

Biodiversity offsets: adding to the conservation estate, or 'no net loss'?

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ABSTRACT

The Western Cape province of South Africa contains globally unique biodiversity. Pressure for rapid economic growth and development poses a significant threat to the remaining biodiversity. Legal and planning frameworks support biodiversity conservation and enable biodiversity offsets. Biodiversity plans at different scales provide a clear indication of spatial priorities for conservation.

In this context, a draft policy for biodiversity offsets in the Western Cape has been developed (DEA&DP 2007). It introduces biodiversity offsets as an integral part of the regulatory Environmental Impact Assessment and development authorization process. The approach focuses on area- and monetary-based compensation to secure and manage priority areas in the long term. The emphasis is on adding priority habitats to the national conservation estate, rather than one of achieving 'no net loss' in the strictest sense.

This paper explains how the Western Cape context has shaped its approach to biodiversity offsets: the political, socioeconomic and institutional characteristics are as important in designing an offsets policy as biodiversity considerations. The paper notes key challenges facing the province in implementing the policy.

INTRODUCTION

Biodiversity offsets are defined as "conservation actions intended to compensate for the residual, unavoidable harm to biodiversity caused by development projects, so as to ensure no net loss of biodiversity" (ten Kate *et al* 2004). They are receiving increasing attention from environmental groups, industries and governments as a way of balancing the competing demands of development and conservation. Offsets are seen by environmental groups as a way to conserve natural habitat, and by companies as a means to secure and maintain license to operate.

Biodiversity offsets may be legally required and considered during environmental impact assessment or planning processes, negotiated in concession agreements between governments and developers, and/or implemented on a voluntary basis by developers.

THE WESTERN CAPE

The Western Cape is a province in South Africa, a developing country where the need for socioeconomic upliftment of a large, relatively poor population is urgent. The province's main characteristics are:

1. It contains significant elements of two global biodiversity hotspots: the Cape Floristic Region and the Succulent Karoo. Approximately 70% of the country's Critically Endangered vegetation types and threatened species occur here, and 73% of vegetation units found here are endemic to the province (Le Roux *et al* 2007). Very few threatened vegetation types are adequately conserved (Driver *et al* 2005).
2. The province's biodiversity presents a huge challenge for land-use planning and decision-making. Existing protected areas do not include a representative sample of species and habitats, or make adequate provision for key ecological and evolutionary processes (Rouget *et al* 2003a). Development and the spread of alien invasive plants are rapidly converting and fragmenting remaining natural areas.
3. Restoration and/or re-creation of most of the semi-arid and arid ecosystems of the Western Cape is widely regarded as impracticable: restoration efforts are often prohibitively expensive, seldom lead to levels of biodiversity approaching those in pre-disturbance habitat in the medium term (e.g. Holmes 2001), and these ecosystems may take centuries to recover (De Villiers *et al* 2005).

4. The removal of alien invasive species on private property is required by existing law, and will be required in terms of the National Environmental Management Biodiversity Act 10 of 2004 (Biodiversity Act).
5. It is home to about 4.5 million people, 28% of which live in poverty. Agriculture is seen as a priority sector for realising economic growth and land reform targets, and mining is likely to expand. About 48 000 migrants enter the province every year (DEA&DP 2005), increasing the pressure on natural resources.
6. Many laws, policies, plans and guidelines at national and provincial levels aim to achieve long term development benefits without compromising the natural environment. The conservation of biodiversity and ecological integrity is required in terms of, amongst others, the Constitution, the National Environmental Management Act 107 of 1998 (NEMA), and the Biodiversity Act.
7. Biodiversity offsets are supported at national level through the NEMA principles that include the need to 'avoid, or minimize and remedy' the disturbance of ecosystems and loss of biological diversity, and for those responsible for harming the environment to pay to remedy that harm. The National Biodiversity Strategy Action Plan (NBSAP) explicitly recognises the need for biodiversity offsets (DEAT 2005) and the Western Cape Provincial Spatial Development Framework, approved by Provincial Cabinet in 2005, creates a policy framework for biodiversity offsets to curb the continual erosion of biodiversity.
8. Regulatory Environmental Impact Assessment (EIA) provides some control over biodiversity impacts, although illegal developments do slip through the EIA net. The Biodiversity Act provides for the listing of threatened ecosystems and species; processes threatening those ecosystems or species will require EIA.
9. Biodiversity plans at different spatial scales, from national (Driver *et al* 2005) to local, determine the conservation status of ecosystems, set defensible conservation targets, and identify priority areas for conservation of biodiversity pattern, and ecological and evolutionary processes (e.g. Driver *et al* 2003).
10. Despite initiatives to mainstream biodiversity in land use planning (e.g. Driver *et al* 2003) and impact assessment (e.g. Brownlie 2005), constraints in capacity at all levels of government are a major obstacle to integrating environmental sustainability into sectoral activities (DEA&DP 2005). There is thus a high risk of losing biodiversity in priority areas. Biodiversity tends to play a subordinate role in decision making and is traded off for short-term socioeconomic benefit. Decision making is inconsistent in its treatment of biodiversity, and EIA consultants often fail to address biodiversity issues adequately (Brownlie *et al* 2006).
11. The agency responsible for biodiversity conservation in the Western Cape is under-capacitated and not in a position to acquire or manage additional priority areas for conservation without an increase in funding.
12. Many development proponents believe that their core function is development, not conservation, and that the management of natural habitat for conservation should not be their responsibility.

