies, highlighting the implemented measure, area of implementation, adaptation function, and environmental and socio-economic benefits.

As described earlier, participation of various stakeholders and the existence of solid governance arrangements is key to the uptake and implementation of EbA, and especially to its

sustainability in the long term. The case studies presented here show that EbA actions can take many forms and can be led and sustained by many different stakeholders, and that governance can be conducted by government, private stakeholders and local communities, but often requires a combination of those. In this context, it is of particular importance to clearly define the roles and responsibilities each stakeholder or group will take on. Governance arrangements for the selected case studies are described in Table 4, highlighting which stakeholders initiated the effort [1], who followed [2], and who sustained [3].

Table 3: Overview of EbA case studies

	CASE STUDY 1 INTEGRATED LANDSCAPE PLANNING AT A CATCHMENT SCALE	CASE STUDY 2 URBAN EbA AND DRR	CASE STUDY 3 COLLABORATIVE CATCHMENT MANAGEMENT	CASE STUDY 4 IMPLEMENTATION BY PRIVATE SECTOR ENTITIES	CASE STUDY 5 INTEGRATED LANDSCAPE PLANNING AND MANAGEMENT
Name of the project	uMngeni Ecological Infrastructure	Partnership eThekweni Riparian areas program (City of Durban)	LandCare	WWF Water Stewardship Model Ntabelanga and Laleni Ecological	Infrastructure Project
EbA measure	Integrated watershed planning and management	Restoration of urban riparian areas to reduce the impact of extreme rainfall and flood events	Restoration of commercial agriculture land and adjacent riparian zones	Restoration and maintenance of ecological infrastructure in a mixed use landscape	Integrated landscape management aimed at creating resilient social-ecological systems
Area of implementation	uMngeni watershed, KwaZulu-Natal	eThekweni Municipality, KwaZulu-Natal	National, with good examples in Western Cape	Western Cape fruit and wine production area	uMzimvubu catchment, Eastern Cape
Climate change adaptation function	Improving the resilience of water services to climate change at a watershed scale	Reducing on the impact of extreme rainfall events on local residents and grey infrastructure	Reducing erosion, increasing the resilience of water services.	Increased resilience in water services in a region that is predicted to become warmer and drier over time	Increased water and food security for local residents. Improved water services to downstream economies
Environmental benefits	Long term protection of species rich, endemic grassland ecosystems.	Clearance of alien invasive plants, reduction in erosion, restoration of water services	Removal of alien invasive plants, reduced erosion	Conservation of Cape Floral Kingdom. Reduced erosion and clearance of alien invasive species	Avoided degradation and restoration of indigenous rangelands
Socio-economic benefits	(i) Improved livestock production, (ii) increase in employment in rural areas, (iii) improved water service to downstream economies.	(i) Decreased flood risk to those living adjacent to riparian areas, reduced expenditure on replacing grey infrastructure e.g. bridges.	(i) Increased rural employment and skill development opportunities, improved food security, (ii) improved water services to downstream economies and farms	(i) Employment and skill development opportunities, (ii) Increased water services to downstream urban economies in a region under water stress	(i) Improved food security, (ii) Improved water service (iii) reduced exposure to the impact of severe storms, (iv) employment and skill development

