

SADC REGIONAL PROGRAMME FOR RHINO CONSERVATION

**Economic Analysis of Rhino Conservation
in a Land-use Context within the SADC Region**

Phase 1: Scoping Exercise

Anna Spenceley and Jon Barnes

SADC RPRC Task 6.3-1.2



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ABOUT the SADC Regional Programme for Rhino Conservation:

The Programme is funded by the Italian Ministry of Foreign Affairs, Directorate General for Development Cooperation (Project AID 5064).

The Programme is contracted to CESVI and implemented through a regional consortium which comprises:

- The Secretariat of the Southern Africa Development Community (SADC)
- IUCN-ROSA (The World Conservation Union - Regional Office for Southern Africa)
- The IUCN African Rhino Specialist Group
- WWF-SARPO - (World Wide Fund for Nature - Southern Africa Regional Programme Office)
- CESVI (Cooperazione e Sviluppo)

The **Programme goal** is to contribute to maintain viable and well distributed metapopulations of Southern African rhino taxa as flagship species for biodiversity conservation within the SADC region.

The **Programme objective** is to implement a pragmatic regional rhino strategy within the SADC region following the acquisition of sound information on, firstly, the constraints and opportunities for rhino conservation within each range state and secondly, the constraints and opportunities for rhino metapopulation management at the regional level.

DISCLAIMER

The information, opinions and materials presented herewith do not necessarily reflect the official views of any of the organisations involved, including the Italian Ministry of Foreign Affairs, SADC, CESVI, IUCN-ROSA, WWF-SARPO, AfRSG or governments of SADC member countries.

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PHASE 1: SCOPING EXERCISE

ECONOMIC ANALYSIS OF RHINO CONSERVATION IN A LAND-USE CONTEXT WITHIN THE SADC REGION

SADC RPRC TASK

6 December 2004

Anna Spenceley and Jon Barnes

A. Objectives of the analysis

The analysis is intended to explore the rationale for regarding rhinos as "flagship species" in terms of:

- The extent to which they might "add value" to existing wildlife operations in state and private areas (though enhancing ecotourism interest, attracting donor support, creating pride and prestige, etc.);
- The extent to which their protection and monitoring needs might confer blanket protection for other wildlife components that might be vulnerable to human pressures (notably poaching, and including the converse possibility, that rhinos may attract poachers into an area where other wildlife is then poached);
- The extent to which they might contribute to community-based tourism and thereby to rural livelihoods, including comment on the opportunities for "direct incentives" payments to landholders or communities who ensure breeding opportunities for this species;
- The extent to which, in view of the above, they might be catalytic to land-use changes that entail a move towards wildlife production from alternative land-uses such as livestock production.

Economic analyses pursuant to the above will concentrate on market values of relevant goods and services rather than non-use values.

The analysis is also required to outline the issues and implications associated with consumptive uses of rhinos within the SADC region, in a land-use context. This component will include consideration of the economic implications of trading rhino products.

Given the time available for this research, it is intended that one or two study sites be used for each portion of the analysis. Therefore, the work will produce an indicative analysis of rhino conservation. Recommendations for more detailed investigation will be proposed, should a second phase be approved.

B. Approach

The market values for relevant goods and services will be separated for black and white rhino where possible, to reflect their different values, conservation status, and the way they act as 'flagships'.

With regard to the 'triple bottom line' of sustainable development, in addition to addressing financial data it will be important to consider the environmental and social consequences of rhino.

In this proposal specific study sites have been indicated, but the authors reserve the right to change these if, during the next phase, there is found to be insufficient or inappropriate data available.

QUESTION 1: What ‘added value’ do rhinos bring to existing wildlife operations in state and private areas?

Where possible, specific areas that have financial data for periods of time both with and without rhino (e.g. relative to local introductions or extinctions) will be compared, in addition to data from areas where populations have changed markedly (i.e. therefore affecting the probability of seeing/hunting rhino).

