

Annex 4

Assessment of key impacts of project investments on target group

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Attachment: Social and financial assessment of proposed human wildlife safety project interventions

1. INTRODUCTION

The direct target group of the project are community members of communal conservancies.

With the proposed project funds and project period and to have a more compact project area the project will focus on up to 40 conservancies including 20 conservancies identified as the ones mostly affected by the HWC. The challenge comes in comparing conservancies due to the different sizes and different populations. Table A4-1 provides the list of 2016 conservancies, with the total number of incidences of conflict, and the value – sorted in descending order of value of loss. In Table A4-2, the loss has been divided by the number of members, to get an average loss per member, and ranked accordingly. When comparing the ranking, it can be seen that such ranking method results in a different selection of “top 40” conservancies, with some overlap. The final selection of conservancies will therefore ultimately depend on the agreement reached with conservancies and wider cluster landscape to participate in the project.

The mission has concluded that Kunene region offers the best opportunity for quick implementation of the project focusing on flagship desert lion, and desert elephant and rhino. This is proposed because a well-designed compound of the project lion ranger program, HWC conflict with lion and experience rangers are in place. This is representing the arid and semi-arid desert climate. The second focus will be Zambezi, especially in the Mudumu complex where IDRNC and WWF have accumulated vast experience.

This Annex presents in more detail relevant information on conservancies with a focus on HC affected communities. More detailed statistics are compiled in Annex 3. The stakeholder analysis in Annex 5 provides details on other stakeholder project beneficiaries.

Table A4-1: Table showing the types of wildlife damage per conservancy (number of incidents and estimated value), sorted from highest to lowest total value (showing top 40 with shading (top 20 darker shading)).

Region	Conservancy	Crop field damage		Livestock losses		Human life/injury		Other damage		Total	
		Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)
Kunene	Marienfluss	19	4 750	225	330 075	-	-	-	-	244	334 825
Kunene	Orupembe	-	-	188	275 796	-	-	-	-	188	275 796
Kunene	#Khoadi Hoas	39	9 750	287	237 636	-	-	16	28 048	342	275 434
Kunene	Puros	-	-	185	271 395	-	-	-	-	185	271 395
Kunene	Sesfontein	2	500	141	206 847	-	-	18	31 554	161	238 901
Kunene	Anabeb	-	-	154	225 918	-	-	-	-	154	225 918
Kunene	Ozondundu	-	-	146	214 182	-	-	-	-	146	214 182
Kunene	Okangundumba	55	13 750	133	195 111	-	-	3	5 259	191	214 120
Kunene	Torra	-	-	144	211 248	-	-	-	-	144	211 248
Zambezi	Kabulabula	6	2 280	138	202 446	-	-	2	2 946	146	207 672
Kunene	Otuzemba	-	-	140	205 380	-	-	-	-	140	205 380
Kunene	Doro !Nawas	39	9 750	230	190 440	-	-	1	1 753	270	201 943
Kunene	Otjambangu	-	-	135	198 045	-	-	-	-	135	198 045
Kunene	Kunene River	-	-	127	186 309	-	-	-	-	127	186 309
Zambezi	Mashi	323	122 740	35	51 345	2	10 000	1	1 473	361	185 558
Kunene	Sanitatas	-	-	126	184 842	-	-	-	-	126	184 842
Omaheke	Otjombinde	-	-	111	162 837	-	-	11	19 283	122	182 120
Kunene	Okongoro	-	-	122	178 974	-	-	-	-	122	178 974
Kunene	Ombujokanguindi	-	-	118	173 106	-	-	-	-	118	173 106
Kunene	Etanga	25	6 250	110	161 370	-	-	3	5 259	138	172 879
Kunene	Otjiu-West	29	7 250	106	155 502	-	-	5	8 765	140	171 517
Kunene	Otjombande	1	250	67	98 289	-	-	26	45 578	94	144 117

Region	Conservancy	Crop field damage		Livestock losses		Human life/injury		Other damage		Total	
		Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)
Kunene	Okondjombo	-	-	85	124 695	-	-	-	-	85	124 695
Kunene	/Audi	2	500	141	116 748	-	-	-	-	143	117 248
Kunene	Otjikondavirongo	271	67 750	30	44 010	1	5 000	-	-	302	116 760
Kunene	Sorris Sorris	-	-	141	116 748	-	-	-	-	141	116 748
Kunene	//Huab	29	7 250	118	97 704	-	-	6	10 518	153	115 472
Kunene	Okanguati	-	-	75	110 025	1	5 000	-	-	76	115 025
Kunene	Epupa	4	1 000	43	63 081	-	-	27	47 331	74	111 412
Kunene	Uibasen Twyfel-fontein	-	-	132	109 296	-	-	-	-	132	109 296
Zambezi	Dzoti	-	-	72	105 624	-	-	-	-	72	105 624
Erongo	Ohungu	-	-	122	101 016	-	-	-	-	122	101 016
Ohangwena	Okongo	-	-	66	96 822	-	-	-	-	66	96 822
Zambezi	Nakabolelwa	70	26 600	42	61 614	-	-	2	2 946	114	91 160
Kunene	Orupupa	132	33 000	38	55 746	-	-	-	-	170	88 746
Omaheke	Eiseb	-	-	60	88 020	-	-	-	-	60	88 020
Kunene	Ombazu	31	7 750	46	67 482	-	-	-	-	77	75 232
Kunene	!Khorro !Goreb	-	-	84	69 552	-	-	-	-	84	69 552
Hardap	Huibes	-	-	74	61 272	-	-	2	3 506	76	64 778
Omusati	Sheya Shuushona	11	4 180	36	52 812	-	-	3	5 259	50	62 251
//Karas	!Khub !Naub	-	-	73	60 444	-	-	-	-	73	60 444
Erongo	Otjimboyo	179	44 750	12	9 936	1	5 000	-	-	192	59 686
Kavango East	George Mukoya	12	4 560	37	54 279	-	-	-	-	49	58 839
Kavango East	Muduva Nyanga	30	11 400	24	35 208	2	10 000	-	-	56	56 608
Otjozondjupa	Nyae Nyae	-	-	37	54 279	-	-	-	-	37	54 279
Otjozondjupa	Okamatapati	-	-	34	49 878	-	-	-	-	34	49 878

Region	Conservancy	Crop field damage		Livestock losses		Human life/injury		Other damage		Total	
		Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)
Erongo	#Gaingu	2	500	45	37 260	2	10 000	-	-	49	47 760
Omaheke	Omuramba ua Mbinda	38	14 440	22	32 274	-	-	-	-	60	46 714
Kunene	Otjitanda	-	-	31	45 477	-	-	-	-	31	45 477
Erongo	Tsiseb	-	-	50	41 400	-	-	2	3 506	52	44 906
Omusati	Uukwaluudhi	5	1 900	29	42 543	-	-	-	-	34	44 443
Kunene	Okatjandja Kozomenje	3	750	29	42 543	-	-	-	-	32	43 293
Omusati	Uukolonkadhi- Ruacana	-	-	28	41 076	-	-	-	-	28	41 076
Oshana	lipumbu ya Tshi- longo	13	4 940	21	30 807	-	-	1	1 753	35	37 500
//Karas	!Han/Awab	9	2 250	41	33 948	-	-	-	-	50	36 198
Hardap	Oskop	32	8 000	32	26 496	-	-	-	-	64	34 496
Otjozondjupa	African Wild Dog	-	-	22	32 274	-	-	-	-	22	32 274
Otjozondjupa	N#a-Jaqa	23	8 740	14	20 538	-	-	-	-	37	29 278
Otjozondjupa	Otjituuo	2	760	15	22 005	-	-	1	1 753	18	24 518
Oshikoto	King Nehale	9	3 420	14	20 538	-	-	-	-	23	23 958
//Karas	//Gamaseb	16	4 000	21	17 388	-	-	-	-	37	21 388
Otjozondjupa	Ondjou	-	-	10	14 670	-	-	1	1 753	11	16 423
Zambezi	Wuparo	-	-	11	16 137	-	-	-	-	11	16 137
Otjozondjupa	Ozonahi	-	-	8	11 736	-	-	-	-	8	11 736
Zambezi	Kyarmacan Associ- ation	5	1 900	6	8 802	-	-	-	-	11	10 702
Zambezi	Mayuni	-	-	3	4 401	-	-	-	-	3	4 401
Kunene	Ehivipuka	-	-	-	-	-	-	-	-	-	-

Region	Conservancy	Crop field damage		Livestock losses		Human life/injury		Other damage		Total		
		Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	Incidents	Value (NAD)	
Kunene	Ongongo	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Impalila	-	-	-	-	-	-	-	-	-	-	-
Kunene	Omatendeka	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Kwandu	-	-	-	-	-	-	-	-	-	-	-
Kunene	Ombombo	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Sikunga	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Sobbe	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Bamunu	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Kasika	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Balyerwa	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Lusese	-	-	-	-	-	-	-	-	-	-	-
Zambezi	Salambala	-	-	-	-	-	-	-	-	-	-	-
Total	79	1 466	437 610	5 242	6 665 697	9	45 000	131	228 243	6 848	7 376 550	

Table 4-2: Table ranking top 40 conservancies according to value of loss by conservancy (NAD), and average loss per conservancy member.

