



Orange-Senqu River Basin

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Participatory Rural Appraisals in Khawa and Zutshwa

**Demonstration Project on Community-Based
Rangeland Management in Botswana**

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Participatory Rural Appraisals in Khawa and Zutshwa Demonstration Project on Community-Based Rangeland Management in Botswana

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1. Background

The Orange-Senqu River riparian States (Botswana, Lesotho, Namibia and South Africa) are strongly committed to jointly addressing threats to the shared water resources. This is reflected in bilateral and basin-wide agreements between the riparian States and led to the formation of the Orange-Senqu River Commission (ORASECOM).

The “Development and Adoption of a Strategic Action Programme for Balancing Water Use and Sustainable Natural Resource Management in the Orange-Senqu River Basin” Project supports the Commission in developing a basin-wide plan for the management and development of water and related natural resources based on integrated water resources management (IWRM) principles. The Project forms part of the ORASECOM-led Orange-Senqu River Basin Environment Programme. It is funded by the Global Environment Facility (GEF) through UNDP and is executed by UNOPS.

The Project currently finalises a Transboundary Diagnostic Analysis (TDA) of issues related to water resources in the Basin and develops an agreed set of interventions under the framework of a basin-wide Strategic Action Programme (SAP) and associated National Action Plans (NAPs) in all four riparian States.

Research and demonstration projects implemented at sites in the four riparian States, explore replicable solutions in critical thematic areas identified in the TDA:

- Environmental flow requirements for the ephemeral Fish River in Namibia and lower Orange River and mouth in Namibia and South Africa
- Water demand and quality management in the irrigation sector, working with the Joint Irrigation Authority and commercial farmers in Noordoewer, Namibia, and Vioolsdrift, South Africa
- Community-based rangeland management, with demonstration sites in Botswana and Lesotho.

Land degradation due to human activity is a critical transboundary concern in the Orange-Senqu Basin. In Botswana, a significant challenge facing environmental protection and conservation of natural resources, particularly wildlife resources, is increasing pressure from other forms of land use. Traditional livestock rearing on marginal grasslands in the drier parts of the Basin requires large expanses of land. Whereas this is the main form of land use for many people, it also poses a significant challenge especially to wildlife conservation in the area. Degradation of vegetation cover leading to remobilisation of sand dunes is another major concern.

Remedying unsustainable management practices is a crucial step in improving conditions. The demo projects on community-based rangeland management aim to empower local communities to address landscape degradation by implementing locally designed measures. The demo projects build

on indigenous knowledge and understanding of the challenges of rangeland degradation, the importance of rangelands in traditional culture and the awareness that these conditions exist, while also expanding alternate economic opportunities for the communities involved.

The demo project in Botswana works with the communities in the villages Khawa (near Tsabong) and Zutshwa (near Hunkunsi), in Kgalagadi District. Practical work started in mid 2011. A field officer of the UNDP-GEF Project works out of the District's Water Affairs office in Tsabong and oversees implementation. Field activities are closely coordinated with the Technical Advisory Committees in Tsabong and Hunkunsi (inter-departmental working groups on development issues).

Activities of the demo project focus on the following main thematic areas:

- Human-wildlife conflict;
- Migratory/rotational grazing and rangeland monitoring;
- Water harvesting and conservation;
- Alternative income-generating opportunities.

Participatory rural appraisals (PRA) were undertaken at both sites. The appraisals had two main purposes; to collect and analyse data on environmental problems that can be addressed by the project; but also to create a partnership between the involved donor agencies, the community and Government institutions in the Kgalagadi District. Government are particularly important to provide support and sustain the resulting projects once the donor period expires.

The facilitation team from the UNDP-GEF Project, IUCN and Government institutions aimed to do an environmental situation analysis which led to community environmental action plans (CEAP) laying out environmental issues and project options to address them.

2. Participatory rural appraisal

2.1 Introduction

PRA is a participatory community planning tool, which operates through exercises to facilitate extensive collection and analysis of data on all aspects of a community, and the preparation of a Community Action Plan (CAP) addressing the most pressing issues(s) of the community. A PRA can be targeted to a section of the community or a particular issue, eg. youth, farmers, environment, health or agriculture.

Normally the PRA process has 8 steps:

1. Site selection and clearance from local authorities;
2. Preparation phase;
3. Data and information collection;
4. Problem analysis;
5. Ranking of problems and opportunities;
6. Preparation and adoption of a community action plan;
7. Implementation of the plan;
8. Monitoring.

2.2 PRA process

As explained above a PRA process involves data sharing using a systematic stepped method to appraise the community in a holistic manner by collecting both primary and secondary data.

Primary data

Primary data is often categorized into spatial, social and time related data. Collection of this type of data involves the use of a set of data collection ‘tools’ which include but are not limited to the following primary data collection exercises.

Spatial data collection tools:

- Sketch maps;
- Farm sketches;
- Transect walks.

Time related data collection tools:

- Time lines;
- Seasonal calendar, i.e. agriculture;
- Trend lines;

Social data collection tools:

- Institutional analysis;
- Livelihood analysis;
- Wealth analysis;
- Gender Analysis.

Spatial data

Sketch maps and farm sketches are the basic tools for collecting spatial data. Villagers are simply asked to draw a map of their village. Often this exercise provides room for everyone to participate as they all know their village. Depending on the objective and or focus of the project for which a PRA is conducted sketch maps can be used to collect data on environmental features, land use, vegetation type and cover, water points, roads and other infrastructure, households, businesses and other physical features. Farm sketch exercises target one farmer as a case demonstration of a typical farming establishment. The farmer is asked to make an illustration of their farm layout and practices therein. The transect walk/drive complements the map illustrations. It allows outsiders to appreciate the environment and also serves to fill the gaps and ground truth the information contained in the maps. Spatial illustrations are key to identifying environmental problems by showing them in the map but also by sparking discussions that bring out the issues and their causes.

Time related data

This facilitates collection of historic data. The data can be collected through timelines, trend lines and seasonal calendars. A time line is simply a list of all historical events, including developments, from as far back as the community can remember. This data will inform the outsiders about the community experiences, relationships and even the pace or lack of development. The results of this exercise may reveal to outsiders how the community relates with outsiders, what previous experience they have with development intervention and how they may receive their intervention. Trend lines are used to illustrate the trend of any resource or aspects of the community life depending on the focus of the PRA and project context over a chosen period of time. These may include trends in education, outbreak of some animal or human disease, harvests, livestock or wildlife numbers, veld products availability and rainfall as perceived by the community. The seasonal calendar is a calendar of an important activity in the village. This serves to map out the villagers' yearly schedule. Apart from giving information upon which environmental analysis can be anchored it can be used for appropriate scheduling of intervention activities.

Social data

Social data is about people's life and livelihoods. Basic social data collection tools are used to collect data on institutions, sources of livelihood, wealth and gender relations and dynamics. As listed above the common tools are institutional analysis, livelihood analysis, wealth ranking and gender analysis.