<p>State-owned areas</p>	<p>STUDY SITES Sites will depend upon the availability of data, which will come to hand during the study, but the aim will be to include sites where there are time series or cross-sectional data on tourism values with or without rhino (e.g. before or after introductions, or between sites with and without, respectively). At the time of writing this proposal information regarding rhino populations and tourism was still outstanding, but it is intended to study either Tembe Elephant Park, Spienkop or Itala Game Reserve in South Africa – which appear to be suitable.</p> <p>DATA COLLECTION</p> <ul style="list-style-type: none"> • Desk study – information on black and white rhino populations, financial information from the park and tourism facilities etc. • Interviews with key stakeholders – including protected area authorities, private sector operators, Non-Governmental Organisations (NGO), local community members or their representatives, IUCN-Southern Africa Sustainable Use Specialist Group (SASUSG) members via email, telephone or face-to-face. <p>TYPE OF DATA</p> <ul style="list-style-type: none"> • Quantitative data <ul style="list-style-type: none"> ➤ (Economic) to include revenue from hunting/photographic tourism/live sales, rack rates for services to tourists (e.g. accommodation, park entry fees), occupancies, turnover, cost of sales, additional costs incurred by the presence of rhino (e.g. management, anti-poaching), concession fees, external donor/state funding (i.e. in general and specific to rhino conservation/breeding), and tourist demand studies where available. ➤ (Environmental) area of land under conservation, funds available for conservation management/monitoring, population density of other species; ➤ (Socio-economic) local financial and livelihood benefits (e.g. employment, local services/product purchasing and implications for local poverty alleviation). • Qualitative data regarding marketing strategies (i.e. and the relative importance of rhino in marketing), tourist demand studies where available, local perceptions of rhino vs other wildlife species and protected areas (e.g. relative to human-wildlife conflict – where information available).
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	<p>TYPE OF ANALYSIS</p> <ul style="list-style-type: none"> • Time series analysis for areas before and after the introduction of rhino, and in relation to changes in population size of rhino (e.g. comparison presence/absence/no. rhino per unit area). The basic measure of economic value in the analysis will be changes in national income due to presence or absence of rhino. Here use will be made of investment/enterprise models of wildlife use, based on empirical data. These should provide evidence of incremental changes in value, as measured in terms of national income as well as returns to investors/landholders. The Appendix provides an example of such a model developed for north-west Namibia. • Qualitative analysis – simply report results found <p>OUTPUTS Holistic assessment of ‘added value’ from rhino in state areas.</p>
<p>Private areas</p>	<p>STUDY SITE The private sites will be one of Karisha, Amakhala, or Tala Game Reserve, in South Africa – which all appear to be suitable sites in terms of rhino populations and the presence of tourism before and after their introduction.</p> <p>TYPE OF DATA As for state-owned areas, but including land sale prices rather than concession fees, and tourism infrastructure lease fees. Concentration on differential marketing, tourist demand for different sites, rack rates for accommodation/services, occupancies etc. Also include whether revenue from live sales of rhinos provides incentives for breeding and conservation (gauged from questions to stakeholders). The desk analysis will include studies that have analysed the live sales market, to determine if these yield any measures of rhino “added value”.</p> <p>TYPE OF ANALYSIS As above</p> <p>OUTPUTS As above, for private areas</p>
<p>Comparison</p>	<p>OUTPUT Comparison between the ‘value added’ to private and state areas with respect to rhino populations, with respect to economic, environmental and social factors.</p>

QUESTION 2: How does the protection and monitoring of rhinos affect other wildlife components?