Region	Conservancy	Area	Approximate population	Total HWC Incidents	TOTAL HWC Costs (NAD)	Average cost of loss per member	Ranking according to conservancy loss	Ranking according to loss per member
Kunene	Sanitatas	1446	124	72	105624	2 239.35	33	1
Kunene	Okondjombo	1645	100	64	54944	1 875.80	45	2
Kunene	Orupembe	3565	240	37	34807	898.50	54	3
Kunene	Otuzemba	742	492	0	0	390.37	69	4
Kunene	Marienfluss	3034	340	50	62397	325.82	41	5
Kunene	Ongongo	501	755	50	60821	301.27	42	6
Kunene	Ozondundu	745	402	0	0	278.21	72	7
Kunene	Ombujokanguindi	1160	758	144	211248	274.75	9	8
Kunene	Otjiu-West	1100	810	4	5868	246.17	66	9
Kunene	Orupupa	1234	2024	0	0	228.11	67	10
Kunene	Puros	3562	641	270	348913	170.51	2	11
Kunene	Etanga	908	1524	0	0	139.56	68	12
Kunene	Sesfontein	2465	1491	146	207452	138.69	11	13
Kunene	Doro !Nawas	3978	1242	170	64464	128.28	40	14
Kunene	Okongoro	956	1378	0	0	125.23	71	15
Kunene	Okatjandja Kozomenje	656	1554	34	49878	119.76	49	16
Kunene	Okangundumba	1131	1845	18	24258	116.78	60	17
Zambezi	Impalila	73	919	126	184842	115.66	18	18
Zambezi	Kabulabula	89	642	146	214182	104.70	7	19
Erongo	Otjimboyo	448	285	153	115472	98.77	29	20
Kunene	/Audi	335	677	0	0	89.28	74	21
Kunene	Otjitanda	1174	498	0	0	88.51	75	22

Region	Conservancy	Area	Approximate population	Total HWC Incidents	TOTAL HWC Costs (NAD)	Average cost of loss per member	Ranking according to conservancy loss	Ranking according to loss per member
Kunene	Omatendeka	1619	1985	114	82620	87.65	36	23
Otjondjupa	Ondjou	8729	2832	8	11736	84.95	64	24
Zambezi	Nakabolelwa	114	747	342	459417	82.69	1	25
Kunene	Okanguati	1159	2223	76	115025	81.06	30	26
Kunene	Epupa	2912	3518	76	112064	77.67	31	27
Kunene	Ombazu	871	2357	11	16137	76.45	63	28
Zambezi	Mashi	297	2310	361	185558	76.15	17	29
Omusati	Uukwaluudhi	1437	836	192	90624	70.83	34	30
Kunene	Otjikondavirongo	1067	1794	56	52708	69.98	48	31
Kunene	Anabeb	1570	1402	23	22788	69.69	61	32
Omusati	Sheya Shuushona	5066	3198	37	29278	65.55	56	33
Kunene	Sorris Sorris	2290	950	73	60444	57.53	43	34
Zambezi	Sobbe	404	1045	77	79262	56.86	37	35
Zambezi	Kasika	147	1130	141	206847	56.62	12	36
Kunene	Ombombo	1487	2657	188	275796	54.49	4	37
Kunene	Otjombande	329	1392	0	0	54.38	73	38
Erongo	Ohungu	1211	1221	35	22391	53.05	62	39
Kunene	Otjambangu	348	932	191	214120	44.38	8	40
Zambezi	Balyerwa	223	1091	118	173106	43.02	24	41
Kunene	Torra	3493	1064	49	57279	42.21	44	42
Kunene	!Khorro !Goreb	1283	1219	85	70380	40.75	39	43
Zambezi	Kwandu	190	3676	60	88020	40.07	35	44
Ohangwena	Okongo	1340	2676	37	54279	39.73	47	45
Oshikoto	King Nehale	508	4756	0	0	38.53	70	46

Region	Conservancy	Area	Approximate population	Total HWC Incidents	TOTAL HWC Costs (NAD)	Average cost of loss per member	Ranking according to conservancy loss	Ranking according to loss per member
Zambezi	Mayuni	151	2364	28	41076	36.27	53	47
Zambezi	Wuparo	148	1076	122	179040	34.79	19	48
Kavango East	George Mukoya	486	990	185	271395	29.72	5	49
Kunene	#Khoadi Hoas	3364	4308	60	27716	28.89	57	50
Zambezi	Dzoti	287	1656	84	123228	28.29	27	51
Kunene	Kunene River	2764	4753	32	43293	26.10	52	52
Zambezi	Lusese	207	992	132	193644	24.29	15	53
Oshana	lipumbu ya Tshilongo	1548	2296	135	198045	19.94	14	54
Kunene	//Huab	1817	930	49	47760	19.59	50	55
Zambezi	Sikunga	287	2473	0	0	17.78	76	56
Erongo	Tsiseb	7913	2415	0	0	12.69	77	57
Zambezi	Bamunu	556	3234	140	173887	11.47	23	58
Kunene	Uibasen Twyfelfontein	286	230	0	0	10.78	78	59
Zambezi	Salambala	930	8553	22	32274	10.71	55	60
Omusati	Uukolonkadhi-Ruacana	2993	33534	52	76856	10.13	38	61
Otjozondjupa	N#a-Jaqna	9120	3698	127	186309	6.67	16	62
Otjozondjupa	Otjituuo	6133	5854	122	178974	2.82	20	63
Otjozondjupa	African Wild Dog	3824	4486	143	207607	2.63	10	64
Otjozondjupa	Nyae Nyae	8992	2785	140	205380	2.12	13	65
Kavango East	Muduva Nyanga	615	1734	122	178974	1.73	21	66
Hardap	Oskop	96	58	34	25262	1.09	59	67
Omaheke	Omuramba ua Mbinda	3217	495	244	337295	0.95	3	68
//Karas	!Han/Awab	1923	750	154	127512	0.41	26	69
//Karas	!Khob !Naub	2747	429	66	54648	0.31	46	70

Region	Conservancy	Area	Approximate population	Total HWC Incidents	TOTAL HWC Costs (NAD)	Average cost of loss per member	Ranking according to conservancy loss	Ranking according to loss per member
//Karas	//Gamaseb	1748	1623	161	148802	0.20	25	71
Otjozondjupa	Okamatapati	3096	1899	151	220430	0.16	6	72
Hardap	Huibes	1327	750	31	25668	0.08	58	73
Omaheke	Otjombinde	5891	4730	74	111932	0.03	32	74
Otjozondjupa	Ozonahi	3204	11064	138	176129	0.02	22	75
Erongo	#Gaingu	7731	2718	11	10033	0.01	65	76
Kunene	Ehrovipuka	1980	1846	302	116760	-	28	77
Zambezi	Kyarmacan Association	4057	5000	32	47100	-	51	78
Omaheke	Eiseb	6625	1448	0	0	-	79	79

2. SOCIO-ECONOMIC SITUATION OF TARGET GROUPS

2.1 Project country context

Social economic development

With a Gross Domestic Product per Capita of US\$ 5,693, Namibia is categorized as a ‘Middle Income Country’. This notwithstanding, it was also found to be the country with the greatest income inequality in the world by the 2015 UNDP Human Development Report. While a small proportion of the population, usually based in the urban areas, enjoys considerable wealth, poverty rates are high in the rural communal areas. About 38% of Namibia is designated communal land. Much of the remaining land is allocated for freehold farmland (44%), National Parks (17%) and declared urban areas (1%). Some 1.1 million people live in communal areas. This is just over half the total population; whilst the remaining people are in urban areas (42%) and on freehold farms (6%). Matters pertaining to tenure in communal areas thus concern high proportions of Namibia’s land and people¹.

