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Rural Needs in Perspective: a Study of Five Villages in Botswana

By
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NOTES:

1. The abbreviation HH is used throughout this report to represent Household(s).
2. Figures presented in all the tables throughout the report display a percentage and/or frequency distribution of the valid responses to each particular case hence should not necessarily be tied to the initial total Sample.

ACKNOWLEDGEMENTS

Many people have contributed to this report - Some very directly, and others quite inadvertently - space permits me to single out only a few for mention. However, I express my deep gratitude to all of them; to any who should be named but are omitted, my apologies.

My primary debt is to the local authorities and Community members of the five study villages - Kanye, Goodhope, Hukuntsi, Shakawe and Tutume - who through their cooperation, patience and assistance made the whole exercise a success. Many thanks go to my enumerators who through their hard work and dedication, made it a point that the field work part be a success. These are G. Tebelelo, K. Mogotsinyane, M. Shatera, C. Tibone and J. Sekelenyane - all University of Botswana students and Mr M. Moetse - an RIIC Extension Officer. Not to forget Ms M. Masire, the then RIP Information Officer for the professional guidance she offered me and Ms Joyce Coangae - the then RIIC Chief Extension Officer for offering general administration support in Kanye and in the field.

I owe much to RIP and RIIC Management Staff for their finance and moral support for this research survey and for the patience they showed from the planning of the Survey up to the release of this report. I further owe a professional debt to RIIC and some BTC R & D members for their constructive comments and suggestions. In this respect I am very much obligated to my R & D colleagues for their assistance and encouragement. Finally I would like to extend my thanks to M. S Gontse for typing the initial hand-written manuscript, R. Yates for his invaluable support and encouragement and D. Cownie for helping with data processing. Again to all these people, named and unnamed, my sincere thanks.

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PREFACE

Rural societies in the third world tend to have complex structures which require modern research disciplines to study and understand. Furthermore, any development attempts among these societies tend to rely heavily on the findings of such studies since such studies are responsible for moulding and influencing rural policies. Without an adequate understanding of rural societies anybody or institution attempting to instigate socio-economic or political change among such communities is bound to fail or will in the long term fail to justify their existence as development agents. Thus, it is within this scope that RIIC decided to carry out a "Needs Assessment Survey" in five Botswana villages as part of an on-going information gathering exercise of attempting to know what is happening in the rural areas. It is worth noting that this particular survey gives an overview of some of the needy areas in five selected villages in rural Botswana. In no way is it representative of the overall situation in rural Botswana.

The process of rural needs assessment is like a blind man trying to locate a black cat in a dark room. As such it is long and endless with a high risk of missing the target. Its objective, as has been the case in this particular case, should be to identify prevailing, felt and perceived needs of rural communities and not to further seek solutions to these needs unless these are cited by the people. This latter issue of solutions is usually left to organizations and experts with the relevant expertise and know how to respond to the needs. This findings of this research exercise should as such be seen as a link between the intended technologists (RIIC R & D) and the rural communities concerned. The paper thus calls for technical responses to those needs identified.

It has been a common tendency in many third world countries that researchers have tended to go and carry out endless research among rural communities and in the end failing to offer any material/tangible benefits to the researched communities. In this respect, research of this nature has in many instances been a one-way process with the villagers always being expected to give and the researchers never giving anything in return. The result in many cases has been over research of some villages and reluctance on the part of villagers to impart reliable information or take researchers in the future seriously. Thus, action from the concerned parties is called for in this particular case. The RIIC R & D committee is hereby presented with what I hope is an action oriented research synopsis which they ought to respond to over the next five years.

SUMMARY OF FINDINGS

HOUSEHOLD SURVEY

1. General Community involvement in Agriculture was found to be high in all the five villages surveyed.

2. Women's involvement in Agricultural related activities was found to be very high. They are responsible for and carry out many of the vital crop operations including ploughing and planting, weeding, bird scaring, harvesting, threshing and grain storage.

3. A high percentage of farmers in Hukuntsi, Shakawe and Tutume were found to be using cattle draft-power while 80% in Goodhope use tractors. Draft-power in Kanye was found to be evenly distributed with cattle and tractors being predominant.

4. A majority of the farmers in all the Villages were found to be owning their draft-power source (except in Goodhope). This applied mainly to animal draft-power. This does not necessarily mean that farmers are able to effectively use their draft power at the required and appropriate time due to some constraints.

5. It was found that Tutume and Shakawe had the highest rate of community involvement in arable agriculture as opposed to Goodhope where overall community involvement in this activity was found to be lower despite a higher rate of production. This could be attributed mainly to the large scale and mechanized nature of production in Goodhope.

6. In most villages where animal draft-power is used for arable agricultural purposes, it was found that farmers are not usually able to efficiently use their animals due to a number of problems usually encountered. Primary to these problems is weak animals during the ploughing season due to poor grazing.

7. On average, farmers spend 7 - 9 months on arable agricultural related activities. These activities include among other activities land preparation, fencing, ploughing, weeding and cultural practices, harvesting, and post harvesting activities.

8. Prevalent small scale traditional farming systems were found to be less productive than other relatively mechanized systems. This is indicated by the level of production in Tutume and Shakawe as opposed to Goodhope.

9. Harvesting and post-harvesting agricultural technologies used in rural Botswana are labour intensive, time consuming and streneous especially

on Women. Most of these methods and technologies are bad enough to justify a need for change, but because of lack of resources and an absence of any readily available options, traditional farmers still adhere to their use.

10. Different systems were found to be in use throughout the five study villages for livestock watering. In Kanye, 66.7% of the farmers use diesel engines (not necessarily on individual basis), 74.9% in Shakawe and 75.6% in Tutume rely on rivers while 82.9% of the farmers in Hukuntsi use hand dug wells.

11. The use of Hand-dug wells in the Hukuntsi catchment for providing water for livestock purposes is widespread. Unfortunately the method used for lifting water (rope and bucket hauled by a person directly on top of the well opening)is crude, streneous and dangerous hence a need to provide better methods for the above purpose.

12. People in Shakawe and Tutume expressed a lot of dissatisfaction with their drinking water sources - rivers. In both cases it was said that because of indiscreminate waste disposal by people, the use of rivers water is not safe since the water sources are subject to contamination.

13. In Hukuntsi, the problems related to firewood are amplified by lack of any form of village transport to carry firewood even if its on commercial basis as is the case in Kanye and Goodhope. This to some extent also applies to Tutume. On the contrary, the availability of transport in places like Kanye appears to have had a depleting effect on firewood resources such that people in these villages have to travel far to collect firewood.

14. Because of depletion of firewood resources in villages like Kanye and Goodhope, it was found that there is need to promote alternative fuel-saving technologies with the view of supplementing or saving the already existing fuel resources and not complete replacement of the present methods, sources and practices.

15. The determination to improve housing by rural communities was found to be existing. The main draw back was found to be lack of technical support and finance to build reasonably good houses.

16. Sanitation was found to be more of a serious problem in Hukuntsi, Shakawe and Tutume. The use of the bush was found to be predominantly used in these three villages as opposed to Kanye and Goodhope where pit latrines are widely used.

17. Survey findings reveal that there is very little awareness among all the surveyed communities of RIIC and other related institutions. Despite this, RIIC turned out to be much more popularly known in Kanye,

Goodhope, Hukuntsi and Tutume than any of the other related organizations (RIP, BTC and BRET).

COTTAGE INDUSTRIES

1. On average, 11.2% of all the households interviewed in the five research villages had members involved in small scale production activities of some sort. Frequency rates were highest in Shakawe and Tutume.

2. Most of the industries identified tended to be female dominated e.g. knitting, weaving, embroidery and beer brewing. Other activities tended to be regionalized e.g. tannery was only found in Hukuntsi.

3. Much of the cottage based production activities tended to be carried out on seasonal basis. A few of the Artisans maintained that they produce throughout the year.

4. Contrary to our initial assumptions, cottage industries tend to be market orientated even though producing at a very small scale level. The main market in most cases is the village of location.

5. 63.6% of all the Artisans interviewed in the five villages expressed an interest in cooperative production.

RURAL PRODUCER'S SURVEY

1. In Tutume, there turned out to be a very high rate of female involvement in the small scale production sector as indicated by the large number of people involved in sewing, knitting and embroidery.

2. Bread-baking was found to be a predominant aspect of Shakawe's village production sector. Unfortunately, there was no technical and financial back-up as shown by an absence of trained bakers nor established village bakeries with the necessary basic facilities. A lot of producers are also involved in beer brewing.

3. On the whole, it was found that there are more females engaged in production activities than males. Women averaged 60% of the total number of producers surveyed.

4. A high percentage of producers (especially in Kanye) had at one point since starting production, employed other people. The main prohibiting factor in this case has always been lack of adequate finance.

5. Kanye, Shakawe and Tutume registered the highest number of producers while Goodhope and Hukuntsi registered the least.

RECOMMENDATIONS

HOUSEHOLD SURVEY

1. Any technological innovations in arable agriculture should be appropriate to the end - Users (the resource - poor farmers). Such innovations should take into consideration the high involvement of women in this sector. Any work should focus mainly on ploughing, planting, weeding, harvesting and post-harvesting activities.

2. The overall social structure related to agriculture has to be taken into consideration in any agricultural related project since a considerably high percentage of the rural communities is involved in agriculture. Technologies developed should be geared at serving a high percentage of farmers in a particular location as opposed to capital intensive technologies which are geared at a few rich farmers in any one location.

3. Any draft-power related innovations should take into consideration the fact that the majority of farmers use animal draft power except in some of the few select areas like Goodhope.

4. It was found that there is a higher community involvement in arable agriculture in Tutume and Shakawe than in Goodhope. Despite this, productivity in Goodhope was found to be much higher. This was attributed mainly to the large scale of production and capital intensive nature of agriculture in Goodhope. Thus, there is need for a review of small scale mechanized draft power technologies which can meet the needs of farmers involved in small scale farming. Work should also be done on divising more efficient uses of animal draft power and hand-powered systems.

5. In an attempt to alleviate some of the draft power related problems, customs hire systems are recommended to create access to draft power by farmers. This could go hand in hand with cooperative ownership of agricultural implements.

6. There is a need to maintain draft animals in good standard so that they can be fit for ploughing at the earliest stages of the ploughing season. This could possibly be done through a low cost supplementary feeding programme focusing on folder production, harvesting, storage, processing and use.

7. Arable agricultural related innovations should be geared at improving simplifying those technologies and systems already in existence. This should be done with the view of increasing efficiency so as to cut on time spent on the different activities involved. There is a need to

consider developing and adapting technologies related to land development, tillage, cultural practices, harvesting, post-harvesting and grain storage and use. The most needy areas are harvesting, threshing and grain storage.

8. RIIC should consider the introduction of a hand pump programme for some select rural locations e.g. Matsheng villages in Kgalagadi district. This technology should be strongly considered for livestock watering use. Alternatively, work should be done on other shallow borehole and well technologies e.g. windlasses. This would include improved techniques of cleaning and linning hand-dug wells (shallow borehole development programme). Any such programme introduced in a particular area could be easily replicated elsewhere in the country.

9. Small scale technologies for purposes of filtering water for drinking should be developed and disseminated. Application of such technologies should be the remote rural locations with no access to clean drinking water.

10. Fuel saving technologies for cooking have a potential role to play in some of the rural areas provided these are given a wider socio-economic base. Goodhope and Hukuntsi are some of the villages where these could be promoted.

11. It's necessary to promote and support rural housing. The support called for here is related to low-cost housing, insulation needs, use of traditional building materials etc. Any initiatives towards rural housing should not fail to take into consideration the regionalized nature of rural housing standards.

12. RIIC should contact those people/organizations who are already involved with pit latrine projects to see if any technical support can be extended to them. Attempts should be made at creating support services for maintenaning pit latrines and these services should be extended to the end - users of this technology.

13. The present RIIC information dissemination service to the public does not seem to be very successful. Thus, it is necessary for RIIC to derive a mechanism in which its technologies and services offered at RIIC could be affected in one package form with the ultimate objective of promoting grass-root awareness of the organization among rural communities in Botswana.

COTTAGE INDUSTRIES AND PRODUCER'S SURVEYS

1. Data gathered during this particular survey on rural producers and rural small scale industries was found to be inade-

quate to draw any concrete conclusions from. Thus, RIIC should make further attempts to gather enough information which could be representative of rural situations hence a call for a more comprehensive and detailed survey.

2. If time saving small scale farming systems could be successfully promoted, farmers could utlimately have more disposable time to spend on other income generating activities resulting in a substantial increase in people's participation in small scale industries.

3. RIIC should try to create links with other international development organizations which are actively involved in rural cooperative production since it is possible to incorporate some aspects of this nature of production into the village Artisan Training Programme.

4. There is a need to create and/or promote centralized village markets which could be part of the socio-economic structure of any particular village. This could possibly facilitate commodity exchange and in so doing have a positive effect on rural small scale industries. The creation of this Market Structure could make possible year round use of agricultural Show grounds.

