



# Ecosystem based Adaptation

## Building Resilience to Climate Change in the Namakwa District



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Ecosystem-based adaptation is the use of biodiversity and ecosystem services as part of an overall strategy for climate change adaptation. It includes the sustainable management, conservation and restoration of ecosystems that provide the services that help people adapt to the adverse effects of climate change (CBD, 2009).

### Assessing vulnerability in the Namakwa District Municipality

Ecosystem-based adaptation (EbA) helps to build resilience to climate change into natural systems and human communities, reducing vulnerability in both while providing multiple benefits. These benefits include the sustainable development of alternative nature-based livelihoods, sustainable natural resource management, and the provision of key ecosystem services such as freshwater, grazing, and soil erosion control. The Namakwa District can expect higher annual average temperatures and lower rainfall under conditions of climate change by 2050, exacerbating current conditions of aridity punctuated by periodic droughts and flooding (Bourne et al, 2012).



An EbA approach focuses on activities and management approaches that use the conservation, rehabilitation, and protection of biodiversity and ecosystem services as low-cost and low-tech solutions to climate change

Some examples of successful EbA projects in Southern Africa can be found in Midgley et al's (2012) Biodiversity, Climate Change and Sustainable Development Report.

## Ecosystem Services in the Namakwa District

EbA focuses on reducing vulnerability through improving ecosystem service delivery. Ecosystem services are the suite of benefits that we derive from our natural environment. There are four main types of ecosystem service (MEA, 2005):

- Provisioning services, including food, fuel, water, minerals, and medicines
- Regulating services, including carbon sequestration, water and air purification, pollination, climate regulation, and disease control
- Supporting services, including nutrient cycling and seed dispersal
- Cultural services, including recreation, scientific discovery, and spiritual inspiration

## EbA activities in the Namakwa District

Recommended EbA activities for the Namakwa District include:

- Sustainable water management: river catchment areas, flood plains, wetlands, and their associated vegetation should be rehabilitated and managed to provide freshwater, water storage, flood regulation, groundwater recharge, erosion control, and fodder provisioning services.
- Disaster risk reduction: the rehabilitation of coastal habitats, such as dunes and estuaries, and wetland habitats often provide a particularly effective measure against storm-surges, saline intrusion and erosion.
- Sustainable management of grazing lands: improve the ability of local farmers to make a living and to respond effectively to climate related challenges such as drought and flooding.

- Diversification of livelihoods: use indigenous knowledge, together with adaptation strategies, to ensure food security, human health, and alternatives for sustainable job creation and economic opportunity.
- Establishing climate change corridors and an effectively managed protected area network: ensure sufficient networks of untransformed, rehabilitated, or better managed natural areas, to deliver the ecosystem services on which we depend and that increase resilience to climate change. This will also create corridors along which species can move. Protected areas can be formally set aside as reserves or sustainably managed under various forms of stewardship.



References  
Bourne, A., C Donatti, S Holness, and G Midgley. 2012. Climate Change Vulnerability Assessment for the Namakwa District Municipality. Final Technical Report, August 2012

Midgley, G.F., S Marais, A Barnett; & K Wagsaether. 2011. Biodiversity, climate change and sustainable development: harnessing synergies and celebrating successes. Final technical report, April 2012

Millennium Ecosystem Assessment. 2005

Secretariat of the Convention on Biological Diversity (CBD) (2009). Connecting Biodiversity and Climate Change Mitigation and Adaptation. Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change. Montreal, Technical Series No. 41, 126 pp.

# healthy ecosystems benefit human well being in the Three Peaks

## human well-being

60 direct jobs  
2 community projects

## ecosystem services

14,950ha healthy grazing land  
+/- 27,000kl sustained water supply

## healthy ecosystems

21,000ha conserved  
+/- 1200 plant species conserved