Table A4- 3: Country basic brief

Index	Unit	Total		Remark
Total area	ha	82 561 500		
Total population		2 100 000		2011 census
Rural population	P	900 000	43%	of total population
Urban population	P	1 200 000	57%	of total population
Population in Conservancies	P	187 000	9%	of total population
			21%	of rural population
Cultivated area	ha	8 500 000	10%	of total land area
Commercial farmland	ha	36 327 060	44%	of total land area
Communal land	ha	31 373 370	38%	of total land area
National parks	ha	14 035 455	17%	of total land area
Conservancy area	ha	16 301 700	20%	of total land area
			52%	of communal area
Per capita	USD	5 600		
Human Development Index (HDI)		0.624		

Sources: USAID, Mendelsohn et al, Conservancy annual report, 2011 housing census

¹ John Mendelsohn et al. 2012. An overview of communal land tenure in Namibia: unlocking its economic potential

Bio-physical context and farming systems

Climate and water resources: The climate is described in the main text.

Namibia is the driest country in sub-Saharan Africa. Rainfall is low and extremely variable, and this will be exacerbated by climate change with project reduced precipitation, higher temperatures and more extreme events like flooding and drought.

Rivers in the interior are ephemeral showing only a flow when it rains. Perennial rivers are found at the northern and southern borders of the country fed from drainage basins with favourable rainfall and runoff in Namibia's neighbouring countries. The scarce water resources are a major limitation for socio-economic development of the communal areas in the northern part of the country where most of Namibia's population resides, and where most are engaged in forms of subsistence-oriented agriculture. The water security for both people and wildlife must be taken into due consideration. Annex 17 provides a map showing the water deficit. There is a clear precipitation gradient from west to north-east.

A **veterinary cordon fence** spans Namibia from east to west running approximately 200 km south of the northern border. The fence roughly separates the poorer north, where most of the communal areas are found and where subsistence farming is prevalent, from the more affluent southern parts where commercial farms prevail. This division approximately represents the segregation during apartheid, when most of the indigenous population was forced to live in the mostly northern 'Homelands'.

Demographic trends and migration urbanization

The population density is generally low, and concentrated in the northern communal areas, although there is increasing migration to urban areas. It is thus assumed that within the next decade many of the youth will have emigrated out of the rural areas in search of jobs – unless more attractive job opportunities can be found in the communal areas. The lion ranger and development of a modern wildlife safety and early response service could provide this incentive.

The large sparsely populated areas of north western Namibia provide high potential for wildlife conservation and tourism.

Farming systems

The present dominant farming system is the result of recent history starting with the phase of German administration (which supported a diversified production system), followed by the South African administration that used Namibia to resettle landless whites from South Africa, and moved towards monoculture practices. The vibrant dairy industry was replaced by beef production. Since independence in 1990, Government has promoted a more diverse production system, and introduced protection measures for Namibian farmers and associated industries. Namibian export produce has been promoted, particularly to markets beyond South Africa. There has been a resurgence in the production of a variety of crops and major efforts have been made to bring new commodities of indigenous plants and animals into production. This explains the coexistence of basically five prototypes of farming systems (Table A4-4). However, farming

systems are dynamic and can change rapidly in response to internal policies and external forces. Hence while commercial livestock dominates, wildlife is becoming increasingly attractive as a complimentary or alternative land use.

The target groups for this project are farmers in conservancies who are generally small-scale subsistence farmers, using open grazing for livestock (cattle and goats), and in the eastern areas, dryland cropping of primarily sorghum and maize for subsistence consumption, and supplementing incomes from non-farming activities. These groups also depend on natural resource production using indigenous fauna and flora, and landscapes.

Table A4-4: Farming systems of Namibia

Farming system	Main commodities	Land area	Use of production
1. Small-scale cereals and livestock	Mahango, sorghum, maize, goats and cattle	Small exclusive farms and open grazing in communal land in the northern regions	Domestic consumption supplementing incomes from non-farming activities
2. Cattle ranching	Cattle	Large freehold farms, exclusive farms in communal land, and in open grazing in northern Kunene	Beef, mainly for commercial sale to South Africa, Europe and Namibian consumers
3. Small stock	Sheep and goats	Large freehold farms and open grazing in communal land in the southern and western regions	Mutton and goats for commercial sale to South Africa and Namibian consumers
4. Intensive agriculture	Maize, wheat, grapes, ostriches, olives, dates, pigs, dairy products, vegetables and fruit	Small farms, mostly irrigated, throughout the country	Commercial sale to export markets and Namibian consumers
5. Natural resource production	Indigenous fauna and flora, and landscapes	Mainly in conservancies, game farms, community forests, parks and reserves.	Commercial sale to Namibian consumers and for export through tourism

Mendelsohn J. 2006.

The viable size of freehold farmland varies from north to south due to climatic conditions, but on average farms are about 5 000 ha.

2.2 Focal region

2.2.1 Target Area North East (Kavango, Zambezi)

Zambezi region is home to 90,596 inhabitants (4.3 percent of the national population) which results in a population density of 4.3 people per square kilometre. Since 1991 the growth of the population of the region has stagnated, due to a net outward migration in the respective period. Sixty nine percent of the population is rural. Since 2001 the share of people living poverty has increased from 32 percent to 39.2 percent in 2011 although a respectable 84 percent of the population is literate.

The **Zambezi region** has a relatively **high and growing population density** in the context of Namibia with a larger number of human residents being very poor and marginalized. With the successful establishment of the conservancies in the area wildlife numbers have substantially increased. However, there is growing pressure both on wildlife and land resources from **encroachment by agriculture and settlement, poaching and uncontrolled** bush fires.

Thirty eight percent of the economically active population is unemployed. The agricultural sector is the main employer in the region, accounting for 42 percent of employment. It is followed closely by the public sector at 22 percent while tourism contributes roughly 3 percent to employment figures. However, tourism's potential in Zambezi region is enormous as it comprises numerous national parks with abundant wildlife at the heart of the KAZA-TFCA. Moreover, it is close to the world-famous Victoria Falls.

The North Eastern Parks are important corridors for animal movements within the greater region in Namibia and surrounding countries and are at the geographic centre of the Kavango Zambezi Transfrontier Conservation Area (KAZA TFCA). The KAZA TFCA aims to broaden the protected areas network, thus increasing biodiversity, expanding wildlife migration routes and drawing more tourists to the area. In a place where local people often bear the costs of living with wildlife, KAZA TFCA aims to make the protection of wildlife more economically attractive to rural communities.

The Bwabwata NP and along the Kwando River may act as a partial barrier to elephant movement. However, our analysis suggests that this barrier is highly porous and that it acts to reroute and filter elephant movements, but does not, at existing development levels, block potential dispersal routes to Sioma NP. The analysis identified three key corridors through this area of relatively high human development. These should be the focus of conservation and mitigation efforts designed to maintain the integrity of the corridor.

Kavango region has 223,352 inhabitants (11 percent of the national population) which results in a density of 4.6 people per square kilometre. The population growth rate was 1 percent per annum between 2001 and 2011. Since 1996 the region has experienced a consistent net outflow of migrants.

Around 71 percent of the population lives in rural areas. With 53 percent Kavango region has the highest share of people living below the poverty line (a minus of 8 percentage points since 2001). Seventy nine percent of the population is literate.

Around 61 percent of the population is economically active while 50 percent of them are unemployed. The agricultural sector employs 60 percent of the workforce. Only in the urban constituencies of Rundu, salary and wages are the main source of income.

(From target group analysis NAMProject)

2.2.2 Target Area North West (Kunene)

The identified high-risk area North West mainly consists of Kunene region. **Kunene** region comprises 86,856 inhabitants (4.1 percent of the national population). With only 0.8 people per square kilometre, Kunene region is very sparsely populated. It saw a population growth rate of 2.3 percent per annum since 2001. Seventy four percent of the population live in rural areas. While 39 percent of Kunene’s inhabitants live in poverty (a reduction of 15 percent since 2001), the classification of severely poor applies to 24 percent of the population. The literacy rate in the region adds up to 65 percent. A considerable 36 percent of people aged 6 years and above have never attended school. About 67 percent of the population are economically active. Of these, 36 percent are unemployed. Agriculture accounts for 56 percent of employment. In the arid climate of Kunene region, nomadic pastoralism is predominant. Other sources of employment are tourism (4.2 percent) and manufacturing (4.3 percent). Kunene has large tourism potential as it comprises the Epupa Falls, Skeleton Coast National Park, the seminomadic ethnic group of the Himba, and tourist-attracting wildlife species. It also borders Etosha National Park.

In sum, the large majority of the inhabitants in these regions live in rural areas, and in poverty. Subsistence farming is prevalent. Tourism’s contribution to employment is single-digit while the potential for further expansion of the sector seems to be significant.

3. CONSERVANCIES

3.1 Overview of conservancies

Table A4-5 provides an overview of the population and size of the Communal conservancies in Namibia, according to governance region.