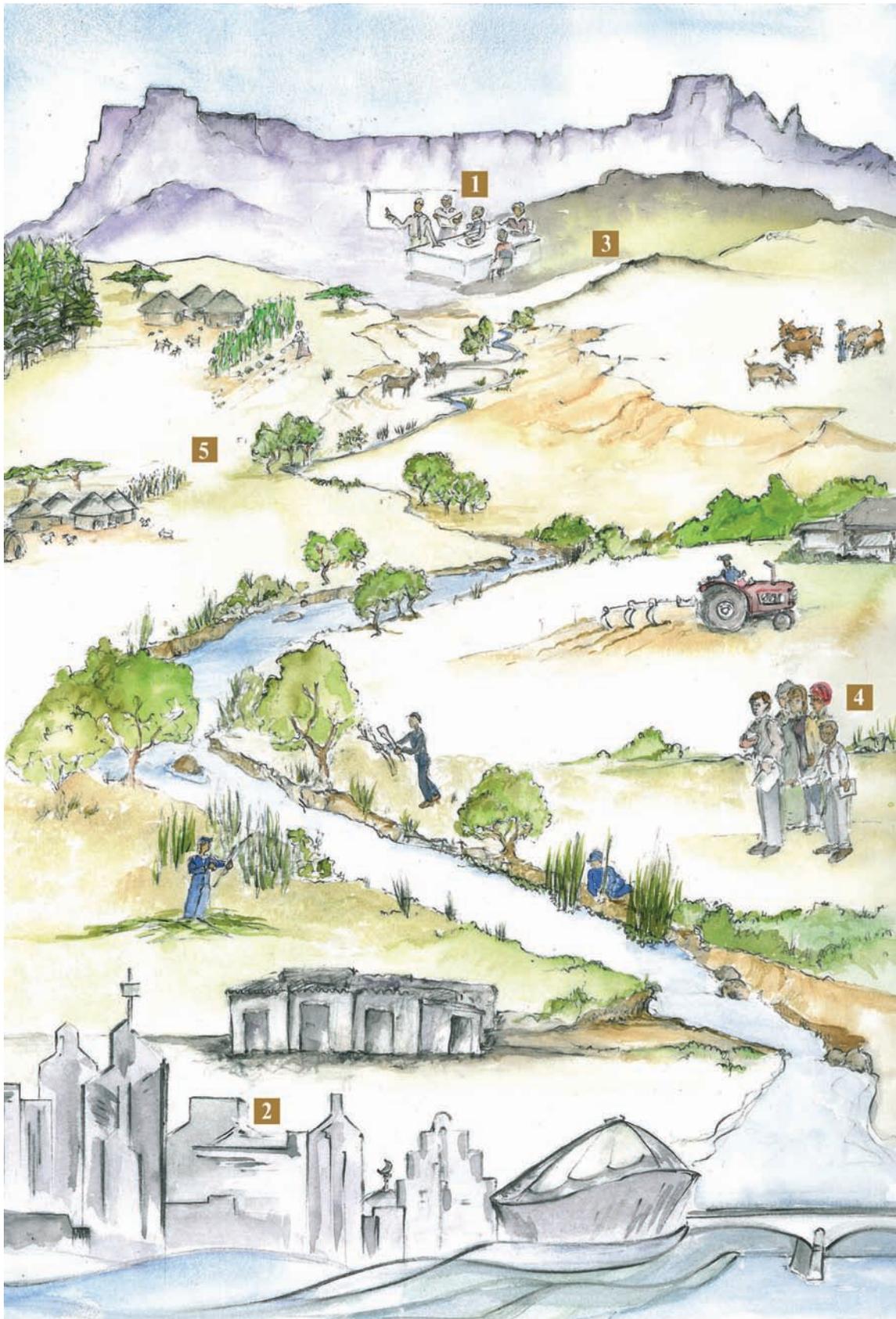


Figure 2. An illustration of the location of case studies within a typical catchment. The uMngeni, Breede and NLEIP case studies (#1, 3, 4 and 5) focus on collaborative and participatory catchment governance in rangeland tenure and land-use contexts. Case study 2 focuses on urban EbA and DRR and particularly the experience in eThekweni to date (Credit Joon Mason and Lovell Southey).

Table 4: Governance matrix highlighting different governance arrangements for each case study, highlighting which stakeholders initiated the effort [1], who followed [2], and who sustained [3].

Governance type	Governance by Government			Shared Governance		Private Governance			Indigenous peoples & local community governance	
	Federal or national ministry or agency	Regional Governments or agency in charge	Local gov.	Collaborative or joint governance	External agents (e.g. donors)	Individual land owner	Non-profit organization (e.g. NGO)	For-profit organization (e.g. tourism operator)	Indigenous peoples	Local communities
1. Integrated planning at a catchment scale: uMngeni (UEIP)	1 2 3	2 3	1	2 3	3	3	2 3			3
2. Urban EbA and DRR: eThekweni (Durban)			1 2 3				2 3			
3. Collaborative catchment management Upper Breede	1	1 2	2 3	1 2 3		3	3			
4. Private sector catchment stewardship Breede-Gouritz				3	2		1 2	1 2		3
5. Integrated landscape planning and management: NLEIP	1 2 3			1 2 3			1 2			2 3
Legend	1 Who initiated it? 2 Who followed up? 3 Who sustained the initiative?									

CASE STUDY 1: INTEGRATED LANDSCAPE PLANNING AT A CATCHMENT SCALE – UMNGENI ECOLOGICAL INFRASTRUCTURE PROJECT (UEIP), KWAZULU-NATAL

The uMngeni Ecological Infrastructure Partnership is a collaboration of the public and private sectors that share expertise and resources to protect and enhance the state of ecological infrastructure in the uMngeni catchment. The initiative has 23 signatories and is part of the Strategic Infrastructure Investment Project 19 (SIP). The project follows the principles of EbA through using the ability of ecosystems to provide services to downstream communities in a resilient manner.

restoration measures in selected sites. An example project within UEIP, “Building resilience in the Greater uMngeni Catchment, South Africa” is led by the uMgungundlovu District Municipality and aims to increase the resilience of vulnerable communities through interventions such as early warning systems, climate-smart agriculture and climate proofing settlements. To date funding has been provided by Government, development banks and multilateral agencies.

The project seeks to enhance governance and regulatory capacity at a catchment scale while implementing

Potential for mainstreaming	There is a growing interest in the catchment collaborative approach, but significant resources for planning and coordination are required.
Governance	Multi-level collaborative governance: Multi-stakeholder platforms provide a means for a variety of public and private sector entities to collectively drive the restoration and long-term management of a catchment. The project concept was conceived by the South African National Biodiversity Institute, together with eThekweni Municipality that had pioneered early EbA initiatives in an urban domain at the bottom of the catchment. The South African National Biodiversity Institute has continued to lead the project with funding coming from the state, overseas organizations and local entities. There is an aim to obtain further income from water tariffs in the future.
Further reading	Colvin et al. (2015). Enhancing ecological infrastructure in the uMngeni catchment through private sector action and engagement. Green Fund Research Report. Pringle et al. (2015). An investment plan for securing ecological infrastructure to enhance water security in the uMngeni River catchment. Green Fund, DBSA.



CASE STUDY 2: URBAN EbA AND DISASTER RISK REDUCTION - ETHEKWINI MUNICIPALITY, KWAZULU-NATAL

Durban initiated a Municipal Climate Protection Programme in 2004, representing one of the earliest municipal scale programs globally to include EbA. The program is multifaceted focusing on a range of assessment, design, implementation and institutional support elements. Roberts et al. 2012 includes a detailed description of the process. Activities on the ground include securing the conservation status, and restoration of degraded areas, particularly riparian belts. While parties initially assumed that EbA was

an easier and less-costly option, it proved significantly more challenging in practice. Due to a complex social, political, economic and ecological context, entities found that implementation needs to occur in an incremental and iterative manner with a focus on experimentation and flexibility (Roberts et al. 2012). While it is possible to identify a long-term direction, implementation can be both technically challenging and resource intensive in practice.

