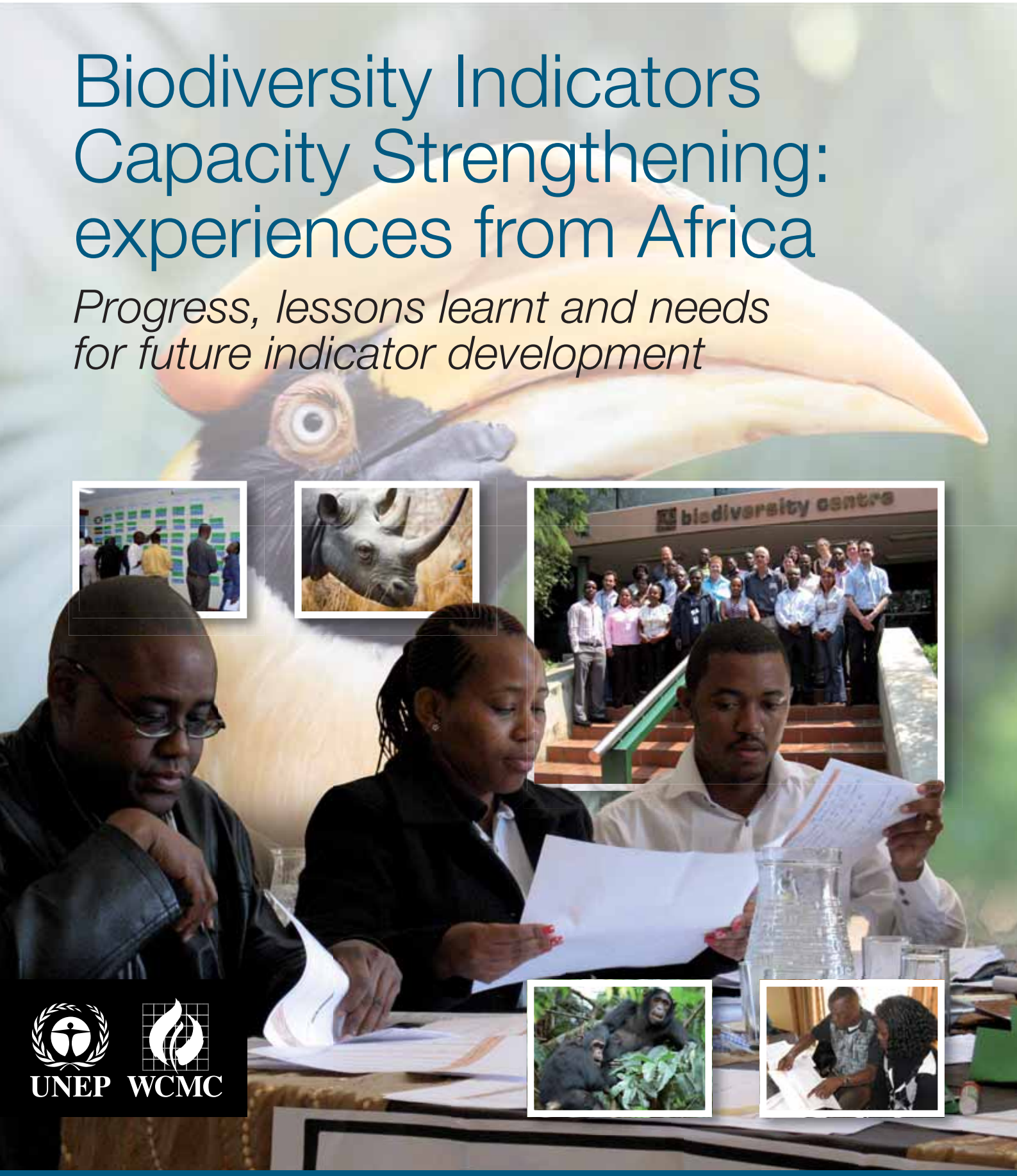
2010 Biodiversity Indicators Partnership

Biodiversity Indicators Capacity Strengthening: experiences from Africa

Progress, lessons learnt and needs for future indicator development



UNEP WCMC

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Introduction

This report presents many of the results, lessons learnt and recommendations from the *Biodiversity Indicators Capacity Strengthening in Africa* project, which assisted countries in eastern and southern Africa to develop national biodiversity indicators on a sustainable basis, utilising existing data to address national priority issues.

The project used a broad definition of biodiversity indicators as information tools to help summarise and simplify information on the status and threats to biodiversity, and to evaluate progress towards its conservation and sustainable use. Indicators are needed to help design and monitor national policies on biodiversity, the environment and sustainable development, as well as for reporting on international agreements such as the Convention on Biological Diversity and the Millennium Development Goals.

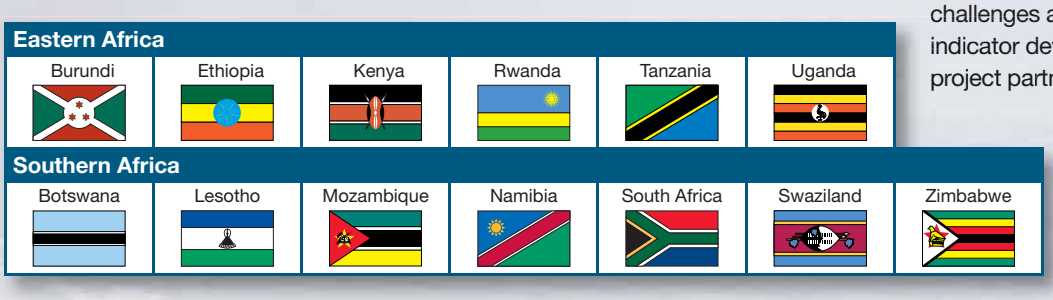
The project worked with thirteen countries from the eastern and southern Africa regions, with the development of partnerships between government agencies, NGOs and academic bodies a key part of its strategy. National teams or task forces were formed to produce a small number of indicators. These national partnerships greatly improved access to data and its analysis and communication. Through this practical work they built their technical and organizational capacity.

Project Facts

Duration: 2008 – 2010
Funding Source: UN Development Account (UNDA)
Implemented by: UNEP and the UNEP World Conservation Monitoring Centre (UNEP-WCMC), with the 2010 Biodiversity Indicators Partnership (2010 BIP)
Number of countries: 13
Number of national project partners: 58

The implementation of the project was built around a series of three capacity building workshops over a twelve month period in each region. The formation of national teams and selection of priority topics requiring indicators were started at the first workshop in each region. The results of stakeholder consultations and initial data gathering were reported at the second workshops, and final results and lessons learnt were shared at the final regional workshops. UNEP-WCMC provided guidance and technical support during and between the workshops.

This document presents examples of the indicators produced as a result of project and is designed as a means for sharing experiences and lessons learnt with biodiversity indicator developers across the globe. The report concludes with key challenges and needs for future national indicator development identified by the project partners.



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Acknowledgements
The authors wish to express their deep gratitude to the many participants involved in the Biodiversity Indicators Capacity Strengthening in Africa project. The production of this document would not have been possible without their invaluable help, hard work and dedication to the project.

We gratefully acknowledge the financial support of the UN Development Account for the project. The project also greatly benefited from materials and expertise of the 2010 Biodiversity Indicators Partnership (2010 BIP), which is funded by Global Environment Facility (GEF) and we would also like to express gratitude for this support.

The success of this project in great measure due to the skilful collaboration of Kenya Wildlife Service (KWS) and South Africa National Biodiversity Institute (SANBI) in organising the project's regional workshops in eastern and southern Africa, for which we are very grateful.

We also thank UNEP DEWA and the UNEP Regional Office for Africa for their partnership in the delivery of this project.

Further information
This document is designed to complement the 2010 BIP document, '*Guidance for National Biodiversity Indicator Development and Use*', which is available online: *www.bipnational.net/indicatorguidance*

More information on this project and national biodiversity indicator development are available from the National Biodiversity Indicators Portal: *www.bipnational.net*

Please contact *info@twentyten.net* to send feedback, questions and suggestions for improvement of this document, or to find out how your country could be involved in future biodiversity indicator capacity building work.