Table A4-5: Breakdown of population and size of conservancies by regions

Region	Conservancy	Area	Approximate population
//Karas	!Han/Awab	1923	750
//Karas	!Khob !Naub	2747	429
//Karas	//Gamaseb	1748	1623
Erongo	#Gaingu	7731	2718
Erongo	Ohungu	1211	1221
Erongo	Otjimboyo	448	285
Erongo	Tsiseb	7913	2415

Region	Conservancy	Area	Approximate population
Hardap	Huibes	1327	750
Hardap	Oskop	96	58
Kavango East	George Mukoya	486	990
Kavango East	Muduva Nyanga	615	1734
Kunene	!Khorro !Goreb	1283	1219
Kunene	#Khoadi Hoas	3364	4308
Kunene	//Huab	1817	930
Kunene	/Audi	335	677
Kunene	Anabeb	1570	1402
Kunene	Doro !Nawas	3978	1242
Kunene	Ehrovipuka	1980	1846
Kunene	Epupa	2912	3518
Kunene	Etanga	908	1524
Kunene	Kunene River	2764	4753
Kunene	Marienfluss	3034	340
Kunene	Okanguati	1159	2223
Kunene	Okangundumba	1131	1845
Kunene	Okatjandja Kozomenje	656	1554
Kunene	Okondjombo	1645	100
Kunene	Okongoro	956	1378
Kunene	Omatendeka	1619	1985
Kunene	Ombazu	871	2357
Kunene	Ombombo	1487	2657
Kunene	Ombujokanguindi	1160	758
Kunene	Ongongo	501	755
Kunene	Orupembe	3565	240
Kunene	Orupupa	1234	2024
Kunene	Otjambangu	348	932
Kunene	Otjikondavirongo	1067	1794
Kunene	Otjitanda	1174	498
Kunene	Otjiu-West	1100	810
Kunene	Otjombande	329	1392
Kunene	Otuzemba	742	492
Kunene	Ozondundu	745	402
Kunene	Puros	3562	641
Kunene	Sanitatas	1446	124
Kunene	Sesfontein	2465	1491
Kunene	Sorris Sorris	2290	950
Kunene	Torra	3493	1064
Kunene	Uibasen Twyfelfontein	286	230

Region	Conservancy	Area	Approximate population
Ohangwena	Okongo	1340	2676
Omaheke	Eiseb	6625	1448
Omaheke	Omuramba ua Mbinda	3217	495
Omaheke	Otjombinde	5891	4730
Omusati	Sheya Shuushona	5066	3198
Omusati	Uukolonkadhi-Ruacana	2993	33534
Omusati	Uukwaluudhi	1437	836
Oshana	lipumbu ya Tshilongo	1548	2296
Oshikoto	King Nehale	508	4756
Otjozondjupa	African Wild Dog	3824	4486
Otjozondjupa	N#a-Jaqna	9120	3698
Otjozondjupa	Nyae Nyae	8992	2785
Otjozondjupa	Okamatapati	3096	1899
Otjozondjupa	Ondjou	8729	2832
Otjozondjupa	Otjituuo	6133	5854
Otjozondjupa	Ozonahi	3204	11064
Zambezi	Balyerwa	223	1091
Zambezi	Bamunu	556	3234
Zambezi	Dzoti	287	1656
Zambezi	Impalila	73	919
Zambezi	Kabulabula	89	642
Zambezi	Kasika	147	1130
Zambezi	Kwandu	190	3676
Zambezi	Kyarmacan Association	4057	5000
Zambezi	Lusese	207	992
Zambezi	Mashi	297	2310
Zambezi	Mayuni	151	2364
Zambezi	Nakabolelwa	114	747
Zambezi	Salambala	930	8553
Zambezi	Sikunga	287	2473
Zambezi	Sobbe	404	1045
Zambezi	Wuparo	148	1076

The abundance of game and other natural resources differs significantly, influenced by differences in climate, topography, soils and water availability. This makes some communal areas more suitable to conservancy formation and CBNRM activities than others.

3.2 Poverty and conservancies²

With a 2015 Gross Domestic Product (GDP) per capita equivalent to USD 6,014³, Namibia's per capita income is high relative to that of other Sub-Saharan African countries. The high per capita income figure conceals the fact that Namibia has one of the most **unequal distributions of income** among its citizens. Namibia's Gini coefficient (measure of income inequality) for 2009/2010 based on census and survey data for those years⁴ was just below 0.6. Only two countries in sub-Saharan Africa, South Africa and Botswana, have Gini coefficients that are equal to or greater than Namibia's.⁵

The geographical distribution of the incidence of poverty within Namibia is revealed through the results of a poverty mapping which combined census (income) and survey (household consumption) data.

For the mapping, poverty was defined as "the percentage of people in a specific area whose annual per adult equivalent consumption is below the poverty line". The "poverty line" cut-off income is sufficient to purchase the minimal food basket as well as a bundle of non-food items consistent with spending of the poor. Using 2010 data, people considered to be living below the poverty line in Namibia had an annualized per adult consumption equivalent to USD 635 (US\$ 702 in 2015 terms).

A second designation, termed "severe poverty", was calculated as an annualized per adult consumption equivalent to USD 466 (US\$515 in 2015 terms). The "severe poverty" cut-off represents the cost of a nutritional basket of food considered minimal for the healthy survival of a typical household. Those with income below that amount are unable to make the minimal purchases.

The poverty mapping combined the census and survey data to produce a spatial distribution of poverty incidence at the constituency and regional levels.

At the time the poverty mapping was released, there were 67 conservancies located in all thirteen Regions of Namibia. An overlay of the conservancies on maps showing the headcount of persons living below the poverty line and those living in severe poverty is revealing (refer to maps in Annex 17).

Data from the Poverty Mapping and 2011 population data for the conservancies' shows 51 of the 67 conservancies (76%) were in the six Regions of Namibia where about 30% of the population was living below

² This chapter is compiled from an analysis made by WWF and NACSO.

³ World Bank Indicators, i.e. 12 Euro 501 or NAD 72,168

⁴ 2009/2010 Namibia Household Income and Expenditure Survey and 2011 Namibia Population and Housing Census, Namibia Statistics Agency

⁵ Gini Index (World Bank estimate) – Country Ranking, the xx

the poverty line: namely Zambezi, Kavango, Kunene, Oshikoto, Ohangwena and Otjozondjupa.

The data below go further than just location and show that:

- The population of a conservancy in one of the **poorest regions** either formed a significant part of the constituency population in which it is located; or that
- The percentage of the constituency population living below the poverty line and in severe poverty in a constituency was so high that conservancy participants, are highly likely to fall into that group even if the conservancy population is not a significant portion of the constituency population.

Poverty: The Project focus will be in the northern conservancies hence there is a great certainty that the benefits being generated by the conservancies are reaching persons living below the poverty line or even in severe poverty.

Table A4-6 Overview of some population analysis for the main regions of Namibia with Communal Conservancies

Criteria	Erongo	Kunene	Omusati	Oshana	Otjozondjupa	Kavango	Zambezi
No of inhabitants	150 809	86 856	243 166	176 674	143 903	223 352	90 596
% of national population	7.1%	4.1%	11.5%	8.4%	6.8%	11%	4.3%
Population growth 2001-2011	3.4%	2.3%	0.6%	0.9%	0.6%	1.0%	0%
Persons per square km	2.4	0.8	9.2	20.4	1.4	4.6	6.2
% living in rural areas	13%	74%	95%	54%	46%	71%	69%
Poverty headcount	6.3%	39.0%	28.6%	21.0%	30.4%	53.0%	39.2%
Literacy rate	97%	65%	88%	96%	83%	79%	84%
Economically active	79%	67%	49%	61%	72%	61%	61%
Of which unemployed	30%	36%	42%	37%	37%	50%	38%
Conservancy data							
Number of conservancies	4	36	3	1	7	2	16
Population in conservancies	6 639	50 455	37 568	2 296	32 618	2 724	36 908
% of region population in conservancies	4.5%	58%	15.5%	1.3%	22.7%	1.2%	40.7%

The constituencies of Kunene and Zambezi are among those that have the **highest poverty headcounts**, conservancies account for 40.7% and 58% of the constituency population respectively.

Support of selected conservancies is also poverty alleviation: It is clear from the above analysis that support to communal conservancies with the resulting cash, job creation and in-kind benefits directs economic development activities to the more, if not the most, economically disadvantaged segment of Namibia's population, thus addressing the inequality in income distribution which is one of the greatest poverty alleviation challenges facing the country.