Institutional analysis involves free listing, ranking and mapping of all institutions that exist in the village. This will show which institutions are active and useful to the villagers and or which ones they value. It will also help the intervention facilitators (donors or development practitioners) to appraise local institutional capacity to partner in the intervention and sustain it. Livelihood analysis also involves free listing, ranking and mapping all livelihood activities in the village. It is important to indicate whether an activity takes place inside the built area boundary of the village or outside. Those outside are usually environment or natural resources based. During plenary presentations of this exercise questions may be asked about the conditions and management of the resources involved. Wealth ranking exercise is usually done by key informants as it deals with sensitive issues of wealth such as asset ownership and income or lack of these. The exercise is suitable for small settlements where key informants (usually community leaders or service providers) know the wealth or poverty condition of each household. The key informants have to first define what wealth or poverty is in the context of their community. The wealth analysis then involves placing each household in a pile of rich, poor and medium households to work out the proportion of the community which is poor, just in the middle or rich. Lastly gender analysis involves listing some activities in the household, those that are business related and those that have to do with community leadership and indicate who between men and women dominate. Gender analysis can be extended to asset ownership to assess the gender situation in ownership and authority over resources.

Secondary data

As is customary for development or research intervention secondary data is collected before the PRA workshop by 'project' researchers/facilitators. This involves collection and analysis of all relevant data that can be found in other projects reports, books, government records and research publications. The exercise and resulting information is important to give the facilitation team basic information about the community.

These are 'basic' tools which are often adapted to the community situation considering the objective for data collection, literacy rates and levels of exposure or familiarity with facilitated development planning and implementation. While the facilitation team for Khawa was trained in all the basic tools, the team selected to apply the sketch maps, farm sketches, seasonal (pastoral) calendar, institutional mapping, livelihoods mapping and wealth analysis and the results are presented below.

3. Khawa PRA results

The first session of the workshop involved a training of trainers session by the lead facilitator. The trainers/facilitators group included staff of the UNDP-GEF and IUCN projects, Government officials and members of the community leadership. The training was aimed at building a facilitation team which would work with the lead facilitator to mobilize the community in a co-learning process that would help them appraise their environment and identify environmental problems as well as solutions to these.

At the time of this workshop site selection, clearance with local authorities and other preparations were already done and had been successful hence data sharing and analysis were the key activities.

The second day started with presentations at the Kgotla detailing out the two projects implemented by UNDP-GEF and IUCN. It was explained that the two projects focus on environmental management and sustainability. This would involve environmental conservation and rehabilitation projects. The community was invited to the workshop and urged to come up with fundable environmental projects which will contribute to the sustenance of their environmental resources and livelihoods.

3.1 Livelihood analysis

Environmental resources dominate the livelihood strategy of the community of Khawa. More than half (10) livelihood sources are based on natural resources. Together with government assistance programmes livestock rearing is an important source of livelihood. This is an indication of the importance of the rangeland. Its availability and condition are key to sustainable livelihoods in Khawa. This is more so considering that livestock contributes to the wealth of the community and households, while Government assistance is often a sign of a poor or ailing community.

Table 1. Livelihoods listing and ranking.

<i>Livelihoods</i>	<i>Score</i>	<i>Rank</i>
Herding own livestock (green and black)	104	1(1)
Old age pension	98	2
Sale of livestock (green and black)	91	3 (3)
Drought relief project work	84	4
Government food aid rations	81	5
Gathering of veld products (wild fruits, food supplements etc.) (green and black)	77	6
Arable farming (green)	75	7
Sale of traditional alcohol (home brew)	69	8 (8)
Making and selling leather mats (green and black)	67	9
Wood carving (green)	51	10
Child maintenance (by fathers?)	49	11
Sale of sour milk	42	12
Hunting (green)	38	13
Painting - art work	35	14
Employment as helpers in homes	31	15
Harvesting and sale of construction materials (poles, thatching grass and other wood products) (green)	30	16
Employment outside Khawa	23	17
Tuck shops	16	18

Box 1: Discussions and responses to the livelihoods analysis.

Discussions and responses:

- There are some builders in the village who win construction tenders to build for council.
- Not individuals, but sometimes the village cooperative wins tenders for supply of food rations to those getting such support like orphans and destitute.
- It was enquired why traditional brew was indicated as partly dependent on natural resources and explained that the ingredients for the traditional brew (Khadi) include a root tuber called Sebete-sa-kgokong and or wild berries (moretlwa) mixed with maize meal of wheat flour.
- Hunting has been greatly reduced due to policy changes – community members are no longer issued with special hunting license. The hunting quota under the context of CBNRM has been greatly reduced as well.
- Livestock rearing has increased substantially.
- Forest resources such as firewood and poles are no longer as abundant and easily available as they used to be. People now have to travel long distances to collect them.

3.2 Institutional analysis

Table 2 below shows that there are many institutions in Khawa either providing the community with social services or development support. It is important to note in the context of the proposed projects that there is no prominence or indication of institutional capacity for environmental management. Such capacity is in Tsabong and may not be sustainable as a community support system given the resource situation in Government institutions. While the trust could help, it has a bias towards tourism as economic investment and not so much or rather directly in environmental conservation and rehabilitation activities. It also depends on donor funding for all its activities, a situation which is likely to affect its sustainability.

It should also be noted that institutions that gained prominence (in the top ten) are those that provide social services or contribute directly to household living such as churches, and the Government Departments for Youth and Culture, and Social and Community Development. This is an indication that there needs to be a strong and clear link between household livelihoods and the projects that finally get implemented.

Table 2: Institutions listing and ranking.

<i>Institution</i>	<i>Function</i>	<i>No</i>	<i>Rank</i>
Church (ELCB/ELCSA)	Provides spiritual counselling Comforts during bereavement Conducts funeral services Provides social counselling	102	1
Youth and Culture (Based in Tsabong)	Provides financial assistance Helps youth establish businesses Assists in sports and other activities e.g netball, football & Polka dance group	92	2
S&CD (Raboipelego and RADP)	Counselling Provides for material needs during funerals (transport, food basket, clothes and toiletry) Facilitate access to education Provides households with livestock Assists in village development planning and strategy	87	3
Education (School)	Gives children education School staff participate and gives advice in village development activities	87	3
Government employment aid (Ipelegeng)	Creates employment and contribute to development of the village	78	4
Telopepele	Provides HIV/AIDS support, counselling and testing	77	5
Land overseer	Safeguard individual land rights Advises on availability of land Help people identify land	77	5
Bomme ba tshidilo (Traditional massage therapists)	Give massage therapy to pregnant women	76	6
Village Development Committee (VDC)	Village development planning Identifies village destitute Employs for Government aid employment programme Prepare for village meeting held by the councillor, member of parliament, governmental or nongovernmental organisations.	75	7
Trust	Contribute to village development planning Provides the tent, the vehicle and funds for the independence celebrations and associated prizes Responsible for conservation of natural resources Gives education scholarships eg. studying tourism	69	8
Community home-based care	Provide care for the sick Donate food such as vegetables Build toilets	60	9
Health (Clinic)	Provides various medical services Counselling Provide children with food rations (Tsabana)	55	10
Cooperative	Provide food retail services Provide transport to sell cattle	54	11