<p>State and private areas</p>	<p>STUDY SITE Hluhluwe-Umfolozi Park in South Africa.</p> <p>DATA COLLECTION</p> <ul style="list-style-type: none"> • Desk study – available monitoring/protection reports • Interviews with key stakeholders – including protected area authorities, private sector operators, anti-poaching units, (possibly) local community groups/representatives - via email, telephone or face-to-face. <p>TYPE OF DATA</p> <ul style="list-style-type: none"> • Quantitative data <ul style="list-style-type: none"> ➤ (Economic) budgets and costs of anti-poaching activities with/without rhino (e.g. including labour, equipment per unit area), poaching statistics per unit area (of all species monitored), wildlife monitoring costs; relative importance of different funding sources (e.g. donor, state, private sector); ➤ (Environmental) ‘success’ of anti-poaching activities (e.g. changes in no. incursions/snare traps etc), wildlife population dynamics; ➤ (Social) reported incidents of human-wildlife conflict; compensation, human/anti-poaching personnel relations. • Qualitative data – reports of field-unit’s perceptions of how anti-poaching activities take place, and how this impacts on rhinos and other species. Areas where protection/monitoring for rhino overlaps, or is exclusive that from, other wildlife species. Intelligence activities relating to rhino by the state (e.g. use of informers, ‘neighbourhood watch’ with local community members) and local perceptions of these activities and wildlife. Whether poachers are local or not. Description of wildlife monitoring activities (in addition to rhino). <p>TYPE OF ANALYSIS</p> <ul style="list-style-type: none"> • Time-series analysis – cost of anti-poaching (e.g. financial cost, activities, personnel, resources per unit area) relative to rhino populations (e.g. comparison presence/absence/no. rhino per unit area), and relative to other wildlife populations. Comparison of protection and monitoring ‘effort’ regarding rhino and other wildlife. • Qualitative analysis regarding perceived impacts by different stakeholders, anti-poaching and monitoring activities. <p>OUTPUT Report on the impacts of rhino protection and monitoring on other wildlife, including social implications of activities.</p>
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QUESTION 3: What impact do rhino have on community-based tourism and local livelihoods?

For simplicity, it is suggested that the study concentrates on enterprises within one country where data is readily available: Namibia. Community-based tourism (CBT) case study sites should be selected that are comparable, and where possible they either (a) operating the tourism business or (b) have a joint-venture with the private sector, but that third parties are responsible for environmental management activities.

<p>Community Based Tourism (CBT)</p>	<p>STUDY SITES Torra conservancy and the Purros conservancy in Namibia. Torra has some rhino and is in the core of the rhino range, while Purros does not have any, and is just outside the current range. Both conservancies have have elephant and are within the range of other north-western desert species (i.e. kudu, oryx, spingbok, giraffe, ostrich, mountain zebra, klipspringer, leopard, occasionally lion, etc.). In addition, both have community campsites and there are some joint venture lodge developments.</p> <p>DATA COLLECTION</p> <ul style="list-style-type: none"> • Desk study – existing information from the enterprises and associated NGOs. • Survey/interview of key stakeholders at case study sites – CBT enterprise managers, NGOs, and private sector partners. <p>TYPE OF DATA</p> <ul style="list-style-type: none"> • Quantitative data <ul style="list-style-type: none"> ➤ (Economic) to include revenue from hunting/photographic tourism/live sales (as relevant), cost of services to tourists (e.g. accommodation), occupancies, turnover, external funding/support in general and specific to rhino conservation/breeding (i.e. donor/state), value of joint-venture concessions with the private sector; ➤ (Socio-economic) local financial and livelihood benefits (e.g. employment, local services/product purchasing and implications for local poverty alleviation). • Qualitative data regarding marketing strategies (i.e. and the relative importance of rhino in marketing), tourist demand studies, local perceptions of rhino versus other wildlife species (e.g. relative to human-wildlife conflict: data available?). Responses from NGOs / Private sector more or less likely to have relationships with CBT where rhino are present from survey. <p>TYPE OF ANALYSIS</p> <ul style="list-style-type: none"> • Time series analysis for areas with and without rhino, and in relation to changes in population size of rhino (e.g. comparison presence/absence/no. rhino per unit area). • Qualitative analysis <p>OUTPUTS Holistic assessment of impacts of rhino on CBT in Namibia.</p>
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QUESTION 4: To what extent do rhinos influence change of land use to wildlife production