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The Biodiversity Indicator Development Framework

The Biodiversity Indicators Strengthening in Africa project and this report have been structured around a Biodiversity Indicator Development Framework, which contains key steps for producing successful biodiversity indicators. The framework has been developed from the capacity building experience of UNEP-WCMC and partners, including the 2010 BIP. Project partners were encouraged to consider and follow the framework steps when selecting and developing biodiversity indicators.

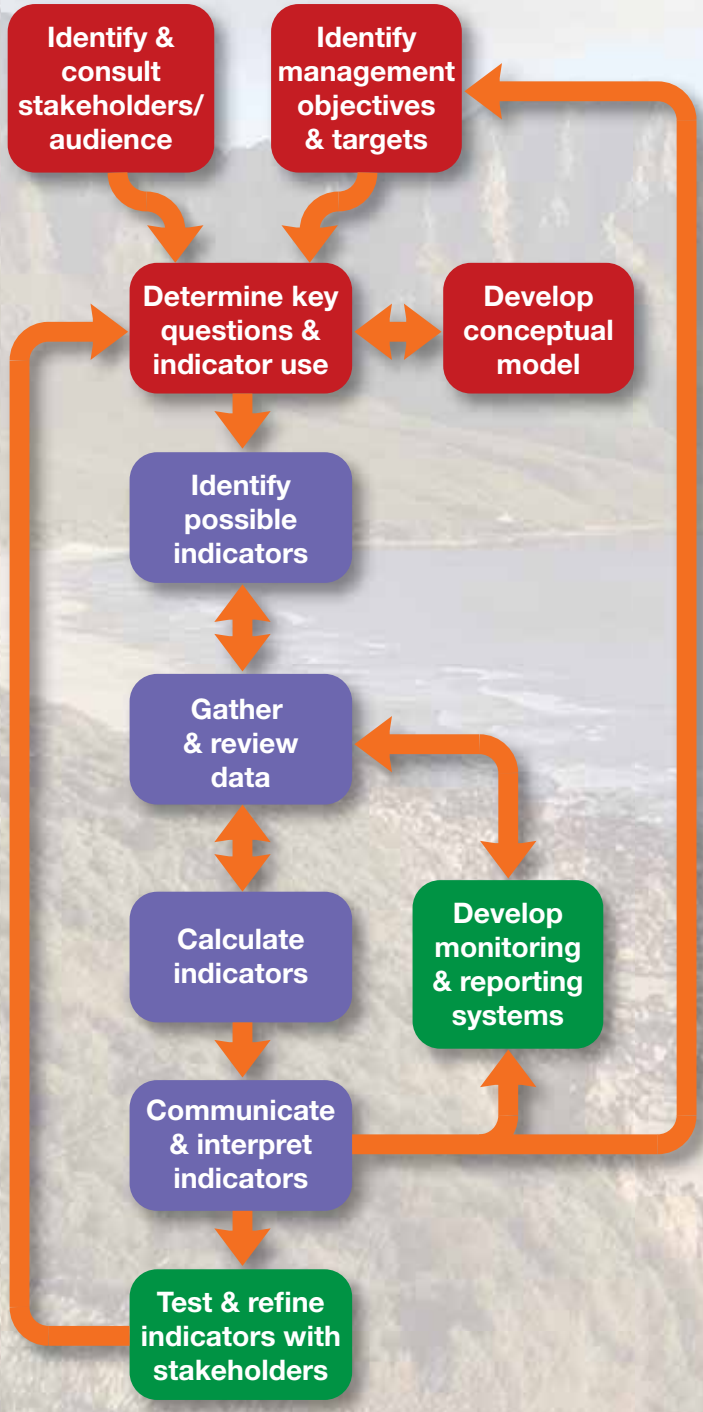
The framework can be separated into three areas:

Purpose – actions needed for selecting successful indicators,

Production – essential stages for indicator development,

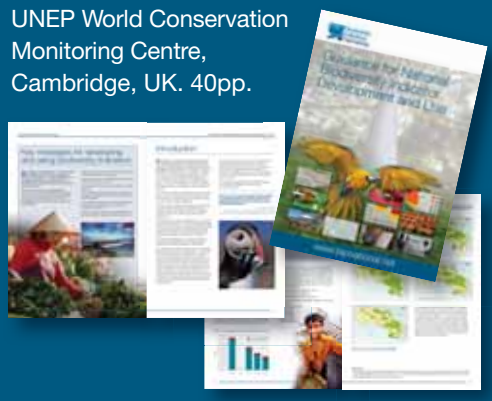
Permanence – mechanisms for ensuring indicator continuity and sustainability.

More information on the Biodiversity Development Indicator Framework and each of the steps is provided in the companion document, '*Guidance for National Biodiversity Indicator Development and Use*', which is available at *www.bipnational.net/indicatorguidance*.



Reference

2010 Biodiversity Indicators Partnership. (2010) *Guidance for National Biodiversity Indicator Development and Use*. UNEP World Conservation Monitoring Centre, Cambridge, UK. 40pp.



Examples of Progress

Identify & consult stakeholders

Burundi: *A stakeholder workshop was held for 32 participants from government agencies, NGOs and media. The agenda included a discussion of the project and the need for biodiversity indicators for Burundi. Outcomes of the workshop included the acceptance of three indicators for immediate development.*

Mozambique: *Stakeholders were identified for the country's first State of the Environment 2010 report across a range of sectors, including agriculture.*

Lesotho: *A stakeholder meeting was held to review national management objectives and identify potential indicators for development. Selected indicators are protected area coverage, numbers of registered traditional doctors and total wetland area. Stakeholder meetings proved critical not only for identifying potential indicators but for highlighting suitable data sources.*

Identify management objectives and targets

Rwanda: *The project was integrated with an ongoing initiative to develop a national 'Biodiversity Information System', which identified national management objectives for the environmental sector.*

Tanzania: *Existing national targets, such as species population recovery targets were identified from policy reports, including the State of the Environment Report. One such target was for the national elephant population.*

Botswana: *Indicator development was delayed during the definition of a new National Development Plan, which includes greater conservation attention to taxa other than large mammals, as well as sustainable biodiversity management.*

Determine key questions and indicator use

Ethiopia: *The status of protected areas was determined to be a key issue of importance. Key questions were developed during several consultations and five where selected to aid indicator development:*

1. *What is the status of key species populations within our protected areas?*
2. *What is the status of land use in our country?*
3. *What is the extent of our protected areas?*
4. *What are the main pressures to our protected areas*
5. *How effective is protected area management?*

Swaziland: *Fourteen specific key questions where identified under three priority themes; Status and trends of biodiversity, threats to biodiversity and state of water resources. A potential indicator was identified for each of the questions.*

Zimbabwe: *Three main key questions were identified relating to deforestation, veld fires and land use change. The key use of potential indicators was identified for each question. For example an indicator relating to veld fires could be used to inform the public about the dangers of veld fires and their effect on biodiversity.*

Develop conceptual model

Namibia: *Conceptual models were completed to ensure indicators selected address all the key issues and questions identified.*

South Africa: *A conceptual model was developed around protected areas coverage of vegetation types, to assist with the indicator development. The model incorporated relevant international and national targets and the roles of each of the organizations/institutions involved in indicator development.*

Botswana: *General conceptual models have been developed around key issues of national importance. These models will be drawn upon when developing key questions and at the later stages of indicator development.*

Identify possible indicators

Uganda: *Nine indicators were selected for development using a Pressure-State-Impact-Response framework:*

- *Uganda Habitat Cover Index*
- *Uganda Species Population Index*
- *Uganda Big Six Index*
- *Uganda Primate Index*
- *Uganda Albertine Rift Index*
- *Uganda Grey Crowned Cranes Index*
- *Uganda Species Richness Index*
- *Uganda Biodiversity Index*
- *Uganda Living Planet Index 2010*

Burundi: *Three initial indicators were selected which respond to national priorities and key questions relating to the national status of bird populations, fish populations and forest extent.*

Zimbabwe: *Three priority indicators were identified for immediate development which responded to the key questions:*

- *Forest cover*
- *Land use change*
- *Extent of land affected by veld fires*

Throughout the project national partners were encouraged to share their progress in selecting and developing indicators according to the steps of the Biodiversity Indicator Development Framework. All nations advanced considerably as a result of the project and examples of their results are presented in this section.