<i>Institution</i>	<i>Function</i>	<i>No</i>	<i>Rank</i>
P.T.A	Provide labour to cook for school children during school trips Mediates and give advice to parents and teachers Fundraising	51	12
Veterinary services	Providing an electronic identification system for cattle Livestock disease control	47	13*
Police	Crime control Help put off wild fires Conflict resolution	47	14
Tribunal Admin	Give general assistance and support eg. finding missing persons Provide security for ipelegeng paying officers Provides leadership and discipline Registers old age pensioners	47	15
Wildlife	Provide wildlife and environmental conservation education Custodians of wildlife Allocate hunting quota	46	16
Village councillor	Takes people's grievances and ideas to the District Council. Brings back issues from the council to the people. Participates in different villages meetings	37	17
Village pump operator	Fair water distribution in the village Ensuring water delivery to the village	29	18
Farmers association	Represent farmers interest and ensure that farmers' issues are resolved	26	19
Roads	Maintenance of the road	24	20
BDF (Based in Tsabong)	Assists DWNP with anti-poaching	22	21

Box 2: Discussions and responses to the institutional analysis.

The community was asked to explain the role played by Conservation International (CI), and the Departments of Youth and Culture, and Animal Health:

- CI assisted the community to form the Trust (KKDT);
- There is a youth grant recipient in Khawa. Funding provided by Department of Youth & Culture.
- Through the Animal Health and Production technician 15 community members have benefited from the Government assistance programmes of LIMIT and ISPAD.

3.3 Wealth analysis

Table 3 below shows the importance of livestock as a source of livelihood and wealth. It also associates Government assistance such as destitute support with poverty. For the community

intervention that will improve their livelihood should be related to livestock production. Certainly improvement and or rehabilitation of the range would have a positive impact on their livelihood and ability to accumulate wealth. The community appears to be highly knowledgeable in livestock rearing.

Table 3. *Wealth ranking matrix.*

<i>Category</i>	<i>Description</i>	<i>Proportion of community</i>
Very poor	No cat, dog, chicken and no shelter Receiving destitute ration	0.8% (8)
Poor	Five cows, 1-49 small stock Can do with his or her hands Participate in Government aid employment Does not receive destitute ration	56% (350)
Medium (well off)	50-100 small stock One room build with cow dung and roofed with corrugated iron roof May be a lowly paid Government employee or not in formal employment	43% (266)
Rich	More than 200 cattle, more than 300 small stock, owning a borehole, a big house and 2 or more vehicles	0.2% (1)
Very rich	Mansion, big farm with labourers and a domestic worker (maid) More than 500 cows, 1000 small stock and able to afford supplementary livestock feed Expensive cars Laptop computer & internet Electricity on farm	0

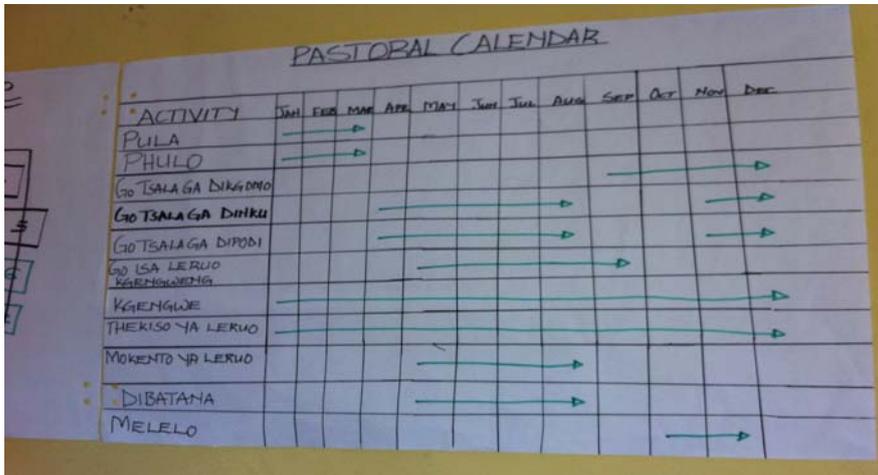
Box 3: Discussion and response to wealth analysis.

Community members generally agreed with the wealth ranking done by key informants and stressed that the rich and very rich categories do not exist in Khawa.

3.4 Pastoral calendar

The calendar shown below demonstrates community pastoral system and knowledge. The most important practice and knowledge for the conservation and rehabilitation of the range is the migratory system between areas close to the village where they depend on borehole water and areas further off where livestock feed on Kgalagadi wild melon (kgengwe) and hence do not need water. According to the community, herders stay with the livestock at these areas for six months of the year allowing the range closer to the village to recover and possibly the borehole to recharge. Members of the community have observed and showed the facilitation team that areas where this type of migration is no longer possible are degraded. It is important to note that predation happens mostly in the winter months and that this coincides with the time when goat and sheep kids are born. This may be due to the presence of small vulnerable animals but also due to the desperation of predators as wildlife would have moved to areas where water is available in winter. Fire is another issue to note for the dry months of October and November.

Figure 1. Pastoral calendar.



3.5 Farm sketch map

The farm sketch shows the farm area of a farmer located in an area where movement is no longer possible. The farmer and many others graze this area all year round. It was observed during the transect drive and indicated by the community that the area north west of Khawa village is now degraded. Crowding of water points and encroaching land uses such as WMA (KD 15) were indicated as the cause of the problem. Farmers claim that their old kghengwe areas are now within the boundaries of the WMA. It would be useful to also acquire livestock population data to check numbers and trends. What is certain is that the range has shrunk in size and most likely the quality has also been compromised.

Figure 2. Sketch of an individual farm.



3.6 Village sketch map

The sketch map shows all of the surrounding areas of Khawa where the villagers graze and harvest some of their veld products. The community indicated that in many areas the communal range is in good condition as most of them are still able to take their livestock to feed on kgengwe. There is, however, concern that the area marked with a red circle in the sketch map below is a degradation hot spot. Framers here are not able to move and hence overgraze the area. As indicated below the area is squeezed between other borehole areas and the WMA (KD15) to which they cannot expand their grazing. KD15 is a source of controversy as it appears that the community is getting impatient waiting for some benefits perhaps related to tourism enterprises to come from it. In particular the youth and those who are involved in the Trust have great expectations of potential developments within KD15. However, the view of farmers is different, as they argue that it greatly reduces their grazing area causing deterioration of the range and perhaps in the long run negatively affecting their livestock holdings. It is not clear at the moment what is happening with the livestock numbers.

Figure 3. Village land use sketch map.