Landowners	<p>STUDY SITES Save Valley Conservancy in Zimbabwe.</p> <p>DATA COLLECTION</p> <ul style="list-style-type: none">• Desk study – existing studies from Save, with data prior to 2000.• Interviews/survey of key stakeholders – combine during private land survey in Question 1 regarding motivation for change of land use. <p>TYPE OF DATA</p> <ul style="list-style-type: none">• Quantitative data: Number of private landowners changing land use to wildlife production over time. Revenue from sales of rhino as a proportion of turnover/sales of other wildlife/other land use activities. Investment in rhino conservation/re-introductions (Private, state and donor funding).• Qualitative data: Have landowners in Save switched land use to wildlife production? Were rhino relevant to this decision? How important has the revenue from rhino sales been to this decision? (Rating of importance using a Likert scale) <p>TYPE OF ANALYSIS Financial comparison of turnover/wildlife sales before and after rhino introductions. Subjective ratings of importance of rhino in land use decisions.</p> <p>OUTPUT Report on whether rhino influence change of land use to wildlife.</p>
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C. Timeframe and costs

In general, the timeframe the study will be as follows:

Activity	Indicative Dates
1. Desk review of existing data	December 04 - February 05
2. Interviews with key stakeholders and field visits	March 05
3. Analysis	April 05
4. Draft report compilation	April/May 05
5. Review (by WWF and other stakeholders)	May 05
6. Final report	31 May 2005

Phase 2	Days			
Activity	AS	JB	RD	WWF
1. Desk review of existing data	5	0.5		
2. Interviews with key stakeholders and field visits	6			
3. Analysis	3	1	0.5	
4. Draft report compilation	5	1	0.5	
5. Review				1 week
6. Final report	2	0.5		
Total Phase 2	21	4	1	

Note: To do a socio-economic impact analysis, it may be necessary to add additional days for further analysis. Existing data on these issues may only be indicative.

The \$2177 for per diems and flights will be allocated once the study sites are definitely determined, and will be used for survey work.

APPENDIX: Indicative example of market analysis presentation format

FINANCIAL/ECONOMIC MODEL - TORRA COMMUNITY-BASED CONSERVANCY - KUNENE - BASE CASE

ASSUMPTIONS*

Production System:	16	beds. Wildlife conservancy producing trophies, live game and wildlife viewing.
Site:	Conservancy in mopane/Acacia short woodland in flat to hilly terrain wildlife populations local with little immigration; water points for livestock and game; livestock in most of area, game mostly in core area	
Game Density:	<u>100%</u> 1.26	LSU Equivalents/Sq. Km. or, 79 Hectares per LSU Equivalent
Carrying Capacity:	<u>100%</u> 0.005	Tourist Beds/Sq. Km. or, 22013 Ha. per Tourist Bed
Conservancy Size:	352200 Hectares or,	3522 Square Kilometres
Core Wildlife Area Size:	108586	
Tourist Category:	Overseas 35% Adults 100%	Regional 35% Children 0%
	Resident 5%	Citizen 25%
Occupancy Rate:	<u>100%</u> 50.0%	Average Length of Stay: 10 Days
Daily Tariffs (N\$):	<u>100%</u> Overseas 800 Children 75%	Regional 800 of Adult Price
	Resident 800	Citizen 800
Capital Item Prices:	<u>100%</u> (Variation from Normal for Sensitivity Analysis)	
Capital Sources:	<u>100%</u> Loan = 25%	Equity = 75% and: <u>100%</u> Foreign 0% Domestic 100%
Interest Rates:	Rate for Capital Loans: 20%	Rate for Working Capital Loans: 30%
Working Capital as Proportion of Annual Operating Costs:	30%	
Park Entry Fees:	<u>100%</u> Fee per Tourist Night/Day: N\$	30.00
Household Dividends:	120 Households @ N\$	1900
Land Rental and Resource Royalty (N\$):	<u>100%</u> Rental: 0.00 per Ha.	<u>100%</u> Royalty: 29% of Turnover
		8.00%
Manpower Needs:	<u>100%</u> Managers 1 <u>100%</u> Management: Skilled Labour Foreign 0%	1 Unskilled Labour Citizen 100%
	6	
Shadow Wage Adjustment:	<u>100%</u> Managers 1.00	Skilled Labour 1.00 <u>100%</u> Unskilled Labour 0.35
Foreign Exchange Premium:	<u>100%</u> 6%	Adjustment Factor = 1.06
Tax Adjustments:	<u>100%</u> General Sales Tax: 11%	Import Taxes: from SACU: 0% to SACU: n/a
Discount Rates:	<u>100%</u> Financial Discount Rate: 8%	Economic Discount Rate: 8%
Opportunity Cost of Capital	<u>100%</u> 8%	