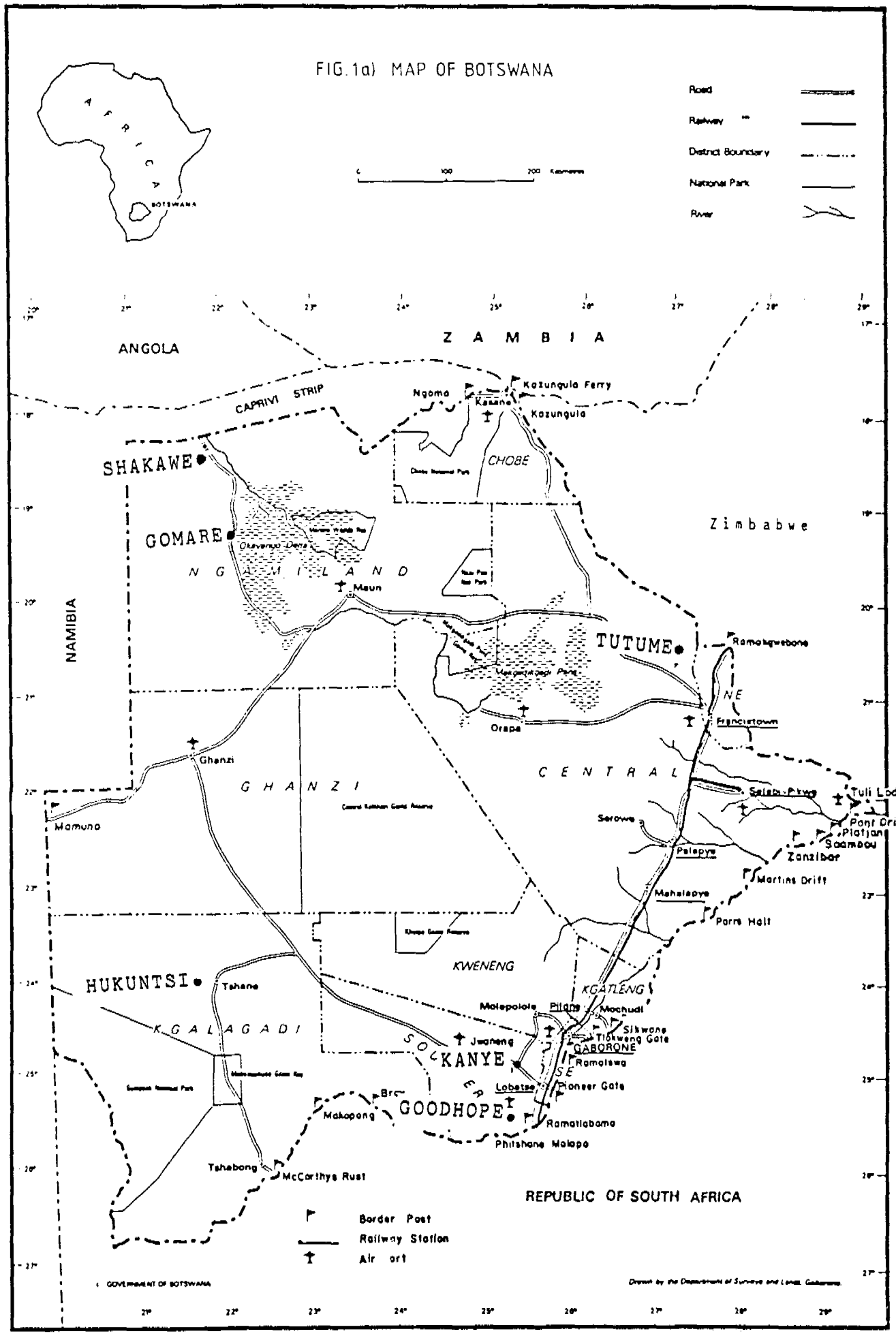
FIG.1a) MAP OF BOTSWANA
Road
Railway
District Boundary
National Park
River
BOTSWANA
ANGOLA
ZAMBIA
CAPRIVI STRIP
Ngoma
Kazungula Ferry
Kasane
Kazungula
CHOBE
SHAKAWE
GOMARE
Okavango Delta
NGAMILAND
Maun
Zimbabwe
NAMIBIA
TUTUME
Ramokgwebana
NE
Orapa
Francistown
Ghanzi
GHANZI
CENTRAL
Tuli Lodge
Pont Drift
Platjan
Zanzibar
Mamuno
Serowe
Palapye
Martins Drift
Mahalapye
Parrs Halt
KWENENG
KGATLENG
HUKUNTSI
Tshane
Molepolole
Pilane
Mochudi
KGALAGADI
Jwaneng
Sikwane
Tlokweng Gate
SOUTH EAST
KANYE
GABORONE
Ramotswa
Lobatse
Pioneer Gate
GOODHOPE
Makopong
Ramatlabama
Philshane Malope
Tshabong
McCarthys Rust
REPUBLIC OF SOUTH AFRICA
Border Post
Railway Station
Air ort
© GOVERNMENT OF BOTSWANA

CHAPTER 1

THE BACKGROUND OF THE STUDY

1.1 Commissioning and Control

This study was commissioned by the Rural Industries Innovation Centre (RIIC) Management in consultation with the Research and Development (R & D) Committee in January 1986. The work on the survey took place between March 1986 and March 1987 with intermittent breaks due to my involvement with other RIIC projects. The study was guided and closely monitored by a reference group chaired by the RIIC General Manager Mr K. V. Morei. I gratefully acknowledge the guidance and assistance offered by this group throughout the implementation of the Survey.

1.2 Terms of Reference and the Project Proposal

The terms of reference are reproduced at Appendix A. In brief, the main purpose of the study was to identify potential broad areas of work in which the RIIC R & D Committee/Sector can develop and disseminate technologies relevant to achieving the overall objectives of the Company. Examples of these broad areas of work were cited as low cost housing, soil preparation and conservation, rural water supplies etc. It was proposed that the survey should also cover the "poor urban centres and the specific needs in these areas" but this proposal was later dropped out by the reference group in view of the available resources for the implementation of the project.

Following the approval of the terms of reference by the reference group, a project proposal was prepared and presented by the Project Manager to the above group. The proposal spelled out the research objectives, proposed action plan and of more importance the budget requirements necessary to implement the Survey. The project proposal is reproduced at Appendix B.

1.3 Rationale and Underlying Assumptions

The rationale of the study was to carry out an exercise in five rural settings with the view of identifying the impeding needs of these rural communities which require technical solutions. Thus, this gave the study a technical orientation given the fact that RIIC is a Technology Centre. Hence any rural needs of interest to RIIC would be those which could be tackled by the R & D section comprised mainly of technical staff such as mechanical engineers.

It was also assumed that since these needs assessment surveys are supposed to be carried out regularly at 5 years intervals, it would be more meaningful to address the study to needy areas which could mould projects

(technical solutions if necessary) on short-term basis. That is to say, the needs identified and later responded to by way of seeking solutions should be such that the impact of such action can be assessible within a period of five (5) years from the starting period. It should not go without saying that the general expectations at RIIC were, and still are, that the study would provide indicators towards potential new projects. Since RIIC is already involved in artisan training (Blacksmith, Bakery, Tannery and Carpentry), it was thought that there are definitely other related home-based artisan technologies which could be adopted and possibly further developed with the view of promoting these into income generating activities. From our experience with the Village Artisan Training Programme (VAT), it was assumed that producers in rural areas experience a vast range of problems in which we as a training institution are not aware of. Thus, the survey team would possibly talk to producers and solicit these problems to RIIC through this report.

1.4 Methodology

SCOPE AND APPROACH OF VILLAGE STUDY:

It is not necessarily that the survey sample is representative of the overall rural situation in Botswana. Despite this, the five Survey villages (Goodhope, Kanye, Hukuntsi, Shakawe and Tutume) were chosen to present as much variety as possible within the overall rural population in Botswana. The strategy was to choose villages which would render a wide range of situations such as differences in land situations, predominant production systems, village population size and the present level of access to services. This is indicated by the following points:

- They ranged from north to south and from east to west covering as much of the country as possible;

- Village size ranged from Kanye (20, 215 population), to Tutume (3, 716 population), to Goodhope (841 population). Kanye had to be included among the study villages mainly because RIIC is based there;

- Kanye was known to be a relatively speaking big village with a large population. A good percentage of its inhabitants were worked out to be actively involved in agriculture while another whole sector was estimated to be actively involved in the formal sector. Goodhope was known as a rich village in a rich area(Barolong) Tutume emerged as an average agricultural area with the majority of inhabitants actively involved in agricultural but at a lower level than in Goodhope. Hukuntsi is a poorer-than-average village located in the Kgalagadi desert with agriculture and formal employment (especially migration to towns) more or less equally contributing to the village economy;

- Gomare was initially chosen as one of the study areas but was later dropped in favour of Shakwe upon advice from the Applied Research Unit - Ministry of Local Government and Lands, that the former village has of late been officially identified as one of those over-researched villages in the country. Thus, Shakawe was taken as an option because of its favourable location in the Okavango river delta. Shakawe stood out to be dependent on arable agriculture, formal employment and other activities such as fishing for a source of living;

- The level of involvement in different income related activities varies from one villages to the other.

SURVEY PROCEDURE:

The manpower and time resources made available were sufficient to survey 50 households in Goodhope, Hukuntsi, Shakawe and Tutume and another 80 households in Kanye (about 280 households in all). This gave a very poor sample percentage in some villages especially Kanye. But in view of the available resources this was about all that could be achieved within these limits. Such a sample gave each enumerator two interviews per day. The rest of the time in the field was spent on the "Rural Producer's Survey".

The drawing of the Sample varied slightly from one village to the other depending on village size, settlement pattern, availability of techincal maps etc. Maps were only used in Kanye and Goodhope since these were readily available. Attempts to use aerial photographs failed due to the fact that the photos acquired were too old hence did not comply with the present village settlement status. Also, we were dealing with large villages meaning that it was difficult to accurately locate compounds on the photos. All the same these photos were of great help to the enumerators in so far as giving them a rough layout of the villages.

The survey was designed based on "dwelling" as the Sampling Unit but household as the unit of analysis. This method was adopted because it has been used in a number of surveys throughout Botswana and has been highly accepted among official circles as reasonable. Also, it is a very easy method to adopt and implement. Household was defined in line with Central Statistics Office who see it as follows:

> "In Botswana as elsewhere, the household is a 'Social Unit', whose members live together and share common social values and goals, an 'economic unit' whose members produce for the common good of the household and also pool their income for a variety of purposes, a 'consumption unit' whose members contribute towards the expenditure requirements of the household and also often eat from the same pot

and also a 'reproduction unit' which often consists of a man with his wife (wives) and their unmarried sons, daughters and possibly brothers with their respective families."[1)]

The rural producer's survey involved anyone who could be identified as a producer in all the villages which were surveyed. Thus, there was no reason to work out a sample since the whole population of producers identified was interviewed. A producer was defined as anyone who is self-employed and is combining resources to produce something new, repairing old products or gathering material resources for a market. The producer's survey met different success rates in different areas.

ACCOMPLISHMENT OF THE SURVEY:

In view of the concentrated period over which the survey was undertaken, it proceeded with relatively few major problems. Enumerators were mostly consistent and performed well. The survey instrument had been pre-tested in one of the localities of Goodhope as part of the enumerator's training. This pretesting was followed with some refinements hence none of the enumertors had problems with its implementation. Kanye was covered most of the time with two enumerators and these people experienced a persistent problem of walking long distances in the village to cover certain wards.

Villages were on the whole extremely co-operative with no cases of outright refusals to be interviewed. This very much facilitated our work in the field. All our enumerators had been introduced in Kgotla meetings hence were openly accepted in their respective villages.

CHAPTER 2

GENERAL VILLAGE REVIEW

2.1 Kanye

Kanye is relatively speaking a big village consisting approximately of about 20 215 people (figure taken from the 1981 population census). This population was further broken down to 5 410 households. The village is the traditional/historical headquarters of the Bangwaketse hence is presently the district council headquarters. As the district headquarters, Kanye has so far been able to attract a lot of developments and services. The village is connected to Lobatse and Jwaneng by way of a tarred road and to the surrouding villages such as Moshupa and Mmathethe by good dirt roads.

The village is serviced by a big hospital (Seventh Adventist Hospital), three secondary schools, and about ten primary schools. There is also a typing school in operation. The village is well serviced by five financial institutions. These are Barclays, Standard and Bank of Credit and Commerce, National Development Bank, and the Post Office Savings Bank. Other existing business services include Botswana Enterprise Development Unit (BEDU), Botswana Agricultural Marketing Board (BAMB), a brigades Trust with a number of units and Rural Industries Innovation Centre (RIIC). These services are further cherished with a big business community ranging from two Market places to accommodate the small man through retail traders to wholesalers.

The 1981 population and housing census reveal that of the 20 215 people enumerated, 5 953 people above the age of twelve were identified as economically active and of these, 3 136 were identified as male while 2 817 as females. These figures, do include people who are actively involved in subsistence production, a sector which highly contributes to the rural economy. According to the above statistics, one person earning an income has to support himself plus three other dependants who are not economically active. Kanye definitely compares quite well with other big villages in Botswana.

2.2 Goodhope

Goodhope is an average village of about 841 residents (1981 population and housing census). It is generally seen as a nucleated village and is located in Barolong Farms. The Barolong Farms lie in the South Eastern part of the Southern District sharing boundaries with South Africa. The Barolong area is the chief arable agricultural resources area for the district as a whole with a big BAMB depot at Pitsane. Goodhope serves as

the tribal and sub-district headquarters. This village is by far a small community when compared to Kanye in terms of population size, services etc. Despite this, Goodhope stands out to be a rich village whose economy is highly dominated by agricultural related activities. The village is connected to Pitsane (which is located along the railway and tarred road from Lobatse to Mafikeng) by way of a dirt road which runs through it to Metlojane in the west and utlimately to Pitsane Molopo and other villages in that direction.

Goodhope is serviced by a clinic with a maternity ward and one primary school The nearest secondary school is a Community Junior Secondary school in Pitsane. There is one financial agency in the village and this is a small National Development Bank Agency and a business Management Advisory body that is Partnership for Productivity (PFP). In addition to the above, there is a small business community operating in the village. The extent to which the financial institutions are linked to the business community is not known. There are no evident smallscale enterpreneural activities in Goodhope. This is thought to be due to the predominance of the Agricultural Sector. It appears that people are making enough income from agriculture and as a result are taking a minimal interest in other income generating activities.

Figures obtained from the 1981 population and housing census reveal that of the 841 people enumerated, 346 people above the age of twelve were identified as economically active (149 males and 197 females respectively). These figures can easily be interpreted to mean that every economically active person has to support two or more dependants. Such a situation stands out to be better than Kanye where the figures show a higher ratio. Apart from Agriculture, economic activities identified are:

1. Regular work for others
2. Cash work for self
3. Seeking work
4. Piece jobs (casual employment)
5. Traditional Agriculture
6. Others.