Gather and review data

Rwanda: *Five initial indicators were selected on the basis that data was readily available and production could be started immediately. These include status of population trends, habitat extent, changes in status of threatened species, fisheries impacts and coverage of protected areas.*

Lesotho: *The initial stakeholder workshop was critical for identifying data sources that many organizations were not previously aware of. Data in most cases were patchy and incomplete. However it was possible to gather data from several sources for use in one indicator. For example the indicator, '*Number of traditional doctors*' comprises data from several sources including Ministry of Finance and Development Planning (Bureau of Statistics) and Ministry of Tourism, Environment and Culture (Department of Environment).*

South Africa: *Data for the indicator '*Protection status of vegetation types*' was gathered from three different sources: Department of Environmental Affairs, South Africa National Biodiversity Institute, South Africa Demarcation Board.*

Calculate indicators

Kenya: *15 identified indicators have been calculated, ranging from human wildlife conflict to wildlife disease. Calculation methods have been documented for each of the indicators in comprehensive individual factsheets to ensure standardized indicator production into the future.*

Swaziland: *Five initial indicators calculated: Ex situ crop collections, extent of ecosystems and assorted habitats, coverage of protected areas, representation of Red Listed species in protected areas, and coverage of ecosystem types within protected areas. A further five indicators are awaiting calculation.*

Uganda: *All nine selected indicators were calculated by several organizations including Makerere University Institute of Environment and Natural Resources, Uganda Wildlife Authority, National Environment Management Authority, Uganda Bureau of Statistics, and Nature Uganda. The calculations were done in association with WWF International and the Zoological Society of London using the methods of WWF's Living Planet Index.*

Communicate and interpret indicators

Ethiopia: *Work has been undertaken on indicator interpretation and additional biodiversity information has been collected for the development of a national indicator report.*

Namibia: *Indicators are being used to develop clear stories which are linked to issues of reliance and target audience. The indicators will be communicated in Namibia's State of Biodiversity Report for 2010.*

Kenya: *A national biodiversity indicators report is being produced as a collaboration between Kenya Wildlife Service and several national partners.*

Test and refine indicators with stakeholders

Tanzania: *Developed indicators will be presented at future consultative meetings to ensure they respond directly to the key questions and to refine them to meet the user's needs.*

Uganda: *There are plans to hold two additional stakeholder meetings to present the calculation procedures and the data required. These meetings will assist with refinement of the indicators and conclude in the adoption of methods that can be used to ensure standardisation of future indicator production.*

South Africa: *The '*Protection status of vegetation types*' indicator has been tested by all stakeholders involved in its development. The next step in indicator refinement includes presenting the indicator to a wider range of stakeholders not involved in its development to get different views on its usefulness and advice on how the indicator can be improved.*

Develop monitoring and reporting systems

Kenya: *Plans for sustainable indicator development include the development of a monitoring system which produces data on a biannual basis. Methods for the existing data used in the indicators has been documented in indicator factsheets and this will aid standardized practices to ensure data collected can be incorporated into the indicators.*

Uganda: *The indicator development has been fully integrated within the government-led Biodiversity Committee with the calculation led by MUIENR in association with other national partners, and quality control with the Uganda Bureau of Statistics.*

The Indicators

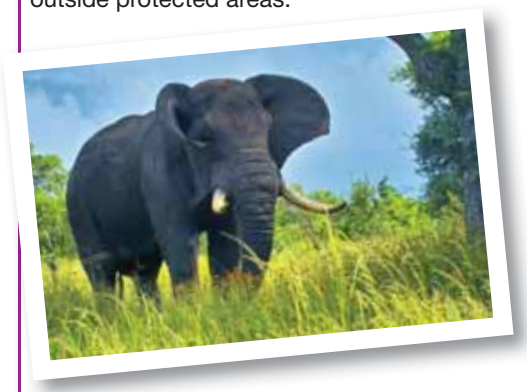
The project aimed to build technical and organizational capacity through the production of a small number of indicators for priority biodiversity issues, with this capacity then allowing future expansion to address more biodiversity indicator needs. Most of the project countries developed one or more biodiversity indicators, meaning they progressed from being introduced to the concept of biodiversity indicators and their uses through to selecting, calculating and then communicating their own indicators, all in the space of just one year. Those which had not managed to calculate indicators still made significant progress, with all countries having selected indicators for development which meet national priorities. Delays in progress were chiefly due to challenges in developing new collaborations between national institutions, rather than technical production issues.

In this section we present a selection of the indicators under a series of general key questions found to be common priorities across all countries involved.

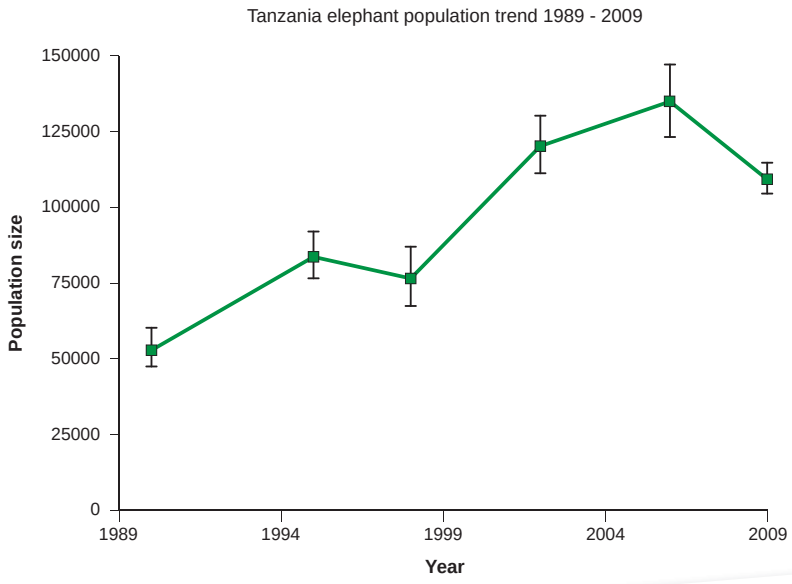
What is the status of species populations within our country?

Tanzania *What is the status of our elephant populations in relation to our national target of 120,000 individuals?*

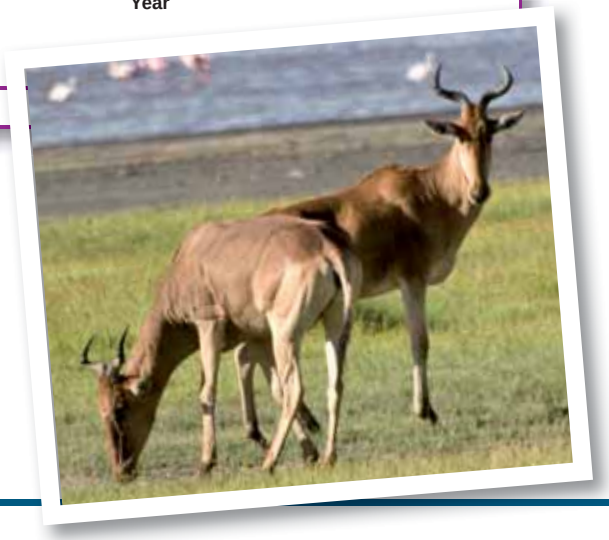
Interpretation: Tanzania's elephant population increased from 52,823 ± 6,296 individuals in the year 1989 to 134,588 ± 12,039 in the year 2006, and then decreased to 109,290 ± 5,289 in the year 2009. The increase is influenced by the implementation a policy on the Management of African Elephant in Tanzania that emphasized the successful conservation of the species to allow its population to recover in protected areas, to resolve conflicts between elephant and legitimate human activities, and provide benefits from elephant conservation outside protected areas.