Static models depict enterprise at full production. Static financial model includes interest, amortisation government fees, royalties and land rentals. Static economic model takes foreign inflows and outflows into account, excludes other interest and transfers and values enterprise in economic prices before land and government costs

Dynamic models presented over 5 and 10 years, to measure IRR and NPV. Financial dynamic model, at constant

TABLE Sa1: CAPITAL REQUIREMENTS

ITEM	QUANT.	PRICE N\$	FINAN. COST	LIFE Years	AMORT. + INT.	DEPREC- IATION	ECON. DEPR.	FOREX ADJ.	TAX ADJ.	ECON. COST
FIXED CAPITAL										
DOMESTIC ITEMS										
Houses Manager	1	30000	30000	40	6161	750	668	1.00	0.89	26700
Houses Labour	7	7500	52500	40	10781	1313	1168	1.00	0.89	46725
Office/Storerooms	1	5000	5000	40	1027	125	111	1.00	0.89	4450
Tourist/Hunter Lodges/Campsites	0	75000	0	40	0	0	0	1.00	0.89	0
Boreholes	3	28000	84000	40	17250	2100	1869	1.00	0.89	74760
Reservoirs	1	38000	38000	40	7804	950	846	1.00	0.89	33820
Reticulation/Pans	1	40000	40000	40	8214	1000	890	1.00	0.89	35600
Road Maintenance (km)	60	643	38580	40	7923	965	858	1.00	0.89	34336
Hiking Trails (km)	0	100	0	40	0	0	0	1.00	0.89	0
Transaction Costs	3	65000	195000	40	40045	4875	4339	1.00	0.89	173550
CONTINGENCIES @ 5%			24154	40	4960	604	537	1.00	0.89	21497
SUBTOTAL DOMESTIC ITEMS			507234							451438
TRADABLE ITEMS										
Boma/Pens	1	15000	15000	20	3080	750	708	1.06	0.89	14151
Campsite	3	41000	123000	15	26308	8200	7736	1.06	0.89	116038
Pump/Windmill	3	15000	45000	15	9625	3000	2830	1.06	0.89	42453
Fencing Perimeter (km)	32	4510	144320	15	30867	9621	9077	1.06	0.89	136151
Other Items	12	8200	98400	15	21046	6560	6189	1.06	0.89	92831
CONTINGENCIES @ 5%			21286	15	4553	1419	1339	1.06	0.89	20081
SUBTOTAL TRADABLES			447006							421705
SUBTOTAL- FIXED CAPITAL			954240							873144
MOVABLE CAPITAL										
TRADABLE ITEMS										
LDVs/Trucks	1	111000	111000	4	42878	27750	26179	1.06	0.89	104717
Tools/Office Equipment	1	16500	16500	6	4962	2750	2594	1.06	0.89	15566
Other Equipment	0	3000	0	6	0	0	0	1.06	0.89	0
Generator/Computers	0	7500	0	6	0	0	0	1.06	0.89	0
CONTINGENCIES @ 10%			12750	6	3834	2125	2005	1.06	0.89	12028
SUBTOTAL TRADABLES			140250							132312
DOMESTIC ITEMS										
Stock : Small Game Batch	1	0	0	40	0			1.00	0.89	0
: Large Game Batch	1	0	0	40	0			1.00	0.89	0
: Big Five	0	0	0	40	0			1.00	0.89	0
: Cattle	0	0	0	40	0			1.00	0.89	0
Horses and Donkeys	0	0	0	40	0			1.00	0.89	0
CONTINGENCIES @ 10%			0	40	0			1.00	0.89	0
SUBTOTAL- DOMESTIC ITEMS			0							0
SUBTOTAL- MOVABLE CAPITAL			140250							132312
WORKING CAPITAL										
			LOAN	INTEREST						
VARIABLE			54639	16392				1.06	1.00	57917
OVERHEAD			41303	12391				1.06	1.00	43781
SUBTOTAL- WORKING CAPITAL			95942	28783						101699

