

PART 7: INDICATORS OF STATE OF ENVIRONMENT PERTAINING TO PARKS, TOURISM AND BIODIVERSITY

The indicators relating to Parks, Tourism and Biodiversity are discussed under the following headings:

- 7.1 Economic Indicators
- 7.2 Social Indicators
- 7.3 Environmental Indicators
- 7.4 Biodiversity Indicators
- 7.5 Park and Land Management Indicators
- 7.6 Conservancy Indicators
- 7.7 Tourism Indicators
- 7.8 Harvesting Indicators
- 7.9 Research and Training Indicators

Each indicator is described in table format and the State-Pressure-Impact-Response (S-P-I-R) category is highlighted.

7.1 Economic Indicators

Most relevant Economic Indicators are included in the SOER: Socio-Economics, such as:

- Foreign Direct Investment
- Fiscal Indiscipline
- Real Economic Growth Rate
- Economic Diversification

7.1.1: MET's ENVIRONMENTAL PROTECTION EXPENDITURE	
Definition	<p>a) MET's total budget, including donor assistance for MET-registered projects, as a percentage of the total GRN budget.</p> <p>b) Donor aid as a percentage of MET's total budget (including funding for research programmes).</p> <p>c) MET's annual operating costs versus capital costs.</p>
Unit of Measurement	<p>a) and b) %</p> <p>c) Ratio</p>
Purpose	a)
	<p>a) To monitor the importance placed by Government on the protection of the environment for current and future generations, as per the commitments made in the Namibian Constitution.</p> <p>b) To provide information on the relative contributions by foreign donors and the Namibian government to research and conservation efforts in the country. To monitor actual investment of capital into the environmental sector by the GRN.</p>
Analysis and Interpretation	<p>a) Compare year on year budgets adjusted for inflation.</p> <p>b) If the proportion of donor aid decreases in relation to the total MET budget, this could indicate one of two things: the GRN's budget for MET is increasing faster than the annual donor aid budget; or, donor aid is being channelled directly to NGOs rather than via MET. An unequal contribution of funding to biodiversity and environmental management could indicate a precarious situation and many research programmes and policy implementation programmes could be jeopardised, if the donor funding was reduced or stopped. Over time it would be essential to see an increase in government expenditure relative to donor funding.</p> <p>c) MET's actual operating and capital costs will decrease due to the formation of NWR, but the trend should continue to move upwards after adjusting for inflation, even if it comes off a lower base (after NWR). Capital costs (e.g. vehicles and equipment) should remain a significant part of the budget, thus indicating an ongoing commitment to 'doing the job' properly.</p>
Monitoring Design and Strategy	<p>Obtain statistics from the Central Statistical Office and MET each year.</p> <p>Collect relevant information on each funding programme.</p>
Reporting scale	National
Outputs	graphs and tables showing comparative figures and lists of projects undertaken by donor/government.
Data Sources	Central statistics Office, MET budget report. Statistics on donor funding are available from the National Planning Commissioner, MET and each donor country.
Limitations	None expected, although data will be scattered around.
Linkages to other Indicators	<p>Linked to 7.4.2 and 7.5.1</p> <p>SOER Socio-economics:</p> <ul style="list-style-type: none"> Foreign Direct Investment Ratio Fiscal Indiscipline Real Economic Growth Rate Economic Diversification
S-P-I-R Category	RESPONSE

7.2 Social Indicators

Please refer to the SOER on Socio-economics for the following relevant social indicators:

- Human Poverty Index
- Human Development Index
- Vulnerability Indicator
- Unemployment Rate
- Rate of Growth of Urban Population
- Gender Equality
- Population Pressure (also in SOER: Agriculture and Land Resources)

Please refer to the SOER on Agriculture and Land Resources for the following relevant social indicators:

- Security of Tenure.