<p>Potential for mainstreaming</p>	<p>There is considerable opportunity for other municipalities across South Africa to adopt the concept of urban EbA and disaster risk reduction. Whereas there are significant lessons to be learnt from the process that has occurred in Durban, the end result is not a “one size fits all” solution. Rather, each municipality needs to undergo an interactive process themselves to ensure that measures are locally appropriate and accepted.</p>
<p>Governance</p>	<p>Collaborative governance: Although the program was initiated and led by eThekweni Municipality, planning and implementation often occurs in collaborative manner, engaging with numerous parties during the course of development and implementation. External non-profit organisations, for example, Wildtrust, implement measures and activities in partnership with the municipality.</p>
<p>Further reading</p>	<p>Roberts et al. (2012). Exploring ecosystem-based adaptation in Durban, South Africa: “learning-by-doing” at the local government coal face. <i>Environment and Urbanization</i>, 24(1), 167–195. http://www.durban.gov.za/</p>



CASE STUDY 3: COLLABORATIVE CATCHMENT MANAGEMENT – UPPER BREEDE COLLABORATIVE EXTENSION GROUP, WESTERN CAPE

LandCare initiated the Upper Breede Collaborative Extension Group (UBCEG), which is a local co-operative partnership including national, provincial and local government departments, non-profit organisations, Water User Associations, a Catchment Management Agency and commercial farmers. The starting point was a conflict between applications to clear land for farming and the need to conserve the region's high biodiversity. This led to the development of an "Area Wide Planning" model aimed achieving a balance between conservation and agricultural outcomes.

Upper Breede Collaborative Extension Group defines its objectives as building capacity and providing mutual support for overlapping responsibilities. To date, funding has been provided by the state and private sector to support a dedicated extension officer as well as to clear of alien invasive plants. In addition, there is good collaboration with private farmers who become involved in River Management and Maintenance Plans, including the implementation of activities in riparian areas adjacent to their farms.

Potential for mainstreaming	There is considerable opportunity to replicate the collaborative approach that has been developed between the public and private sector in Upper Breede Catchment. However, LandCare's capacity to roll-out similar processes in other provinces is a concern.
Governance	Collaborative governance with the private sector: Whereas LandCare initially started and continues to coordinate the program, the process has resulted in significant buy-in by farmers who implement a range of measures and now often regulate other parties within the landscape who attempt to follow conflicting land-use options. In addition to funds provide by LandCare, commercial farmers are injecting capital into activities that enhances buy-in and commitment to a sustained outcome over time.
Further reading	Mortimer (2009). M&E Case Study Upper Breede Collaborative Extension Group: Supporting local cooperative governance. https://www.sanbi.org/sites/default/files/documents/documents/14-synergy-through-upper-breede-collaboration.pdf .

CASE STUDY 4: PRIVATE SECTOR LED CATCHMENT MANAGEMENT - BREEDE WATER STEWARDSHIP PROJECT – WESTERN CAPE

The production of fruit in the Breede catchment was identified as part of one of Mark and Spencer's supply chains that are vulnerable to a lack of adequate water supply – a "water risk hotspot". This finding led to the development of water stewardship activities that are led by WWF-SA in partnership with Woolworths, M&S, GIZ, the Alliance for Water Stewardship (AWS), the Breede-Gouritz Catchment Management Agency and local farmers. The program focuses on water management within rural farmland areas as well as the urban domain. Activities

include the clearing of alien invasive plants, on-farm activities (e.g. irrigation efficiency) and the clearing of litter and monitoring of sewage within urban areas. Although adoption of the AWS tool as one of the main interventions has not been as extensive as first hoped, farmers were found to be progressive with their water usage. Current usage is two to seven times below international norms. In general, there has been substantial progress in building relationships and in securing funding from the private retail sector to support alien clearing.

Potential for mainstreaming	Many South African catchments share a similar mixture of commercial agricultural land use and urban areas, both of which are vulnerable to climate change, particularly regarding the supply and regulation of water. There is good opportunity to replicate the process in similar catchments across the country.
Governance	Non-profit organisations and retailers initiated the stewardship project in response to identified water risks. The project was developed in a collaborative manner with civil society organisations and commercial farmers with funds coming from a number of resources.
Further reading	Schachtschneider, K. 2016. Breede Catchment Water Stewardship Programme – Summary report. WWF Report available at www.wwf.org.za/freshwater .

CASE STUDY 5: INTEGRATED LANDSCAPE MANAGEMENT IN AREAS UNDER COMMUNAL TENURE NTABELANGA-LALENI RESEARCH INVESTMENT STRATEGY (NLEIP), UMZIMVUBU CATCHMENT

Through applied research, the Ntabelanga and Laleni Ecological Infrastructure Project seeks to support integrated landscape management that improves the sustainability of local people’s livelihoods, fosters equity in access to ecosystem services and strives for more resilient social-ecological systems (Fig. 3). Located in the Tsitsa sub-catchment of the uMzimvubu catchment of the Eastern Cape, the starting point were national plans to construct the Ntabelanga Dam in a region with erodible soils and a history of land degradation. Identified as Strategic Infrastructure Investment Project (SIP 19), project partners saw a window of opportunity to shift development pathways from low

institutional capacity, loss of ecological infrastructure, low agricultural productivity, dependence on social grants and low adaptive capacity, towards a new social-ecological paradigm. The Department of Environmental Affairs Natural Resource Management motivation was to reduce risk by demonstrating that investing in restoring and retaining ecological infrastructure is the most cost-effective and socially equitable solution. The project used a strong focus on research and collective governance (Figure 3). Barriers in implementation so far include the poor communication of the Department of Water and Sanitation on its plans for the region.