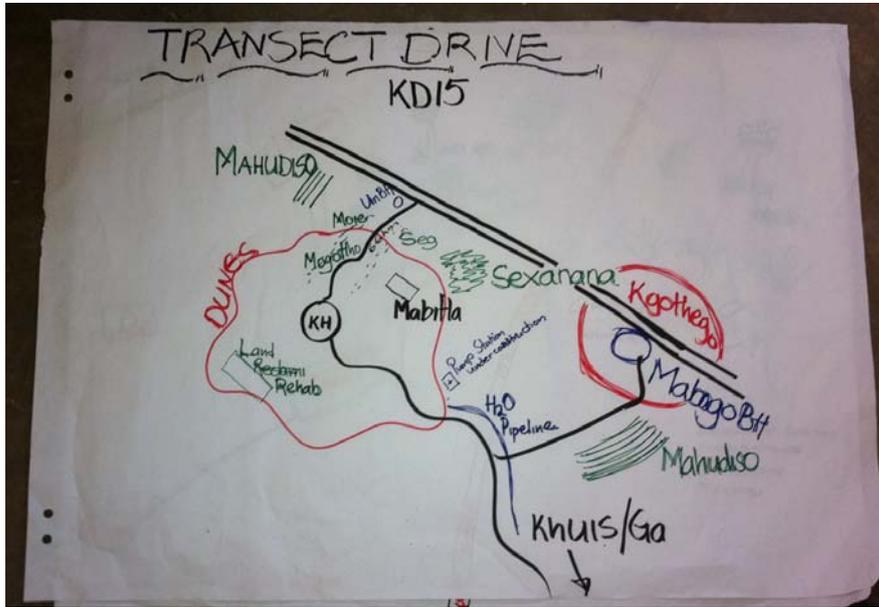


3.7 Transect drive

The transect drive also identified the area North west of the village as a degradation hot spot as shown with the highlighted red circle in the transect illustration below. Another environmental issue identified during the transect drive was the advancing sand dunes. Some sand dunes are moving closer to the settlement area and have pose a danger of invading homes. The workshop was informed that some residents have had to be moved because the dunes were threatening their homes. There has been some rehabilitation to halt this movement but it may be important to rehabilitate yet another few selected sand dunes. Sand dunes have also been identified as part of the

tourism strategy for developing 4x4 trails. It therefore is not desirable to rehabilitate and vegetate many of them.

Figure 4. Transect drive illustration.



3.8 Problem analysis

At this stage in the workshop the community revisited all the products of the data sharing process and identified emerging environmental issues. These were analysed for causes, coping strategies and new opportunities as shown in Table 4 below.

Some of the environmental problems in this area are due to the fact that the area is semi-arid. Moving sand dunes, salty water, unreliable rainfall and some loss of vegetation may just be due to the climatic character of the place and responding to climatic cycles. However livestock and range issues listed below appear to be land management issues. For example it emerged that degradation issues in the Mabogo cattlepost are due to shortage of land which is needed to allow for the all important periodical movement of livestock. Without this movement this naturally fragile area is grazed all year round with no relief and allowance for regeneration and recovery.

Another livestock management issue is that traditionally cattle are not kraaled in the Kgalagadi region. This is to allow for opportunistic grazing over as long as is necessary. The tradition is in response to conditions of low and patchy rainfall and similar conditions for grazing availability. However as wildlife and people move closer to each other due to either population expansion or land use decisions (as it appears to be the case here) predation has increased causing case of serious human-wildlife conflict. The people of Kgalagadi and those of Zutswa in particular may have to be empowered to change their livestock management system.

Table 4. Problem analysis.

<i>Problem</i>	<i>Cause</i>	<i>Present coping strategy</i>	<i>Opportunity</i>
High water salinity	Natural causes	Using water as it is	Desalination Acquiring a borehole with good water and reticulating the water
Livestock diseases	Saline water Saline water combined with poor grazing Grass worm	Vaccination	Dosing and vaccination
Overgrazing	Overcrowding / overstocking Grazing continuously in an area over a long period Reduced grazing land limiting migration Drought Shortage of boreholes causing concentration in around the few	Maintain current status	Find ways to introduce migratory grazing system Increase communal grazing into KD15
Deforestation	Harvesting (for poles, firewood) Natural causes e.g. wind	Maintain current status because of poverty	Assistance to utilise alternative building materials Planting of trees (Plantations)
Unreliable rainfall	Nature of the area (semi-arid)	Praying Government assistance Boreholes for livestock	Dig more boreholes Rain water harvesting
Lack of market (for small stock)	Distance & bad roads Low prices	Maintain current status	Butchery in village and supply orphans Small stock coop Improvement of infrastructure (road)
Predation	Too many predators (lion, hyena, jackal) Mixed land use Proximity to KTP and KD15 (wildlife areas)	Scarecrows Guard dogs	Herding (super patrol) Kraaling
Veld fires	Natural (thunderstorm) Fires not put out by tourist	Move away from burnt area	Fire education
Shortage of domestic water	Available water too saline for human consumption	Bowsing of water (KGDC) Khawa mogobe	Reticulation in village and release of other sources (boreholes by government)
Alien invasive plants (<i>Sexanama</i> , <i>Prosopis</i>)	Aforestation campaign by DFRR	Currently being removed through ipelegeng (2010)	Technical advice on dealing with the plant Uproot and burn the root
Mobile dunes	Natural process	Maintain current status	Selected dune stabilisation

3.9 Community environmental action plan

This session build on the results of the previous workshop which identified some issues and opportunities for the CEAP from within the management plan for KD15. In this exercise opportunities identified in section 3.1.8 were brought to the CEAP matrix and further analysed for resource needs by identifying why it is identified as an opportunity, what material resources would be needed, where the activity would take place and who would be responsible for ensuring that implementation takes place.

The main environmental issues in faced by this community are shortage of water and disturbance to the all important migratory rangeland and livestock management system. This has already caused localised degradation in the Mabogo cattlepost area. This is caused by land annexation for the WMA KD15 and crowding of boreholes. Framers claim that their migratory kgengwe areas are now within the WMA where they cannot go and camp with their livestock. The distance to the other 'kgengwe' area where other farmers go is prohibitive for the Mabogo farmers. Suggested solutions include reducing KD15 to a wildlife ranch of about 20 x 20 kms and releasing the rest of it for grazing and asking for an extension of the community grazing land by moving back the boundary of KD15 by about 20kms. These solutions are very long term as they involve political discussion and decision making. What would be easy for the community to deal with in the short term is to manage the existing human wildlife conflict by herding and kraaling their livestock.

The community of Khawa have several simple environmental management and conservation options that they suggest and can implement with the support of TAC and not necessarily involving outside donors. The Department of Forestry and Range Resources has an ongoing community support project which can assist in the setting up plantations with appropriate indigenous plants which do not need a lot of water. There are also opportunities to work with LEA, CEDA and Department of Youth to get investment grunts for job creation and income generation projects.

Table 5. Khawa community environmental action plan.