7.3 Environmental Indicators

7.3.1 Rainfall variability

See SOER: Water for relevant Indicators:

- Mean Annual Rainfall
- Annual Runoff
- Monitoring Network (rainfall, ground water levels)

7.3.2 Desertification Index

See SOER: Agriculture and Land Resources for relevant Indicators:

- Rangeland Condition Indicator
- Forest and Crop Area Change

7.3.3: UNCONTROLLED BURNING	
Definition	The extent and proportion of vegetation types burnt by uncontrolled fires per annum by location
Unit of Measurement	km ²
Purpose	Southern African savannas have developed under natural fire regimes, triggered by lightening strikes. However, burning occurs regularly as land is cleared for agriculture and to promote grazing. Many of these fires go out of control and some areas are being burnt almost every year. This is resulting in a major impact on biodiversity and could lead to irreversible changes in vegetation. This in turn will affect rural lifestyles.
Analysis and Interpretation	Maps of the areas burnt per year can be superimposed onto a vegetation map to calculate the proportion of each vegetation type affected. Comparisons between the maximum burnt extent for successive years will show the frequency of burning over a given area.
Monitoring Design and Strategy	Only the north central and north-eastern parts of Namibia are affected badly by fire. Monthly satellite images are the most effective ways of recording the areas burnt per year.
Reporting Scale	Regional
Outputs	Publication of tables and maps showing the extent and frequency of burns by vegetation type. This may also be expressed as a percentage of the region experiencing fire at yearly increments e.g. % burnt annually within the last 5 years.
Data Sources	Satellite images.
Limitations	Cost of monthly satellite images.
Linkages to other Indicators	Linked to 7.3.2
S-P-I-R Category	PRESSURE

7.3.4 Pollution Control

See SOER: Industrialisation for relevant Indicators:

Effectiveness of [Environmental]Policy and Legislation

Urban Pollution (Development Indicator)

Revenue from Pollution Charges as a Percentage of Total Revenue of GRN
(Development Indicator)

Proportion of Industry in Towns which have a Waste Disposal System for Oil
(*sic*)

Water Regulation Violations

Proportion of Industry in Towns with Dumps of Sufficient Quality and Location
and Suitable Water Treatment (*sic*)

Number of New Dumping Sites (*sic*) Established in Areas with an Appropriate
Location and Stakeholder Discussions (*sic*)

See SOER: Water for relevant Indicators:

Pollution of Groundwater

Monitoring of Ambient Changes in Water Quality (groundwater)

** No Indicators have been developed in SOER: Water, for Surface Water
Quality and Pollution

7.4 Biodiversity Indicators

7.4.1: SPECIES DIVERSITY AND CONSERVATION STATUS	
Definition	<p>a) The total number of species per taxonomic group or the estimated number where the total is unknown.</p> <p>b) The number of Red Data species as a percentage of the total number of species.</p> <p>c) The number of endemic species as a percentage of the total number of species</p>
Unit of Measurement	Number
Purpose	The information provided by these Indicators will reveal the extent of genetic diversity, the number and identities (where known) of species and the conservation status of species.
Analysis and Interpretation	<p>The comparison between the number of species and the estimated number of species will show the difference in knowledge of the various groups which make up species richness. It will also show how those species we have most information on make up only a small part of species diversity. Over successive reports, changes in these figures will indicate a response to this lack of knowledge.</p> <p>a) For most vertebrate and vascular plant Orders, the number of species will be known. However, for most other taxonomic groups this figure will be an estimate. The reliability of the estimates will vary with the groups.</p> <p>b) By showing the number of species in different Red Data conservation categories, it will indicate which groups require special conservation management. This will also show bias in favour of vertebrates and higher plants.</p> <p>c) Namibia is rich in endemic species which may be under threat from over-exploitation, unplanned development and trade. High endemism implies increased responsibility for protection. This indicator will also favour vertebrates and higher plants, but it will also highlight those groups for which more data are required.</p>
Monitoring Design and Strategy	The data for these indicators should be collected at regular intervals from MET, and various research programmes through MET, donor agencies and universities. Systematic annual reporting may be difficult because data input from surveys will be irregular and for a limited number of species.
Reporting Scale	National
Outputs	Tables and graphs by taxonomic groups showing the number (or estimated number) of species, number of species in each conservation grouping and number of endemics. Line graphs can be used to show trends over time and pie charts can be used effectively to show the conservation status of different groups. Some indication of the proportion of Red Data species relative to the total number of known species would indicate the likely proportion of other taxa endangered, and therefore the problem that the lack of knowledge presents.