Population trend of the elephant population in Tanzania, 1989-2009
Data source: Tanzania Wildlife Research Institute (TAWIRI)



Produced by: *Samwel K. Bakari, TAWIRI.*



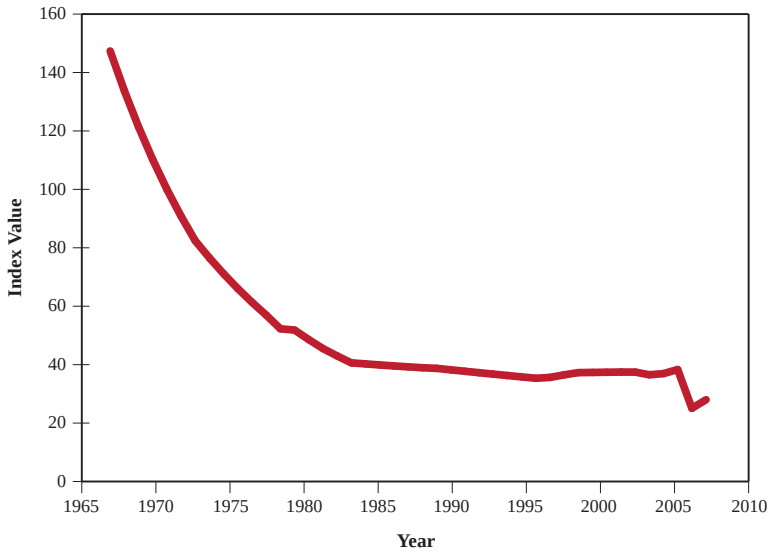
Uganda

What is the status of our 'Big Six' species (mountain gorilla, chimpanzee, Uganda kob, Rothschild's giraffe, elephant and lion) which are important for wildlife tourism?

Interpretation: The index is an indicator of the average change in the population abundance of the six species selected, with the index set to a value of 100 in 1970. The index shows an average population decline of the 'Big Six' species in the 1970s and 1980s due to poaching and habitat destruction during the civil strife in Uganda. Population levels have stabilised from 1990s onwards, although at only 40% of the 1970 value.

Uganda 'Big Six' Index

Data source: The main source of data for primates is Wildlife Conservation Society (WCS) censuses and Uganda Wildlife Authority for the other species



Produced by: *MUIENR in association with WWF International and ZSL.*

Ethiopia

What is the status of Swayne's Hartebeest populations within our protected areas?

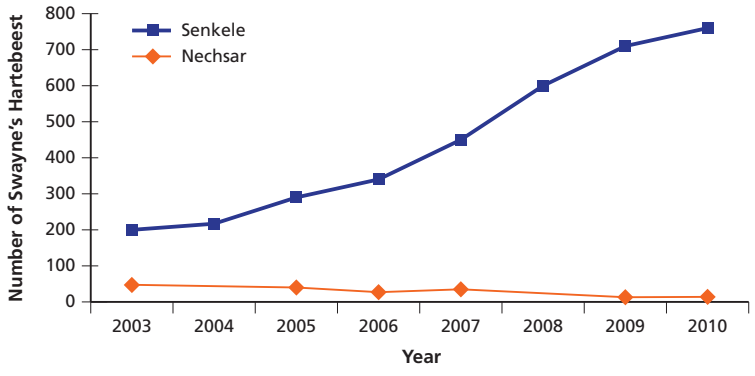
Interpretation: There has been a considerable increase in the Swayne's Hartebeest population at SSHS, which is mainly due to decreases in mortality levels resulting from disease and poaching. Successful actions undertaken to reduce mortality levels include:

- Establishment of habitat management and ecological monitoring mechanisms, which have included capacity strengthening of the Sanctuary's staff;
- Better livestock disease monitoring and increased awareness of communities in areas surrounding the Sanctuary.

Population numbers in Necshar National Park have declined mainly due to poaching.

Population trend of Swayne's Hartebeest within Senekele Swayne's Hartebeest Sanctuary (SSHS) and Nechsar National Park

Data source: SSHS Annual and Monthly reports (complied by EWCA). Nechsar National Park Annual and Monthly Reports



Produced by: *Ethiopian Wildlife Conservation Authority (EWCA), Institute of Biodiversity Conservation (IBC), Central Statistics Agency (CSA) and Ethiopian Wildlife and Natural History Society (EWNHS).*

What is the status of our national protected areas?

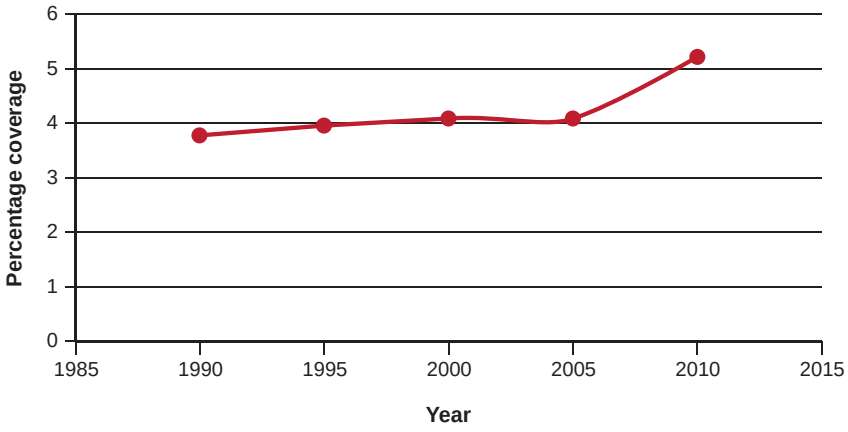
Swaziland *What is the coverage of our protected areas?*

Interpretation: Protected area coverage has increased to 5% of the country. Despite the increase, further protected areas are needed to provide an adequate network and coverage of our terrestrial ecosystems.

Coverage of protected areas in Swaziland expressed as percentage of total area of the country

**Data for 2010 are target based on areas that are currently under consideration (draft gazette being finalized) for proclamation and will be monitored on an annual basis.*

Data source: BCPD (PWA) Survey Reports and accompanying datasets



Produced by: *Swaziland Environment Authority, the Swaziland National Trust Commission (SNTC), and the Central Statistics Office (CSO).*

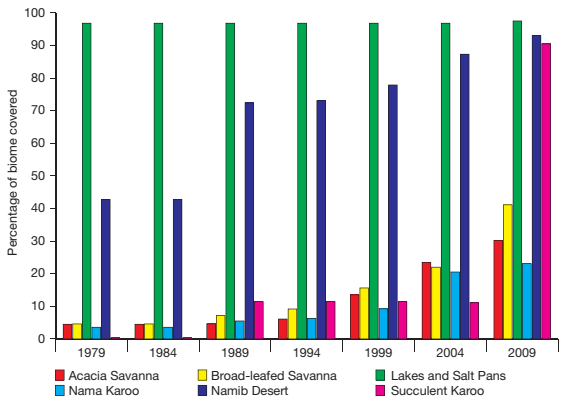
Namibia *How much of our different biomes are protected by forms of conservation management?*

Interpretation: In 2009 the Lakes & Salt Pans biome is the best covered under conservation protection, at 98%. The Namib Desert biome coverage has increased to 93%, mainly because of the Skeleton Coast and Namib-Naukluft National Parks, the more recent registration of Communal Conservancies and establishment of Private Protected Areas. The Succulent Karoo biome coverage has increased to 91%, mainly due to the proclamation of the 2.5 million hectare Sperrgebiet National Park in 2008. The Broad-leafed Savanna coverage has increased to 41% as a result of the proclamation of four State Protected Areas in the Kavango and Caprivi, and the registration of some 15 Communal Conservancies in the same regions. The Acacia Savanna biome now has 30% of its area under conservation management, mainly due to the establishment of Freehold Conservancies, but less than 5% is in the State Protected Area network. The least well protected biome is the Nama Karoo with 23% of its area under some form of conservation, but only 5% in the State Protected Area network. Communal Conservancies protect almost 15% of this biome.