<i>Activity</i>	<i>Why</i>	<i>What</i>	<i>Where</i>	<i>Who</i>
Construction of camp site	Tourist accommodation Job creation	Construction material Manpower Water Funds Transport Plan (physical) Land	KD15, community zone	Engage contractor T.A.C ICPs Casual labour (men, women, youth)
4x4 trail	Tourist attraction Job creation hence improves livelihood	Machinery & equipment Tractors Manpower Funds Sketch plan	KD15 commercial zone	ICPs Casual labourers Contractor TAC

<i>Activity</i>	<i>Why</i>	<i>What</i>	<i>Where</i>	<i>Who</i>
Human wildlife conflict	To reduce livestock loss to predators	Herding Kraaling Engage guard dogs Maintenance of electric fence TP boundary Regular patrols by both farmers & wildlife personnel	Predation hot spots Farms around Khawa along KTP boundary	Farmers Wildlife personnel Community escort guides
Cultural tourism	Promote culture tourism attraction Income generation	Form cultural groups Traditional dance, craft, leather work, story telling	Khawa KD15 & tourism attraction areas e.g. campsites	Youth groups Elders
Desalination	Reduce salty water	Professional assistance Capital resource Assess risks	Community borehole	ICPs Farmers TAC
Acquiring a borehole and reticulating	Alleviate shortage of water	Acquire existing boreholes Seek financial and technical assistance Purchase necessary materials	KD27	Farmers TAC Land Board Water Affairs
Migratory grazing	Reduce overgrazing and reverse degradation	Ask for extension of KD15	KD15	Community Councillor Member of Parliament Minister
Plantation (trees)	Reduce deforestation	Acquire land Technical advice from DFRR	KD27	Community DFRR TAC
Alternative energy (solar & biogas)	Reduce deforestation	Seek financial assistance and alternative energy expertise	Khawa	Community BPC Lesedi RIIC ICPs
Brick moulding	Alternative building material	Establish brick moulding yard Seek financial resources	Khawa	Community CEDA LEA Youth ICPs
Water harvesting	Alleviate low rainfall / water shortage	Construct appropriate water storage tanks for KD Seek expert advice Seek financial assistance	Khawa	Community ICPs Water Affairs

<i>Activity</i>	<i>Why</i>	<i>What</i>	<i>Where</i>	<i>Who</i>
Small stock cooperative	Source market for small stock	Diversify current coop into small stock Seek advice from Ministry of Trade and Industry, Dept of Cooperatives	Khawa	Community ICPs
Sand dune stabilisation	Reduce movement invasion of homes and infrastructure	Fence and vegetate	Selected and dunes	Community DFRR ICPs
Game ranch	Wildlife management Income generation	Permission and technical assistance	KD15	Community DWNP
Alien invasive plants	control invasive species	Physically remove the plant	Khawa	Community DFRR

4. Zutshwa PRA results

As was the case in Khawa the workshop in Zutshwa aimed to;

- Undertake a participatory rural (environmental) appraisal of the Zutshwa area KD2
- Bring together ICPs, government workers and the community to come up with ways of addressing identified environmental issues/problems.
- Develop a community environmental action plan (CEAP)

Similarly in this workshop the traditional data sharing PRA methodology was adopted. Participants were divided into three groups. One group was responsible for collating and sharing spatial data through the production of the Zutshwa land use map showing different features such as roads leading in and out of their area, pans, boreholes and campsites; the pastoral farm sketch showing the layout of a single farm holding; and a transect illustration showing geographical features encountered by the transect drive party. Another group collated and shared social data on livelihoods and institutions from which the community receive services. The third group worked on the social aspect of wealth. The group was requested to give an indication of how they perceive the wealth/poverty situation in the village and share the information with the rest of the participants for their approval or otherwise. The same group also dealt with time related data. They produced trend lines of selected aspects or resources over a selected period to suggest how these aspects/ resources have changed over the time; this was also brought to the plenary for approval by the rest of the participants on behalf of the community. Lastly the third group also produced a calendar of important village activities over an orthodox year period. The results of this workshop are presented below.

4.1 Village sketch map

The sketch map shows that Zutshwa village exists within a WMA area KD2. Within this area there is the built up area surrounded by a grazing and hunting area covering an area defined by a radius of about 20km. Within this area the community graze their livestock of cattle goats and sheep, plough their crops, harvest veld products, hunt and are developing a fledgling tourism industry. Existence within a WMA has proven to be very challenging. First of all predation is high very high and crops get damaged by both wildlife and domestic animals. These problems are compounded by the proximity of both the Mabuasehube and Kgalagadi Transfrontier Park. The other problem with being surrounded by conservation areas is lack of room for expansion in order to separate wildlife from livestock.

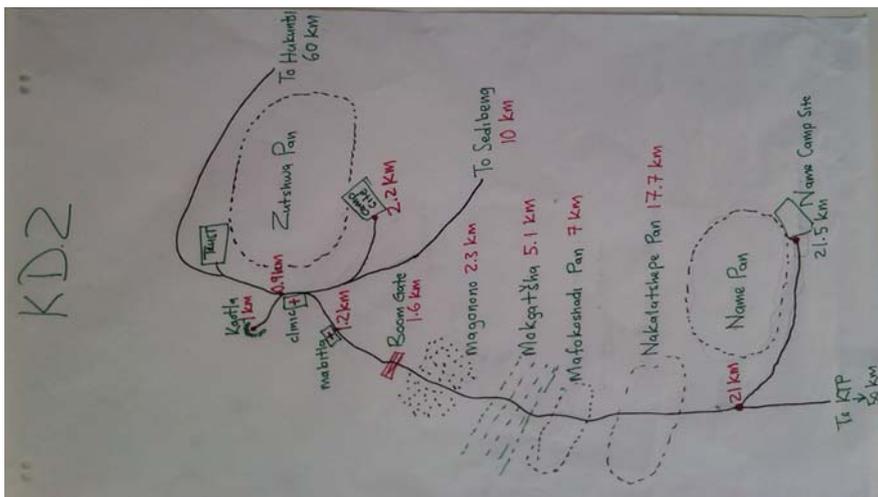
Figure 5. Village sketch map (KD2).



4.2 Transect drive

The transect drive confirmed and detailed out many of the features referred to in the sketch mapping exercise. It emerged further that the area to the east of the village is also not available for expansion as it is grazing for Hukuntsi village. There are two main problems for this area and the residents; shortage or lack of land to which to expand and explore for water and salinity of water in almost the entire area. This has resulted in acute shortage of water for both the people and their livestock. The underlying issue appear to be the introduction of livestock in a small WMA area with no room for expansion resulting in both social and environmental problems.

Figure 6. Transect drive illustration.



Box 4: Clarifications and additional information to village sketch map and transect drive.

Clarifications and additional information received:

Livestock is grazed in all the areas within and around the village in KD2.

Naka-la-tshepe pan is within a pan called Kaba which is on the right side of the map.

The campsite near Zutshwa pan is called Ngwamathare.

The community is planning on having two campsites.