4. HUMAN WILDLIFE CONFLICTS IN CONSERVENCIES

4.1 Human wildlife conflict and wildlife safety

HWC definition of the Namibia HWC Policy (2009) is in line with the international recognized definition of IUCN which understand HWC occurring “**when wildlife requirements encroach on those of human populations, with costs both to residents and wild animals**” (IUCN, 2005). In the international (academic) discussion three levels of conflicts are distinguished:

- **Disputes:** e.g. loss of cattle;
- **Underlying conflict:** e.g. loss of cattle; is this a recurring issue which is not satisfactorily resolved;
- As **deep-rooted conflict:** in which any social identity value is threatened and this conflict could not be resolved.

It is being argued by HWC specialists that before designing the project interventions (solutions) it is important to determine which of the three levels of conflict is present. However, this is not so easy to distinguish and worse, not easy to be tackled by a financial investment project.

With diminishing habitat and increasing human populations, **local perception of HWC incidents** and the way in which these are dealt with are critical in terms of conserving those species deemed important/ threatened. HWC is usually derived from groups of people holding **different values** e.g. local people versus protected area authorities, or protection of species that are highly valued at a global scale but have little or even negative value at a local scale. Hence if the international conservation community perceived the value of a nearly extinct species as highly valuable, but locally it is more of a nuisance, then ecosystem payment for conservation of such species needs to be channelled. Sustainability simple speaking means what pays stays, ie if there are people willing to pay ecosystem services and the other party, in our case the conservancies, accept the conditions and amount of pay, then the different perspectives can be balanced. The project will demonstrate such financial mechanism by establishment of local wildlife credit funds in incentive landscapes.

The Mission proposed a paradigm shift from a negative concept of conflicts to a positive and easier operation concept by focusing on wildlife safety management issues. A wildlife safe system consists of five elements for assessment and management: monitoring, safety for people, assets, wildlife and habitat. The current hot HWC debate in Namibia is far from creating a wildlife safety culture with all affected and concerned stakeholders. While the different dimension of conflicts is not easy to be dealt, all the conservancy member the mission talked with agreed that wildlife safety issues are a top priority; none who lost the life of a relative or his /her its life and its assists, or fear of wildlife to his /her children. The safety of wildlife depends much on the value and income derived from wildlife.

4.2 Wildlife damage value in conservancies

The game event book only records the incidence of HWC, but not the dimension of the damage. Brown (2017) used this data and prepared a detailed cost estimate of average costs (of different categories of damage (crops, livestock etc.) for different regions to assess the financial losses of the Human-Wildlife Conflict. This formula can be used to convert the incidents into financial value.

Diggle (2017) used the recorded incidences of all conservancies and used the offset value to assess the cost of offsetting (Table A4-7).

Table A4-7: Wildlife offset damage value

Type of impact	Value	% of total value	Remark
Livestock	8 000 000	76%	5,842 livestock deaths
Crop	600 000	6%	1,544 incidents of damaged crops?
Community infrastructure	400 000	4%	211 incidents
Loss of life and injury	1 500 000	14%	15 incidents of loss of life and injury; assume NAD 100,000
Total	10 500 000	100%	
Total without life and injury	9 000 000	89%	
Data from Diggle 2017			

4.3 Affected groups of people and regions and risk zones

Groups of affected people in Conservancies

- High potential revenue once mature conservancy and abundant conservation of wildlife:
- Low revenue prospect, but important as wildlife corridor or habitat for targeted wildlife species. None in study, but we should identify which are structurally intact wildlife corridors and which do not fulfil this function (use the IUCN guidelines for Area Conservation Connectivity and info from Namibia)

Most affected rural poor live near wildlife, even one incidence of property, crop or livestock loss can impose severe economic and livelihood hardship on individuals - and also families.

4.4 Legal framework of wildlife ownership and damage claims

Wildlife in Namibia is generally considered as *res nullius*, i.e. nobody owns wildlife. Nonetheless, current legislation (Ordinance 4 of 1975) prescribes the conditions under which wildlife can be utilized, and except

for some exceptions, most utilization of wildlife takes place under a permit issued by the Ministry of Environment and Tourism. Under this context, in Namibia the state is perceived in the Act to “own” the game. Whether the term of ownership is used or not, it seems the extent of state ownership only goes as far as rights of use and rights of benefits but not responsibly for damages.

A farmer on freehold land is deemed to have a form of ownership of the wildlife (as determined in the Nature Conservation Act 1975) if he has a game proof fence and keeps the wildlife on his land. Once the wildlife leaves the property, unless there is proof to show otherwise (exotic animal, proof of purchase), he would not be able to claim it as his, which also means he is not responsible for losses in other nearby farms. However, if a game farmer has bought elephants and predators that escape and cause damage elsewhere he “might” be held responsible for the damage if it could be proved it was his elephant or lion.

A freehold farmer without a game proof fence and with a livestock fence and a certain size of land has notional “ownership” of hunnable game when it is on his land (again defined under the Nature Conservation Act 197), i.e. he is allowed to hunt it for own use without getting a permit, but it is no longer his when it leaves his land. Any other form of use would be subject to a permit issued by MET. The word “ownership” here might just be a legal mechanism to alienate the animal from the state so someone else can use it without the permission of the government.

On communal lands, the State is responsible for the use of wildlife which can be delegated to the communities / conservancies (as determined in the Nature Conservation Act amended in 1996). This is only for when the animal is within the conservancy boundary, but not when it leaves the conservancy, and it seems, not for when wildlife causes damages.

There is no legal basis for the state being held liable for damage by wildlife, thus the payments that are made according to the HWC policy is considered a contribution to losses, funerals, etc., done on their terms and not because they are legally required to.

4.5 Human-lion safety issues and initiative in Kunene

The Kunene Region of northwest Namibia is a unique place where people and wildlife model can co-exist in future. The continued success of CBNRM in Kunene will require the work of hundreds and will continue long to secure a sustainable future for human and wildlife coexistence in Kunene.

Chief among these challenges is a **unique free-ranging desert-adapted lion population** that has grown from an estimated 30-35 individuals in 1997 to at least 120 in September 2017 – a true conservation success. The range of this population has correspondingly grown from roughly 7,000 sq. km. to more than 40,000 sq. km. Kunene lions demonstrate unique adaptations to the region’s arid and semi-arid environment. Kunene’s increase in its free-ranging lion population is a prime example of where human land use can also yield positive lion conservation outcomes- This population is thus of special conservation and management concern. This conservation success has been possible because Kunene farmers support and enable wildlife conservation on their communal lands. However, lions increasingly range into land inhabited by farmers and grazing livestock, a problem compounded by ongoing drought conditions which bring livestock and

wildlife together on what suitable grazing remains. Farmers now pay a significant cost of living with lions.

Cattle mortality: Lions account for 18% of cattle mortalities with some household losses topping 60%, over the past three years. Valued at roughly NAD 6,000 per head, farmers in these conservancies have lost an average of NAD 39,700), such losses are substantial in a region where 39% of the population lives on less than USD 1 per day and in most conservancies exceeds the income members receive from their conservancy.

Because nomadic pastoralism is the main economic activity in Kunene the threats which lions pose to residents' livestock have locally far-reaching socioeconomic consequences. Negatively effecting farmers' livelihoods, human-lion conflict (HLC) also now threatens Kunene lions.

Retaliatory killings are the single biggest threat to Kunene's lion population. Since 2000, 89% of lion (non-cub) mortalities in Kunene have followed HLC incidents. When residents of Kunene's conservancies lose livestock to lions so-called '**problem lions**' are often destroyed, as is a Namibian's right as set-forth Nature Conservation Amendment Act (Act 5 of 1996). In November 2017 alone, six lions were destroyed in retaliation to HLC incidents in Kunene conservancies. This situation – where lions threaten conservancy residents' livelihoods as well as their safety – requires immediate action. The indirect causes of these mortalities are complex and include the dynamics of changing lion territories, conservancy zonation challenges, and the seasonal movement of pastoralists following available grasses. If the desert-adapted.

FOCAL LION - RANGE CONSERVANCIES

Kunene is, with a population density of about 1.3/km², is amongst the least populated regions in the World. Kunene primarily falls within the 100-200 mm annual precipitation area– comparable to the southern Sahara – and rainfall is highly variable. Under South African apartheid, the region was comprised of the Bantustans (ethnic homelands) of Damaraland and the Kaokoveld. Since then the area has been home to Damara, Himba, and Herero, as well as the Riemvasmaak people in the Torra conservancy and a small population of Nama in Sesfontein conservancy.

Table A4-8 provides information on the Conservancies identified in the North West human lion conflict strategy, as experiencing high levels of HLC. Highlighted conservancies are where the Lion Rangers will commence full-time operation in 2018. A further three conservancies will join as funding is available and memoranda of understanding are developed with each conservancy (Source: NACSO, 2015).