The importance of different forms of landscape and biodiversity conservation in Namibia is apparent when their contributions are seen in terms of biome protection.

Percentage of biomes covered by different forms of conservation management

Data source: Namibia Nature Foundation

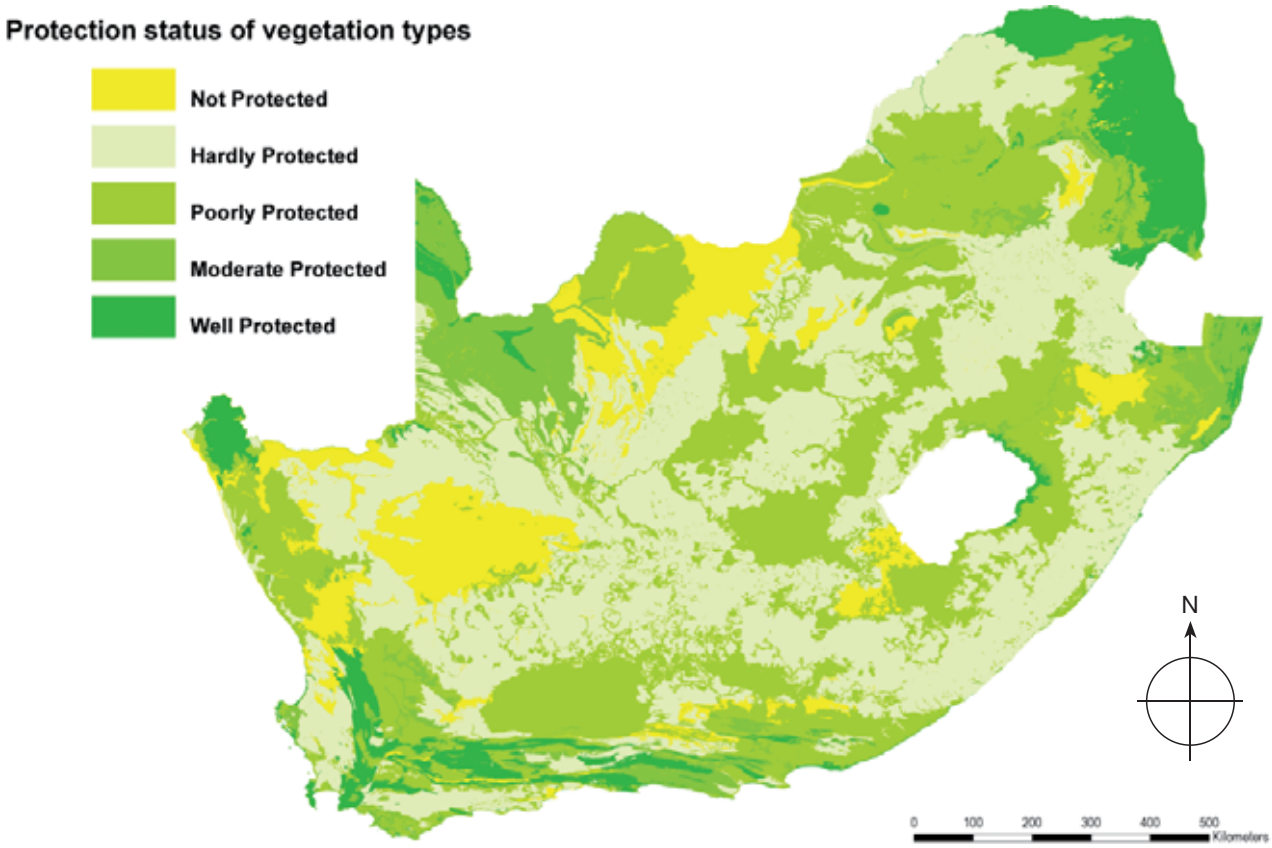


Produced by: *Dr Chris Brown, Namibia Institute for Sustainable Development, for the* 'State of Biodiversity in Namibia' *report, 2010.*

South Africa *To what extent does our Protected Area system achieve biodiversity targets for different vegetation types?*

Protection status of vegetation types in South Africa in 2010

Data source: Department of Environmental Affairs (DEA), South African National Biodiversity Institute (SANBI)



Interpretation: The current protected area network covers 6% of the country, reaching half of the 12% target by 2010 as set out in the South African National Biodiversity Strategy and Action Plan (NBSAP, 2005). For each of South Africa's 437 vegetation types a biodiversity target has been set for the area that should be protected to ensure that the area of the vegetation type under protection constitutes a representative sample of the biodiversity and ecological systems within that vegetation type.

In 2010, 72 vegetation types were not afforded any protection status, meaning that they were not falling within the boundaries of any formally protected areas within the country, and 88 vegetation types were hardly protected. Protection targets have been achieved for a total of 100 vegetation types. This number is likely to increase when new protected areas are identified and proclaimed as suggested in the South African National Protected Areas Expansion Strategy (NPAES). The current situation in South Africa is that the majority of the vegetation types are hardly protected, and their biodiversity targets as set by Vegetation Map have not yet been achieved. These under-conserved vegetation types run the real danger of becoming threatened and in extreme cases extinct, which would lead to the loss of associated biodiversity and ecological processes. This means that most of the vegetation types are in danger of becoming extinct or threatened with extinction.

Produced by: *SANBI, DEA, Statistics South Africa, Birdlife SA, CSIR.*

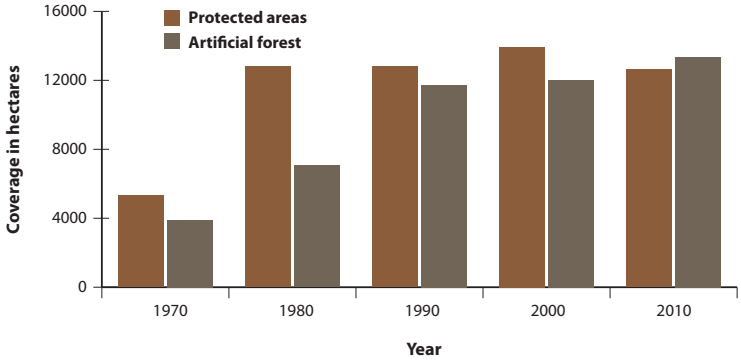
What is the status of our national ecosystems and habitats?

Burundi *What is the coverage of our national forest?*

Interpretation: The increase in the extent of artificial forests and forests within protected areas demonstrates positive response actions undertaken by policy makers and other groups to protect forest habitats. Increases in forest cover also imply greater conservation of forest biodiversity and associated ecosystem services which are essential for the welfare of local communities.

Coverage of forests in Burundi

Data sources: Burundi, NEPAD (2009): Implementation of the comprehensive program of development of agriculture in Africa in Burundi: inventory of agricultural development efforts in progress and their alignment with the CAADP principles;
Ministry of Land Management and Environment (2000): National Strategy and Action Plan on Biological Diversity-SNPA-DB;
UNDP (2000): Strategic Framework for Growth and the Fight against Poverty: Second Report Implementation



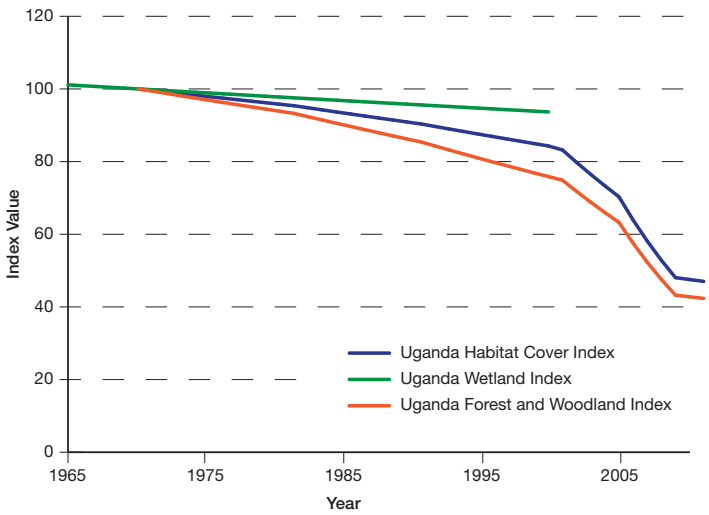
Produced by: *National Institution for Environment and Wildlife Conservation (INECN); General Direction of Forests and Environment (DGFE); Geographic Institute of Burundi (IGEBU); Burundian Association for the Protection of Birds (ABO).*

Uganda *How has the coverage of our habitats changed over time?*

Interpretation: The Habitat Cover Index is an indicator of the average change in the extent of wetlands and forests, with the index set to a value of 100 in 1970. Uganda has seen clear declines in its forest, woodland and wetland habitats since 1965. Forest cover has especially decreased in recent years as deforestation has become more widespread.