Data Sources	MET
Limitations	Lack of resources and funding for research; detailed knowledge restricted to only a few species. “Development indicators” for the future to be added to the above would include: d) percent of species with changes in distribution e) number, distribution and abundance of migratory species (this may be possible now for certain species of birds)
Linkages to other Indicators S-P-I-R Category	Linked to 7.9.1, 7.9.2, 7.1.1, 7.4.2 STATUS

Note: No Indicators have been developed in SOER: Water, for aquatic ecology

7.4.2: BIODIVERSITY CONSERVATION	
Definition	The percentage of each major vegetation unit (Giess) conserved in P&PAs (including conservancies) and the percentage of areas of special ecological importance conserved, as defined in PART 3, section 1.3.2.
Unit of Measurement	Area and percentage
Purpose	Protected areas are necessary, but not sufficient to sustain biodiversity. The goal of the PAN is to represent the full range of biodiversity in Namibia. This indicator will measure the degree to which this goal is being achieved.
Analysis and Interpretation	This indicator is most easily interpreted by setting percentage targets e.g. 10% of each vegetation unit should be protected, and then monitoring levels of achievement on an annual basis. Analysis of this indicator should take account of the guidelines for the new P&PA classification system and from this, the gaps can be identified and national priorities for conservation set (especially relating to the conservation of centres of endemism).
Monitoring Design and Strategy	The vegetation map by Giess can be superimposed on the PAN map. The percentage of land conserved (State land, private land, conservancies etc) per vegetation unit needs to be determined. An estimate needs to be made of the areas recognised as centres of endemism and this information superimposed onto a map of the PAN.
Reporting Scale	National by vegetation unit
Outputs	Maps of geographical extent and tables, showing any changes in coverage.
Data Sources	MET
Limitations	This indicator will only be meaningful if there are management plans in place for each P&PA
Linkages to other Indicators	Linked to 7.4.1, 7.5.1, 7.6
S-P-I-R Category	STATUS

7.5 Park and Land Management Indicators

7.5.1: MANAGEMENT OF PROTECTED AREAS	
Definition	The number of P&PAs by protection category with current and implemented management plans
Unit of Measurement	Number
Purpose	<p>The mere presence of a protected area does not necessarily mean that there is effective conservation, especially in Namibia where at present, none of the P&PAs have any legal protection from developments such as mining, infrastructure, tourist ventures etc. The new Wildlife and Parks Management Act will allow for the re-classification of P&PAs into a new classification system, which should allow for greater control over developments in the higher protection categories. Furthermore, to be effective, each of the P&PAs must have a current management plan, which is being implemented and integrated into the surrounding region.</p> <p>Effective environmental management will only be successful if it is regarded as equal in importance to production-oriented activities in managing all parts of the landscape i.e. a contributor to development, rather than an obstacle. The long-term value of sustainable ecological functioning needs to be given equal weighting with traditional economic goods and services. Much of the wildlife in Namibia occurs outside P&PAs and indeed large parts of the so-called centres of endemism occur on commercial and communal land. Therefore integrated development plans are essential.</p>
Analysis and Interpretation	<p>The number of P&PAs per protection category (still to be decided) with a management plan should be determined. The plan must include <i>inter alia</i> management actions for conservation of biodiversity, carrying capacity targets, visitor numbers, sustainable harvesting of species, integration of neighbours, annual maintenance plans, control of alien species, research priorities etc. The plans should be updated every few years. A checklist approach to this indicator should be used until a more systematic approach to park management is adopted (under new NWR management).</p> <p>The number of local management plans finalised and implemented per region will be counted and compared to previous years. The content of the plans in relation to key environmental factors will be analysed, together with the financial and human resources set aside for environmental management.</p>
Monitoring Design and Strategy	<p>The following should be compiled to report on this indicator:</p> <ul style="list-style-type: none"> - lists of protected areas by category with implemented management plans; - a checklist of the aspects covered in the plan; - a table of resources committed by the responsible management agencies to implementing the plans; - the number Regions which integrate the P&PAs into their development plans.
Reporting Scale	National and Regional