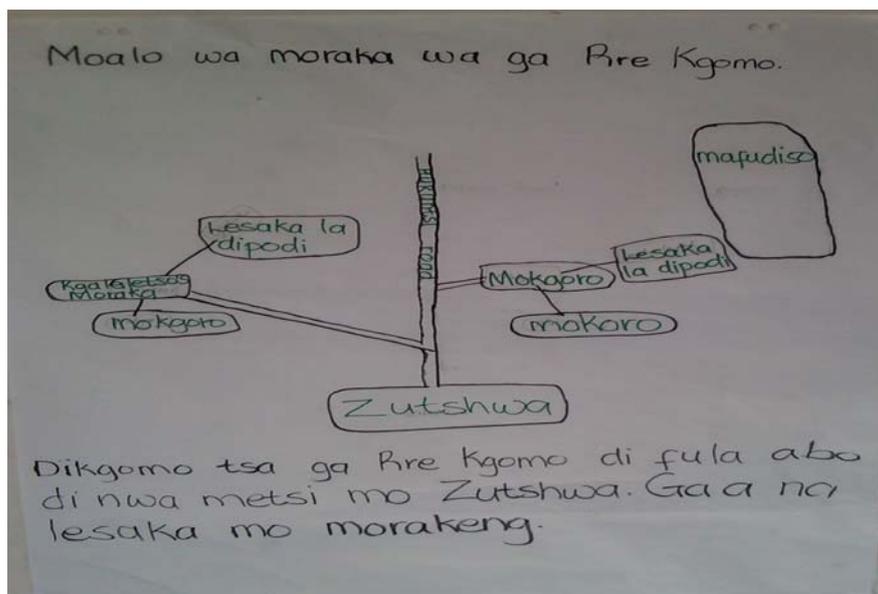
There is a unique feature of open grassland on the way from Zutshwa to KTP (a valley which stretches all the way to Kaba).

Hunting (of allocated quota) also takes place throughout KD2 which covers an area of 20km radius around the village.

4.3 Farm sketch

The farm sketch shows that livestock rearing activity takes place near the village build up area. The farmer explained that only goats are kraaled while cattle are allowed to roam freely. Mr. Kgomo's animals graze near his temporary cattle post home structure. The livestock drink with all others from the village at the nearby mokoro where council provides water. Although not shown in the farm sketch Mr. Kgomo practices arable farming within the same location. Although arable agriculture is practiced it was not shown in any of the sketches, neither did the transect party encounter an arable field along their transect. It was explained that there are a few which are used and that many people are still waiting to be allocated by the Land Board which takes very long to respond to applications.

Figure 7. Mr. Kgomo's farm.



Box 5: Clarifications and additional information to Mr. Kgomo's farm.

Clarifications and additional information received:

Mr. Kgomo's cattle post and arable field are closer to the village as are those of most farmers.

Grazing is just around the village area and the rest of KD2.

There is a designated watering point for the whole village where water is supplied by the council water unit.

Most households own goats, few own cattle.

4.4 Livelihood analysis

The livelihood analysis of Zutshwa shows a high dependence on Government assistance and hence high levels of poverty and unemployment. This was later confirmed by the wealth analysis but is indicated in Table 5 above by the fact that 2 out of the top three livelihood sources are Government aid/ or poverty alleviation programmes. There is also a high level of dependence on environmental goods and services. Table 6 below shows that out of the top ten sources of livelihoods six are based directly on the environment. Arguably therefore environmental management and conservation are important to ensure sustainable livelihoods in Zutshwa. There are, however, in the list of livelihoods and especially in the top ten livelihood sources which do not 'deserve' to make the list at all; arable farming, tourism, salt mining and craft sales. These may be developed in the future but there is no evidence that they currently have significant contribution to the community livelihood.

For example although salt mining made the top ten the project has not operated for the past eight years. The community explained that they still regarded it as a part of their livelihood strategy because while it was functioning it provided employment and good income returns for the village. They hope to re-open it in the future and believe that it holds the key to their bright future. There are many reasons why the project collapsed ranging from mismanagement to lack of operating licence.

Tourism also made the top five and is also still only a possibility. The community has two non-functioning tourism sites. Tourists go through the village on a daily basis but the community has no way of capturing the market and associated income. As will be shown later in the trends sale of crafts (jewellery) also does not 'deserve' to be on the list as it collapsed when the salt mining NGO left the village.

Poaching made the list but as expected was controversial. Some, especially the village leadership, felt that like any other crime poaching does not deserve to be listed as a source of livelihood. Some felt however that the practice 'helped' some people. It also seemed to feature as both a point of protest (defiance) and demonstration of the desperate poverty situation. Several times it was mentioned that the quota is getting smaller and smaller and clearly the community was not happy with this as they perceive wildlife numbers to be rising (see trends below). It would appear also that as many in the community are traditionally hunter gatherers they are not about to give up the practice.

Many activities take place within and around the village built up area. This has a potential of depleting resources and causing degradation and has to be managed. The existence of predators, especially the lion makes it difficult to harvest or use resources further away from the village.

Table 6. Livelihoods listing and ranking.

<i>Source of livelihood</i>	<i>Rank</i>	<i>Score</i>
Ipelegeng (Government aid employment)	1	
Pastoral farming	2	
Government aid (food & toiletry rations)	3	
Hunting (quota)	4	
Tourism	5	
Old age pension	6	
Gathering wild fruits	7	
Arable farming	8	
Tannery	9	
Salt mining – last operated in 2003	10	
Brewing traditional beer	11	
Making jewellery (meraka) with ostrich shells	12A	
Kiosks	12B	
Employment as herders	13	
Making wood crafts (go betla)	14	
Poaching	15A	
Traditional healing	15B	
Construction	16	

Box 6: Further discussion and explanation on livelihoods.

<p>Clarifications and additional information received: Rain-fed agriculture is stated as a source of livelihood among the top ten, why is it that none of the illustrations show fields? What crops are grown? Rain-fed agriculture is practiced in Zutshwa but by very few people. The activity faces challenges which include:</p> <ul style="list-style-type: none"> - Low rainfall - Lack of land – land board takes long time to respond to applications for farm land. - No farming implements e.g. tractors; people here use donkeys for ploughing. <p>Crops grown in Zutshwa:</p> <ul style="list-style-type: none"> - Beans - Melons - Maize.
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4.5 Institutional analysis

As in Khawa the community of Zutshwa receives services from several institutions. However none of the local ones work with the environment. The community gets such support from Hukuntsi and Tsabong. The village trust which works on developing tourism is the closest to an environmental organisation. To implement the project it maybe prudent to add an environmental role and build capacity of existing institutions such as the Trust, the School, Youth Group or at a higher level the VDC. It is usually not advisable to form new institutions associated only with the project as they are likely to collapse at the end of the project.

Table 7: Institutions listing and ranking.