Uganda Habitat Cover Index

Data source: MUIENR, UWA, NFA, MUBFS (Makerere University Biological Field Station), Budongo Conservation Field Station, NatureUganda, and WCS

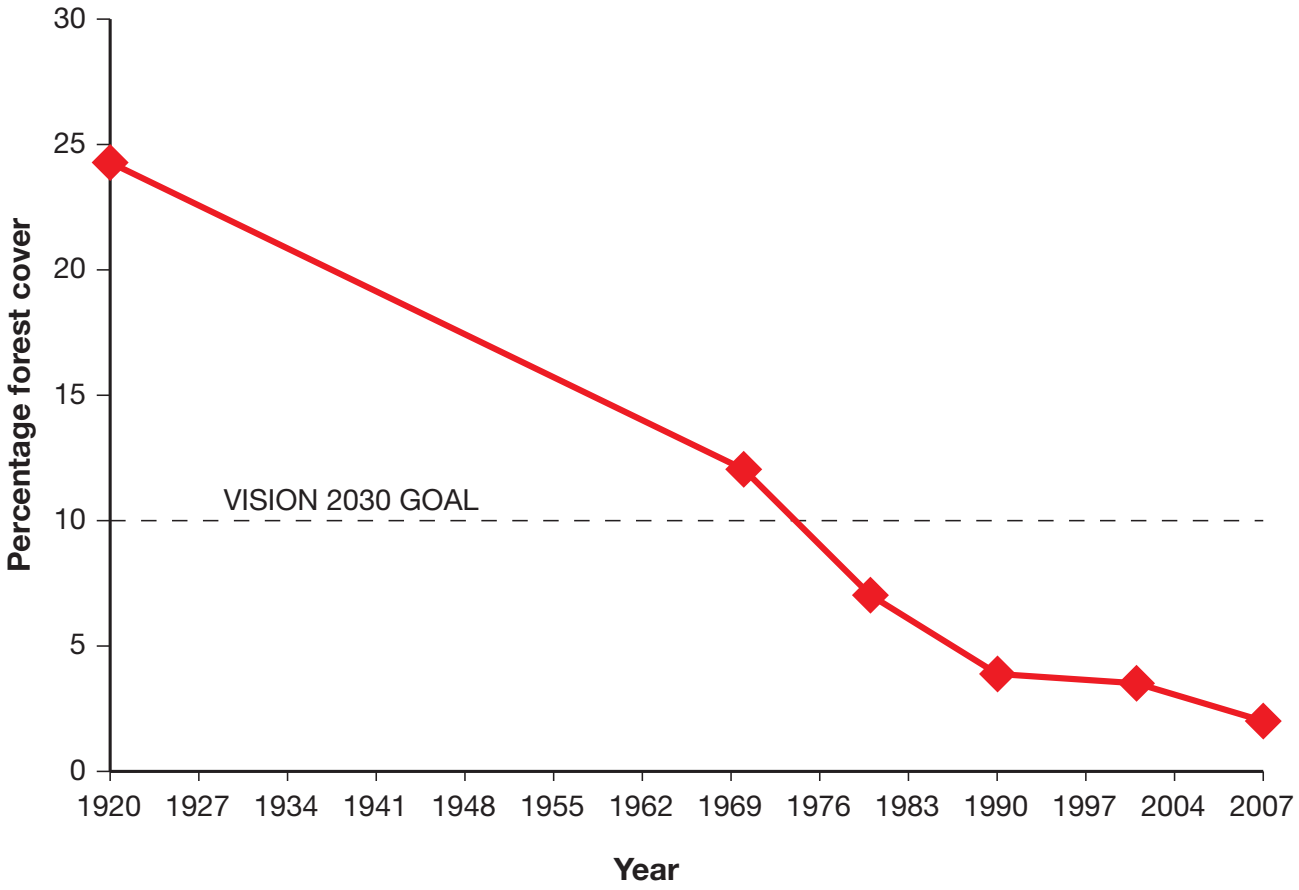


Produced by: *MUIENR in association with WWF International and ZSL.*

Kenya *What is the coverage of our national forest?*

Kenya's forest cover, 1920 -2007

Data source: Biodiversity indicator project progress reports 2006-2008 (unpublished); Survey of Kenya topographic maps (1960S,1970S); Landsat satellite imagery 1976,1986,1996; Africover LULC project2000; KWS; WWF



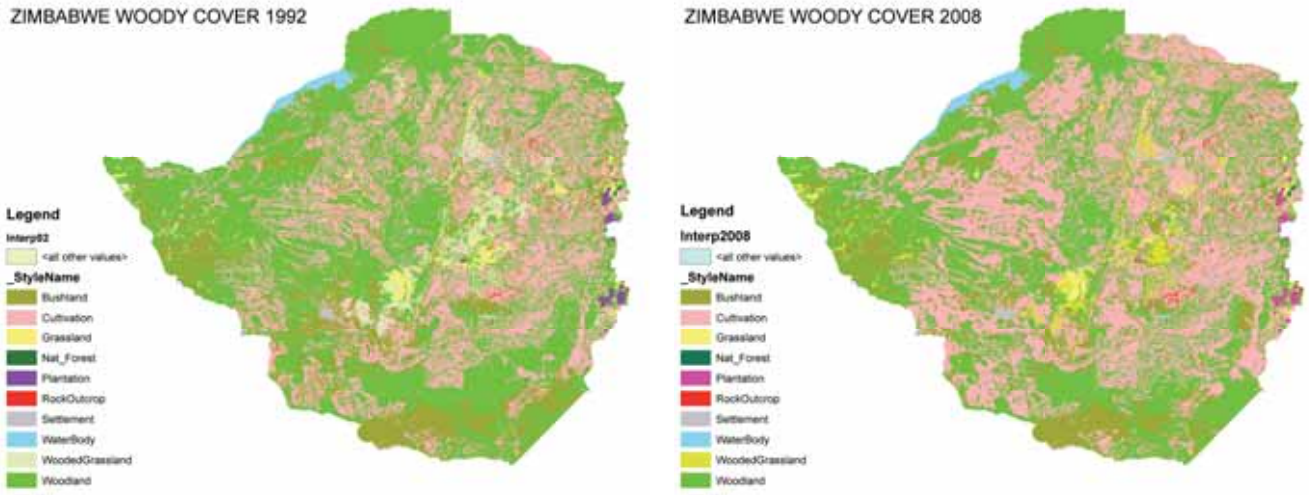
Interpretation: Kenya's national forest cover has decreased dramatically from 140,922 km² in 1920 to 11,653km² in 2007. Reasons for this loss include rapid human population growth resulting in land use conversion to agriculture. The loss and degradation of the forest has severe implications for forest associated species. Kenya still has a long way to go in achieving its Vision 2030 goal of achieving 10% forest cover by 2030.