TABLE Sa2: STOCK COMPOSITION BY SPECIES AT FULL PRODUCTION

ITEM	HEAD	POT. OFF-TAKE		OFF-TAKE		TROPH. RATE	LSU FACTOR	LSU
		(%)	(NO.)	(%)	(NO.)			
Baboon	69	6.60%	5	3.30%	2	0	0.00	0
Duiker	0	22.60%	0	11.30%	0	0	0.07	0
Eland	0	6.70%	0	3.35%	0	0	1.00	0
Elephant	87	3.10%	3	1.55%	1	1	3.33	291
Giraffe	20	6.20%	1	3.10%	1	0	1.43	29
Hyaena (Spotted)	0	20.20%	0	10.10%	0	0	0.00	0
Kudu	162	9.90%	16	4.95%	8	5	0.45	73
Leopard	12	15.00%	2	7.50%	1	1	0.00	0
Lion	0	12.00%	0	6.00%	0	0	0.00	0
Oryx	453	9.40%	43	4.70%	21	14	0.40	181
Ostrich	489	10.00%	49	5.00%	24	15	0.26	127
Springbok	4735	18.00%	852	6.75%	320	14	0.11	521
Steenbok	110	27.70%	30	13.85%	15	0	0.06	7
Warthog	0	14.40%	0	7.20%	0	0	0.18	0
Wild dog	0	15.00%	0	7.50%	0	0	0.00	0
Wildebeest	0	9.60%	0	4.80%	0	0	0.40	0
Zebra (Mountain)	226	8.40%	19	4.20%	10	10	0.63	143
Cattle	0	15.00%	0	7.50%	0	0	1.00	0
Goats	0	45.00%	0	22.50%	0	0	0.11	0
Donkeys/horses	0	10.00%	0	5.00%	0	0	0.63	0
TOTAL	6364		1020		403	59		1371
STOCK DENSITY ON LA	1.26	LSU PER SQ.KM.; CONSERVANCY SIZE:		108586	HECTARES			

TABLE Sa3: SALES AT FULL PRODUCTION

ITEM	QUANTITY	@	VALUE (N\$)	FINANCIAL VALUE	FOREX ADJ.	TAX ADJ.	ECON. VALUE
Trophy Hunting Rental	1 camp	@	0 N\$ =	0	1.06	1.00	0
Trophy Hunting: Royalty	1 camp	@	60000 N\$ =	60000	1.06	1.00	63600
Trophy Hunting: Meat	59 animals	@	322 N\$ =	19052	1.06	1.00	20195
Tourism Rentals	2 lodge	@	280000 N\$ =	560000	1.06	1.00	593600
Campsite Net Income	1 site	@	14600 N\$ =	14600	1.06	1.00	15476
Tourism Rentals - Other	1 site	@	26280 N\$ =	26280	1.06	1.00	27857
Live Game Sales	0 animals	@	250 N\$ =	0	1.06	1.00	0
Venison: Biltong	344 animals	@	322 N\$ =	110904	1.06	1.00	117558
Livestock sales	0 animals	@	0 N\$ =	0	1.06	1.00	0
Crafts	0 units	@	0 N\$ =	0	1.06	1.00	0
Poles	0 h' holds	@	525 N\$ =	0	1.00	1.00	0
Other	0 h' holds	@	525 N\$ =	0	1.00	1.00	0
TOTALS			GROSS INCOME	790836			838286