Outputs	Comparisons of the proportion of P&PAs by category with implemented management plans, funding levels and community involvement in the form of tables, checklists and statements. Tables showing the number of districts or regions with a) prepared and b) implemented management plans which take environmental conditions into consideration
Data Sources	MET, NWR and Regional Councils
Limitations	The new system of classifying the PAN has not yet been implemented and NWR have only just taken over the management of certain parks. Nevertheless, if any management plans have been developed, these should be reported on an annual basis.
Linkages to other Indicators S-P-I-R Category	Linked to 7.1.1, 7.6 RESPONSE

7.5.2: INTERNATIONAL CONVENTIONS AND POLICIES	
Definition	<p>a) The number of international conventions, agreements, protocols and treaties signed by Namibia relating to Parks, Tourism and Biodiversity in their widest sense.</p> <p>b) The number of international conventions etc. implemented by Namibia</p> <p>c) The number of policies supporting International and National Conventions and commitments relating to Parks, Tourism and Biodiversity e.g. the Convention for Biological Diversity, CITES, the Namibian Constitution etc</p>
Unit of Measurement	Number
Purpose	<p>The activities and interests of Namibia extend beyond its borders (into neighbouring SADC countries in particular) and therefore Namibia should adopt the principles of best practice in biodiversity conservation, park management, research and environmental management in order to maintain its conservation reputation and position as a tourist attraction.</p> <p>To establish the level of government commitment to effective environmental management.</p>
Analysis and Interpretation	<p>a) Compare annually the number of international conventions, treaties etc available for ratification and the number actually signed by Namibia.</p> <p>b) List the number of conventions etc actually implemented by Namibia and report on progress made.</p> <p>The total number of policies per sector finalised and adopted by Cabinet each year can be compared annually to see the trends. Initially the number should be high, but as Namibia generates its own policy and legislative framework, the actual number should eventually decrease. The subject of the policies can be compared to a prioritised list of actions specified in the next National Development Plan (NDP2).</p>
Monitoring Design and Strategy	Collate total number of policies drafted and adopted every year by sector.
Reporting Scale	National
Outputs	<p>Collate information on conventions annually and compare figures.</p> <p>Lists of policies adopted and drafted per year and a table showing the number of policies per sector.</p>
Data Sources	MET and other Ministries responsible for environmental management eg MAWRD, MFMR, MLRR.
Limitations	None
Linkages to other Indicators	None
S-P-I-R Category	RESPONSE

7.6 Conservancy Indicators

7.6.1: THE AREA OF COMMUNAL CONSERVANCIES	
Definition	The area that falls within the boundaries of gazetted communal area conservancies. The area that falls within the finalised boundaries of emerging communal area conservancies.
Unit of Measurement	Square kilometres.
Purpose	To track the area of communal land which falls within communal conservancies.
Analysis and Interpretation	Track the amount of land that is being managed to the benefit of rural Namibians at community level through community institutions.
Monitoring Design and Strategy	Collate data for all new conservancies registered with MET per annum.
Reporting Scale	Nationally and by region.
Outputs	Tables and maps.
Data Sources	MET.
Limitations	This indicator gives an indication of land area, but not of effective management within that area.
Linkages to other Indicators	Linked to all indicators for both communal area conservancies and community/conservancy based initiatives.
S-P-I-R Category	STATUS