2.3 Hukuntsi

Hukuntsi is located in the centre of Kgalagadi district and is the traditional headquarters of Bakgalagadi. It is presently the Sub-district headquarters. Compared to desert villages, Hukuntsi stands out to be one of the big villages in the desert despite its small population of about 2009 people (figure obtained from the 1981 population and housing census). This village is located in the Matsha rectangle - the other villages being Lehututu, Tshane and Lokgwabe. Thus it stands out to be a centre of attraction among these other villages.

Hukuntsi is serviced by one primary school (which at present has the highest enrolment in the district) and one Community Junior Secondary School. The other nearest secondary school is in Kang - about 120 km North East of Hukuntsi. The only financial service available is the post office savings bank. Despite the existence of a small business community, people involved in business do not seem to be utilizing the services of this financial institution. They rather seem to be relying on services in Lobatse. Figures obtained from the 1981 census report reveal that of the 2009 people enumerated, 593 people were identified as economically active. This being the case, it implies that each one of these people has to support two other persons who do not fall within the economically active group. Given the location of Hukuntsi in the Kgalagadi desert, it is evident that arable agriculture plays a minimal role in the lives of this community. Thus a lot of the economically active people are involved with income employment and livestock production. In fact formal employment and sale of livestock seem to be the most obvious income sources in the Matsheng Villages.

2.4 Shakawe

Shakawe is the second largest village in the Okavango delta, with the Administrative Centre (Sub-District headquarters) at Gomare. The village is located in the extreme North-West part of the country along the Okavango. The residents of Shakawe and the surrounding smaller villages and localities are Mambukushu and Baherero ethnic groups. Shakawe is characterised by a high rate of illiteracy with very few jobs in and around the village. Migrant labour to the South African Mines plays a significant role in the village economy.

Arable Agriculture plays a very important role in the lives of the Shakawe residents with millet as the staple food. Sorghum is also grown to a large extent. While Arable Agriculture is predominant, a large proportion of the village population is also engaged in livestock production. Unlike Goodhope where agriculture is highly mechanized, traditional methods are much more prevalent in Shakawe. Engagement in economic activities by the overall village population is much more suitable than in the other villages described above. Of the 1 755 people enumerated in the 1981 census, 66 males and females were identified as economically active and all above the age of 12 years. The majority of these people were regular workers for others and people involved in traditional agriculture. Shakawe is serviced by one primary school, a health clinic, a post office and a Barclays Bank Ageny which flies in from Maun once every month end. There exists a Central Village Market (Skitikiti) and a fairly big business community as indicated by two big stores in the middle of the village. The village is connected to Maun via Gomare and Sehitwa through a track road and a 50 km stretch of tarred road between Tsao and Sehitwa. Shakawe is a fairly remote village considering its location.

2.5 Tutume

Tutume is located in Central District and is the Sub-District headquarters. The village is about 100 km north-west of Francistown and is located in the Mophane belt. It is comprised of a population of about 3 736 people (1981 population and housing census). This village is the second biggest in the sub district following Tonota. It is connected to the Francistown - Maun road by a 50 km tarred road joining the main road at the Sebina junction. Tutume is strictly a Kalanga Speaking Village. It is an above average Agricultural Village with almost all the households actively involved in arable agriculture. Livestock production is also a major component of the village economy. while agriculture can be said to be much more mechanized than is the case with Shakawe there is definitely less use of machinery than is the case in Goodhope. Agricultural involvement by the community is much more at a subsistence level with most households producing just about enough to sustain themselves until the next season. Tractors are a common site in the area but there is no evidence of use of other modern agricultural machinery except basic machinery. This village is serviced by five primary schools, a form five secondary school and a multi unit Brigades Centre. Existing financial services include a Barclays Bank Agency and the Post Office Savings Bank. These services, coupled with an average prospering business community, can be said to be adequate for such a village. In addition to the above services, there is a Central Village Market and a Botswana Agricultural Marketing Board Depot. A telecommunications link with the rest of the country and a good road link all make life much easier than in case with Hukuntsi and Shakawe.

From the 1981 population and housing Census, it is indicated that of the 3736 people enumerated 1 043 were identified as economically active. These figures do include people involved in traditional agriculture and the formal sector. Thus, it can be deduced from the above figures that every economically active community member has to support two other people from his or her income. With such a good proportion of the village community being economically active, a good village economic base is basically assured or rather guaranteed.

2.6 General Observations

It is obvious from the above information that the survey villages had more variations than similarities. All the villages varied in terms of population size and this has been reiterated enough. Also, the vast distances between the five villages means that they are located in different areas of the country each with its own socio-economic, cultural and ecological characteristics. In addition to the above is the amount and nature of services available in each one of these villages. This is greatly influenced by the distance of each village from major national administrative centres.

Language (or possibly cultural) variations are seen as major influencial factors - Kanye: Setswana, Goodhope: Setswana, Hukuntsi: Sekgalagadi, Shakawe: Sembukushu and Seherero and Tutume: Kalanga. The question of language can possibly have a major bearing on the extension aspects of RIIC. A good or sound knowledge of any one of the indigenous languages in respective areas of work by any extension worker would be an added advantage where possible.

Of most importance is the variety of economic activities found in the different villages and the extent to which the local populations are actively involved in these activities. Agriculture and livestock productions feature as major in all the villages but there are other activities which are of relative importance to the different village economies.

SEX	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Male	3 136 (53%)	144 (57%)	320 (54%)	292 (44%)	378 (45%)
Female	2 817 (47%)	110 (43%)	273 (46%)	373 (56%)	465 (55%)
TOTAL	5 953 (100%)	254 (100%)	593 (100%)	665 (100%)	843 (100%)

Table 1: Economically active people according to Sex. (Source: 1981 Pop. and Housing Census Report).

As already indicated, the economically active group is categorized as comprised of people aged twelve years and above. The table above shows a percentage distribution of this group in the five study villages according to sex. Since the source of this figures does not offer any explanation in relation to area variation, it is not within the scope of this report to do so. Figures such as these are now six years old and as such are bound to be not as accurate as they were in 1981. Despite this, they do give a good picture of the situation country wide.

CHAPTER 3

HOUSEHOLD NEEDS ASSESSMENT SURVEY

3.1 Demographic Data

Data collected during this survey has explicitely shown that each of the five study villages is characterized by some of its own unique characteristics. Of primary importance among these are the basic demographic and socio-economic aspects of each one of these areas and some of these are shown in the table below:

VARIABLE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Male headed HHs	73.8% (59)	66 % (33)	74% (37)	38% (19)	76 % (38)
Female headed HHs	26.2% (21)	34 % (17)	26% (13)	62% (31)	24 % (12)
HHs with family members employed	62 % (49)	82 % (41)	80% (40)	40% (20)	84 % (42)
No of HH Producing Crops	57.5% (46)	87.8% (43)	60% (30)	60% (30)	98 % (48)
HHs owning L/stock	74 % (57)	99 % (47)	81% (41)	76% (38)	93.9% (46)
HHs owning Draft-Power	63.8% (30)	39.5% (17)	60% (27)	75% (21)	70.8% (34)

Table 2: Summary of Demographic and Socio-Economic Data

It is apparently clear from the above table that there is consistency in the nature of household headship with the exception of Shakawe which stands out to be unique with more female headed households. Usually, the question of household headship seems to be confusing among Botswana communities, hence, responses got depend on how the question is put across to the respondents and how they ultimately interpret its meaning. Basically there is the question of household control and that of household/compound ownership. While in certain instances household headship is tied to who controls the household, in other cases it is readily tied to compound ownership (who actually owns the compound despite his or her not being there most of the time).

In most instances in rural Botswana, women have historically come to assume an active role in the daily management of the household due to the migratory nature of employment patterns found in the country and elsewhere in the region. But because they are not involved in making major family decisions, they are not recognized as household heads despite their demanding household daily management role throughout the year.

It is also quite evident from the above table, that household involvement in crop production was found to be high in all the five surveyed villages. As earlier pointed out, Goodhope works out to be a rich and mechanized farming village. At the same time, Tutume has more household involvement and participation in this sector. It's of importance to note that while responses might have been prompted by a general interest in crop production, the actual extent of involvement in this activity greatly varies from one village to the other. That is to say, what is seen as a field in Hukuntsi would not necessarily be regarded as such in other villages but would rather be seen in some cases as a garden. But all the same, residents from the different villages would see themselves as being involved in arable agriculture despite variations in the scales of production.

With the exception of Shakawe, participation in the formal employment sector was found to be high in Kanye, Goodhope, Hukuntsi and Tutume. percentages of households with at least one member holding a formal job were 62% for Kanye, Goodhope 82%, Hukuntsi 80%, Tutume 84% and Shakawe with the least percentage of 40%. This, indeed, is a remarkable interesting finding.

Figures from the very table indicate that in all the five study villages, over two thirds of the population did indicate livestock ownership of some sort. This did not breakdown ownership in terms of cattle, smallstock etc. but generally speaking does foster a convincing arguement that most rural families are involved in pastoral farming of some sort. Animals usually reared in rural Botswana include among others cattle, goats, sheep, donkeys and in a few instances mules. According to the "Rural Income Distribution Survey - 1974/75" "..... five percent of households in Botswana own(ed) 50% of the cattle, while 45% of rural households owned no cattle at all".[2] While these figures might be true in so far as national assumptions are concerned, figures from this particular survey have to be understood within the content of a household being involved in livestock farming and not necessarily cattle in exclusive. There was no further probe as to whether the livestock was genuinely owned or were of Mafisa System.

On the question of formal employment, a further breakdown was made as to whether household members are under government employment, in the police force or army, South African mines or other unspecified sectors and this is presented in the table below:

NATURE OF EMPLOYMENT	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Formal Government Employment	16.3% (8)	30 % (12)	48.7% (19)	42.1% (8)	31.7% (13)
Army/Police	-	2.5% (1)	7.7% (3)	10.5% (2)	-
S.A. Mines	36.7% (18)	17.5% (7)	17.9% (7)	10.5% (2)	-
Two or More	18.4% (9)	25 % (10)	10.3% (4)	21.1% (4)	26.8% (11)
Other	28.6% (14)	25 % (10)	15.4% (6)	15.8% (6)	41.5% (17)
TOTAL	100 % (49)	100 % (19)	100 % (39)	100 % (40)	100 % (41)

Table 3: Formal Employment Distribution

A good percentage of the households interviewed did indicate that formal employment plays a prominent role in their economic lives. A further breakdown of this situation as indicated in the table above, shows that engagement in different employment activities varies from one village to the other. This is mainly due to access to different employment opportunities existing in different parts of the country and also the varying literacy rates in these different regions. Kanye and Shakawe were the only two villages with a South African Mines recruiting agency (TEBA). But all the same there is a good indication that a substantial proportion of the different communities was migrating to South Africa for employment with the exception of Tutume. This does not necessarily mean that Tutume does not have migrant labourers to South Africa. They are in fact there and are covered under the category 'other' since none were openly identified as working in the mines.

3.2 Arable Farming and Food Production

Agriculture to date remains the core of the rural economy affecting four fifths of the total population who still live in the rural areas. Due to Botswana's arid climate, livestock production has an advantage over crop farming. As clearly indicated in NDP VI 1985-91, "high temperatures and low, erratic rainfall result in low average yields in arable production, which has stagnated in the last ten years".[3]) Despite this stagnation, the urge to produce food still exists and infact people in the rural areas continue to plough, despite the adverse effects of drought over the past four to five years. Amidst all this, it is of vital importance to note that women play an important role in a wide range of Agricultural activities. They are responsible for and carry out many of the crop operations, especially weeding, bird scaring, harvesting, threshing and storage. Involvement in agriculture was found to be high in all the five villages surveyed.

AGRICULTURE INVOLVEMENT	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	46 (57.5%)	43 (88 %)	30 (60 %)	30 (60 %)	48 (98 %)
No	34 (42.5%)	6 (12 %)	20 (40 %)	20 (40 %)	1 (2 %)
TOTAL	80 (100 %)	49 (100%)	50 (100%)	50 (100%)	49 (100%)

Table 4: Household Involvement in Crop Production

Presently there is a whole range of government financial packages aimed mainly at subsidising and motivating the rural population to actively involve itself in arable farming - food production. On the contrary to this financial support, there seems to be very little in terms of actively introducing new technologies or at least improving the already existing ones. If there are any such efforts, they are accompanied by very little awareness among the farmers of such research programmes. There is at present marked government support towards land preparation, tilling and planting, and the setting up of a readily available market through Botswana Agricultural Marketing Board (BAMB). These subsidy schemes are in a number of forms, e.g.:

1. Arable Land Development Project - ALDEP
2. Accelerated Rainfed Arable Programme - ARAP.

All these schemes address themselves to basic arable programmes ranging from field clearing and fencing through ploughing and planting to draft power. The main issue then is whether there is any support to farmers in terms of promoting farm related systems and technologies.

It was not until NDP 5 that Ministry of Agriculture adopted a farming systems approach to arable research with particular reference to the small resource poor farmer. Two projects were introduced: the Evaluation of Farming Systems and Implements Project (EFSAIP) and the Intergrated Farming Pilot Project (IFPP) - with the aim of testing farmer's reactions to the technical packages recommended by the Agricultural research stations. From these projects it was noted that "attempts to transfer technology to the field highlighted the problem of ensuring the economic as well as the technical viability of new technology in relation to the needs of resource-poor farmers".[4] The success mainly of EFSAIP was in the development of Agricultural implements such as the Sebele Plough Planter and the Single Row Planter. These improved implements were supposed to allow optimum plant population achievement and facilitate weeding by oxen-drawn equipment. Despite these developments, farmers' awareness of such attempts is minimal.