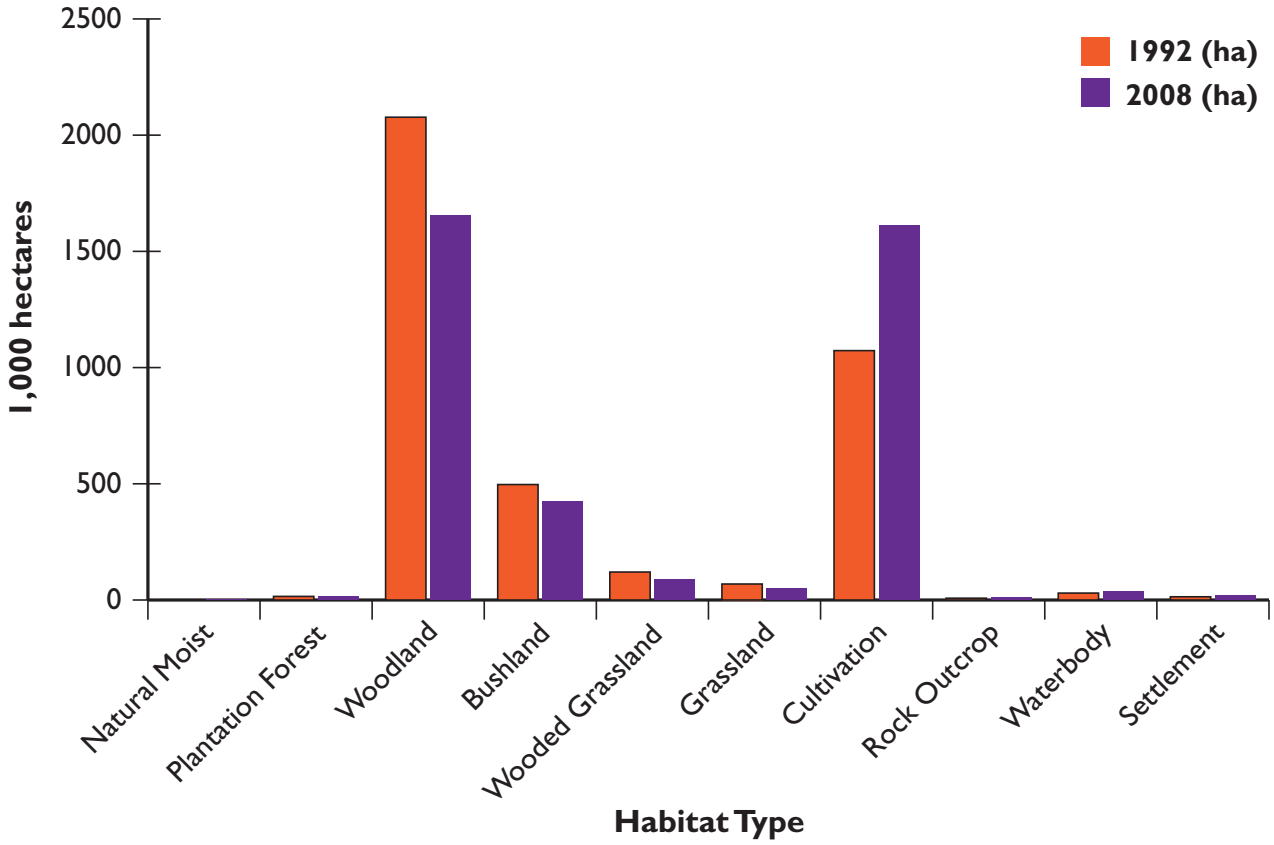
Produced by: *Kenya Wildlife Service (KWS), Department of Resource Survey and Remote Sensing (DRSRS), International Livestock Research Institute (ILRI), Ministry of Water and Irrigation (WRMA), Meteorological Department (MD), Kenya Fisheries Research Institute (KEMFRI), Kenya Forest Service, Nature Kenya/ Birdlife African Secretariat, National Museums of Kenya, National Bureau of Statistics, National Environmental Management Authority (NEMA).*

Are we utilizing our national biodiversity in a sustainable way?

Zimbabwe *What is the extent of deforestation and land use change in Zimbabwe?*

Extent of Zimbabwe's habitat types in 1992 and 2008
Data source: Forestry Commission





Interpretation: Woodland cover decreased from 53.20% in 1992 to 43.34% in 2008. Cultivation increased from 27.7% to 41.2% representing an increase from 10,738,945 ha in 1992 to 16,113,866 ha in 2008. This conversion of natural woodland to cultivated land is due to the land reform programme initiated in 2000.

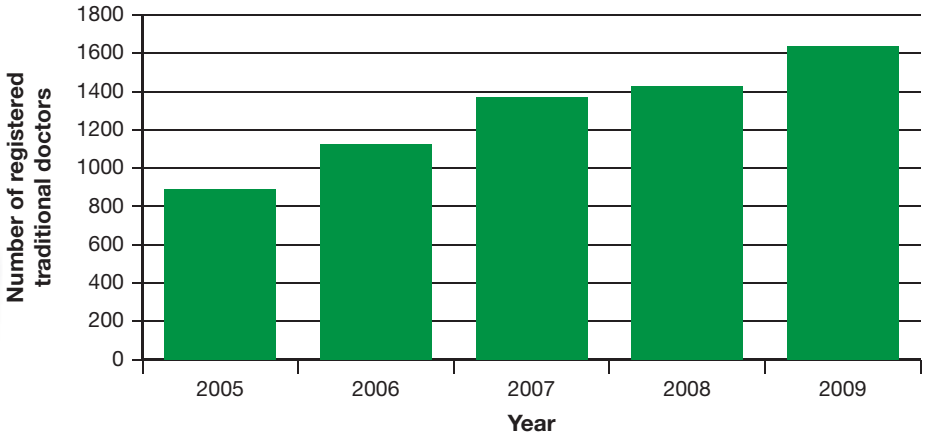
Produced by: *Forestry Commission.*

Lesotho *How have numbers of Lesotho's traditional doctors changed over time?*

Interpretation: The total number of traditional doctors has increased from 887 in 2005 to 1630 in 2009. The observed changes may indicate increased pressure on Lesotho's biodiversity, as increased reliance on species for medicine may result in over exploitation.

Number or registered traditional doctors by district

Data source: Administrative Records of the Ministry of health



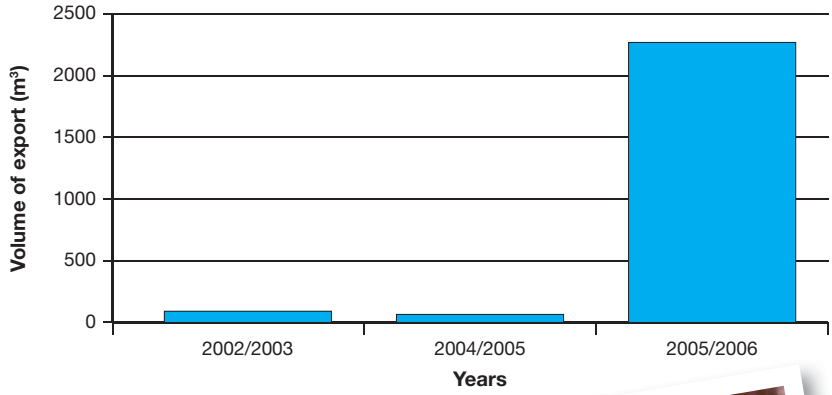
Produced by: *Ministry of Finance and Development Planning (Bureau of Statistics); Ministry of Tourism, Environment and Culture (Department of Environment).*

Tanzania *What are the levels of black wood exportation in Tanzania?*

Interpretation: Black wood is principally used for wood carvings and its export has increased from 91 m^3 in the period 2002/2003 to 2,269 m^3 in the period 2005/06. This change may be due to increased international demand for black wood and increased numbers of tourists who often purchase wood carving as souvenirs. It may also be due to an improved road network and accessibility to the southern part of Tanzania (Lindi and Mtwara regions), which contributes 25% of Tanzania's global carving exports.

Black wood Exportation in Tanzania, 2002/2003 to 2005/2006

Data sources: Forest and Beekeeping Division (FBD)



Produced by: *Anna Maembe (NEMC) and Stephen Maganda (TAWIRI).*

Lessons Learnt

The production of useful biodiversity indicators is possible with even limited data, and should be an ongoing process of production, review and adjustment. As well as providing technical assistance on indicator production the project's capacity building workshops provided a platform for national partners to share experiences and lessons learnt in indicator development.