APPROACH TO DEVELOPING A POLICY FOR BIODIVERSITY OFFSETS IN THE WESTERN CAPE

A policy on biodiversity offsets must take into account the prevailing political, socioeconomic and institutional context if it is to be effective. The Western Cape context informs the policy in the following ways:

1. The approach must cater for the full spectrum of development types at different scales: small, poorly resourced developments can do as much damage to priority habitat fragments as large ones.
2. The approach to biodiversity offsets must be simple and explicit for developers, implementing authorities and EIA consultants to apply. Requirements should be reasonable in terms of the developer's investment of resources in investigating and implementing offsets, and should not delay project authorization unduly.
3. The 'no net loss' objective for biodiversity is unlikely to be realistic in South Africa, a developing country. There will, at least, be loss of biodiversity at genetic levels through ongoing reduction in size of populations through cumulative impacts of habitat conversion deemed acceptable by decision-makers.
4. Restoration or creation of habitat is not considered as a feasible or reliable option for offsets in the Western Cape; the biota is ill-suited and the risk of failure is too high.
5. The development of biodiversity plans in recent years and the setting of targets for biodiversity conservation provide an explicit and scientifically defensible framework on which to focus offset efforts.
6. There is an urgent need to protect and manage those priority areas for biodiversity conservation identified in biodiversity plans that are located outside of the existing protected area network.

7. Offsets must be seen strictly as a last resort form of mitigation once all other mitigation options have been shown to be exhausted. Clear 'bottom lines' where biodiversity offsets should not be considered in view of potentially irreplaceable loss of threatened species or ecosystems must be made explicit.
8. A risk-averse approach to biodiversity offsets must be taken in view of probable deficiencies in the quality of some EIAs, time lags in interpreting data on ecosystem status and between development activity and securing offsets, and inherent uncertainties about the response of ecosystems to climate change.

THE WESTERN CAPE'S POLICY

The biodiversity offsets policy (DEA&DP 2007) responds to the current socioeconomic context and biodiversity conservation priorities in the Western Cape. It is not seen as a static policy, but as one that will have to be modified to respond to a changing context over time. The objective of biodiversity offsets, through the development authorization and associated EIA process, is to ensure that residual impacts on biodiversity and ecosystem services of moderate to high significance are compensated in such a way that:

- i. The cumulative impact of development does not cause any ecosystem to become more threatened than 'endangered'¹ or the conservation status of species and 'special habitats'² to decline;
- ii. Conservation efforts are focused in areas identified as priorities for biodiversity conservation; and
- iii. Ecosystem services on which local or vulnerable human communities - or society as a whole - are dependent for livelihoods, health and/or safety, are safeguarded.

The proposed biodiversity offset system is underpinned by an explicit set of principles. Offsets would only be considered as a 'last resort' in the mitigation hierarchy. They would not be considered for residual impacts on critically endangered ecosystems, ecosystems containing irreplaceable biodiversity, or irreplaceable ecosystem services. Offsets would not be required for residual impacts of low significance on 'least threatened' ecosystems.