<i>Institution</i>	<i>Functions</i>	<i>Rank</i>	<i>Score</i>
Water unit	Provides water for people (domestic use) and livestock Teach the community about water conservation.	1	
Sports	Keeps youth busy and away from illegal activities (crime) Encourages team spirit and love amongst the youth.	2	
Clinic	Provides health services Teaches about hygiene and diseases Teaches about disease prevention.	3	
S&CD and RADP	It helps the poor and deals generally with issues of livelihood improvement.	4A	
Primary school	Provides education Gives learners access to knowledge and learning Improves behaviour and general character of children.	4B	
Churches	Teaches about morals, Christian principles and communal living Gives families support during funerals Provides for material needs of the community by giving to the needy.	5	

<i>Institution</i>	<i>Functions</i>	<i>Rank</i>	<i>Score</i>
VDC	Is responsible for the village development Links community with national government structures Provides care and support to the community	6	
Trust	It support families during funerals It markets the village and its activities Responsible for developing and marketing tourism activities Creates temporary employment	7	
Traditional leadership	Responsible for conflicts resolution Involved in fighting crime and crime prevention education Encourage people to participate in village development activities and committees.	8	
Youth group	Markets the culture and traditions of the village.	9A	
Home based care	Cares for patients and educates about health.	9B	
Pre-school	Help children get used to school environment and develop their social skills Improve children's performances by awarding prizes for both academic and extracurricular activities Teaches kids about hygiene.	10	
Crime prevention unit	Involved in campaigns to fight crime and educate about crime prevention	11	

4.6 Wealth analysis

Key informants from the community leadership were asked to do this exercise. The group perceived and the community agreed that most people in the village are poor. Although Government aid was not stated in the category description it showed in the livelihood analysis that there is high reliance on Government aid. That is a traditional indicator of poverty. Any project that comes into this village has to take this condition into account.

Table 8. *Wealth analysis.*

	<i>Definition</i>	<i>Proportion of population</i>
The rich	A person with not less than 15 cattle and not less than 50 goats. A person who plants and harvests 5 to 10 50kg's. A person who owns a kiosk. A person with proper accommodation / house and owns a car.	3% (14)
Neither rich nor poor	A person with at least 5 cattle and 5 to 10 goats. A person with more than one house, able to accommodate relatives. A person who uses the hands to do projects (e.g. making crafts).	12% (56)
The poor	A person with 0 – 2 cattle. A person with 1 house (hut) or no accommodation at all. A person who relies on asking for whatever they need (more especially food) from other people.	85% (390)

4.7 Pastoral calendar

While this calendar is almost the same as that of Khawa it is note worthy that the range management system of taking the livestock to eat wild melons away from the village and usual grazing area takes a shorter time in this case; about 6 months in Khawa and only 2 months here. Several factors contribute to this; first the community is not traditionally pastoralist, livestock were only introduced in 2004; secondly, livestock numbers are too low to be worth the camping in the cold; and thirdly it is difficult to control predation out in the bush. The community therefore needs capacity building if they are to continue with livestock rearing and make it viable. Alternative livelihoods such as tourism and hunting related activities would be most suitable. However tourism will require a lot of input in finance and expert capacity building as well as patience for returns. Hunting unfortunately does not enjoy political favour at national level and may not be worth investing in. It would appear that development and management of the traditional agricultural production and natural resources use systems remain important as part of Zutshwa community livelihood strategy.

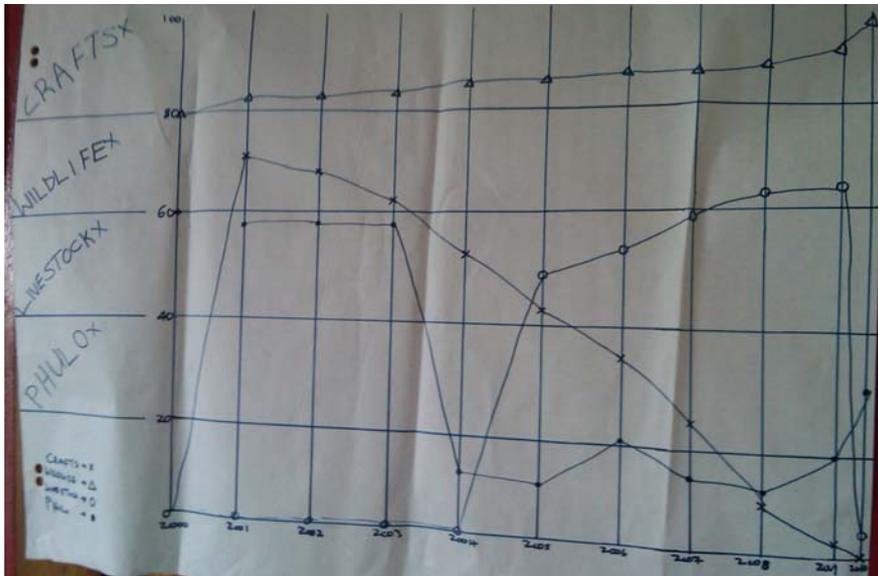
Figure 8. Pastoral calendar.

Activity	J	F	M	A	M	J	J	A	S	O	N	D
Rain-fed farming	■	■	■	■	■	■	■					■
Livestock reproduction						■	■	■				■
Harvesting veldt fruits	■	■	■									■
Harvesting truffles				■	■	■	■					■
Rainfall	■	■	■									■
Livestock feeds on wild melons						■	■	■				■
Harvesting devil's claw	■	■	■	■								■
Hunting season				■	■	■	■	■	■	■		

4.8 Trends

Four trend lines were drawn: That of craft sales, wildlife numbers, livestock numbers and the condition of grazing (phulo). Note worthy trends are those of craft sales and livestock. Craft sales rose sharply between the year 2000 and 2001, but subsequently started a free fall until none was being sold by 2010. Two reasons were given for this; the departure of the salt mining NGO which assisted with the marketing and the closure of ostrich farms from which the community bought the raw materials (ostrich egg shells). Both these are possible to reverse; for example the trust can be empowered to source raw materials and market the crafts on behalf of the producers. Livestock also increased after introduction in 2004 but crushed to near extinction in 2010. According to the community high levels of predation are responsible for this crash. Lack of water was also said to contribute to the problem. Once confirmed as indeed the real cause for the drastic decline in livestock numbers, management of predation will have to be prioritised by all concerned as it threatens a whole investment by Government and an important livelihood source for the community.

Figure 9. Trends of crafts sales, wildlife, livestock and the condition of grazing.



Box 7: Further discussion and explanation of trends.

Clarifications and additional information received:

Crafts

What caused the crash in craft sales? Ostrich egg shells used by the community produce crafts are now in short supply as ostrich farms in the area have closed down. Crafts were sold to Botswana Craft and Ghanzi Craft. Marketing of crafts also became a challenge upon the departure of the German man who was running the Zutshwa salt mining project.

Wildlife

There seems to be a steady increase in the number of wildlife. Yes, wildlife is now sighted very close and even within the village. Hunting (quotas) do not affect the increasing number of wildlife. The increasing number of wildlife has however lead to conflict between people and wildlife.

Livestock (cattle)

The Government bought cattle for the community in 2004/5. There was initially a sharp increase in the number of cattle but there recently has been a sharp decline due to predation. Hyena predation is not compensated for but is one of the top predators.

Advice: Please report all cases of predation even those that do not attract compensation as Government uses this statistics to decide on additional predators to be included in the compensation list.

Grazing land (phulo)

Unreliable rainfall affects grazing land.