7.6.2: THE NUMBER OF INDIVIDUALS IN REGISTERED COMMUNAL AREA CONSERVANCIES IN NAMIBIA	
Definition	The number of individuals registered within communal conservancies as determined by conservancy constitutions.
Unit of Measurement	Number.
Purpose	To track the number of individuals influencing and being influenced by sustainable natural resource management enabled by conservancy status..
Analysis and Interpretation	To track the number of registered Namibians who have committed to improved natural resource management and benefit through conservancies.
Monitoring Design and Strategy	Number.
Reporting Scale	Nationally and Regionally per conservancy.
Outputs	Tables and graphs to show trends over our time.
Data Sources	MET.
Limitations	This gives the number of people involved in conservancies, but no indication of their active involvement in decision-making or benefits gained.
Linkages to other Indicators	Linked to all indicators for both communal area conservancies and community/conservancy based initiatives.
S-P-I-R Category	STATUS

7.6.3: THE TOTAL COMMUNAL CONSERVANCY INCOME FROM NATURAL RESOURCE BASED ACTIVITIES	
Definition	Gross income earned and registered by conservancies in Namibian dollars over the period of one calendar year.
Unit of Measurement	Namibian dollars.
Purpose	To track the amount of benefits being received by rural Namibians (conservancy members) from sustainable management of their local natural resources.
Analysis and Interpretation	
Monitoring Design and Strategy	Namibian dollars.
Reporting Scale	National.
Outputs	Tables.
Data Sources	MET.
Limitations	This indicator provides a measure of conservancy benefits in economic terms while the social benefits generated by conservancies are difficult to quantify yet are just as important an incentive in the conservancy process.
Linkages to other Indicators	Linked to all indicators for both communal area conservancies and community/conservancy based initiatives.
S-P-I-R Category	STATUS

7.7.1 Tourism Indicators

7.7.1: NUMBER OF VISITORS TO NAMIBIA	
Definition	The number of visitors to Namibia per annum by country/area of origin.
Unit of Measurement	Total number and percent.
Purpose	To see if Namibia continues to be an attractive tourist destination.
Analysis and Interpretation	The number of visitors per annum should continue to increase at a rate at least equal to SADC tourist growth rates. The proportion of visitors from different countries should equalise in order to ensure a more robust tourist market source. A decline in visitor numbers, or a sudden reduction in the number of visitors from any one country would indicate a problem e.g. safety and security threats, declining standards etc.
Monitoring Design and Strategy	Collate annual statistics on visitors from eg Europe, USA and South Africa (as the origin of most visitors to Namibia on holiday)
Reporting Scale	National
Outputs	Graphs and tables showing the total number of visitors per annum since 1990 from Europe, USA and South Africa.
Data Sources	Department of Immigration.
Limitations	Data are collected as a matter of routine at all points of entry to Namibia, but all people entering the country are classified as 'Tourists', even if they are business people or on shopping trips. This distorts the number of people who visit Namibia on holiday.
Linkages to other Indicators	Linked to 7.7.2 and Tourism Earnings Ratio in SOER: Socio-economics.
S-P-I-R Category	STATUS

7.7.2: NUMBER OF VISITORS TO EACH PARK AND PROTECTED AREA	
Definition	The number of visitors to each registered Park and Protected Area, including conservancies per annum.
Unit of Measurement	Number
Purpose	To determine tourist pressure on specific P&PAs at different times of the year.
Analysis and Interpretation	The total number of people visiting each P&PA can be monitored over a period of years e.g. from 1990, to detect the trends in total visitor numbers over time. The data will also indicate the popularity of certain parks over others and then the underlying reasons for the usage patterns should be examined e.g. are the facilities, services, attractions, safety, accessibility, environmental quality of a given park better or worse than others? Is the Park being properly marketed? Etc. If the P&PA has a management plan with a specified visitor carrying capacity, the actual usage can be compared to the target limits and appropriate responses formulated.
Monitoring Design and Strategy	Each registered P&PA (including conservancies) to report entrance figures on an annual basis to MET: Directorate of Tourism, to be collated on the computer and reported annually.
Reporting Scale	By each P&PA (including conservancies).
Outputs	Graphs and tables together with an annual report analysing the data as described above, with a recommended action plan and budget.
Data Sources	Each registered P&PA including conservancies.
Limitations	Can only measure over-utilisation where park management plans are available.
Linkages to other Indicators	Linked to 7.5.1
S-P-I-R Category	STATUS – PRESSURE