Of those people who indicated involvement in Agriculture, a number of problems related to draft-power surfaced. Attention on this particular issue was drawn mainly to animal draft-power. The table below shows the nature of draft-power used while the next table will show problems related to animal draft-power.

DRAFT POWER USED	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Cattle	17 (36%)	3 (7%)	18 (60%)	27 (93%)	38 (79%)
Donkeys	5 (11%)	2 (5%)	--	--	--
Tractor	17 (36%)	35 (80%)	--	--	--
Two or More	8 (17%)	4 (9%)	2 (7%)	--	10 (21%)
Other	--	--	10 (33%)	2 (7%)	--

Table 5: Draft-Power Used by Farmers

The above table clearly shows that there is more use of animals than machinery e.g. tractor, save in Goodhope where 80% of the people use tractors for ploughing.

From the study it became apparent that the use of draft-power has some ownership implications. While there are channels of getting free funds to pay for hired draft-power, it would be misleading to think that farmers without any reliably owned source of draft-power are able to plough their fields at their own convenient time. The table below shows ownership of draft-power sources in the five study areas respectively:

DRAFT-POWER OWNERSHIP	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Owning	63.8% (30)	39.5% (17)	60 % (27)	75 % (21)	70.8% (34)
Not Owning	56.2% (17)	60.5% (26)	40 % (18)	25 % (7)	29.2% (14)
TOTAL	100 % (47)	100 % (45)	100% (45)	100% (28)	100 % (48)

Table 6: HH Ownership of Draft Power

Attempts were made to try and find out whether ownership or non-ownership of draft-power affects the extent to which a household does or doesn't commit itself in arable farming. Findings as indicated in the above table were that the majority of households engaged in arable farming in fact own draft-power. Goodhope was an exception with only 39.5% of the households involved in crop production owning draft-power despite an overall 88% of the total populations involvement in agriculture. Further probing indicated that because of the mechanized nature of arable farming in the

area. most farmers have easy access to hired draft-power i.e. tractors. In fact farmers go to extent of hiring draft-power from South Africa. The South African farmers readily respond to this call with the hope of making as much money from this government supported activity as possible.

In other areas such as Tutume and Shakawe the response to draft--power need is not as good due to shortage of readily available hire sources. This absence is mainly due to the fact that farmers till smaller plots of land as opposed to Goodhope where farming is commercially oriented. Because of this, the call for tractor draft-power is small since it's not an economically lucrative practice to any prospective owner. Thus the need is that of an efficient small scale mechanized draft-power which is not as expensive to run as a tractor but at the same time is faster and much more efficient than animal draft-power. Technological devices are available on the commercial market which could be looked into and tried.

Despite the availability of government funds to subsidise draft-power expenses, farmers still experience a lot of problems related to draft-power.

PROBLEMS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Adequate Animals	15.8% (3)	13 % (3)	4.3 % (1)	12.5% (1)	18.2% (4)
Weak Animals during ploughing	52.6% (10)	34.8% (8)	56.5 % (13)	12.5% (1)	77.3% (17)
Not enough Animals	10.5% (2)	--	4.3 % (1)	12.5% (1)	--
Two or More	10.5% (2)	47.8% (11)	--	25 % (2)	--
Other	10.5% (2)	4.3% (1)	34.8 % (8)	37.5% (3)	45 % (1)
TOTAL	100 % (19)	100 % (23)	100 % (23)	100 % (8)	100 % (22)

Table 7: Problems encountered with Animal Draft-Power

While those farmers experiencing the problems of shortage or inadequate animal draft-power during the ploughing season can easily purchase more draft animals through ALDEP or hire draft-power through ARAP, there is need to improve the quality of draft-power. Such improvements should be geared at preparing animals in order to be fit for the ploughing season. Despite the fact that government presently sells supplementary feed through Livestock Advisory Centres (LACs) at subsidized prices, farmers still require cheaper ways of maintaining their draft-animals in good health. This might then mean an easily available market for chaff cutters. Since the nature of livestock feeding under discussion here is closely related to arable farming, the use of chaff cutters would as such have an indegenous justification since the chuff used is after harvest crop residue.

Usually there is a lot of stalk waste in the fields after harvesting and because this waste is not cut and properly stored, it only lasts for a few weeks. It then takes only a month for the farmers to realize that there is not enough grazing to maintain the cattle healthy enough to start ploughing with the first rains. Consequently, farmers start ploughing later than they ought to have. The introduction of chuff cutters for the above purpose should go hand in hand with making the farmers aware of the need to keep a stock of supplementary feed and also proper methods of storing this feed. Apart from helping the resource-poor farmer, such a programme could help the government save on imported annual feed which at present is bought at exhorbitant prices from South Africa and sold to local farmers at subsidised prices.

It is difficult to specify the exact period of time spent by farming communities in crop production and infact such involvement varies from one region to the other. From this study, it was found that an average farming community spend 7 - 9 months of their time fully or partly engaged in agricultural related activities (Kanye 66%; Goodhope 97.7%; Hukuntsi 53.3%; Shakawe 36.7%; Tutume 97.9%).

Also of interest is to note the number of fields owned by individual households:

HH FIELD OWNERSHIP	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
None	42.1% (34)	20% (10)	40% (20)	40% (20)	4% (2)
1 Field	28.8% (23)	24% (12)	54% (27)	52% (26)	78% (39)
2 Fields	7.5% (6)	28% (14)	6% (3)	6% (3)	10% (5)
More than 2 Fields	21.2% (17)	28% (14)	---	2% (1)	8% (4)
TOTAL	100% (80)	100% (50)	100% (50)	100% (50)	100% (50)

Table 8: Field Ownership by Households

Field ownership by individual households in Kanye, Goodhope, Shakawe and Tutume range from one field per household to more than two fields per household. This definitely shows the extent to which these different communities are involved in the activity with the exception of Hukuntsi where none of the households interviewed had more than two fields. This, as already mentioned, is a clear indication of the fact that there is less of agricultural activities in this village than is the case in the other four villages since Hukuntsi is classified as one of the desert villages. It is obvious that despite the numerous number of fields owned by invididual households in each of the five villages, the total amount of land ploughed over the past few years has been adversely affected by the present impeding drought. This has been worse in Kgalagadi district where Ministry of

Agriculture estimates (1985/86) put total cereal production at 240 kg for the whole district (NOTE: as reported at the Inter-Ministerial Drought Relief Committee Meeting - 2nd February, 1987: Tsabong). Other pre-harvesting agricultural methods are prevalent and open to inquiry. Observations of this field study show that different communities in different areas use different methods in seed sowing. The most commonly used method is broadcasting which according to experts is the most uneconomic of all the other methods. The table below shows different methods used by farmers in the five different research areas:

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Broadcasting	58.3% (18)	9.1% (4)	93.3% (28)	55.2% (16)	100% (48)
Row-Planting	48.9% (23)	86.4% (38)	--	31 % (9)	--
Both	10.6% (5)	4.5% (2)	--	13.8% (4)	--
Other	2.1% (1)	--	6.7% (2)	--	--
TOTAL	100 % (47)	100 % (44)	100 % (30)	100 % (29)	100% (48)

Table 9: Sowing Methods Used

With the exception of Goodhope and Kanye, broadcasting is the predominant sowing method in Tutume (100%), Shakawe (55%) and Hukuntsi (95%). This is quite a disappointment especially in the case of Tutume and Shakawe where there is a reasonably good involvement in agriculture. This means that despite this involvement, production remains relatively poor due to the traditional farming methods which are still being adhered to. As such there is a definite need to improve small scale farming systems through technological innovations and a good extension network with the view of optimizing production.

3.3 Harvesting and Post Harvesting Technologies

Research activities in the field of Agriculture in Botswana are at the present moment incomplete. This is so because all the research packages available in the country are geared at crop production methods but there is no serious consideration as to what happens to the produce when its ready for harvesting and thereafter. Thus, one would not be wrong to say that while benefits are being gained through research and development of new plant materials and new farming systems, others are being lost through poor harvesting, threshing methods, poor crop storage, inadequate distribution and utilization practices. The problem does not only lie with grain or rather from produce loss but also mainly with the time demanding, labour intensive and streneous activities which at the present moment are female oriented and dominated.

Female oriented activities in agriculture emerge shortly after ploughing with weeding/hoeing to include any other cultural practices which are practised until the crop is harvested, threshed and safely stored away. There were no good indicators from this survey as to the nature of cultural practices which exist in the different villages in the exception of Tutume where the farming community indicated scaring away birds and protecting the crop against livestock damage as the major activities between the time of hoeing and harvesting.

3.3.1 HARVESTING:

Depending on weather, location, and scale of production, harvesting in most parts of Botswana usually commences in mid-May and continues through to July when all the produce has been brought to a central collection point and is ready for threshing. Methods of harvesting are fairly uniform throughout the whole country. In fact, other than the use of machinery in some of the more select areas like Barolong farms, Pandamatenga, and among the European farming communities, crops are handpicked. This process of going from one plant stack to the next cutting the crop head and similarly from one bean plant to the next collecting beans is like counting the number of plants which managed to mature in your field. Closely tied to this counting game is the fact that the harvesters - mainly women, have to carry a huge basket balanced on their heads or a 70 kg bag slung over their backs as a collecting container. In this respect harvesting becomes a long and streneous process especially on women.

Andrew Hamilton* in his report on post-harvesting technologies in Botswana gave a very good description of the hand-picking harvesting process. According to him, "the heads of the sorghum plant are cut from the stalks with small curved knives, placed into sacks and then taken to the threshing platform where they are placed on racks or in conical shaped wooden cribs for drying; similar procedures are followed in the harvesting of maize, cowpeas and millet".5 Although Hamilton does not comprehensively describes the process for each crop, his definition I hope, does surfice for the purposes of this report. Survey results on harvesting methods are presented in the table below:

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Hand pick	100% (46)	100% (29)	100% (30)	100% (43)	100% (48)
TOTAL	100% (46)	100% (29)	100% (30)	100% (43)	100% (48)

Table 10: Harvesting Methods Used

From the above table, it is clear that all the respondents who responded to the question on harvesting methods identified hand-picking as the only method used. This was so despite the fact that this question was open-ended and required a further probe into different methods used. While in the case of sorghum and millet farmers use a knife and basket or sack, a hoe and basket is used for beans and cow-peas. Asked whether the farmers had any suggestions as to how harvesting methods could be improved, there were only 30 responses from all the five villages either pointing at promotion and revitalization of traditional labour intensive and self help methods as an option or machinization as another alternative. Of the ten responses from Kanye alone, 90% (9) called for machinization, Hukuntsi one response on the same line, Goodhope seven responses 100% (7) while tutume was 50% (6) for promotion of traditional systems and the other 50% (6) called for machinization. No concrete suggestions were forthcoming from Shakawe and the reason given here being that the farmers wouldn't have any suggestions since they have never been exposed to any other technology options. This reason was also given by many other farmers in the other four villages.

In view of what has so far been said, one would surely agree with the view that there is a definite need for technological innovations related to harvesting. Commercial harvesters are readily available on the South African market but these are expensive and require related skills to operate and maintain. These machines might also prove to be unsuitable for use on the small field plots cultivated by the average farmer found in rural Botswana. This is not to say that they are completely unsuited for local use since the authors knowledge of this technology is not complete and hence not authoritative. But definitely there is a need to ease the burden of harvesting from the women folk as a way of improving rural life standards. An answer to such a need lies in further socio-economic and technical research.

3.3.2 THRESHING:

Having harvested the crop, the farmers are faced with the strenuous process of threshing. This process is far from easy such that the mention of it brings ill-feelings and again mainly among the women folk. Different methods were identified as being used in different villages and these are presented in the table below:

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Traditional Methods	93.6% (44)	25% (1)	100% (30)	100% (29)	97.9% (47)
Tractor	4.1% (2)	---	---	---	2.1% (1)
Threshing Machine	2.1% (1)	75% (33)	---	---	---
TOTAL	100 % (47)	100% (44)	100% (30)	100% (29)	100% (48)

Table 11: Threshing Methods Used

As indicated in the above table, traditional threshing methods are in use throughout with the exception of Goodhope where only 25% of the farming community did acknowledge the use of such methods. Most people in Goodhope use hired threshing machines for sorghum (which usually comprise a bulk of their agricultural produce) while sticking to traditional methods for beans, sunflower, cow-peas etc., which are produced in much smaller quantities.

Hand or rather traditional threshing varies slightly from one crop to another. The threshing platform, normally located on the farm compound or immediately adjacent to it, is a semi-permanent raised mud floor measuring about 10 - 12 square metres semi-surrounded by storage racks and cribs. Each year prior to the start of harvesting the floor receives a fresh coating of carefully applied mud and cowdung plaster. After drying, this area becomes a remarkably effective working surface. Depending on amount of produce, the floor will require another coating half-way through the threshing process. Thus, this process is quite labourous amidst other threshing activities. As such the response among some farmers has been a resort to construct concrete slabs which require less maintenance.

Variations of different traditional threshing methods for the different crops are minimal. A good description of these methods is given by Hamilton who maintains that:

> "In the case of sorghum (and millet), the plant heads are either placed into bags or left on the threshing platform and then beaten streneously with long sticks until the grain is separated. The grain and chuff are then gathered together and hand winnowed using a small shallow basket ..... Cowpeas are handled in very much the same way, although with less force. Maize is generally left a little longer in the crib after which it is shelled and either bagged or placed in bulk storage".[7)]

The whole process described above takes about 6 weeks and up to as much as three months to accomplish. In Tutume, a couple of farmers indicated the use of tractors for threshing purposes. This method involves the pilling

of crop heads on the threshing floor in a circular form. A conventional farm tractor is then run on reverse in a circular manner with the outside rear wheel spinning and in so doing threshing the crop. Winnowing is then done manually. Most farmers in Tutume indicated their awareness of this method but most of them are not using it mainly because it requires bulk produce.