CONCEPTUAL FRAMEWORK FOR IMPLEMENTATION PHASES

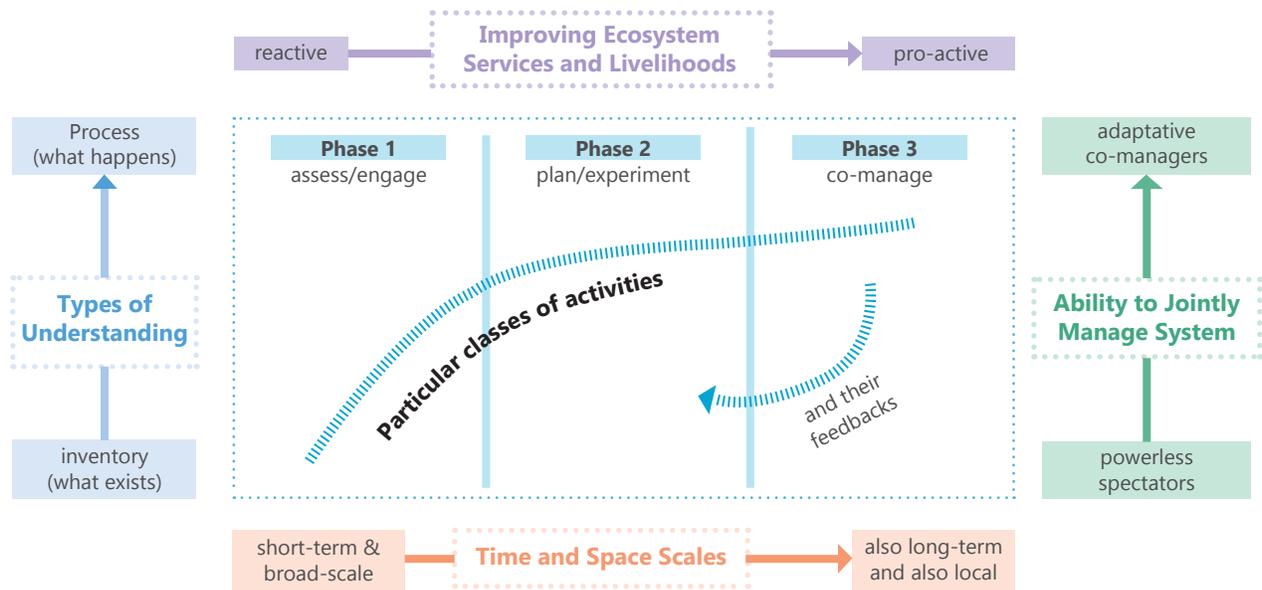


Figure 3. Conceptual framework for implementation phases. (Source: Fabricius et al. 2016).

<p>Potential for mainstreaming</p>	<p>There is significant opportunity to expand the application of this model to other areas that are under communal land tenure. Many of these areas, in Mpumalanga, KwaZulu-Natal and the Eastern Cape provide crucial water services, yet are often in a degraded state.</p>
<p>Governance</p>	<p>The program was initiated by the Department of Environmental Affairs Natural Resource Management with the aim of ensuring that a new large dam would not be filled with silt and be effective for water storage over a longer period. The project has initially been hosted and implemented by Rhodes University. Planning and implementation was a collective activity between communities, stakeholders, consultants and civil society. It is anticipated that implementation will occur in a similar cross-sector collaborative manner into the future.</p>
<p>Further reading</p>	<p>Fabricius et al. (2016). Research Investment Strategy Ntabelanga and Laleni Ecological Infrastructure Project. Cape Town.</p>

IV. Lessons to date on developing EbA in South Africa

The following set of lessons emerged through the process of interviewing stakeholders. Effort was made to engage with a broad range of parties working on different elements of EbA, who are located across the three spheres of government as well as the private sector.

Implementation to date is often through bottom-up initiatives led by a particular ‘champion’. The majority of existing EbA programs have been led by a champion, either an individual or an organisation, who is often driven by a passion to implement sustainable practices. Within both the rural and urban domains, programs have often been developed in a bottom-up, gradual manner, leveraging funding and capacity opportunities as they arise. One leading EbA developer noted that activities are often developed through a “confluence of coincidences”, rather than a well-funded, predefined pathway. Seasoned implementers strongly supported the organic, bottom-up development of programs where relationships and initiatives are cultivated in a gradual manner over time. This approach is often viewed as pivotal to buy-in and success over the long-term. However, parties were quick to note that it is difficult to expand such projects. The underlying relationships are not scalable and an individual champion can only give a certain area due diligence. Rather, the emphasis should be on providing an enabling environment and mentorship in similar landscapes to allow the process to organically develop there. Early developers have noted that support may be required for 5-8 years to gain suitable traction.

Intergovernmental engagement and planning can be improved. A consistent message from stakeholders is that engagement between national departments and programs needs to be enhanced. The ‘silo effect’ is often quoted where there may either be replication in activities or implementation in an isolated disparate manner that leads to ineffectiveness. Furthermore, misalignment in land-use priorities often lead to expensive, drawn out resolution processes, which could be resolved in a more efficient manner through better early engagement and discussion. Improved communication may be fruitful at both a high-end planning and strategy level as well as at an on-the-ground implementation level.

Utilise existing private- and public-sector capacity. South Africa has an extensive and diverse range of entities currently implementing aspects of natural resource management that may be aligned with envisioned EbA implementation in certain locations. This includes national departments, conservation agencies and programs (e.g. LandCare, Expanded Public Works Programme) that not only implement measures on the ground, but facilitate planning and engagement processes (e.g. the river management plans developed by LandCare) as well as

monitoring programs. The private sector, both commercial agriculture and non-profit organisations have played a central role in the realisation of EbA to date. Several NGOs are leading EbA projects in certain areas of the country (e.g. WWF-SA, Conservation South Africa, ICLEI) and commercial farmers are assisting in the implementation of on-the-ground measures, be it in the form of catchment management or through biodiversity stewardship agreements.

There is often a lack of basic resources over long-term horizons to plan and implement. Practitioners noted that the planning and development of EbA at a provincial or local municipality scale requires sustained capacity for a period of at least 5-8 years. Often, there is a lack of human capacity to drive EbA forward. Where there is staff, parties often do not have access to required data and software for planning purposes and then (very) limited resources for implementation. Whereas programs such as the “Let’s respond toolkit” do assist to a certain degree, entities across the public and private sector consistently identified the need for considerable additional capacity if EbA is to be realised at a significant scale.