7.8 Harvesting Indicators

7.8.1: VOLUME OF WOOD HARVESTED FOR SUBSISTENCE PURPOSES	
Definition	The rate of removal of trees per annum for firewood, building timber, craft production and agricultural land clearance.
Unit of Measurement	Tonnes per annum
Purpose	To monitor the total consumptive use of wood over a period of years to determine the magnitude and significance of the impact of removal on forest cover and biodiversity, because at present, no information exists.
Analysis and Interpretation	The amount of wood consumed per annum for various purposes will yield information on the magnitude of the problem and provide trends over time. However, without any data on rate of regeneration and replacement, the significance of the impact can only be guessed, by comparing wood utilisation with the area of new land cleared per annum or canopy cover.
Monitoring Design and Strategy	The new Forest Act requires a permit for all wood collection, but it is extremely unlikely that it will be possible to administer and enforce this in the rural areas. Therefore it will be necessary to adopt indirect methods of calculation e.g. amount of wood burnt by household per year; number of wood craft sales by size category; aerial photo interpretation etc.
Reporting Scale	Regionally
Outputs	Graphs and tables showing wood consumption by use category per region per annum. Maps showing changes in forest cover.
Data Sources	Directorate of Forestry, craft associations, census data, household surveys, research into this topic, aerial photographs and satellite imagery.
Limitations	Direct data on actual subsistence wood collecting does not exist and indirect estimations will have to be made until better data are available for the whole country.
Linkages to other Indicators	Linked to 7.8.2 and to Indicators in SOER: Industrialisation: Total Biomass Consumption Biomass Fuel Production Woodfuel (<i>sic</i>) Prices Areas Deforested from Fuelwood (<i>sic</i>) Extraction
S-P-I-R Category	PRESSURE – IMPACT

7.8.2 Replacement of Wood as an Energy Source

See SOER: Industrialisation for relevant Indicators:

Electricity End Users/Rural Electrification Progress

7.8.3: LEGAL TRADE IN CITES SPECIES	
Definition	<ul style="list-style-type: none"> a) Number of CITES-listed species being legally exported or sold. b) Number of permits issued and utilised for legal collecting and harvesting of CITES species. c) The number of CITES species being illegally poached or traded.
Unit of Measurement	Number
Purpose	The extent of the removal of CITES species from the wild is a measure of the pressure of such activities on biological diversity. Harvesting, culling and recreational take-off, including plant harvesting and seed collection, reduces population size and may change the demographic characteristics of populations, affecting fecundity and rates of recruitment.
Analysis and Interpretation	Monitoring harvesting and culling operations and recreational take will enable MET to assess the impacts of these activities on elements of biodiversity and in relation to reporting obligations to CITES and the Convention on Biological Diversity (CBD). Scientifically-based planning and policy responses can then be recommended and formulated. Decreases in catch compared to set quotas, given the same unit of effort could indicate problems with the target species which may require prompt management action.
Monitoring Design and Strategy	<ul style="list-style-type: none"> a) Data on the identity and numbers of organisms being traded (total) and exported (CITES species). b) The permit system is currently being revised so that the number of permits issued will be recorded as well the actual number of permits used to collect species. c) Collate data (primarily on illegal rhino and elephant trade) from the Resource Protection Unit of the Police, and Customs interventions, as well as reported incidences of illegal killing of animals in self-protection or due to crop damage, (CITES species).
Reporting Scale	National
Outputs	Tables or graphs showing: a) traded volumes of CITES species over the last 10 years; b) the ratio of permits issued and used by main category; and c) statistics relating to the illegal trade in plants, mammals, birds, reptiles and all derivative parts.
Data Sources	The Resource Management Division of MET collates information from a number of sources: police, Resource Protection Unit, MFMR (seals), Agricultural Extension Officers, Regional MET officers, Immigration, Veterinary Services.