Table A4-8: Focal conservancies for the NW Human-Lion conflict strategy

CONSERVANCY	DATE GAZZETTED	POPULATION	AREA (km sq)	ANNUAL RAINFALL (mm)
Anabeb	2003	1402	1570	150-250
Puros	2000	641	3562	50-150
Sesfontein	2003	1491	2465	50-150
Ehrovipuka	2001	1846	1980	200-350
Omatendeka	2003	1985	1619	150-300
Torra	1998	1064	3492	50-150

Source: Compiled by the Lion Ranger program team

In accordance with the recommendations set-forth in the NW Lion Plan, the Lion Ranger program will begin operating in three communal conservancies: Anabeb, Puros, and Sesfontein in 2018. While the NW Lion Plan focuses on HLC within western Kunene, MET has further designated Ehrovipuka and Omatendeka as conservancies experiencing high-levels of human-lion conflict. Following feedback meetings with each conservancy in October 2017 it was decided that the Lion Ranger program would begin operation in the three conservancies noted, with the others joining soon. The Lion Ranger program is headquartered at Wêreldsend Environmental Centre in the Palmwag Concession and is supported by the IRDNC Windhoek Office team.

Preliminary analysis of lion conflict focal conservancies: the effects of drought, predators, and lions are unevenly distributed. There is a variation in how people have been affected by these three factors.

1. Livelihoods in Anabeb, Sesfontein, and Puros have been quite adversely affected by the recent/ongoing drought. Conflict with predators exacerbates these challenges. Lions receive high attention because:
 - Lions appear to have an outsize effect on cattle – the most valuable type of stock, which for many has additional traditional value;
 - Lions are believed to be a unique threat to people;
 - Lions receive special attention among the tourism and conservation community.
2. Perception of lion behaviour has changed with the growing influence of conservation and tourism. There is the widespread perception that lions - once afraid of people - have lost much of their fear so safety issues are a great concern;
3. It is assumed that the tourism industry in Kunene benefits from the presence of lions. However, community members perceive that these benefits do not reach conservancy residents – though through livestock loss residents think that they bear the cost of living with lions.

However, conservancy members underlined that It is important for lions to continue to exist within their conservancy. They understand and accept the risk, and even trade-offs, of living with lions. They place a high level of **existence value** on lions. The main source of concern and frustration was that risks and benefits seem **unequally distributed**. People have been, and will continue to be receptive to living with lions, but they need help in managing the risks.

Livestock and Lion Survey, 2017. Prepared by John M. Heydinger, Lion researcher.

Project implications: This study clearly shows that living with lions is accepted provided the risks are minimized and the benefits are equally distributed among conservancy members. In other words safety issues must be proactively addressed through sustainable management methods targeting the most affected spots and people. This means **stopping conflict before it occurs**. The project will support the lion ranger program to increase the safety by channelling investments to risk zones, an area which pastoralist are mostly affected by safety issues for livestock and life. **With this support lions will remain viable as a free-ranging population.**

4.6 Land use conflicts in conservancies

The conflict between commercial oriented livestock enterprises and wildlife is more prevailing in humid zones like in Zambezi. The Mission visited the Mudumu-South Complex, Zambezi Region. This complex is

made up of protected areas, conservancies and community forests and lies adjacent to the Kwando River in the southernmost tip of the eastern part of the region. This area lies at the heart of the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA), within the Kwando Wildlife Dispersal Area (WDA), and is one of six identified as imperative for wildlife connectivity within KAZA. The Kwando WDA is an important area for transboundary movement of many wildlife species including all of the larger carnivores, and is pivotal to the success of KAZA as a wildlife landscape, and an especially important area of connectivity of lions between Angola, Botswana and Zambia. During 2012 and 2013, predation on cattle by lions in the East Zambezi Region of Namibia increased dramatically, seemingly in response to lion populations in Nkasa Rupara and Mudumu national parks reaching their ecological thresholds. In 2012/13 a total of 135 cattle were reported killed by lions, followed by 61 in 2014. In response 17 lions were killed in retaliation in late 2012/2013. ((From Hansson 2018).

Case study in Dzoti conservancy in Zambezi

Table A4-9 provides a zonation conflict matrix for Dzoti Conservancy. Livestock grazing, and human settlements are complementary (green) to each other, as well as livestock grazing, fishing and the use of forest resources. The interaction between livestock grazing and tourism, fishing resources and wildlife corridors are mostly acceptable (yellow) and they don't have to compete. Interaction between livestock grazing and cropping, hunting activities and herbivores in wildlife areas can cause conflicts but is expected to be manageable (orange) with proper planning and implementation.

The potentially serious conflict areas are between livestock grazing, tourism development, the presence of predators in wildlife areas and the allocation of exclusive wildlife zones (red).

As the human population in general increases in conservancies, communities continue to spread out to practice agriculture and find pasture for their livestock. The pressures to secure customary land rights for both present and future access to land and the resources thereon put further pressure on a region already characterized by its multiple competing land uses. As a result, there is increased potential for human settlement, cropping and livestock grazing to come into conflict with wildlife-based land uses. Wildlife resources and tourism are extremely important to most communal conservancies. It is important to find a way to reduce these conflicts given the fact that livestock are and always will be an integral part of people's livelihoods.

Table A4-9: Zonation conflict matrix for Dzoti Conservancy

ACTIVITY/ LAND-USE	Cropping	Livestock grazing	Hunting	Tourism develop- ment area	Tourism	Fishing	Fishing reserves	Forest resource har- vesting	Wildlife – herbivores	Wildlife – predator	Exclusive wildlife breeding	Wildlife corridors
Re/settlement	✓✓	✓✓	X	XX	✓	✓✓	X	✓✓	XX	XX	XX	XX
Cropping		X	XX	XX	✓	✓✓	✓	✓	XX	X	XX	XX
Livestock Grazing			X	XX	✓	✓✓	✓	✓✓	X	XX	XX	✓
Hunting				XX	X	✓	X	✓	✓✓	✓✓	XX	✓
Tourism dev					✓✓	X	✓✓	X	✓✓	✓✓	✓	✓
Tourism						✓✓	✓✓	✓✓	✓✓	✓✓	✓✓	✓✓
Fishing							✓	✓✓	✓✓	✓	XX	✓
Fishing reserves								✓✓	✓✓	✓✓	✓✓	✓✓
Forest res									✓	X	✓	✓
Wildlife – h										✓✓	✓✓	✓✓
Wildlife – p											✓✓	✓✓
Exclusive Wildlife Zones												✓✓
Wildlife corridors												

(✓ Acceptable, ✓✓ complimentary, X conflicting but manageable, XX conflicting)

Due to the reality of different land uses and the real possibility of severe conflict between livestock grazing, human settlement, exclusive wildlife zones, tourism development and predator/livestock interaction, finding sustainable solutions to minimize conflict and maximize people's livelihoods is of paramount importance. The Project will address this with a sound rangeland management practices into conservancies that will provide the basis for commercially oriented livestock production, integrated with wildlife management ([Annex 10](#))

4.7 Gender analysis

HWC affects not only different social groups but also impacts males and females differently. One study (Meredith & Kahler 2012) which assessed gender-disaggregate data about stakeholders' risk perceptions associated with human-wildlife conflict (HWC) in two communal conservancies in Caprivi, using concept maps about risks to wildlife and livelihoods and any associations of those risks with HWC, indicated **some divergent perceptions** in how groups characterized risks to wildlife and livelihoods;

- Identified risks to wildlife (e.g., pollution, hunting) dissimilar in some instances, descriptions of risks varied as well;
- Worry associated with HWC effects on local livelihoods.

Related to safety was also confirmed in discussion of the Mission, in which women were concerned about safety issues, e.g. how children can get safely to school with free roaming elephants or lions, and the damage of assets. Another study on women's experiences in Kwandu Conservancy, examining both the visible and hidden impacts of human-wildlife conflict showed that effects of human-wildlife conflict reach beyond direct material losses to include hidden impacts such as persistent worries about food insecurity, fears for physical safety, and lost investments.

Existing vulnerabilities related to poverty and marital statuses make some women more susceptible to wildlife impacts, and less able to recover from losses or to access compensation. This process may deepen the vulnerability of women whose economic status is already marginal. Because the benefits of wildlife conservation accrue at multiple scales, we recommend that the cost of human-wildlife conflict be better distributed, with additional resources for prevention and compensation made available for conservancy residents (Khumalo & Yung 2015).

For a poorer household in Kunene the impact of loss of cattle due to lion is much higher on a household owning only a few cattle (e.g. 8 heads) compared to the same number of animals lost by a household owning 10 times more animals. The loss would be even worse to a female-headed household with few other assets and little or no cash income. Hence, the project investments into lion risk corridors will benefits relative speaking poorer households more than rich owners of livestock.