Attempts were made to find out whether the use of tractor for sorghum and millet threshing is an accepted and standard agricultural practice but all in vain. Thus, it is necessary to assess whether its mechanically accepted to use a tractor in the above manner. If so, it would be reasonable to promote this method since farmers prefered it even through not using it.

The main prohibiting factors for it not being used are:

1. It is costly to hire a tractor for threshing.
2. A farmer has to have a relatively high produce (good harvest).
3. There is need for a concrete threshing platform in order to minimise wastage.

Different threshing methods are preferred. Thus choice of technology should always be divorced from preference since the farmer's choice is determined by availability of resources and the later by a farmer's exposure to different technology choices. The table below shows frequencies of the different threshing methods preferred.

METHOD USED	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Traditional Methods	85.5% (29)	2.3% (1)	100% (30)	100% (29)	41.7% (20)
Tractor Machine	14.7% (5)	97.7% (43)	--	--	58.3% (28)
TOTAL	100 % (34)	100 % (44)	100% (30)	100% (29)	100 % (48)

Table 12: Threshing Methods preferred

As indicated in the above table, traditional methods feature as most preferred in Kanye (85%), Hukuntsi (100%) and Shakawe (100%) as oppose to Goodhope and Tutume where mechanized methods are much more preferred. Different reasons were put forward as determining factors for technology preferences. And as already mentioned before these are based on individual experience with other differeht other methods. Hence farmers in places such as Goodhope, Kanye and Tutume had numerous options to choose from while farmers in Hukuntsi and Shakawe barely had any options at all as reflected in table 12.

REASON FOR PREFERENCE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Quicker	9.1% (3)	95.5% (42)	10% (3)	3.4% (1)	52.1% (21)
Only Known Method	67.7% (23)	--	33.3% (10)	55.2% (16)	10.4% (5)
Appropriate	18.2% (6)	--	53.3% (16)	37.9% (11)	--
Other	3 % (1)	4.5% (2)	22 % (1)	34 % (1)	37.5% (18)
TOTAL	100% (29)	100% (44)	100% (30)	100% (29)	100% (48)

Table 13: Reasons for Threshing Methods Preferred

In many instances, mechanized threshing was given preference mainly because its quicker than traditional methods. This was the case mainly in Kanye, Goodhope and Tutume. This preference was cited even by those farmers who do not use or have access to it mainly because they can't afford to pay for it. It is quite clear that some farmers in the above villages especially the Goodhope farming community, are aware of the time saving factor in machines as opposed to traditional methods as shown by the fact that about 95% preferred machinery for the reason that machines are quicker. It was also cited that machines are better in so far as the final grain products is free of all chuff (clean).

A bulk of farmers in Kanye and to a lesser extent in Shakawe and Hukuntsi respectively indicated threshing methods used and preferred were the only known threshing methods they have ever been exposed to. Another good percentage in the above villages indicated that their method choice was based on appropriatenes of the method. This means that traditional methods are used mainly because they are simple and most appropriate for small scale production. Because farmers are not producing enough produce, they tend to stick to traditional methods which work out to suit their level of production.

Despite the above situation, one would not be wrong to say that crop threshing in Botswana is a field that requires technological innovations. While farmers in areas like Tutume spend long periods of time on threshing, their counterparts in more mechanized villages such as Goodhope spend less time on this activity despite their higher level of production. Needy areas commence with pre-threshing preparation activities such as threshing floor preparation and storage racks and cribs construction. Cribs and storage racks are constructed out of wooden poles and as such are subject to annual re-construction. The threshing platform is also re-built annually and further undergoes regular maintenance of re-coating with cow-dung plaster. In this respect, there is a definite need to design the threshing platform so that the resource - poor farmer can afford to build a cheap but reliable threshing floor. Attempts to identify alternative methods of mechanizing threshing should be seriously considered. Such attempts should be two fold:

a) be done with the view of improving the living standards of the resource -poor farmers by devicing methods which cut down the amount of time spent on the activity.

b) Creation of a potential seasonal rural industry for the farmer who can afford to purchase a tractor to provide a mobile service to any one community.

3.3.3 Grain Storage

The problems and damage that insect infestation and vermin can cause to stored grain are well known and appreciated by farmers throughout rural Botswana. Severe insect infestation is often related to the variety of grains stored and also the type of storage used. Traditional methods are commonly used in many parts of the country and where used and found to be unsatisfactory, these methods are still accepted by the farmers even if they cause loss because there is no immediate answer to their problems. Thus, while many old ways are wasteful, a number of them are also good and as such must be kept until they can be replaced or improved. Critical assessment studies of the world food storage problem have shown that "approximately 30% of grain in storage all over the world is being lost because of insects, rodents, and molds". Botswana stands out to be of no exception to the above situation. The table presented below show the different methods used in the five different study villages.

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Sacks/Jute Bags	95.7% (44)	100% (44)	80% (24)	3.3% (1)	12.5% (6)
Traditional Graineries	2.2% (1)	--	20% (6)	93.3% (28)	83.3% (40)
Both	2.2% (1)	--	--	3.3% (1)	4.2% (2)
TOTAL	100 % (46)	100% (44)	100% (30)	100 % (30)	100 % (48)

Table 14: Storage Methods of Food Grains

Farmers in Kanye, Goodhope and Hukuntsi indicated a high frequency in the use of sacks or rather jute bags for storage purposes. A close examination of this method indicated that jute bags are cheap and readily available on the market. In addition to this, they are the most readily accepted form in the marketing system. Thus, because of the commercially oriented nature of Agriculture in the South, farmers in Goodhope and Kanye tend to use jute bags for storage and selling purposes.

It is interesting to note that while Tutume and Shakawe stands out to have a higher participation in Agriculture as opposed to Kanye and Hukuntsi, this activity - Agriculture, still remains highly traditional. Indications show that 93% of the farming population in Shakawe and 83% in Tutume still adhere to traditional crop storage methods. Traditional storage methods identified ranged from mud/wattle cribs to reed and grass basket cribs. Unfortunately it was not within the scope of this survey to make a comprehensive study on each one of these methods.

STORAGE PROBLEMS ENCOUNTERED:

PROBLEM	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Vermin/Rats	4.5% (1)	--	20% (3)	--	11.1% (4)
Insects	4.5% (1)	--	20% (3)	100% (10)	41.7% (15)
Both	54.5% (12)	100% (1)	13.3% (2)	--	13.9% (5)
Moulding	27.3% (6)	--	6.7% (1)	--	33.3% (12)
Other	9.1% (2)	--	40% (6)	--	--
TOTAL	100 % (22)	100% (1)	100% (15)	100% (10)	100 % (36)

Table 15: Problems encountered in grain storage.

Of the people who indicated encountering problems related to grain storage, a majority of them identified insects (Tshupa) as the main problem. This problem, as indicated by percentages from the above table, is repetitive in almost all the villages with the exception of Shakawe where only one case occured. This is mainly because in Shakawe millet is the major staple crop and it stands out to be resistant to this pest. Storage problems do not necessarily emanate from poor traditional storage design but also from the general system and farming values of a particular community. As A. Hamilton correctly observed:

> "Whereas most farmers are aware of the problems of infestation, not all of them realize that by simple process of cleaning up and maintaining reasonable level of hygiene around the farm, and isolating wherever possible old grain stacks, losses could be substantially reduced. Impressing these points through Agricultural and community development programmes could prove extremely beneficial to the farmer."[8]

Despite the identification of such problems and related susggestions by researchers, government has up to now put minimal effort to implement an

effective programme to help farmers overcome these problems. Findings from the Hamilton report indicate that while chaff and other plant residues are either burnt or kept for animal feed, fairly large stacks of plant waste were observed late in the after harvest season. This provides an ideal home and a possible source of insect cross infestation.

Insect infestation is a general problem faced by farmers and hence there are at present various methods of combating this. Traditional methods of treating grain for storage are widespread, and the most commonly used ingredients are burnt sheep and goat manure ash and ordinary wood ash. The type of ash and the time it is applied varies according to individual preference of the farmer. Modern insecticides introduced by the Ministry of Agriculture are Kopthion and Malathion dusts. These compounds are supposed to be highly toxic to insects but at the same time have a low toxity rate to man. In this respect they are considered highly suitable for use under traditional farming systems in the developing world.

Despite the introduction of these pesticides in the early 1970s, no literature could be identified which analyses the effectiveness of these and their overall impact on small-scale farming systems in Botswana. Thus, at the present moment it can not be out-rightly pointed out whether much of the problems are with storage facilities at their present state - of - the art or with pests. The farmers themselves are at least aware of the problems but possibly do not have any immediate solutions. Thus, unless further field research is made to solicit these problems from the farmers nothing much can be done for now.

3.4 FOOD SURPLUS

Food Production in Botswana is very much undeveloped. As a result, we can not at present talk of self-sufficiency in the agricultural sector given the fact that Botswana still receives large tonnes of food aid from donor organizations and countries. Much of this food aid is channeled into the rural areas where there seems to be a much more pressing need than the urban areas. At the same time, a bulk of the commercially available food is imported mainly from South Africa. Thus, income has to be diverted from other sources into buying food. The big question then is to what extent agriculture (mainly crop production) is able to sustain life in the rural areas. Interesting percentages were obtained from the survey indicating the extent to which the five communities realize a food surplus on annual basis.

DO YOU PRODUCE ENOUGH FOOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	56.6% (30)	85.1% (40)	28.3% (13)	48.6% (17)	91.7% (44)
No	47.4% (27)	14.9% (7)	71.7% (33)	51.4% (18)	8.3% (4)
TOTAL	100 % (57)	100 % (47)	100 % (46)	100 % (35)	100 % (48)

Table 16: Views on Food Production Sufficiency.

Responses as to whether people thought their individual households produce enough food varied from one village to the other. While 92% and 85% of the respondents in Tutume and Goodhope respectively indicated that they thought their households were producing enough food, percentages drop to 53% for Kanye, 49% for Shakawe and 28% for Hukuntsi. Thus, Hukuntsi remains with the highest rate of 72% of responses indicating that their respective households are not producing enough food. A small percentage of households in Tutume, Goodhope, Kanye and Shakawe still encounter a food shortage problem at one point during the year. Amidst all this is the question of food surplus, since a good percentage of the households indicated problems with enough food production one can obviously not expect any surplus.

The table below shows percentage number of people experiencing a surplus in food production and those who are not. Incidentally, there seems to be no link between food aid and surplus food production. Food aid comes in many different forms that even households with a food surplus still receive food aid of some sort.

HH WITH FOOD SURPLUS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	43.8% (21)	76.6% (36)	15.2% (7)	63.3% (19)	84.8% (39)
No	56.3% (27)	23.4% (11)	84.8% (39)	36.7% (11)	15.2% (7)
TOTAL	100 % (48)	100 % (47)	100 % (46)	100 % (30)	100 % (46)

Table 17: Surplus food production.

While people could be producing at subsistant level with the objective of only producing enough for their survival, this varies from one area to the other and from one year to the next depending on rain. Despite the overall subsistance nature of the agricultural economy in Botswana, some areas /villages still realize surplus production which is either channelled into the commercial economy, informal economy like in beer brewing or lost through moulding due to poor storage methods. According to the above table, a good percentage of the population in Goodhope, Shakawe, and Tutume

did acknowledge the fact that during good years of rain a surplus is usually realized.

This is at all not the case in Kanye and Hukuntsi where 56% and 85% respectively of the farmers did acknowledge the fact that they do not usualy realize a surplus in food production. The result then is that they supplement their food situation with income generated either from livestock or formal employment. Looking at table 2, one will realize the fact that 57.5% and 80% of the households interviewed in Kanye and Hukuntsi respectivelly, had household members formally employed. Figures from that table also indicate a high percentage of cattle ownership in these two villages. Goodhope, Shakawe, and Tutme have throughout this survey indicated heavy involvement in agriculture. Thus, much of their needs are related to improving the present farming systems with the view to improve living standards of the communites, best utilization of agricultural produce and maximising production.

As earlier mentioned, food aid has over the past years come to have significant meaning to people in the rural areas. Thus, the survey attempted to assess the extent to which people in the five surveyed villages are involved in it and the results are as shown in the table below.

HH RECEIVING FOOD AID	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	37.3% (28)	80% (40)	61.2% (30)	69.4% (34)	24 % (12)
No	62.7% (47)	20% (10)	38.8% (19)	30.6% (15)	76 % (38)
TOTAL	100 % (75)	100% (50)	100 % (49)	100 % (49)	100% (50)

Table 18: Food Aid received by Households.

Figures on food aid as presented in the table above indicate the fact that the majority of households interviewed in Goodhope, Hukuntsi and Shakawe are receiving food aid. But of importance to note is the fact that all the surveyed villages have a proportion of the community receiving food aid. This situation does not seem to be related to the overall food production system as already portrayed in this survey. Aid food seems to be blindly distributed country-wide irrespective of the status of food shortage and malnutrition in different regions. Unfortunately there was no further probe as to whether food aid recipients and the surveyed households at large attach any value to this aid or whether this aid does alleviate any suffering in the rural areas.

RECEIVAL INTERVALS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Every months	85.7% (30)	97.6% (40)	84.4% (27)	85 % (29)	61.5% (8)
Every 2 months	8.6% (3)	2.4% (1)	12.5% (4)	--	--
Irregularly	2.9% (1)	--	3.1% (1)	11.8%(4)	38.5% (5)
Not Sure	2.9% (1)	--	--	2.9%(1)	--
TOTAL	100 % (35)	100 % (41)	100 % (32)	100 %(34)	100 % (13)

Table 19: Frequency of receiving food aid.

The majority of those people who acknowledged receiving food aid indicated that this happened at least on a monthly basis. Thus, it ultimately turned out that the majority of these were households with expectant or lactating mothers and those households with children who are less than five years old. All these receive monthly rations at the clinics or health centres. The other categories include households with members categorized as destitutes. Such people are also eligible to aid food.