TABLE Sa4: VARIABLE EXPENDITURE AT FULL PRODUCTION

ITEM	FINANCIAL VALUES			FOREX ADJ.	TAX ADJ.	ECONOMIC VALUES			
	N\$/LSU	N\$/HA.	VALUE			N\$/LSU	N\$/HA.	VALUE	
TRADABLE ITEMS									
Marketing Costs: Advertising	0.12	0.00	166	1.06	0.89	0.11	0.00	157	
: Agents Fees	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
Campsite Running Costs : Accomodation	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
: Transport	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
: Optional Activ.	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
: Bar	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
: Crafts	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
Fodder and Supplements	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
Other Costs : Office Supplies	2.88	0.04	3954	1.06	0.89	2.72	0.03	3730	
: Capture Team	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
: Biltong Distribution	10.16	0.13	13937	1.06	0.89	9.59	0.12	13148	
: Live Game Distribution	0.00	0.00	0	1.06	0.89	0.00	0.00	0	
Consultancies, Travel and Training	35.87	0.45	49201	1.06	0.89	33.84	0.43	46416	
General Vehicle Running Costs	17.70	0.22	24279	1.06	0.89	16.70	0.21	22905	
SUBTOTAL TRADABLES	66.74	0.84	91538			62.97	0.80	86357	
DOMESTIC ITEMS									
Veterinary and Medicine Costs	0.00	0.00	0	1.00	0.89	0.00	0.00	0	
Meat Board Levy	0.00	0.00	0	1.00	1.00	0.00	0.00	0	
Bank Fees	2.62	0.03	3600	1.00	1.00	0.00	0.00	0	
Sales Tax	63.43	0.80	86992	1.00	1.00	0.00	0.00	0	
SUBTOTAL DOMESTIC ITEMS	66.05	0.83	90592			0.00	0.00	0	
TOTAL VARIABLE EXPENDITURE	132.80	1.68	182130			62.97	0.80	86357	

TABLE Sa5: OPERATING OVERHEAD EXPENDITURE AT FULL PRODUCTION

ITEM	FINANCIAL VALUES			FOREX ADJ.	TAX ADJ.	ECONOMIC VALUES			
	N\$/LSU	N\$/HA.	VALUE			N\$/LSU	N\$/HA.	VALUE	
DOMESTIC ITEMS									
Salaries and Wages: Unskilled Labour	27.49	0.35	37701	1.00	1.00	27.49	0.35	13195	
: Skilled Labour	9.16	0.12	12567	1.00	1.00	9.16	0.12	11185	
: Managers	24.06	0.30	33000	1.00	1.00	24.06	0.30	33000	
Administration	4.23	0.05	5800	1.00	0.89	4.23	0.05	5162	
Maintenance and Repairs	13.09	0.17	17957	1.00	0.89	13.09	0.17	15982	
Insurance	5.11	0.06	7013	1.00	0.89	5.11	0.06	6241	
Miscellaneous Fixed Costs	17.24	0.22	23639	1.00	0.89	17.24	0.22	21039	
TOTAL OPERATING OVERHEAD EXPENDI	100.39	1.27	137677			100.39	1.27	105804	

TABLE Sa6: STATIC FINANCIAL MODEL (AT FULL PRODUCTION)

ITEM	UNITS	TOTAL	
Conservancy Extent	Hectares		108586
Conservancy Stock	Large Stock Units (LSU)		1371
Total Capital Requirement	N\$		1190432
	N\$/LSU	N\$/HECTARE	N\$
GROSS INCOME	576.63	7.28	790836
VARIABLE COSTS	132.80	1.68	182130
GROSS MARGIN	443.83	5.61	608706
OVERHEAD COSTS			
Overhead Operating Costs	100.39	1.27	137677
Loan Amortisation and Interest	45.81	0.58	62829
Provisions for Capital Replacement	40.94	0.52	56142
Interest on Variable Working Capital	11.95	0.15	16392
Interest on Overhead Working Capital	9.03	0.11	12391
Land Rental	0.00	0.00	0
Resource Royalty	166.27	2.10	228038
TOTAL OVERHEAD COSTS	374.39	4.73	513468
NET CASH INCOME	69.44	0.88	95238
NET CASH INCOME/N\$100 TOTAL CAPITAL INVESTMENT	8.00		
"TOTAL BENEFITS"*/N\$100 TOTAL CAPITAL INVESTMENT	41.76		
"TOTAL BENEFITS"*/HECTARE	4.58		

* "Total Benefits" = all of Net Cash Income, Salaries and Wages, Licences and Duties, Rental and Royalties.