Project design implications:

The Project ensure that in community action planning and other events, there is a high female representation is , e.g. least 25% of the working group should be female, and training of especially females with their children in safety skills to co-exist with wildlife.

5. INVOLVEMENT OF TARGET GROUPS

Project design of successful wildlife safety solutions will be based on:

- Practical/feasible interventions at the site where safety issue do occurs;
- A thorough understanding of the underlying context to the existent it helps to overcome the issues;
- A participatory community action planning will ensure that conservancy communities have influence in and ownership in adaptation of project interventions.

Through this involvement in wildlife safety management it will be ensured that the conservancy communities will develop a greater tolerance levels, and ability to cope with wildlife issues.

6. ASSESSMENT OF IMPACTS OF THE PROJECT INTERVENTION ON LOCAL COMMUNITY MEMBERS

6.1 Financial and social and climate change related impacts of project investments

The preliminary assessment of financial and social impacts of key proposed human wildlife safety investment is presented. The financial analysis is only preliminary, given time constraints of the mission. Nonetheless, the results provide sufficient evidence that the proposed investments are financially viable and socially justified under the assumptions made by the Mission. (Attachment 4-1)

Benefits and costs of key wildlife safety investments

Wildlife water source development: The Project will support the development of wildlife water point. Expected **benefits** of developing water point with separate trough for elephants and other wildlife are: (i) Sufficient water for all wildlife; hence less conflicts between elephants and the other animals like antelopes; (ii) Wildlife management will be improved as animals will be more likely to remain in the wild zone, and not to move into the farm when they will cause conflicts with farmers and settlement; (iii) Value will be added to any joint venture contract between the conservancies and private sector partner; a high sighting index of economic species like elephant can generate wildlife credits through photographic value to be channelled directly to maintenance of the water points and performance pay to game guards. Only with initial investment subsidy and payment of wildlife credits the Internal Rate of Return (IRR) will be robust and attractive.

Elephant and domestic drinking water supply: In dry sites people, especially the poor, suffer from chronic water shortage. By adding water supply to the development of elephant water-points water security of poor people will be improved. For instance, in one model 40 elephants plus 1,000 people could be supplied. With subsidizing the investment and channelling wildlife credits free of charge water supply for poor communities is possible until the conservancy generate more income contribution to collect fees through water

point committees. Elephant water proof wall for protection of water facilities will prevent damage to infrastructure like windmills the investment is justified. For poor villages and livestock depending on water will be secured. However, the issues are more complex and needs further participatory development of taken the nature tourism potential, wildlife and human domestic needs into due consideration in the preliminary design stage (see box).

The issue of **water needs of desert elephants, people and potential of elephant related tourism** in Kunene needs still further detailed concept prior implementation of any elephant cum local village water supply nexus.: Elephants damaging / competing at the domestic water points. There are two issues taking the water and having elephant too close to villages: (i) Elephant competing the cattle post water points, particularly annoying when one has been fuelling all day a generator and at evening the elephants take all the water; (ii) However local communities also know the value of these “desert” elephants in terms of tourism. The design question is how to balance the two, i.e. unlock the tourism value and minimize impact. Following design issues needs to be taken into due consideration:

- Water points at villages: Reinforce current water points to prevent elephant damage; and construct a kilometre or two away from the village another water hole (it might be cheaper to link to the domestic one) specifically for elephant use;
- Water points at water kraals like using efficient solar powered windmills to draw water so that if the elephants have taken all the water at night, it at least means that they have not wasted their money on fuel. This could be linked by an underground pipe to the village water place;
- Planning nature-based tourism in a way that local people can see a way to generate returns from elephant tourism

Predator proof kraals

Taken the prototype Zambesi B1 (Annex 10) as one example the partial budget analysis assuming that the keeping livestock in a predator proof kraal compared to current traditional non-proof kraal the killing of livestock would be reduced from 20% to 5% the net gain over a period of 10 years would be for the current 9,000 cattle in the complex without subsidy NAD 9.92 million (Euro 661,3000) and with a subsidy of 50% for investment costs in predator proof kraals NAD 11.12 million (Euro 741,3000). Without subsidy the lost for one proof kraal would be NAD 12,800 and with 50% the lost opportunity for labour and material only NAD 800 or 9 NAD per animal. Hence this is one-time investment subsidy is justified.

Conservation agriculture through mobile kraaling of livestock: In Zambezi interest of more subsistence-oriented farmers is driven by food security with cattle protection being secondary. Therefore, cattle combining conservation farming with predator protection is promising, still needs further testing. Cattle housed in

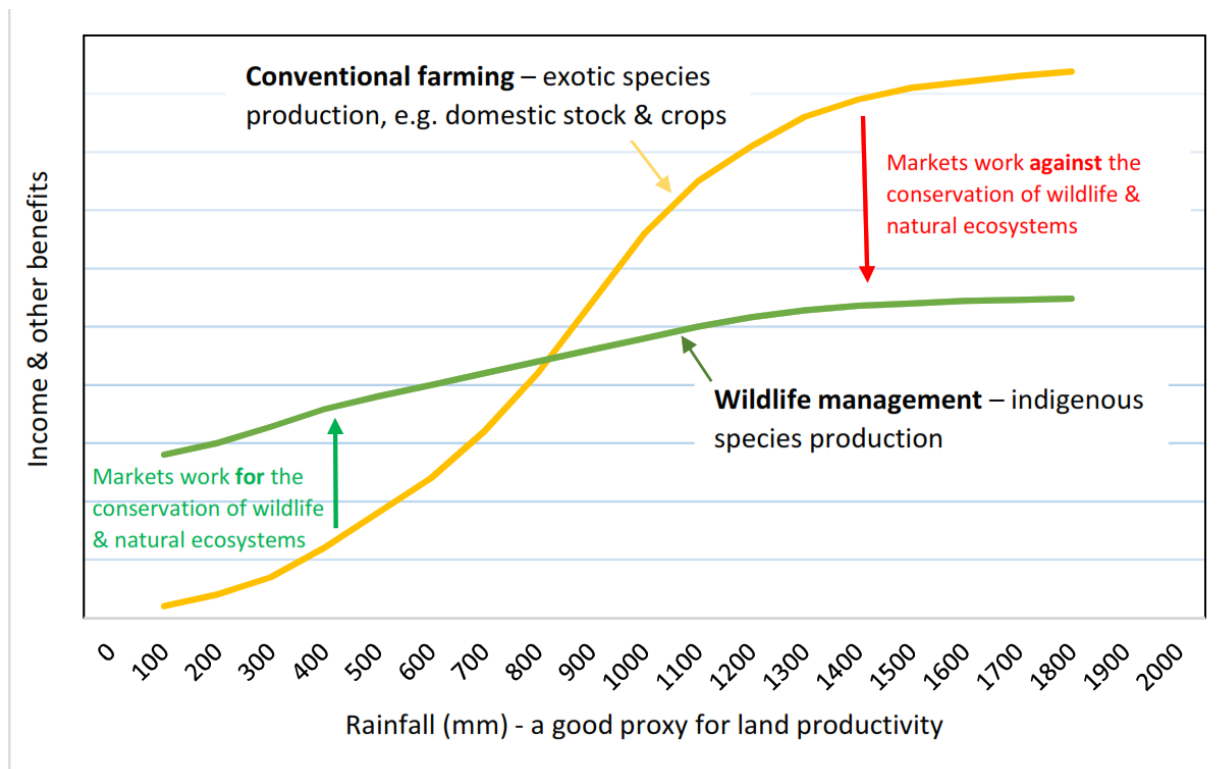
mobile kraals during the night trample dung into the substrate. This results in the field being fertilized contributing to improved crop yields. Mobile bomas in mosaic landscapes contribute to conservation as well as human livelihoods by: (i) Implementing an adaptable method of protection for cattle at night near the fields where they graze, which is 100% effective if properly carried out; (ii) Improved fertilization of cropping areas which result in increased yields of staple food crops for food security; (iii) A reduction in loss of habitat as nitrified fields provide sufficient space for food production. Reducing the further fragmentation of habitats (iv) Adherence to zonation of land-use, will discourages settlement and cropping in wildlife corridors. The mobile kraals tested by IRDNC resulted in 100% protection of almost 800 head of cattle with a collective value of approximately NAD 4 million.