The system is based on area-based compensation in the form of 'like for like' habitat located either on, or at a distance from, the development site. Habitat of high conservation priority could either be donated to a statutory conservation authority or an accredited Public Benefit Organisation, or could be the subject of a formal conservation servitude drawn up between the State and landowner. In every case, funds for management of the offset would be required. In some instances, monetary compensation may be appropriate in the form of contributions to an accredited conservation fund to acquire and manage priority habitat for biodiversity, and/or providing funds to expand or manage public protected areas.

Offsets may need to comprise either a single or composite areas to compensate fully for residual biodiversity impacts. Offsets are calculated by multiplying the residual area of impacted habitat by a basic offset ratio linked to the national conservation status of the affected ecosystem (Driver *et al* 2005), as shown in Figure 1, namely a 30:1 ratio for 'critically endangered' ecosystems (to be considered in exceptional circumstances only), a 20:1 ratio for 'endangered' ecosystems, and a 5:1 ratio for 'vulnerable' ecosystems.

The required offset area is then adjusted by a range of context-specific considerations, namely the condition of the affected habitat and the significance of residual impacts on threatened species, special habitats, important ecological corridors or process areas, and on biodiversity underpinning ecosystem services with socio-economic value.

Offsets should be located in an 'offset receiving area', namely a priority area identified in biodiversity plans or by the provincial conservation agency as being targeted for the expansion of protected areas, and/or irreplaceable for meeting conservation targets. As far as possible, offset sites should be connected to other formally protected sites, make a positive contribution to securing, protecting and/or linking biodiversity priority areas, and/or consolidating ecological corridors in the landscape.

In evaluating an offset proposal, decision makers and the biodiversity conservation agency must satisfy themselves that the offset would: compensate fully for the residual negative impacts on biodiversity and

¹ The Biodiversity Act makes provision for listing threatened ecosystems; listing is expected in 2008. Red Data Books/ Red Lists indicate threatened species, and the National Spatial Biodiversity Assessment lists threatened ecosystems.

² Referred to in NBSAP, defined in some fine-scale biodiversity plans, or identified by the provincial conservation agency - 'special habitats' capture elements of significant biodiversity that would not be covered by coarser indicators like threatened ecosystem. Could include habitat for migratory species, for life-stages of important species or locally rare or range-restricted species.

ecosystem services; be functionally viable in the long term; be acceptable to the main affected parties; and be implemented successfully and effectively with minimal risks.