TABLE Sa7: STATIC ECONOMIC MODEL (AT FULL PRODUCTION)

ITEM	UNITS		TOTAL
Conservancy Extent	Hectares		108586
Conservancy Stock	Large Stock Units (LSU)		1371
Total Initial Capital Requirement	N\$		1107154
Economic Depreciation Cost	N\$		69942
Foreign Financing (Prorated)	N\$		0
Foreign Amortisation	N\$		0
Foreign Capital Replacement Provision	N\$		0
Foreign Interest Cost	N\$		0
Domestic Interest Cost	N\$		217557
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ECONOMIC BENEFITS	N\$/LSU	N\$/HECTARE	N\$
Gross Income	611.23	7.72	838286
ECONOMIC COSTS			
DOMESTIC COMPONENT			
Shadow Unskilled Citizen Wages	9.62	0.12	13195
Other Citizen Wages	32.22	0.41	44185
Opportunity Cost of Capital	64.58	0.82	88572
Other Domestic Economic Costs	35.31	0.45	48424
SUBTOTAL DOMESTIC COMPONENT	141.73	1.79	194376
TRADABLE COMPONENT			
Foreign Remuneration	0.00	0.00	0
Foreign Services	0.04	0.00	55
Foreign Interest	0.00	0.00	0
Foreign Lease Payments	0.00	0.00	0
Foreign Rentals	0.00	0.00	0
Foreign Net Income	0.00	0.00	0
Other Tradable Economic Costs	62.93	0.79	86302
SUBTOTAL TRADABLE COMPONENT	62.97	0.80	86357
TOTAL ECONOMIC COSTS	204.69	2.59	280733
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NET ECONOMIC BENEFIT (Gross Value Added)	406.53	5.13	557553
NET VALUE ADDED (Excluding Depreciation)	355.54	4.49	487611
DOMESTIC RESOURCE COST RATIO =	0.55		
NET VALUE ADDED/N\$100 TOTAL CAPITAL COST =	44.04		
CAPITAL COST/EMPLOYMENT OPPORTUNITY CREATED =	138394		
NUMBER OF EMPLOYMENT OPPORTUNITIES/1000 HA.	0.07		

FINANCIAL/ECONOMIC MODEL - TORRA COMMUNITY-BASED CONSERVANCY - KUNENE - BASE CASE
TABLE Sa16: SUMMARY OF RESULTS

ITEM	UNITS	TOTAL		
Conservancy Extent	Hectares	108586		
Conservancy Stock	Large Stock Units (LSU)	1371		
ITEM	% of TCI	N\$/LSU	N\$/HECTARE	N\$
Total Financial Capital (TCI)	-	867.99	10.96	1190432
Financial Gross Income	66.43%	576.63	7.28	790836
Variable Financial Costs	-	132.80	1.68	182130
Fixed Financial Costs	-	374.39	4.73	513468
Net Cash Income	8.00%	69.44	0.88	95238
Community Cash Income	34.15%	296.43	3.74	406544
Land Rental	-	0.00	0.00	0
Resource Royalty	-	166.27	2.10	228038
Project FRR (@ 10 Years)	-	-	-	16.29%
Community FRR (@ 10 Years)	-	-	-	133.39%
Project FNPV (@ 8%, @ 10 Years)	-	-	7.93	860791
Community FNPV (@ 8%, @ 10 Years)	-	-	19.65	2133202
Total Economic Capital	-	807.27	10.20	1107154
Economic Gross Income	75.72%	611.23	7.72	838286
Economic Costs	25.36%	204.69	2.59	280733
Net Economic Benefit	50.36%	406.53	5.13	557553
Net Value Added	44.04%	355.54	4.49	487611
ERR (@ 10 Years)	-	-	-	131.23%
ENPV (@ 8%, @ 10 Years)	-	-	33.73	3662342
Economic Capital Cost/Job	-	-	-	138394
Domestic Resource Cost Ratio	-	-	-	0.55
Policy Analysis Matrix	: Effects of Policy / Market Imperfections	: on Output		-47450
		: on Tradable Inputs		-5181
		: on Domestic Factors		-339742
	: Net Effects of Policy / Market Imperfections	: on Annual Net Income		-392373
		: on Net Present Value (10 Years)		-2801552