Identify & consult stakeholders

Stakeholders often have diverse understandings of biodiversity indicators and expectations for their use

- **Lesotho:** *Stakeholders often have data, but little understanding of how they can be used for indicators*
- **Tanzania:** *Different stakeholder expectations may need to be streamlined to enable the process to move forward*
- **Zimbabwe:** *The consultation was successful because of existing networks*

Determine key questions and indicator use

Questions should be kept simple in order to meet stakeholder needs

- **Kenya:** *Multiple indicators may need to be used to answer one question*
- **Rwanda:** *Simple questions aid interpretation and stakeholder understanding*
- **Namibia:** *Reformulate questions a few times and test in working group sessions to ensure that they meet national objectives*

Gather and review data

Poor data availability and quality is a common problem

- **Uganda:** *Data are produced using different methods and are therefore hard to compare or harmonise*
- **Kenya:** *Data inaccessibility often hampers indicator production*
- **Zimbabwe:** *Several institutions have data and there is a need for co-ordination and collation (clearing house mechanism)*

Calculate indicators

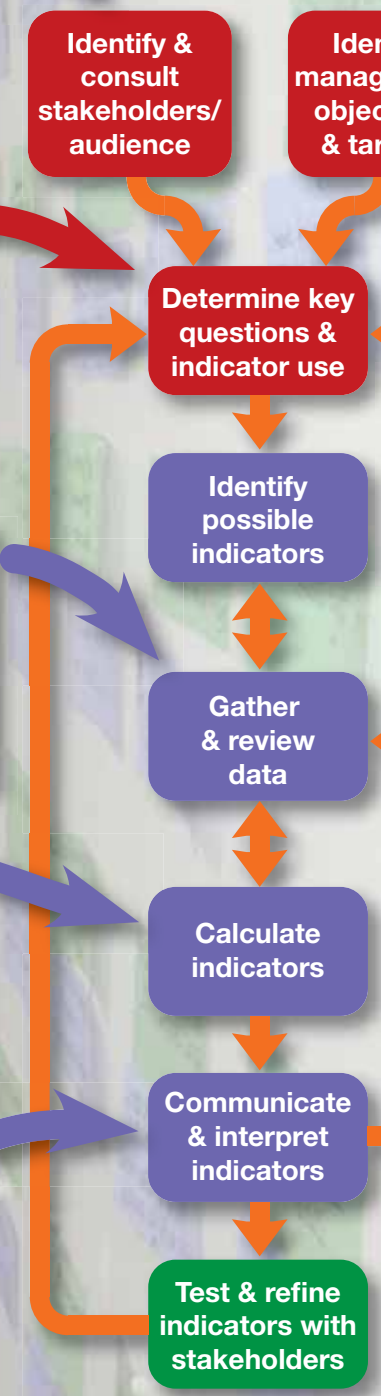
Indicator calculation is often hampered by poor quality data sets and low technical capacity

- **Tanzania:** *This step needs creativity*
- **Namibia:** *Keep the target audience in mind when deciding on how to analyse and present data*
- **Lesotho:** *Greater investment is needed in technical capacity building for indicator calculation*

Communicate and interpret indicators

It is important that indicators are communicated with clear interpretation and key messages

- **Ethiopia:** *Simple interpretation is needed which responds to the key question identified in the early stages of development*
- **Namibia:** *Don't expect immediate uptake of the indicators, it takes time for indicators to become a common currency*
- **South Africa:** *Refer back and ensure the interpretation is closely linked to the key question*



Identify management objectives and targets

National policy reports often include vague objectives and unquantified targets

- **Burundi:** *Although objectives exist they often lack detail in regards to achievable measures*
- **Uganda:** *No specified or quantifiable indicators were identified*
- **Mozambique:** *Using national objectives and targets creates a broad sense of ownership*

Develop conceptual model

Although important this step is often overlooked due to limited resources and lack of understanding

- **Rwanda:** *When looking back it is clear that completion of this stage aids indicator development in the long run*
- **Lesotho:** *Production of a conceptual model can aid the whole process from indicator identification to communication*
- **Botswana:** *It is important to keep conceptual models simple and involve all stakeholders*

Identify possible indicators

Identified indicators are often deemed unfeasible due to limited data availability

- **Ethiopia:** *Some identified indicators where abandoned due to data constraints*
- **Burundi:** *Understanding of biodiversity varies among different partners in the group*
- **Botswana:** *Review of selected indicators should be undertaken by a range of organizations and institutions*

Develop monitoring and reporting systems

Institutionalisation of indicators will support sustainable monitoring and reporting systems

- **Rwanda:** *Indicator institutionalisation will help the development of a regular monitoring system which produces comparable data for reporting*
- **Swaziland:** *Essential for sustaining future indicator development and initiatives*
- **Lesotho:** *Monitoring and reporting systems need to be harmonized*

Test and refine indicators with stakeholders

This step is rarely undertaken but yields valuable benefits

- **Tanzania:** *Indicator refinement can be a long process, especially when responding to changing needs of stakeholders*
- **South Africa:** *Get as many comments on the indicator as possible to ensure it meets the needs of its users*
- **Swaziland:** *This stage is an opportunity to review if the indicator and its communication have been successful in answering the key questions*

Key Messages and Future Recommendations

During the final project workshop in each of the regions the participants developed a series of key messages that they would wish to share with the global community, and especially the Convention on Biological Diversity (CBD), regarding national biodiversity indicator development. These key messages build on the experiences encountered during this project and highlight needs for sustained indicator development into the future. Although generated by eastern and southern African countries these messages are likely to reflect the needs of nations across the globe.

The importance of national biodiversity indicators

The countries participating in the project have demonstrated that national biodiversity indicators are vital for effective conservation, sustainable use and equitable sharing of biodiversity resources. Their role includes raising understanding of how biodiversity is part of addressing priority development issues such as poverty reduction and climate change.

Challenges in producing national biodiversity indicators

It has been noticed that there is very little awareness or use of biodiversity indicators at all levels (technical, scientific, and policy).
The participating countries in the project have shown that some relevant national biodiversity indicators can be produced, but there is frequently inadequate or inaccessible data for biodiversity indicators to answer priority national questions for policy and monitoring.

Institutionalisation of national biodiversity indicators

Biodiversity indicators need to be developed to address national biodiversity and development priorities, including NBSAPs.
Countries need to have an effective national institution to co-ordinate their national biodiversity indicators.

Capacity building needs for national biodiversity indicators

Developing countries need financial and technical support to institutionalise and operationalise biodiversity indicators.

Networking and collaboration for biodiversity indicators

The project has demonstrated that networking and collaboration by government institutions, NGOs and other stakeholders within countries and regions significantly strengthens progress in national indicator development and use.

Overall recommendation to the CBD

The CBD Strategic Plan should support developing countries to build their capacity to develop biodiversity targets and indicators on the basis of national priorities and with regional and international collaboration.

Photographs from Project Workshops

A KWS, SANBI & UNEP-WCMC collaboration

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Botswana Dept of Environmental Affairs
Botswana Department of Wildlife and National Parks
BirdLife Botswana
Central Statistics Office

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National Institution for Environment and Wildlife Conservation (INECN)
General Direction of Forest and Environment (DGFE)
Geographical Institute of Burundi (IGEBU)
Burundian Association for the Protection of Birds (ABO) (BirdLife partner in Burundi)
Burundi Institute of Agricultural Sciences (ISABU)

Ethiopia
Ethiopian Wildlife Conservation Authority
Ethiopian Wildlife and Natural History Society (BirdLife partner in Ethiopia)
Institute of Biodiversity Conservation
Central Statistical Agency

Kenya
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International Livestock Research Institute (ILRI)
Ministry of water and Irrigation (WRMA)
Meteorological Department (MD)
Kenya Fisheries Research Institute (KEMFRI)
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Nature Kenya/BirdLife African Secretariat
National Museums of Kenya
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Council for Scientific & Industrial Research (CSIR)

Swaziland
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Rwanda Environment Management Authority (REMA)

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National Environment Management Authority (NEMA)
Nature Uganda
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Uganda Bureau of Statistics

Zimbabwe
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