Communication: EbA needs to be translated for each specific audience. The topic of communication drew a diversity of responses from stakeholders and practitioners. Whereas many suggested that the basic concept of EbA be broadcast more widely, others, particularly seasoned practitioners, noted that it may be more effective to translate EbA into the language and priorities of potential implementing agencies, such as local municipalities. Parties noted that there is often fatigue among implementing agencies who are requested to implement a new concept, for example, the ‘sustainable management of ecological infrastructure’, ‘ecosystem-based mitigation’, ‘land degradation neutrality’, ‘biodiversity stewardship’, ‘integrated catchment management’, ‘integrated land-use management’, among others, and then EbA. In addition, several entities noted that EbA can rarely be sold on its own merits alone. Often, it needs to be sold as part of a broader risk reduction package that has additional ecological, social and economic benefits. In the context of local municipalities, communicating EbA as means of reducing the risk of disasters, improving water supply and creating employment may gain more traction. Likewise, NGOs are finding that commercial agriculture companies are more open to concepts of long-term sustainability, shared reduction of risk and shared responsibility. EbA would still be communicated as such to the international community and within national scale processes, but it may gain more traction if it is translated into existing terminology and goals at the level of implementation.

Need for empirical data to inform policy, resource allocation and implementation. Practitioners at different levels of EbA planning and implementation identified a clear need for data on the extent of the opportunity, the effectiveness of measures, operational requirements, costs and social outcomes. Planners noted that there is often insufficient data on the extent and type of degradation to plan measures. There is also little information on direct and indirect drivers of degradation at required scales. Implementers highlighted the need for a common and

standardised means of measuring project outcomes, including biodiversity, social and economic metrics. Furthermore, developers noted that the true cost of implementation is not often known, making it difficult to present a business case for EbA in annual planning and budgets. Initial indications are that EbA is more expensive than first presumed, but further data is required to understand the nature of costs and outcomes and how they may vary spatially.

Table 5: Summary of enabling and hindering factors for further EbA development

Enabling factors		Hindering factors
<ul style="list-style-type: none"> Progressive national environmental policy and regulation. Early development of national EbA strategy and guidelines. 	Policy	<ul style="list-style-type: none"> Lack of realisation of policy and the enforcement of regulations at a provincial and local scale. Other policy priorities take priority in important areas for EbA activities.
<ul style="list-style-type: none"> Early development of an EbA focussed division within DEA. Establishment of national EbA Steering Committee. 	Institutional capacity	<ul style="list-style-type: none"> A lack of intergovernmental planning and implementation A lack of communication between Departments which share similar priorities
<ul style="list-style-type: none"> Numerous existing initiatives have planning and implementation processes can easily be adopted e.g. LandCare’s River Management Plans or the Lets Respond Toolkit. Established communication channels within commercial agriculture and other entities that can be leveraged. 	Capacity supporting implementation	<ul style="list-style-type: none"> Lack of a structured monitoring system to report the effectiveness of EbA and key social and cost metrics. Limited capacity in provincial and local government to rollout existing policies and measures.
<ul style="list-style-type: none"> Well-established commercial agriculture associations through which implementation could be realised at scale. Substantial national programs through which EbA could be implemented in certain areas (e.g. LandCare and EPWP) A strong NGO community that are current leading implementation in many areas. 	Field implementation	<ul style="list-style-type: none"> Little integration of programs leading to inefficiencies and ineffectiveness. The ability to replicate successful initiatives that have been developed in a bottom-up manner. Misalignment between funder’s criteria and implementation at risk for a number of years.



V. Entry points for EbA mainstreaming

The successful realisation of EbA can be broadly considered as the implementation of required policies and measures at scale, in a manner that is comprehensive and rational, taking into account social, economic and ecological trade-offs. It is principally focused on the land domain, utilising the inherent ability of ecosystems to provide terrestrial ecosystems-services in a way that is resilient to climate change, as well as their ability to buffer the effect of extreme climatic events and associated disasters.

In terms of time scale, the full realisation of EbA not only includes the implementation of opportunities in the immediate term (e.g. the restoration of currently degraded watersheds), but the continual consideration of ecosystem approaches to adapting to climate change as challenges and opportunities arise in the future. In terms of spatial scale, especially in the context of water services in South Africa, implementation will only be successful in terms of impact, effectiveness and efficiency, if it is comprehensive and at a substantial catchment or landscape scale. Restoring only a small component or patch within a landscape significantly reduces the effectiveness of the measure, rarely addresses the cause of the degradation and is often overly expensive.

A key emerging question is: “what set of policies and measures are necessary for EbA to be adopted?”. And more specifically: “what is required in a South African context for EbA to develop in a way that is truly effective, cost efficient and sustainable over time?”

To answer this question, the following matters will define potential entry points for mainstreaming EbA:

- **The diverse ecological, social and economic nature of South African landscapes.** The country has a diversity of land tenure systems and land-use types that will have a profound effect on implementation models and governance systems.
- **The broad range of direct and indirect land-use change drivers,** which need to be fully addressed if ecosystems are to remain conserved over time and not continue to be degraded.
- **The number of national departments and institutions that focus on various elements of land management.** As noted, these include the Department of Environmental Affairs, Department of Agriculture, Forestry and Fisheries, Department of Rural Development and Land Reform, Department of Water and Sanitation, Department of Mineral Resources, provincial government and local municipalities, as well as associated implementation agencies (e.g. national and provincial conservation agencies, LandCare and the Expanded Public Works Program).
- **The need to balance leadership and governance** by the state with development and implementation by the private sector and broader civil society. There is a large set of non governmental and civil society organisations working within the EbA domain that are often vibrant, innovative and already implementing substantial programs, for example, the Wildlands Conservation Trust, Living Lands, ICLEI, WWF, Conservation South Africa and the Adaptation Network. They often provide a suitable vehicle through which to initiate, develop and test implementation and governance options.
- **The need to balance the development of long-term policies and measures with short-term opportunities.** Several stakeholders within Government and private sector noted that entities often utilise short-term funding and partnership options in an opportunistic manner to advance matters while seeking the longer-term inclusion of EbA in annual budgets.
- **The need to jointly consider bottom-up and top-down actions.** The development of activities in a locally specific manner has to be coordinated with the supporting policies and measures that need would provided at a national scale (e.g. incentive mechanisms or monitoring, reporting and verification). As noted in a recent report on unlocking barriers to land use-based climate change mitigation in South African (DEA 2017), a ‘chicken or egg’ dilemma can arise where both national and local scale activities are required. Often public funding is required to stimulate and kick-start the program, illustrating proof of concept, before greater uptake is realised.
- **Recognition of existing policies, strategies and implementation.** South Africa has already developed national EbA strategies and pioneered early implementation. In addition, there are a substantial number of related programs that fulfil the principles of EbA in certain contexts, for example the Biodiversity Stewardship Program, LandCare or the Expanded Public Works Program. As noted, there is a broad set of conservation and development NGOs that are currently developing EbA activities within rural and urban areas. It is important that future efforts to mainstream EbA clearly recognise the work that has been done to date and build upon it in an effective and efficient manner.

Focussing on the theme of resilient water services within EbA, a number of potential entry points have been identified, ranging from initial planning, to implementation and the creation of supporting elements. Due to the considerable amount of development that has occurred within the natural resources domain, these potential entry points need to be considered in light of existing policies and measures to avoid conflict, duplication and inefficiencies. A comprehensive analysis of the exact extent and progress of existing programs is beyond the scope of this assessment and therefore the intention is to broadly describe existing policies and measures and identify potential gaps where meaningful contributions can be made towards achieving EbA at a national scale.

To make this comparison, we assess entry points at four levels of governance:

1. Setting the national agenda through policy and strategy
2. Spatial planning at a catchment scale
3. Implementation of on-the-ground activities
4. Sustaining implementation through required supporting functions

The following are the entry points identified in this study. In each instance, suggested gaps and next steps draw heavily on insights provide by interviewed stakeholders.

ENTRY POINT 1: SETTING THE NATIONAL AGENDA THROUGH POLICY AND STRATEGY

Main actors	Department of Environmental Affairs (DEA) including SANBI. Department of Agriculture, Forestry and Fisheries (DAFF) Department of Rural Development and Land Reform (DRDLR) Department of Water and Sanitation (DWS) Department of Mineral Resources (DMR)
Pertinent policy	Conservation of Agricultural Resources Act, 1983 (CARA) National Water Act, 1998 National Forests Act, 1998 (NFA) National Veld and Forest Fire Act, 1998 National Environmental Management Act, 1998, 2002 National Environmental Management Act: Biodiversity Act, 2004 National Climate Change Response White Paper, 2011
Brief list of pertinent strategies	National Development Plan 2030; Forestry 2030 Roadmap Integrated Growth and Development Plan: Agriculture, Forestry and Fisheries 2012 SIP 19: Ecological infrastructure for water security - a proposed Strategic Integrate Project 2014

Guidelines for ecosystem-based adaptation (EbA) in South Africa 2017
Strategic framework and overarching implementation plan for ecosystem-based adaptation in South Africa 2016-2021

STATUS QUO

South Africa has a substantial set of progressive environmental policies, including the National Water Act 1998, National Forests Act 1998, the National Environmental Management Act 2002, the Conservation of Agricultural Resources Act 1983, among others. These policies and associated regulations provide clear and strong support for the sustainable management of natural landscapes and the principles of EbA. However, as noted in the National Terrestrial Carbon Sinks Assessment (NTCSA, 2015, Section 3.1: a review of current South African land-use related policy), whereas there are few policies that directly advocate for the clearance of natural ecosystems, there are many that may indirectly lead to the conversion of land. Many “development” related policies advocate for the expansion of mining, urban areas and cultivated land, which in practice may result in the conversion of indigenous landscapes that provide valuable water services.

Planned changes in land use that are envisioned by several national departments relating to environmental, agricultural, mining and urban development were modelled in Section 1.4 of National Terrestrial Carbon Sinks Assessment (2015). The mapping exercise up to the year 2020, illustrates that there is substantial overlap in the anticipated location of development. This often occurs in the important water provision areas of the country, for example, the high-altitude indigenous grasslands of the Enkangala region that is an important source of the Vaal, uThukela, Usuthu and Phongola rivers. This potential conflict in land use intention may apply to many of the important water source areas identified in WWF’s (2013) report, the 8% of the country that provides 50% of surface water.

POTENTIAL WINDOWS OF OPPORTUNITY

Enhancement of inter-department planning. Several interviewed stakeholders within national government noted that a lack of necessary communication between relevant departments is a cause for concern (this “silo” phenomenon is not unique to South Africa). The creation or enhancement of an inter-department planning forum would provide a significant opportunity to realise EbA at a significant scale. The intention would not be to completely halt alternative land-use options, but to facilitate an informed discussion on the broader social, economic and ecological consequences and trade-offs of land-use decisions, thereby potentially halting land degradation and the loss of adaptation benefits.