3.5 Village Water Supplies

Water has always been identified as crucial to Botswana's economy. Over most parts of the country water is scare and costly to retain. Rainfall is low, varying from 250 mm a year in the far south west to 650 in the extreme north with the national average at only 450 mm. Of late, repetative drought years exacerbate water scarcity and according to the NDP 5 an estimated 80% of the population rely on water from boreholes. At present there are an estimated 10 000 registered boreholes over the whole country, of which 40 - 50% have water.

In view of the above situation, the Government's objective then is to have all villages provided with a safe and reliable water supply. The District Councils select and prioritise villages to be included in the government water programme. The implementation of this programme is done by both central and local government.

The programme is such that more and more boreholes have been drilled and water reticulated in most villages. There also has been an increase in the number of private connections. This has in fact been the case in all the five study villages. All these villages are serviced by government maintained water reticulation system.

Also to note is the fact that government maintains a policy of providing water for free in the rural areas. Thus, such a situation results in people not being worried about water needs. Also, it was a general feeling that given the nature of government policy on water, RIIC ought not to

start considering water-related projects since this is wholly covered by the government water package. But all the same a few questions were included in the questionnaire related to household water source.

WATER SOURCE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Borehole/Standpipe	98.7% (79)	100% (50)	80% (40)	10% (5)	68% (34)
Hand-dug wells	--	--	--	--	--
River	--	--	--	90% (45)	30% (15)
Other	1.3% (1)	--	20% (10)	--	2% (1)
TOTAL	100 % (80)	100% (50)	100% (50)	100% (50)	100% (50)

Table 20: Household drinking Water Sources.

Indications from the above table show that the majority of households in Kanye, Goodhope, Hukuntsi and Tutume have access to clean drinking water from standpipes. Thus, one would see the government water programme as effective in meeting its objectives. The situation in Shakawe was different mainly because the community has got year round access to river water. Coupled with this is the fact that reticulated water has a rusty colour and tastes very badly hence preference of river water by the villages. The case of Tutume is quite different. Because of the scattered nature of the settlement pattern, water reticulation has not been able to effectively reach and service all the households. Thus, some of the households still have to walk long distances to water points. The result has been a resort to the use of water in the river sand bed.

TIME	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Less than 1 hour	98.8% (79)	46 % (23)	88% (44)	100% (50)	80% (40)
1 - 2 hours	1.3% (1)	28.6% (14)	10% (5)	--	20% (10)
More than 2 hours	--	24.5% (12)	2% (1)	--	--
TOTAL	100 % (80)	100 % (49)	100% (50)	100% (50)	100%(50)

Table 21: Time spent on fetching water for household use.

Again because of the fact that water has been reticulated in all the five villages, water was found to be having a few time related problems. It is not a time demanding activity with the exception of a few households which are settled well out of the defined village boundaries. Households indicating more time spent on fetching water might possibly have missed correct timing or rather have had a different interpretation of what the

enumerators exactly wanted. Asked about the cleaniless of water, a high percentage indicated their satisfaction with the water source in the exception of Shakawe and to some extent Tutume with 45.5% and 26.5% respectively indicating dissatisfaction.

RESPONSE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	96.2% (75)	94% (47)	100% (50)	54.4% (24)	73.5% (36)
No	3.8% (3)	6% (3)	--	45.5% (20)	26.5% (13)
TOTAL	100 % (78)	100% (50)	100% (50)	100 % (44)	100 % (49)

Table 22: Cleaniless of household water source.

Basically, 45.5% of the respondents in Shakawe felt that the available water sources in the village (river and borehole) were not clean. While tap water is rusty in colour and tastes quite badly, river water is dirty since the use of the river is not restricted to drinking water. In Tutume, the same problem was indicated. Most respondents complaining about river water indicated that due to an absence of a good sanitation system (toilets), the indiscriminate use of the bush and river for sanitation purposes mean that river water stands a good chance of being contaminated. Asked whether respondents had any suggestions as to how their water problems could possible be alleviated, a couple of suggestions were made and these are presented in the table below.

SUGGESTION	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Reticulate Water	83.3% (5)	61.2% (30)	26.1% (12)	--	84.4% (28)
Purify Water	--	--	--	16.7% (2)	6.1% (2)
Both	--	--	--	50 % (6)	--
Additional Bore-holes	-	32.7% (16)	47.8% (22)	--	3 % (1)
Other	16.7% (1)	6.1% (3)	26.1% (12)	33.3% (4)	6.1% (2)
TOTAL	100 % (6)	100 % (49)	100 % (46)	100 % (12)	100% (33)

Table 23: Suggestions on possible improvements of the household water sources.

With the exception of Shakawe, a reasonable percentage of respondents in the other four villages expressed the feeling that reticulated water does not reach everybody. Hence the need to increase the existing number of standpipes and also improve their overall distribution in the village. Responses from Shakawe indicated that there is need to purify the water and

then reticulate the purified water. Suggestions have so far been made by colleagues at RIIC that charcoal water fitters could possible partially alleviate the problem in this particular village. The need for additional boreholes was particularly expressed in Hukuntsi where despite the existence of a reticulation system, much of the time there is no water at all - especially in the evenings. Other possible improvements were also cited.

3.6 Livestock Water Supplies

Attempts were made to examine the nature of water sources used for livestock purposes. In most cases it turned out that there is no link between household water source and livestock water source. This is because while government assumes the responsibility of maintaining community water systems, livestock watering is left to individual farmers. In a few exceptions where farmers do use a government or council borehole, they are required to pay for this service. But all the same a couple of questions were included in the survey particularly dealing with water for livestock and below is a table indicating the nature of water sources used in the five research villages.

NATURE OF WATER SOURCE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Windmill	3.9% (2)	--	--	--	--
Diesel Engine	66.7% (34)	98% (49)	17.1% (7)	--	6.7% (3)
Hand-pump	--	2% (1)	--	--	44 % (2)
Windlass	5.9% (3)	--	--	20.6% (7)	--
Two or more	7.8% (4)	--	--	--	13.3% (6)
Other	15.7% (8)	--	82.9% (34)	79.4% (27)	75.6% (34)
TOTAL	100 % (51)	100% (50)	100 % (41)	100 % (34)	100 % (45)

Table 24: Nature of Water source used for Livestock.

There is a clear indication from the above table that the majority of farmers in Kanye and Goodhope use boreholes mainly equipped with diesel engines for purposes of watering their livestock. Only one case (2%) in Goodhope indicated the use of a hand-pump for this purpose while the rest (98%) uses diesel engines. Kanye figures are slightly lower mainly due to the existence of three dams in the vicinity of the village hence these could possibly account for the 15.7% under other. A few areas in Kanye pointed out the fact that they use windmill (3.9%) and windlass (5.9%) while another 7.8% indicated the use of more than one source. Reasons given were mainly that cattle are moved from location to another depending on season and grazing.

Only 17% (7) in Hukuntsi indicated that they use a diesel engine for pumping while the rest - 82.9% indicated the use of other unspecified sources. In that particular part of the country, it is common practice for farmers to use hand-dug wells which are mainly found around pans. Water in these wells is usually salty. And for purposes of lifting the water to the surface, farmers usually use a bucket tied to a long thong string (usually a leather thong). A person stands directly on top of the well supported by two or more horizontal poles and from that position hauls the water from below. The bucket is then retrived at the well opening by a second person who then pours the water into the cattle trough. This process is repeated until all the intended livestock is watered. It is a very tiresome and infact dangerous process which calls for a serious consideration of the viability of hand pumps. This is applicable to all the four Matsheng villages (Hukuntsi, Tshane, Lokgwabe and Lehututu).

Shakawe turned out to be the only village with the least animal related problems. This is mainly due to the fact that this village is located on the banks of the famous Okavango river which flows throughout the year. Thus, it is obvious that most farmers water their animals directly from the river. Another 5.9% indicated the use of a windlass and the most obvious explanation given is that these are farmers who have migrated their livestock further from the river delta in search of better grazing. Overgrazing has been found to be a growing problem especially around the bigger villages in the region. This problem has been of growing concern in the Gomare CFDA.

The situation in Tutume had been almost similar with 75.5% of the livestock holders indicating the use of other unspecified water sources. The contention here is that these people use river-bed water since the rivers in that area - even though flowing only during the rainy season, are able to sustain a substantial amount of water under the river beds. These water reserves are able to last late into the winter season while in some cases can be year round. 6.7% indicated the use of diesel engines, 4.4% uses hand-pumps while 13.3% indicated that they use more than one water source. As in the case of Hukuntsi and Goodhope, no respondents indicates the use of windglass. It is apparent from the above table that Kanye and Tutume have the widest variety of livestock water sources and water lifting methods in use.

The question of location was also considered as indicated in the table below.

LOCATION OF WATER SOURCE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
In the village	45.5% (30)	90% (45)	78% (37)	20.6% (7)	77.8% (35)
Out of the village	54.5% (36)	8% (4)	22% (9)	79.4% (27)	15.6% (7)
Both	--	2% (1)	--	--	6.7% (3)
TOTAL	100 % (66)	100% (50)	100% (46)	100 % (34)	100 % (45)

Table 25: Location of Livestock Water Source.

According to the above table, there is a good indication that the majority of livestock farmers or holders in Goodhope, Hukuntsi and Tutume tend to use water sources which are in the vicinity of the village. This was not verified in Goodhope but in the case of Hukuntsi the pan which contains most of the wells is located in the village. As for Tutume, the river runs through the village. Figures from the above table also tend to strengthen the argument that because of poor grazing and around the village in Shakawe, most farmers (possible 79.4%) have their cattleposts further out of the village even though still using the river for watering their livestock.

Kanye is a different case in that while a certain percentage of farmers might have migrated their livestock elsewhere in search of good grazing, those who haven't are still not allowed to permanently keep their animals in the village. The result then is keeping livestock near the three dams. These dams can either be categorized as in the village or outside the village since they are on average 5 km outside the village but are always such as part of it. There is a smaller fourth dam in the middle of the village. In the case of all the other villages, indications are that a small percentage of the stock holders use water which is located outside the village. This should infact be seen as an inevitable case all over the country since the search for better grazing continues.

The problems related to household and animal water supplies are definitely widespread with variations according to difficult regions. Government at present has village water supplies as top on the priority list on the water programme. This as such leaves very little room for RIIC to actively involve itself in this field. But still there are pressing areas in the livestock sector which require RIIC intervention. A good example would be the promotion of a handpump programme in the Kgalagadi area with specific reference to livestock applications. The introduction of one hand-pump in Hukuntsi could easily alleviate the problems of at least 3 to 5 resource poor farmers.

3.7 Household Cooking Needs

Cooking as everyone knows, is a very important aspect of the overall household activities. In this respect any problems encountered in this activity directly affect the lives of all household members.

Despite this, cooking in Botswana is generally associated with women. It is the women's duty to make sure that the household or family is fed and cared for. Thus, most cooking related needs are mostly experienced by women and as such any technological innovations in that field directly affects the lives of women at most. It was as such within the scope of this study to examine cooking practices and possibly identify any problem areas experienced in the different study villages. Primary to this examination was the nature of fuel used for cooking and this is presented in the table below.

FUEL	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Open Fire	77.2% (61)	90% (45)	90% (45)	98% (48)	98% (49)
Gas	3.8% (3)	--	--	--	--
Both	16.5% (13)	10% (59	10% (5)	2% (1)	2% (1)
Other	2.5% (2)	--	--	--	--
TOTAL	100 % (79)	100% (50)	100% (50)	100% (49)	100% (50)

Table 26: Nature of fuel used for household cooking.

Results obtained from the survey and as presented in the above table do confirm the fact that firewood is the primary fuel used in the rural areas for cooking. Cooking is done on open fire hence there is very little use - if at all there is - of accessories such as stoves in this activity. Responses from Kanye do indicate the fact that while open-fire is the predominant method, people do use other cooking methods such as gas stove or both fire and gas. Another 2.5% reported the use of other cooking methods unspecified here, Kanye in fact turned out to be the only study village with a wide range of cooking methods and fuels in use.

Goodhope and Hukuntsi indicated a 10% respectively of the use of both fire and gas for cooking while Shakawe and Tutume indicated 2% use of both these fuel sources. While respondents were asked whether they ever used paraffin and electricity, there were no responses what-so-ever in all the five villages indicating the use of these two types of fuel. Attempts were also made to try and find out if people were satisfied with their methods of cooking or not, and the results are presented in the table below.

VIEWS OF COOKING METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Satisfied	55.3% (42)	51% (24)	94% (47)	56.4% (22)	100% (48)
Not Satisfied	44.7% (34)	49% (25)	6% (3)	43.6% (17)	--
TOTAL	100 % (76)	100% (49)	100% (50)	100 % (39)	100% (48)

Table 27: Views on cooking methods presently used.

The overall results on what people thought of the kind of fuel they were and are using worked to be that they are satisfied with the situation. Thus, open-fire cooking was found to be a widely used and accepted method in all the five villages. The above table shows a 100% satisfaction rate in Tutume, 94% in Hukuntsi and lesser percentages in the other three villages but still above fifity percent. 49% of the respondents in Goodhope expressed their feeling of dissatisfaction with fire cooking. This does not in fact come as a surprise mainly because Goodhope is generally known for its firewood shortage problem.

Basically the acceptance and/or non-acceptance of open-fire cooking is determined by a number of factors. Of importance is the availability of firewood resources in a particular location. In bigger villages such as the ones surveyed, firewood resources have in numerous cases been highly depleted in the surrounding areas. This is most likely the case in Goodhope and Kanye. The result then is a resort to buying firewood from people with the means to travel long distances to collect it. Secondly, household choice and acceptance is based on the cost and affordability of this particular method. Firewood is widely used as fuel in rural Botswana mainly because it is easily available as opposed to other types of fuel and also that it turns out to be cheaper. Asked what problems the households had related to firewood use, numerous problems were pointed out as indicated in the table below.