4.9 Problem analysis

Upon reflection and synthesis all the data shared it became apparent that the community faces many problems which emanate from three main issues; human wildlife conflict whose root cause is

mixed land uses within a small land area; shortage of water due to low rainfall (naturally) and salinity of mined water; and last but not least poverty which is caused by lack of employment and limited income generating opportunities. The poverty issue is particularly serious as it leads to criminal activities such as poaching. The predation and water issues add to the poverty and threaten the state of the grazing as people tend to keep their livestock around the village built up area to access what and keep their livestock away from predation. Unfortunately sustenance of the rangeland requires movement over a reasonably large area (beyond 10kms) to avoid overgrazing localised areas. Intervention needs to focus on water provision and rangeland/livestock management.

Table 9. Problem analysis.

<i>Problem</i>	<i>Cause</i>	<i>Present coping strategy</i>	<i>Opportunity</i>
Decline in livestock numbers	Predators Thirst	Report to Wildlife Department	Erection of a fence that separates livestock from wildlife Building of wildlife camp Building strong kraals Herding during the day and kraaling at night.
Shortage of water for domestic use	No borehole with good water Water salinity Constant breakdown of council vehicles causing delay in water supply	Depend on council to bring water in bowsers Capture rain water for livestock to avoid sharing domestic water with the animals	Develop rain water harvesting to use for livestock and domestic activities that do not require clean water Explore and develop separate water sources for livestock Government should speed up the Ngwaatle water project Water desalination
Shortage of water for livestock	No borehole with good water Water salinity Shortage of land for water exploration Low rainfall No water reservoirs Poor water retention soils (sand)	-Share domestic water with livestock Hire vehicles to get water from Hukuntsi Illegal watering of livestock from stand pipes Feed livestock wild melons (kgengwe).	Ask for government assistance to build water reservoirs Form a farmers' syndicate in order to ask for Government assistance to explore for and drill a borehole outside the village Desilt and renovate the water village reservoir and the one in the pan which was developed by German NGO.

<i>Problem</i>	<i>Cause</i>	<i>Present coping strategy</i>	<i>Opportunity</i>
Un-employment	No Government offices in Zutshwa to hire residents No development or business projects to create employment	Subsistence livelihood activities Legal (quota) and illegal (poaching) hunting	Cattle ranch Use of Government aid programmes to create employment e.g. chicken, ostrich farming, craft development projects Seek assistance to re-start salt production project Develop the village tourism projects; campsites and water points to attract wildlife Form cooperatives to improve livestock market.
Poverty	Unemployment Lack of water Low education and lack of skills Lack of Government support Remoteness (far from opportunities and services).	Piece jobs Farming Government aid employment (Ipelegeng)	Continue farming (livestock and crops) Attract foreign investment and business partners from outside Attract ICP funding and technical assistance (another white person should come to help)

4.10 Community environmental action plan

The community felt that the main action that needs to be taken to alleviate their problems as outlined in the problem analysis matrix above is to extend their area so that they can have enough land to explore for water. They also feel that they need to separate wildlife from livestock and with the amount of land they have separation is neither possible nor viable. However it was agreed that such an action may only be achieved through political intervention in the long run, that currently it is near impossible. The community otherwise have other suggestions and options which they outline in Table 10 below. While securing good water for livestock will be a challenge improved livestock and range management can be effected through herding and kraaling. The community is also particularly passionate about the salt mining project as a source of employment and income. The project is worth exploring for intervention where both the salt and the water can be captured.

Table 10. Zutshwa community environmental action plan.

<i>Activity</i>	<i>Why</i>	<i>What</i>	<i>Where</i>	<i>Who</i>
Request for extension of land available to the community for grazing and possibly drilling boreholes and separating livestock from wildlife Building strong specialised kraals Herding.	To protect livestock from predators	To seek / request extension of KD2 Seek permission to dig boreholes Seek financial and technical assistance to build specialised kraals Purchase necessary materials to build kraals Learn effective herding techniques.	KD2	Farmers Political representatives Government departments (DWNP, Veterinary Services, Kgalagadi Land Board, DWA, Geological Surveys) ICPs TAC
Construct new dams and renovate existing ones Conduct exploratory studies to establish where good water exists	Alleviate shortage of water for livestock	Seek financial and technical assistance Purchase necessary equipment to construct dams/water reservoirs Construct the reservoirs	KD2	Community Department of Crops DEA Geological Surveys TAC
Develop rain water harvesting infrastructure	Alleviate shortage of domestic water	Seek financial and technical assistance Purchase necessary equipment to develop water harvesting infrastructure Construct/install water harvesting infrastructure	Zutshwa	Water Affairs – Water Conservation Unit ICPs Community TAC

<i>Activity</i>	<i>Why</i>	<i>What</i>	<i>Where</i>	<i>Who</i>
Form and empower craft groups Seek market for the crafts	To create employment and alleviate poverty	Seek permit to buy ostrich shells Train craft producers in business management and improving the quality of the crafts Net work with other organisations to seek the market.	Zutshwa	Community DWNP ICPs Trust TAC
Re-start the salt production project	To create employment and alleviate poverty	Apply for mining permit Seek financial and technical assistance Find a business partners to run the project Purchase the necessary equipment	Zutshwa	Mines DEA Trust TAC ICPs Community
Develop tourism	To create employment and alleviate poverty	Apply for tourism license Seek financial, marketing and other technical assistance Improve existing campsites and construct supporting facilities (e.g. boom gate) Construct water holes to attract wildlife Acquire vehicle to transport tourists within KD2	KD2	Trust BTO DoT TAC ICPs

Annex 1: PRA participants in Khawa

<i>Name</i>	<i>Organisation</i>	<i>Contacts</i>
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Gert Manyoro	Cluster	
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Jan Januarie	Elder	
Jan Killer Manyoro	Elder	
Jan Kontant Manyoro	Elder	
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Johannes Manyoro	Elder	
John Bock	Elder	
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Klaas Mpoelang	Kgosana	
Lenah Manyoro	Adult	
Lucas Manyoro	Driver KKDT Board of Trustee	73217738
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Marea Bock	Court Clerk	73614145
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Marea Rooi	Cleaner	73393296
Marea Thau	Youth	
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Minah Manyoro	Youth	
Mma Ditshipi	Youth	
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Annex 2 PRA participants in Zutshwa

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J. O. Motlhaetsi	Kgosi - Zutshwa	
Jacob Mkgoeise	Kgosana	
Aeye Kono	Mogolwane (elder)	
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Tirelo Lekaukau	VDC & trust member	73491973
Moses Ltshelelo	VDC member	73515669
Minah Mai		
Matllo Senkganane		73561994
John Kgomo	Chairperson-Home Based Care Com	
Emma Sennye	PTA Chairperson	
Fannie Ditshipe	Zutshwa	73722394
Kegomoditswe Babotse	Zutshwa	73567351
Kooneng Mokoti	Mogolawane (elder)	
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Tantane Koto	Trust chairman	73550628
Nelson B. Molemele	Trust driver	73379117
Ontuetse Mantle	Trust treasurer	
Tshoganetso Modise	Leather works	73510293
Gosaitse Kabathliphanya	Zutshwa	
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