ENTRY POINT 2: SPATIAL PLANNING AT A CATCHMENT SCALE

Main actors	<p>Department of Environmental Affairs (DEA)-SANBI</p> <p>Department of Agriculture, Forestry and Fisheries (DAFF)</p> <p>Department of Rural Development and Land Reform (DRDLR)</p> <p>Department of Water and Sanitation (DWS)</p> <p>Department of Mineral Resources (DMR)</p> <p>Provincial government</p> <p>District and local municipalities</p> <p>Land users, water users</p> <p>Non-profit organisations</p>
Pertinent policy	<p>Conservation of Agricultural Resources Act, 1983 (CARA)</p> <p>National Water Act, 1998,</p> <p>National Forests Act, 1998 (NFA)</p> <p>Spatial Planning and Land Use Management Act 2013 (SPLUMA)</p>
Example strategies and processes	<p>Pringle et al. (2015). An investment plan for securing ecological infrastructure to enhance water security in the uMngeni River catchment.</p> <p>Fabricius et al. (2016). Research Investment Strategy Ntabelanga and Laleni Ecological Infrastructure Project. Cape Town.</p>

STATUS QUO

Integrated landscape management has a history going back to the 1970s where parties identified that a coordinated approach at scale may be required to effectively and efficiently realise natural resource, agricultural and rural development goals. Generally implemented at a landscape or catchment scale, the concept recognises the:

- Processes that support ecosystem services, particular the regulation of water flow, sedimentation and quality. If water services are to be effectively produced, a comprehensive landscape approach is required as opposed to isolated interventions within a broader degraded catchment. The recent World Water Assessment Program (WWAP, 2018) report on nature-based solutions for the provision of water summarises this concept well.
- Importance of biodiversity corridors for the ability of species to adapt to climate change over time. As suggested by van Jaarsveld and Chown (2008), connectedness between isolated indigenous areas in landscapes which gives species the ability to move and access other populations, may be crucial to the long-term ability of species to adapt to climatic change.
- Efficiency in governance and providing supporting services. Many functions that are required to initiate and sustain implementation, for example, spatial planning, the provision of extension services or monitoring and evaluation, can be disproportionately expensive if

implemented at a limited scale or in a disparate manner. Implementation at a catchment or landscape scale may be a means of reaching a critical mass and economies of scale. This is not only important in the context of EbA, but realising potential climate change mitigation and emission reduction outcomes as a co-benefit of implementation in a viable manner.

- Critical mass and buy-in. Several stakeholders noted that there is often a form of social critical mass that is required to adopt and sustain initiatives. Some even suggested that a form of peer-pressure develops at a certain scale of buy in, where parties within a landscape start to reinforce EbA principles on each other as a default in one part of a landscape may affect them.

POTENTIAL WINDOWS OF OPPORTUNITY

Enhanced collaborative governance and planning.

Considerable progression in EbA planning has been made in a number of catchments, including the uMngeni, Ntabelanga, Umzimvubu and Breede. From a governance and mainstreaming perspective, it is interesting to observe that a range of state and private institutions, such as the South African National Biodiversity Institute, the Rhodes Restoration Group, LandCare and Birdlife have led planning. Whereas many stakeholders proposed that Catchment Management Associations might theoretically be well placed to undertake planning activities, it was noted that few have the capacity to plan and sustain management over the long-term. Parties suggested this is a crucial level of governance and a significant window of opportunity exists to create entities that lead participatory planning and EbA development. These do not necessarily need to be a new entity, it could be the support of an existing public or private sector body, but it needs to be sustained over the long-term.

ENTRY POINT 3: IMPLEMENTATION OF ON-THE-GROUND ACTIVITIES

Pertinent policy	<p>Conservation of Agricultural Resources Act, 1983 (CARA)</p> <p>National Water Act, 1998</p> <p>National Forests Act, 1998 (NFA)</p> <p>National Environmental Management Act (NEMA), 1998, 2002</p> <p>National Environmental Management Act: Biodiversity Act, 2004</p>
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STATUS QUO

While South Africa has some truly innovative and progressive implementation models, activities on the ground can be isolated and small in scale, both spatially and over time. At present, implementation occurs at several scales and through a number of agencies:

- National policy and regulations in the form of the Conservation of Agricultural Resources Act of 1983, National Forestry Act 1998 and the National Environmental Management Act 2002 provide an instrument through which to maintain intact functioning landscapes and

to halt further degradation. Applicable to indigenous rangeland, forest areas as well as commercial cropland, the enforcement of regulation is often identified by practitioners as one of the primary measures to avoid degradation. However, it is a domain in which significant additional capacity is required to make it effective at a full national scale.

- National and provincial conservation agencies play an important role in the implementation of EbA principles within formal conservation areas as well as through the projects located in important biodiversity areas. Ezemvelo KZN Wildlife and CapeNature, for example, provide broad planning and implementation support beyond the boundaries of the considerable conservation areas that they directly manage.
- At a national scale, South Africa has a set of programs that are internationally recognised for their innovative nature. The Expanded Public Works Programme, LandCare and the Biodiversity Stewardship Program provide avenues through which to implement the principles of EbA at scale. However, several stakeholders noted that, while considerable progression has been made to date, Expanded Public Works Programme projects can be isolated within a broader landscape and are relatively short-term. Parties suggested that there might be good opportunity to integrate EPWP and LandCare initiatives into greater landscape or catchment planning and support.
- The private non-profit sector has made a considerable contribution to the planning, development and implementation of EbA related projects. Due to their relative independence, they are often more flexible and able to respond relatively rapidly to opportunity. In

addition to independent fund raising, many work with spheres of government, for example EPWP, to implement planning and on-the-ground measures. Organisations include Wildlands, ICLEI, Conservation Outcomes, WESSA, Conservation South Africa, WWF South Africa, Living Lands, Adaptation Network and the Nature Conservancy, among others.

- The private commercial sector already plays a significant role in the realisation of EbA across South African landscapes, which has the potential to grow substantially in future. This not only includes what would be 'traditionally' considered as commercial agriculture (livestock and crop production), but plantation forestry as well as fruit, wine and sugar production. Entities within this sector often manage large areas of land and have recently started collaborating with national government and conservation NGOs on the management of adjacent land within watersheds (e.g. working with LandCare and WWF South Africa within the upper Breede River catchment). Implementing parties noted that this may be a particularly efficient manner through which to effect implementation as one only needs to pay the additional marginal cost to the farmer.