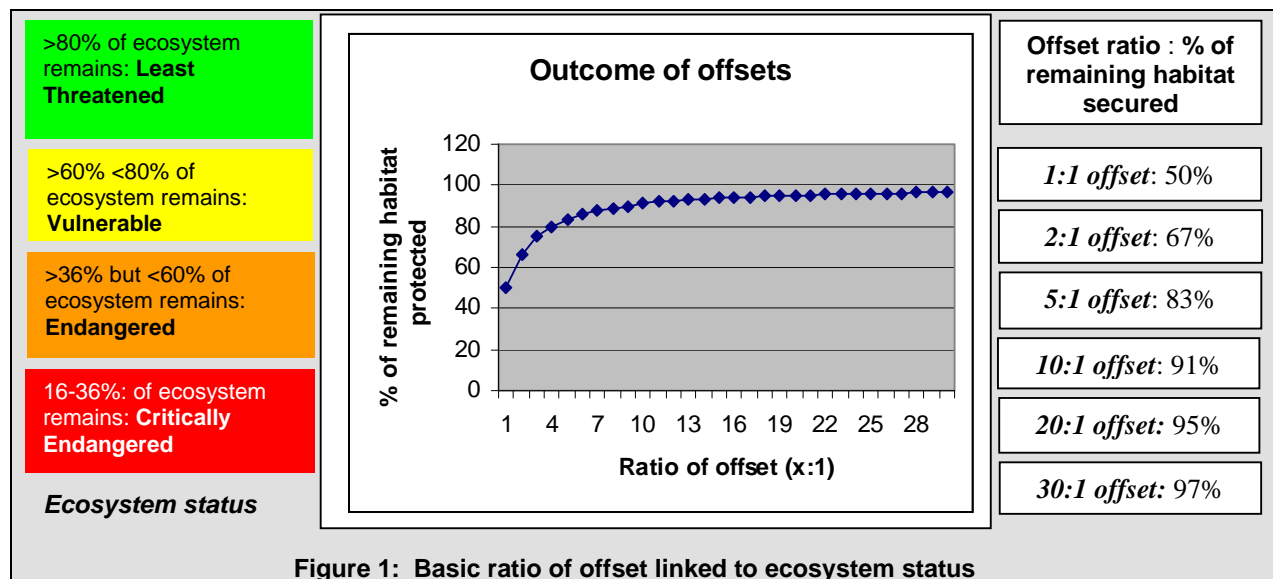


Figure 1: Basic ratio of offset linked to ecosystem status

DISCUSSION

Biodiversity conservation is embraced by most countries. However, there is a pressing need for poverty reduction and development in developing countries like South Africa. Some further conversion of natural habitat, the main cause of biodiversity loss, with associated loss of genetic variability, is thus inevitable.

Most countries or states that have introduced biodiversity offsets stipulate either a 'no net loss' or 'net gain' outcome of implementing offsets. However, the explicit interpretation of these terms is generally lacking.

- 'No net loss' could be taken in its strictest sense to mean no net loss of biological diversity from genetic to ecosystem levels. Alternatively, it could mean that the total amount of natural habitat must be maintained, and that biodiversity gains must at least be equal to any losses resulting from clearing or other forms of degradation of native vegetation (e.g. DEC 2006). One could also view 'no net loss' in relation to formal targets or goals for biodiversity conservation in a particular country or area. Clearly, the scale at which 'no net loss' is measured affects its interpretation, as noted by Huggett (1998) who states that if the 'no net loss' policy is to work, the geographic scale on which alternatives are considered may need to be increased.
- For some extractive industries a net gain is the specified outcome, namely to establish a process to protect and manage biodiversity 'over and above that lost' (e.g. DWLBC 2005, for the minerals and petroleum industry). Some authorities, e.g. EPA, Government of Western Australia (2006), are of the opinion that offsets should be used with an aspirational goal of achieving a 'net environmental benefit'.

In considering a regulated approach to be applied across different sectors and scales of development in a predictable and consistent manner, a 'net gain' outcome is difficult to define for the Western Cape, and unrealistic in a developing country context. Rather, an approach is sought that strives to ensure that representative areas of ecosystems and associated species, and biodiversity underpinning important ecosystem services, are secured for public protection in perpetuity. This approach requires reliable information on the status of ecosystems and species, explicit conservation targets, as well as defensible spatial conservation plans. It echoes in part the approach taken in developing a draft Regional Conservation Plan for the Lower Hunter Valley, Australia (DEC 2006). The plan indicates where new reserves are to be established, and identifies regional conservation priorities that should be the focus for future offsets.

In the absence of an overarching biodiversity conservation plan with clear priorities and targets, it could be argued that repeated biodiversity offsets, for which developers could be responsible for at most the life of a proposed development, could result in a game of 'offset dominoes': the cumulative risks and uncertainties

associated with repeated undertakings to restore, create or enhance habitat resulting not only in insidious loss and fragmentation of biodiversity over time, but also in foregone opportunities to secure priority habitat as part of the conservation estate in perpetuity. According to Bekessya *et al* (in press), trading schemes that allow vegetation clearance to be offset by protection of existing ecological assets will result in a net loss of habitat. Whilst this would indeed be the case on a project-by-project basis, the overall advantages of securing priority habitat for the conservation estate, and enabling biodiversity conservation targets to be met, are significant.

The ratio-based approach in the Western Cape has a number of advantages, namely it:

- Is relatively uncomplicated;
- Explicitly relates the size of offset to the conservation status of the impacted ecosystem;
- Sends a clear signal to developers to avoid priority biodiversity areas;
- Should significantly reduce further loss of threatened ecosystems and species;
- Introduces clear, fair (i.e. applied to all) and consistent expectations from government of developers with regard to providing biodiversity offsets and enables predictability in decision-making.

The main challenges to implementing the system of biodiversity offsets are:

- i. Monetary compensation increases the work of institutions and organizations responsible for biodiversity conservation in the Western Cape. Depending on their capacity, the added work may be problematic.
- ii. Perceptions of vested interest between different government departments and the conservation agency which could stand to benefit from an expanded land holding and/or financial benefits through receiving funds for the conservation management of offsets.
- iii. Ring-fencing and auditing performance of offset funding.

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