PROBLEM	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Scarcity Good Trees	15.4% (10)	6.7% (3)	--	2.4% (1)	10.5% (4)
Depleted	6.2% (4)	--	--	--	--
Far from Village	50.8% (33)	48.9% (22)	100% (46)	61.8% (26)	89.5% (34)
Two or More	20 % (13)	44.4% (20)	--	31 % (13)	--
Other	7.7% (5)	--	--	4.8% (2)	--
TOTAL	100 % (65)	100 % (45)	100% (46)	100 % (42)	100 % (38)

Table 28: Problems related to firewood resources.

Of the firewood related problems mentioned, distance from the village was the commonest. On average, there was a general complaint that firewood resources are now found far out of the villages. This can not be interpreted to mean that there is a severe shortage of firewood in any of the five survey villages. In the case of Kanye, general observation reveal that a lot of donkey carts can be seen daily coming into the village from all directions with cart-loads of firewood. It is thus obvious that some of these donkey owners are indeed making a substantial amount of income from sale of firewood. This is a clear indication of the fact that while firewood is scarce in the immediate surrounding areas of the village, it can still be obtained in some areas far out of Kanye. Goodhope can similarly be viewed as Kanye except for the fact that there is a widespread use of tractors for transporting firewood into the village.

Hukuntsi unsurprisingly shows 100% problem with firewood being far from the village. But all the same, a lot of firewood is found when further going out of the village. The main problem is getting this firewood into the village since there seems to be no village transport system available. There has been no observation of any donkey cart use nor tractors at all in this particular village. According to a report by the Energy Planning Associates entitled "A Study of Energy Utilization and Requirements in the Rural Sector of Botswana", Hukuntsi as yet experiences no firewood shortage since there is plenty of shrub wood fuel available. I am quite inclined to agree with their conclusion that:

> "Overall ....., it is concluded that for most of the Kalahari the sparse low density vegetation cover is sufficient to meet the needs of the low population of the western area of Botswana, although undoubtedly particular villages may face a severe problem where sand and/or drought have caused the vegetation to die". 10)

Tsabong was cited as one of the villages most likely to be experiencing a severe wood shortage problem.

Because of its strategic location in the Mophane belt, residents in Tutume have got access to good quality firewood. But then there is now a general complaint (89.5%) that firewood is now obtainable further and further from the village. Respondents pointed out the fact that firewood resources are mainly found at the lands areas which are located far out of the village.

Of interest to note was the time spent by household members on collection of firewood Results of this are presented in the table below, but it is of importance to note the fact that firewood collection is not necessarily done on daily basis.

TIME	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
2 hours	24.3% (18)	34 % (17)	98 % (49)	2.1% (1)	24 % (12)
half day	60.8% (45)	46 % (23)	2 % (1)	66.7% (32)	68 % (34)
Over half day	14.9% (11)	20 % (10)	--	31.3% (15)	8 % (4)
TOTAL	100 % (74)	100 % (50)	100 % (50)	100 % (48)	100 % (50)

Table 29: Time spent on collecting firewood.

On average households indicated the fact that they spend about half a day when collecting firewood. This is definitely not a daily job but whenever it is undertaken it is a time demanding exercise. Hukuntsi was an exception with 98% indicating that collecting firewood is a 2 hours housenold chore. Figures report by the Energy Planning Associates* indicate that woodsellers in Goodhope have to travel about 7 - 12 km to collect firewood. Distances definitely vary from one village to the next and this has an effect on time spent by villagers in firewood collection. Also, distance travelled has a positive relationship to the amount and quality of wood collected. Since less firewood can be found near the villages, this firewood is definitely of poor quality most of which has been rejected by those people who can travel further to collect required quality firewood.

The table also indicates that to a lesser extent, people spend more than half a day on firewood collection. This again exempts Hukuntsi with no percentage registration at all of people spending long periods in wood collection. Unfortunately no direct reference was made in the survey as to what mode of transport is used to collect firewood. Costs involved are also important in so far as determining the extent to which people find the use of firewood fuel a problem. These costs are very much dependent on the size of a household, standard charges as prevailing in any particular village etc. That is to say the bigger the household, the more firewood is likely to be used. Also, it might be that while a cart-load of firewood costs P12.00 in Goodhope, the same amount of firewood might turn out to cost P20.00 in Kanye or Tutume. The implication here would then be that while two families located each in the two villages could be using the same amount of firewood over a given period of time, they could in actual fact be paying different amounts of money. The table below indicates the amount of money said to be spent by households over a one month period.

HH FUEL EXPENDITURE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
None					
Less than P10	23.2% (13)	13.8% (4)	73.3% (33)	47.7% (21)	14.3% (1)
P11 - P20	39.3% (22)	62.1% (18)	6.7% (3)	25 % (11)	85.7% (6)
P21 - P30	19.6% (11)	24.1% (7)	6.7% (3)	13.6% (6)	--
P31 and above	17.9% (10)	--	13.3% (6)	13.6% (6)	--
TOTAL	100% (56)	100 % (29)	100 % (45)	100 % (44)	100% (7)

Table 30: Money spent on fuel over a one month period.

Fuel (firewood included) in the rural areas does entail expenses on the part of the users. As indicated in the above table, a substantial number of people in Kanye and Goodhope spend about P10 to P20 per month on fuel needs. On the contrary, more people in Shakawe and Hukuntsi spend less than P10 on fuel requirements over a period of one month while 84% of the respondents in Tutume indicated no expenditure at all over the same period of time. This was also experienced in Goodhope (42%) and Kanye (30%). It was also found that very few cases in Kanye, Hukuntsi and Shakawe indicated the fact that they spend more than P31 per month on fuel requirements.

In fact expenditure on such things as parafin was pointed out as minimal. Apart from influencing factors on fuel expenditure such as household size, other possible factors of influence include the economic well being of individual households and patterns of fuel use. Families or rather households with reliable income sources do not hesitate to use gas either as the main cooking fuel or to supplement firewood. The same thing applies to fuel for lighting. But then, the use of gas depends on village location and supply. Attempts were also made to try and find out whether any of the households interviewed have ever been exposed to alternative cooking methods and the results of this are presented below.

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Wonder Box/Mai-kapei	2.5% (2)	--	--	2% (1)	6% (3)
Bret Stove	6.3% (5)	2% (1)	--	--	--
Solar Cooker	5 % (4)	6% (3)	--	2% (1)	--
Biogas	13.8% (11)	20% (10)	6% (3)	--	8% (4)
Two or More	21.3% (17)	40% (20)	8% (4)	4% (2)	6% (3)
None	51.3% (41)	32% (16)	86% (43)	92% (46)	80% (40)
TOTAL	100 % (80)	100%(50)	100% (50)	100% (50)	100% (50)

Table 31: Alternative Cooking Methods Known.

Surprisingly, very few people know about any alternative cooking methods/technologies that are available. The exceptional cases were Kanye and Goodhope mainly because of a number of factors. In Kanye alone, 48.7% of the respondents indicated a knowledge of one or more of the technologies listed. This could be mainly because RIIC is located in this particular vilalge and as such people are much more aware of its activities. In the case of Goodhope, the one listed technology which was not at all known was the wonder box and given the fuel problems of that particular village one wonders whether this particular technology would not be easily used and accepted there.

Because of the presence of a bio-gas plant at Mogwalale - about 6 km from Goodhope, more people in Goodhope (20%) tended to know about this particular technology (this figure could possibly go up given the fact that another 40% knew more than one technology hence a substantial number of these could include biogas). What can not be definitely said is whether people are aware of the fact that bio-gas can be used for cooking since their knowledge of the Mogwalale plant is limited to its being used for water pumping.

Knowledge of alternative cooking methods was much lower in Hukuntsi (86%), Shakawe (92%), and Tutume (80%). Given the nature of these results, one is inclined to come to the conclusion that there is need to promote alternative fuel saving technologies in some of the rural areas. Such an exercise might not be necessary in certain given instances but would still be necessary and applicable in others - especially villages like Goodhope where fuel is already a problem. While people were aware of the technologies, only a mere 4.2% of respondents in Kanye indicated ever trying one of the listed technologies for cooking.

3.8 Shelter

Housing is nationally recognised in Botswana as one of the basic human needs and infact it is covered under the present National Development Plan (NDP 5) as one of the National Development goals. This was done in conformity with Government Paper NO 2 of 1981 and the Presidential Commission on the National Housing Policy. Unfortunately, while urban housing is to some extent adequately covered by this plan, rural housing is not and this, according to the plan, is due to certain constraints. According to NDP 6, "limited housing assistance is given to rural areas, the current policy and capacity of the financial institutions, the marketability of housing in rural areas, and tribal land tenure are constraints to private initiative because they restrict access to credit." Government has since made some initiatives to make the land tenure system much more compatible with housing in the rural areas. Other present constraints mentioned are lack of rural jobs, difficulties in providing infrastructure to rural areas, higher costs of materials and transport and lack of technical assistance.

As part of the survey, attempts were made to assess the housing situation and if possible identify problems related to housing in the five study villages. This was done bearing in mind the fact that different house structures are found in different parts of the country depending on the available local building materials, income levels, price of building materials in shops, skills, etc.

TYPE OF SHELTER	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Brick House	15% (12)	12% (6)	12% (6)	--	4.1% (2)
Mud Huts	32.5% (26)	14% (7)	36% (18)	--	85.7% (42)
Reed/Pole Huts	--	--	16% (8)	14% (7)	--
Two or more	47.5% (38)	74% (34)	2% (1)	64% (32)	10.2% (5)
Other	5 % (4)	--	34% (17)	22% (11)	--
TOTAL	100 % (80)	100 % (50)	100% (50)	100% (50)	100 % (49)

Table 32: Types of building structures found in household compounds.

Different types of house structures were found to be in existence and infact each one of the villages tended to be characterized by its own type (especially Hukuntsi and Shakawe). In Kanye, 47.5% of the compounds tended to have two or more types - brick houses and mud-grass thatched huts. Thus, about 62.5% own or rather reside in modern brick houses of some sort. In this case Kanye can be said to be gradually assuming a modern outlook in housing. This can be verified by mere observation. In Goodhope, 74% of the respondents indicated ownership of both brick houses and mud hut structures. Another 12% owned brick houses only while the rest - 14% owned mud huts only. Thus, a similar interpretation to that of Kanye can be applied here to say that 86% of the households interviewed occupy modern brick houses of some sort hence giving the housing situation in this particular village a modern outlook. Tutume gave a completely different picture with 85.7% of the respondents indicating that they had mud huts only. Only 10.2% had brick houses and mud huts while the remaining 4.1% had brick houses only. Thus, in Tutume there is very little in terms of modernization in housing.

As for Hukuntsi, shelter structures owned by households ranged from a few brick houses to pole built huts. Households occupying mud-huts only worked out to be 36%, brick houses only 12%, pole huts only - 16% while the rest fell under other. Pole huts here (Hukuntsi) refer to huts where walls are built out of poles and roofed with grass while mud huts are those built in the same way but are then further plastered with clay and cow-dung mixture. These worked out to be very common in Hukuntsi. Ordinary mud walls were said to be difficult to build mainly due to the poor quality of soil in area. Results from Shakawe turned out to be much more

interesting. No households in this particular village in the sample had brick houses nor mud huts even though a few brick houses can be seen in the village. About 14% had reed huts only, 64% had more than two types of structures while 22% had other unspecified types of structures. In Shakawe, there generally tends to be a predominance of reed-built huts.

The source of building skills and the extent to which the household is physically involved in building were also examined and below is a presentation of the findings.

SOURCE OF BUILDING SKILLS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
HH Members	41.3% (33)	12% (6)	66% (33)	62% (31)	84% (42)
Paid Skilled Builders	41.3% (33)	16% (8)	30% (15)	14% (7)	--
Brigades	1.3% (1)	4% (2)	--	4% (2)	--
Two or More	16.3% (13)	54% (27)	--	12% (6)	16% (8)
Other	--	14% (7)	4% (2)	8% (4)	--
TOTAL	100 % (80)	100% (50)	100% (50)	100% (50)	100% (50)

Table 33: Source of building skills for houses/huts already in existence.

On the whole, family/household members were found to highly contribute physically in house building. This contribution as shown in the table is 41.3% in Kanye, 66% in Hukuntsi, 62% in Shakawe and 84% in Tutume. The engagement of skilled builders is also high especially in those villages where there is a high percentage of households owning brick/modern houses. As for the occurance of households which would engaged two or more sources of building skills in building their compounds, this could well be accounted by the existence of households owning different types of house structures. That is to say, while household members could have been involved in building the first few mud huts, resort could later have been made in engaging a skilled builder to build a brick house. Very few people had built their houses through brigades. Only 1 case in Kanye and another 2 cases in Goodhope and Shakawe respectively indicated the use of brigades services for building their houses.

Following household members as the source, paid skilled labour worked out to have an effective contribution in house building in four of the five study villages. The next issue of consideration in housing is house/compound maintenance. The basic assumption here was that because of the nature of traditional building materials, traditional housing is time consuming and expensive.

TIME	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Four days	68.5% (37)	19.1% (9)	45.8% (22)	39.6% (19)	22.4% (11)
1 week	14.8% (8)	6.4% (3)	14.6% (7)	18.8% (9)	4.1% (2)
2 weeks	9.3% (5)	23.4% (11)	2.1% (1)	4.2% (2)	12.2% (6)
Over 2 weeks	7.4% (4)	51.1% (24)	37.5% (18)	37.5% (18)	61.2% (30)
TOTAL	100 % (54)	100 % (47)	100 % (48)	100 % (48)	100 % (49)

Table 34: Time spent on Maintenance every year.

It worked out that people had difficulty in spelling out the amount of time they spend on hut/house maintenance in a year mainly because this is a seasonal activity. Maintenance of traditional huts depends on the type of materials used, state of the hut/house and on whether the owner can spare enough time to do maintenance jobs. Much of this work is done during the dry season when there is less of agricultural related activities.