Lion risk zone (hot spots) and lion ranger scheme in Kunene: A unique free-ranging desert-adapted lion population in Kunene has grown from an estimated 30-35 individuals in 1997 to at least 120 in September 2017 with increased range from some 7,000 sq.km. to more than 40,000 sq.km and thus increasingly range into land inhabited by farmers and grazing livestock, a problem compounded by ongoing drought conditions which bring livestock and wildlife together on what suitable grazing remains. Because nomadic pastoralism is the main economic activity in Kunene, the threats which lions pose to residents' livestock have locally far-reaching socioeconomic consequences. Negatively effecting farmers' livelihoods, human-lion conflict (HLC) also now threatens Kunene lions in a range, in which nearly 40% live under the poverty line. However, since most incidence occurs in the identified HLC-hotspot farms, the Project will contribute to drastically **reduce the conflict by channelling investments to HLC designated hotspots.** Households with higher number of cattle may both suffer greater absolute monetary losses to lions and have greater resilience to such losses. Since incomes in western Kunene are focused primarily upon pastoralism the compounding effect of human-carnivore conflict in addition to the ongoing drought, may prove too much for certain households' resilience. For a poorer household in Kunene the impact of loss of cattle due to lion is much higher on a household owning only a few cattle compared to a household owning large number more animals. For poor household with a few livestock only the amount of getting a few killed compared to the soma amount by livestock rich farmers means losing nearly all their assets. The loss can be even worse to a female-headed household with few other assets and little or no cash income. Hence, the project investments into lion risk corridors will benefits relative speaking poorer households more than rich owners of livestock.

6.2 Wildlife as alternative land use

Financial analysis (Figure below) suggests that wildlife can be the viable alternative land use in area below 800 mm compared to conventional rain fed farming. Above 800 mm annual rainfall conventional farming can outperform wildlife management. The Project will contribute to further enhance the opportunity to make wildlife also in higher rainfall regime as an alternative land use through focus on combination of rewarding conservation performance with reduction of cost of wildlife damage.

Figure A4-1: Economic returns to conventional rain fed farming and to wildlife management in areas of different land productivity related to perception gradient



Wildlife meat value: In 2016 Conservancies harvested over 520,000 kilograms of game meat. i.e. 1,425 kg per day. The off the bone value of the game meat harvested was over N\$ 10.4 million. Sustainable hunting contributes significantly to the livelihood especial of the poor members of communities NACSO 2016

6.3 Climate change, wildlife and livelihood

Projected rising temperatures and decreases in total precipitation and recurrent droughts will have serious impacts on biodiversity and wildlife. Problems exacerbated by drought (such as fewer antelopes, lower meat distribution; hungry predators, thirsty elephants) and increased poaching will increase human wildlife conflict, if not decisive investments and actions in human wildlife prevention and mitigation measures are taken now.

In Namibia the tourism sector has the potential to expand as a substitute to production in climate sensitive sectors. Shifting from livestock production to wildlife conservation is a prospect climate change adaption.

Climate change could also result in a need of shifting of habitats of fauna and flora. A larger, connected wildlife corridor will provide better chances of adaptation and reducing human-wildlife conflict. The financing of such large conservation connectivity area through local, national and international wildlife credits fund channelled via CCFN to local wildlife credit funds will ensure that such conservation landscape will be increased and sustainably managed.

Although the conservancy game management and take of quota system are in line with international standards for hunting, and has already considers the drought considerations the proposed further testing of an early warning drought system for forage availability for both livestock and wildlife in one conservancy in Zambezi will enhance the quota system at field level, allowing conservancies to be better prepared for disaster management and hence having a tool to become more proactive for managing human wildlife conflicts. Hence the project will support the harmonized and integrated rangeland and wildlife management with a focus on testing the reality of rangeland early warning system in a conservancy cluster in Zambezi. The commercial oriented livestock enterprise can be financial viable if forage issues is tackled especial in drought conditions. The expected socio-economic impacts are that the number of livestock lost due to fodder shortages and droughts decreased. The total cattle numbers in the Mudumu south Complex is estimated to be around 10,000. If it is assumed that out of 5 years one is a serious drought in which 50% of all cattle die, around 5,000 will die and at an average value of NAD 3,000 per animal, the loss can be as big as NAD 15 million for the whole cluster. Through destocking of wildlife and livestock and disaster preparation for supply of good animal feed during the drought the financial losses can be counterbalanced to a great extent. Hence this project component will contribute to increase household food security; and reduce vulnerability of livestock-based households to severe climate change and climate variability.

Enhancement of wildlife conservation and management by the project at the same time will protect resilience of most important Namibia habitats and most vulnerable ecosystems outside but connected to national parks; hence the adaptive capacity of the natural resource dependent communities about climate change and other disaster risks will be greatly improved.

6.4 HWSRS Human Wildlife Self Reliance Scheme (HWSRS)

The original concept was to have a self-help scheme in place to be matched by public funds. Talks of the mission with conservancies and other key informants showed that there is no matching. It is assumed that the government via the GPTF will offset the wildlife damage losses but paying a lump sum payment of N\$ 60 000 to each registered conservancy, to be put in a special account for the self-reliance scheme, and which is replenished with a further N\$ 60 000 once the conservancy has reported back on the use of the first tranche. However, revenue richer conservancies may match with voluntary contributions. It is expected that in the new HWC policy, the amount of offset will be doubled. In meetings with conservancy committees and livestock owners the issue of paying a premium in an insurance for livestock indicated that some of the members found this a good idea but would not really willing to pay into a national scheme, even after examples of advantage of risk pooling was explained using the real data provided by livestock owners on losses due to wildlife damage. On the other side to further reactive the self-help scheme and find a way to cope with issue of disaster was welcome. The Mission proposal to develop a local wildlife

credit scheme in which credits of conservation performance plus a lump sum of the conservancies which can afford to do so, and the funds from the GPTF would be combined, was regarded worse further testing. Some conservancy which work already together with Joint venture to test the Wildlife Credit scheme even considered that this initialization of a local trust fund managed by the conservancies with the JV partner would be the best way to have a transparent system in place.

6.5 Average cost of different type of HSW

Next table summarizes the average cost of different type of HWC as compiled by Brown in a study of 29 conservancies. This is a good reference, and was used in calculation of the total damage.

Table A4-10: Average costs (NAD) of different types of Human-Wildlife Conflict (Brown 2017)

HWC Impact		Cost (NAD)	Explanatory notes on cost
Garden and crop field damage	Gardens in	250	Per incident, being an estimate of average value of vegetables lost and opportunity costs including travel and health impacts.
	Crop fields in all other regions	380	Of 384 incidents of crop damage in the Caprivi documented by MET between 1996 and 2001 an area of 764 ha was damaged, i.e. about 2 ha per incident. Assuming that only incidents of large amounts of damage were reported, and average damage is about 1 ha, with about 40% crop loss in this area, a 250 kg/ha yield and a market price of about N\$3.8/kg (these being averages for maize, millet and sorghum), then the average cost per crop damage incident is about N\$380.
Local value of domestic stock	Cow	3,800	The cost of livestock varies somewhat from region to region and even within regions. A consistent set of figures should be applied at this broad national overview level for comparative purposes. More specific costs will be applied in the detailed analysis of individual conservancies. The cost applied is that of replacing lost livestock. No distinction is made between young and adult animals, as young animals are seldom marketed and are usually held until adult. The ration of animals lost varied from region to region. In the Southern and parts of the Central Kunene the ration of mortalities is horse:donkey:cow:sheep:goat about 1:3:7:10:74. This gives an average figure of N\$828 per head of stock lost. In the Northern Kunene, North Central and higher rainfall regions to the east where more large-stock is farmed a ratio of 1:2:20:10:40 is used, which gives an average figure of N\$1,477 per livestock loss.
	Horse	1,500	
	Goat	600	
	Donkey	550	
	Sheep	450	
Infrastructure damage	Pipes	1,500	Per incident, being the estimated average cost of new infrastructure / equipment, transport, travel and installation.
	Taps	1,500	Per incident, being the estimated average cost of equipment, transport, travel and installation.
	Tank	4,000	For 5,000 litre tank. Includes purchase, transport and installation.
	Pump	40,000	Includes Lister diesel engine, pump, transport and installation.
	Windmill	90,000	Includes purchase, transport and installation.
	Actual water loss	150	Per tank of 5,000 litres, calculated at pumping rate of 2,000 litres water per hour, 6 litres diesel per hour at N\$10 per litre.
	Cost to livelihood as a result of losing water	6,100	Per 30 days of impact on livestock condition and reproduction, assuming a 5% value loss to stock over this period; and assuming an average livestock holding of 40 goats, 10 sheep, 5 cows and 4 donkeys per household; with an average of 4 households per water point.
	Fence	350	Per incident, being the estimated average for replacement of material, transport and repair time.
Homestead	3,500	Per incident, being an estimate of average cost of replacement of material and rebuilding time and labour.	
Human life	5,000	This is not a value on human life but only the cost of funeral benefits provided.	