Limitations	The lack of inter-sectoral co-operation, slow reporting by certain authorities, discrepancies in permits issued and traded volumes, shortage of enforcement personal and computer failures have all contributed to less than satisfactory reporting conditions over the last 10 years. However, with the policy revisions completed in 1999 and the expected enactment of several new Acts relating to resource management in 2000, it is expected that most limitations on this indicator will disappear.
Linkages to other Indicators S-P-I-R Category	Linked to 7.8.4, 7.5.2 PRESSURE

7.8.4: ENFORCEMENT AND CONTROL OF ILLEGAL TRADE	
Definition	a) The number of people and organisations involved in the control of illegal trade in wild species. b) The number of seizures/prosecutions/violations of illegal wild species per year
Unit of Measurement	Number
Purpose	To monitor illegal trade in wild species more closely in order to prevent serious impacts on biodiversity, especially the rarer and endemic species.
Analysis and Interpretation	The amount of effort (staff, financial resources etc) should be compared to successes in catching people involved in illegal trade.
Monitoring Design and Strategy	The number of staff at MET, the Resource Protection Unit and Immigration dealing with illegal trade should be counted every year. A breakdown of each departments' budget showing the amount set aside for enforcement should be analysed. This information should then be compared to the number of seizures, prosecutions and violations recorded per species per year.
Reporting Scale	National
Outputs	A report on trade in CITES species is required in terms of Namibia's obligations. This should be incorporated into a comprehensive report on illegal trade.
Data Sources	MET, RPU and Immigration
Limitations	It could be difficult to obtain reliable data on all species being traded illegally and therefore, it may be worthwhile focussing on a few indicative species such as Rüppell's parrot, elephant, rhino etc
Linkages to other Indicators	Linked to 7.8.3
S-P-I-R Category	RESPONSE

7.9 Research and Training Indicators

7.9.1: NUMBER OF RESEARCH PROGRAMMES	
Definition	Total number of research programmes relating to parks, tourism and biodiversity initiated per annum.
Unit of Measurement	Number
Purpose	To ensure that the field of knowledge relating to the management of parks, tourism and biodiversity is continually expanded to better understand the systems involved, the pressures being placed upon them and the resultant impacts. This information can lead to more informed management and decision-making.
Analysis and Interpretation	Analyse the number of research programmes by type and compare with the national priorities for each sector. Total expenditure on research in Namibia can be compared to other SADC countries and compared to the norm given for African countries viz. that at least 0.4-0.6% of the GDP should be spent on scientific research and development. The proportion of MET-funded research to donor-funded projects also needs to be carefully monitored to ensure that local capacity is nurtured and the intellectual rights remain in Namibia. This is important because if donor-funding for research suddenly ceased, there would be no local capacity and momentum to continue the work.
Monitoring Design and Strategy	Obtain a list of programmes from all relevant government departments each year.
Reporting Scale	National
Outputs	A report with tables showing the number of new programmes by type.
Data Sources	MET and other relevant ministries and donor agencies.
Limitations	None
Linkages to other Indicators	Linked to 7.9.2, 7.1.1
S-P-I-R Category	RESPONSE

7.9.2: NUMBER OF GRADUATES IN NATURAL SCIENCES	
Definition	The number of Namibians graduating in a tertiary institution in a biological science per year.
Unit of Measurement	Number
Purpose	To track the development of local capacity to manage all environmental aspects of parks, tourism and biodiversity in future.
Analysis and Interpretation	Although there is a core of highly qualified scientists within the MET and other related ministries and institutions, most obtained their tertiary qualifications outside of Namibia. Furthermore, much of the recent research conducted in Namibia has been done by expatriates on donor funding. Thus there is an urgent need to develop young Namibians in a relevant biological science.
Monitoring Design and Strategy	Collate statistics issued by the tertiary institutions per year.
Reporting Scale	National
Outputs	Tables and graphs on an annual basis showing number of graduates by major discipline at Diploma, BSc, MSc and PhD levels.
Data Sources	University of Namibia, the Polytech and any other institution offering degree and diploma subjects.
Limitations	None
Linkages to other Indicators	None
S-P-I-R Category	REPSONSE