POTENTIAL WINDOWS OF OPPORTUNITY

The creation of coordination and management capacity at a catchment scale. Whereas South Africa has a broad range of implementation models that are thriving in certain locations, these tend to be isolated and often short term (less than five years). Relatively small, short-term projects are limited in their effectiveness, especially when attempting to improve



water services at a basin scale. In addition, the impact of individual projects can be significantly reduced if the drivers of degradation are still at play within the greater landscape and the net level of degradation still increases over time.

Parties suggested that a window of opportunity may be the creation of coordination and management capacity at a catchment scale. This suggestion is not new, as there are examples of this type of capacity within the uMngeni and Breede River catchments, but practitioners repeatedly suggested that an entity is certainly required in every sizeable catchment if implementation is going to be effectively realised. The entity would cover a broad range of tasks, from facilitating early planning processes, to the identification of implementation models and the management of the catchment over the long-term. Several implementation models may be required in a single catchment depending on land-tenure and -use types, including the enforcement of existing regulations to halt the initial degradation of landscapes.

Interviewed parties noted that pilot projects within the greater area may be required to illustrate proof of concept and to achieve buy-in. Land managers are often known for their conservativeness, and for good reason. Due to the time period of investments and the associated risk of producing crops and livestock (both commercially and non-commercially), one could literally “lose the farm” through adopting a new form of untried land-use that fails to deliver. Governance at a local scale may be crucial to cultivating buy-in and commitment over time.

Engagement with the mining sector. A second opportunity is engagement with the mining industry with a view to creating

a constructive working relationship over time. This is applicable to both land use planning and to the management of land over time. Stakeholders working on catchment management planning noted that the mining priorities often supersede others and that a more informed and constructive engagement is required with the Department of Mineral Resources as well as mining companies. Furthermore, mining firms own and manage vast tracks of land that could provide valuable EbA benefits to downstream communities. There may be good opportunity to work with companies to improve the ecosystem services provided by land under their control.

Land redistribution process. Interviewed emerging farmers, noted that large areas of restituted land may be in a degraded state, either cleared of vegetation, heavily eroded or bush encroached. New land managers often lack substantial capital reserves to restore land and allow it to rest for several years. It is in this context where external EbA funds as well as payment for ecosystem services could provide a crucial additional source of income. It provides an alternative source of revenue in the short-term and may improve the sustainability over the long-term by diversifying sources of income. Implementation may take place in a number of forms. The main implementer would be the emerging farmer and their staff, who may need advice from extension services on appropriate land management. In certain areas, farmers may need an external entity with substantial capacity, for example LandCare or the Expanded Public Works Programme, to assist in the rollout of more intensive activities (e.g. large scale erosion control or bush clearing measures). However, the scope of this opportunity has not been assessed to date. While several stakeholders have initially identified the idea, a form of gap analysis is required to



evaluate its true potential. In a national context where it is so important that emerging farmers succeed, creating an EbA and ecosystem-based mitigation program focussed on restoring restituted land fulfils multiple national policy goals.

Association and conservation agencies may be able to provide a number of support functions at little additional cost.

ENTRY POINT 4: SUSTAINING IMPLEMENTATION THROUGH SUPPORTING FUNCTIONS

STATUS QUO

Most forms of land use, be it livestock or crop production, protected areas, among others, require a certain level of institutional support to be sustainable over the long-term. Whereas activities on the ground may be developed in a context-specific manner, they generally require a number of supporting functions to remain sustainable over the long-term. For example, within the agricultural sector, most producers are members of a particular commodity-specific institution (e.g. the National Wood Growers Association, Grain SA or HORTGRO) that provide training and extension services, applied research, monitoring and certification, representation in policy development and engagement with the market. Many have their own periodical to communicate developments across the sector.

In the context of EbA (and ecosystem-based mitigation), this form of institutional support is often lacking, especially at a full national scale. Interviewed stakeholders were quick to highlight the need for enhanced extension services, better monitoring, applied research on land rehabilitation, and improved communication.

POTENTIAL WINDOWS OF OPPORTUNITY

Good opportunity exists to develop each of the supporting functions, mentioned by the interviewees, to include EbA-relevant aspects:

- Extension services that educate and support land managers on the ground.
- Monitoring, reporting and verification to track progression and to communicate outcomes to funders, Government and further stakeholders.
- Applied research on each element of land rehabilitation: the effectiveness of erosion control and restoration measures, the cost thereof and estimation of social and biodiversity benefits.
- Improved communication, possibly a periodical that will keep land managers up to date with developments and form the medium through which a community of practice can communicate.

Initially, a form of gap analysis may be appropriate to evaluate the current status of each element within South Africa and measures that need to be undertaken to develop it to a sufficient level. Part of the analysis should evaluate existing institutions and human capacity that can be leveraged to perform certain functions. The agricultural industry entities listed above as well as the South African Local Government

VI. Way forward to mainstreaming EbA at a national scale

The development of the four entry points represents an important next step towards the realisation of EbA at a full national scale. As noted, these were identified by practitioners across the country who have good insights into what is required to scale up implementation. Defining who should undertake the development is beyond the scope of this assessment, but it is crucial that it is closely aligned with current national EbA programs, notably, the strategic framework and overarching implementation plan (2016-2021) and the broader work currently being undertaken by Department of Environmental Affairs and the South African National Biodiversity Institute.

A next step may be to undertake a brief scoping assessment of each entry point to understand the nature and extent of required work, a reasonable development time-frame, key parties that need considered as well as required expertise and costs. This need not be a lengthy, drawn out process, but rather a brief assessment aimed at ensuring that development happens in a considered and well-structured manner. Thereafter, each entry point would be developed in full.

At the same time, short-term opportunities should be explored. The current land redistribution process in South Africa, where emerging farmers may receive land that needs to be restored and managed sustainably, may provide a good early opportunity to implement EbA while fulfilling a broader set of national development and social upliftment goals. In a similar manner to the principal entry points, a brief scoping analysis is required to understand its full potential and costs.



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