Maintenance jobs are mainly restricted to wall plastering which in many cases has to be done annually while floors have to be done much more regularly. Grass thatching is done throughout the five study villages using different methods and different grass species. Thus the intervals between maintenance can not be outrightly specified but in many cases the roof has to be re-done after 2 - 5 years. Respondents were asked to specify a few of the most pressing maintenance jobs which are regularly done and this is presented in the table below.

MAINTENANCE JOBS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Mud Plastering	74.6% (44)	81.8% (36)	26.1% (12)	44.9% (22)	62% (31)
Plastering and Thatching	1.7% (1)	9.1% (4)	63 % (29)	34.7% (17)	32% (16)
Thatching	--	--	4.3% (2)	2 % (1)	4% (2)
Reed Replacement	--	--	--	4.1% (2)	--
Thatch and Reed	--	--	--	14.3% (7)	--
Other	27.7% (14)	9.1% (4)	6.3% (3)	--	2% (1)
TOTAL	100 % (59)	100 % (44)	100 % (46)	100 % (49)	100% (50)

Table 35: Specific Maintenance jobs done by Households.

It can be observed from the above table that plastering takes much time in house/hut maintenance. There is less of that activity in Hukuntsi and Shakawe mainly because the wood-made and reed-made walls do not require much plastering. In the case of Hukuntsi, the wall is usually plastered from inside hence it is not washed away by rain. Much of the

plastering done is on floor repair. But due to the poor quality of grass used for thatching, the thatch has to be done much more regularly to ensure an intact rain-proof roof before each rainy season. This is shown by the 63% response to mud-plastering and thatching.

Shakawe, like Hukuntsi, has got its own unique features in housing. Because of the abundance of reeds in the river, this material resource is commonly used for hut construction and compound fences. Mud huts which are grass thatched are also a common site in the village. With reed huts, the walls are not usually plastered at all save the inside floor of the hut. Thus it is the floors which require much maintenance. The reeds tend to be susceptible to destruction by termites - also a common problem in Hukuntsi with pole-made walls.

Given the above situation, one would be correct to conclude that mud huts require a considerable effort, time and dedication to maintain. Maintenance jobs falling under the "Other" category were mainly related to house painting, replacement of old, rotten, or worn out poles and decorating of walls with cow-dung.

A number of constraints related to housing were identified and these are presented in the table below.

CONSTRAINTS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Expensive Materials	48 % (36)	15 % (6)	4% (2)	45.8% (22)	20.4% (10)
Materials not locally available	5.3% (4)	10 % (4)	2% (1)	4.2% (2)	10.2% (5)
Scarcity of local materials	10.7% (8)	7.5% (3)	10% (1)	4.2% (2)	32.7% (14)
Inadequate Building skills	1.3% (1)	2.5% (1)	--	2.1% (1)	--
Two or more	33.3% (25)	52.5% (21)	84% (42)	29.2% (14)	26.5% (13)
Other	1.3% (1)	12.5% (5)	--	14.6% (7)	10.2% (5)
TOTAL	100 % (75)	100 % (40)	100% (46)	100 % (48)	100 % (47)

Table 36: Constraints experienced by Households in house/hut construction

Different constraints were found to be experienced in different villages. In Kanye, 48% of the respondents complained of the fact that building materials are too expensive. This could be said to be a reasonable argument since most people in this village have or are in the process of building modern houses. Thus the cost of cement, timber, door frames and window frames is proving to be a hindering factor. This is further exacerbated by what appears to be a lack of appropriate and affordable

building plans which can be easily understood by local builders. Because of the existence of a big business community, very few people indicated as a problem the availability of materials on the local market. In Kanye, there are couple of retail shops which are well stocked with building materials and one of the issues raised by traders is that sales on building materials tend to be seasonabl. That is to say people will tend to buy more during the dry season when they come back from the fields and hence have the time to engage in building and construction. Another 10% indicated scarcity of traditional materials while a 33.3% indicated having more than one problems related to building.

In Goodhope 52.5% of the respondents had experience more than one problem. These could possibly be expensive materials (15%) and the unavailability of building materials locally. Many people in Goodhope pointed out the fact that because of lack of any local supplier of building materials in the villages, they tend to purchase these from Mafeking in South Africa. Another 7.5% pointed out problems related to scarcity of traditional building materials while 12.5% experienced other problems unspecified.

In Shakawe and Tutume, 45.8% and 20.4% respectively expressed concern over the high cost of building materials. Because of the long distance over which building materials have to be transported to Shakawe from Francistown (the nearest town), one expects the costs to considerably increase. In actual fact very few people in that part of the country can afford to build brick houses. This also applies to Hukuntsi. The problems related to building are much more severe since they affect both commercial and traditional materials. While commercial ones are expensive, traditional materials are scarce to the extent that a government managed woodlot has been set up exclusively concerned with wood for building poles.

Apart from the hindering economic aspects of building materials and scarcity of traditoinal materials, other related problems were identified. Of importance amongst these is the fact that traditional building materials were found to be unsatisfactory when used. This was tied mainly to the fact that houses built of traditional materials tend to require much more regular maintenance. As correctly observed by the economic consultants (Jan. 1985), "there is a need to organise the supply of building materials, because people spend an increasing time away an activities of gathering; at the same time cash is available from the employed to purchase traditional materials; at present people are forced to buy imported materials and build low quality modern houses because they can not organise supplies of traditional materials." But then because of people's involvement in both traditional and modern building, it would be reasonable to come up with a development; programme which encompasses both. It would be a fallacy to believe that a successful programme centred around traditional resources alone could be of success without using imported building materials.

It is presently within the objectives of NDP 6 that building materials

production and supply is of special concern. It was initially envisaged that local production of such materials would be encouraged and designs and standards be developed to reduce the use of imported material where possible. It is further stipulated in the plan that "research and development in the application of local materials and technology to the housing programme will be supported, related to government's commitment to thermal efficiency studies. Building technology is also being supported by Rural Industries Innovation Centre, Botswana Renewable Energy Technology, Botswana Technology Centre and the Botswana Polytechnic ....".[13] So far the role of RIIC in rural housing has over the past few years not been very much pronounced except in the fields of clay tile making and the development and dissemination of the Cinva Ram Block Mould. These two technologies seem to have up to now had minimal national impact. It would therefore be reasonable for RIIC to start seriously considering much more active involvement in the housing programme. This should not necessarily be taken to mean that RIIC has up to now not taken an interest in this programme.

3.9 Sanitation

According to figures from the latest National Development Plan (NDB 6), 90% of rural housing has no form of sanitation, involving 60% of the national population or about 10 000 households. This, it is said, is slightly in lesser proportions in major villages. However, many people already understand the relationship between improved community sanitation and better health. While many have or would like to have a toilet for their individual households, others still lack the necessary knowledge, required funds or motivation to build one. It was as such within the scope of this survey to assess sanitation in the five study areas and below is a table showing a breakdown of different sanitation methods used.

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Bush	42.5% (34)	30 % (15)	74 % (37)	90 % (45)	84 % (42)
Pit Latrine	47.5% (38)	70 % (35)	22 % (11)	8 % (4)	16 % (8)
Water borne	--	--	--	2 % (1)	--
Other	10 % (8)	--	4 % (1)	--	--
TOTAL	100 % (80)	100 % (50)	100% (49)	100 % (50)	100% (50)

Table 37: Sanitation Methods in Use.

The above table seems to support the initial contention that the problem of sanitation is slightly in lesser proportions in major villages. As is the case of Kanye, 47.5% of the households interviewed indicated that they use a pit latrine while 42.5% uses the bush for sanitation purposes. This could possibly have severe implications since this 42.5% non toilet users

could be more than the size of a medium Botswana village. Another 10% indicated the use of other unspecified methods. In the case of Goodhope, 70% of the household indicated that they use pit latrines while the rest - 30% still uses the bush.

Percentages for the other three villages - Hukuntsi, Shakawe, Tutume - are much more disappointing. In Hukuntsi, 74% of the respondents indicated that their households use the bush for sanitation. In Tutume the figure is 89% while this rises to 90% in Shakawe. This practice definitely has an effect on the village water supply source especially in the case of Shakawe where 90% of the households use water from the river for domestic purposes. This would also be the case in Tutume where 30% indicated the use of river water for household purposes. Dissatisfaction with river water source in Tutume was mainly attached to water contamination as a result of indiscriminate waste disposal. Respondents were also asked to spell out reasons for their choice of method and the results are presented below.

METHOD	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
It's Healty	28.9% (22)	70% (35)	--	8% (4)	12 % (6)
Can't afford better system	36.8% (28)	20% (28)	87.8% (43)	68% (34)	70 % (35)
Other	34.2% (26)	10% (5)	12.6% (6)	24% (12)	18 % (9)
TOTAL	100 % (76)	100% (68)	100 % (49)	100% (50)	100 % (50)

Table 38: Reasons for choice of Sanitation Method.

No specific technical reasons were pointed out as a determining factor in method choice. Initially it was thought that because of poor sand soil in areas like Hukuntsi or Shakawe, people are thus not able to build suitable toilet structures. In Goodhope, more people turned out to be using pit latrines and are aware of the fact that this system is healthier than using the bush. Only 20% said they couldn't afford better system as opposed to 87.8% in Hukuntsi, 68% in Shakawe and 70% in Tutume. In Tutume, a further probe on how sanitation can be improved revealed that 48% (24) thought that the public should be educated on the importance of using appropriate sanitation systems (19.5%) Kanye, 12.5% Hukuntsi and (60%) Goodhope. 50% had other reasons unspecified. In Hukuntsi, 62.5% (5) indicated the sandness of the ground as the reason for people not being able to construct toilets. Shakawe figures indicated affordability as the main limiting factor. Infact many people using the bush did indicate the fact that while they would very much want improved sanitation systems (e.g. toilet), they could not afford the costs of constructing one. A few cases in Kanye (2.4%) and Hukuntsi (33.3%) indicated that pit latrines smell and because of that they don't want them.

The core of the matter then is coming up with affordable sanitation method designs whose costs are not prohibitive but rather can be afforded by rural communities. Water systems from a glance do not seem to be an attractive option given the fact that Botswana already experiences a severe shortage of water. A number of government supported pit latrine pilot projects have been implemented in different parts of the country. Lessons should be drawn from their experiences - especially the extension related aspects of these projects. Pit latrines, although unhealthy and unpleasant, still remain one of the few technologies affordable by a developing country like Botswana. But then, poorly constructed pit latrines can easily get fouled. They abound in flies, are smelly and can present a source of danger to users who may fall in when a floor collapes due to termite attack or because of deterioration due to a long spell of rain, age or poor construction. While this might be true, one should always consider the fact that there are so many variations of pit latrines and that such condemnation could be bad.

Any planned innovations related to sanitation in a country like Botswana ought to be heavily imbued with extensive extension imput. During the survey, the question of sanitation was approached very cautiously with the fear that respondents would feel insulted when required to discuss sanitation related matters. Surprisingly this was found not to be the case. People were unexpectedly highly cooperative and answered questions in a satisfactory manner. Despite this, rural Batswana still maintain certain values and attitudes which could definitely hinder effective implementation of sanitation programmes. Such values require tact and consideration. While many people can't afford to build toilets, they still would possibly not use them even when given a chance. As already pointed out earlier, there is need to educate the public on the need for improved sanitation in relation to health.

GENERAL HOUSEHOLD INFORMATION

a) Income

Household income featured as a determining factor in all the needs and problems encountered by villagers. Because of this, earlier considerations had already been made to try and indirectly assess household income by way of identifying the income related activities households were involved in. No specific attempts were made to measure household income since this was envisaged to be a fruitless exercise as has been the case with other previous studies carried out elsewhere. Instead, the survey was limited to identifying the nature of income - generating activities prevalent and the extent to which household engagement in each one of these varies from one village to the other. This is basically presented in the table below.

INCOME SOURCE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Arable Farming	17.4% (12)	19.2% (14)	--	39.5% (15)	30% (15)
Livestock Production	20.3% (14)	18.8% (9)	30.4% (14)	23.7% (9)	16% (8)
Formal Employment	23.2% (14)	18.8% (9)	13 % (6)	13.2% (5)	26% (13)
Informal Employment	2.9% (2)	--	--	2.6% (1)	8% (4)
Casual Employment	14.5% (10)	10.4% (5)	2.2% (1)	10.5% (4)	--
Two or More	21.7% (15)	22.9% (11)	54.3% (25)	10.5% (4)	20% (10)
TOTAL	100 % (69)	100 % (48)	100 % (46)	100 % (38)	100%(50)

Table 39: Sources of Household Income.

On the whole, households in all the five villages surveyed tended to depend on a whole range of income sources ranging from crop production through to employment. Hukuntsi turned out to be quite interesting in that none of the households acknowledged a dependence on arable farming for an income. This infact is undisputable given the nature of geographic location of Hukuntsi in the Kgalagadi desert. In this respect arable farming cannot be taken seriously in that part of the country while livestock production does effectively present itself as an immediate option. According to the above table, 30.4% of the households depend on livestock for an income, 13% on formal employment, 2.2% on casual employment and the other 54.3% on two or more sources. This last percentage would mainly apply to those households with one or more household members formally employed but at the same time being involved in livestock.

One look at the table above confirms the contention that village economies tended to be multi-faceted. That is to say, each village tends to be dependent on numerous sources for income generation. These sources can either be internal or external. Attempts were made by individual enumerators to give a personal judgement of the economic status of households. This was done through a structured question in the main questionnaire.

HH WEALTH STATUS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Rich	7.5% (6)	28% (14)	2% (1)	14% (7)	4% (2)
Average	47.5% (29)	26% (13)	56% (28)	50% (25)	62% (31)
Progressive Poor	36.3% (7)	36% (18)	26% (13)	26% (13)	20% (10)
Very Poor	8.8% (7)	10% (5)	16% (8)	10% (5)	14% (7)
TOTAL	100 % (80)	100%(50)	100% (50)	100% (50)	100%(50)

Table 40: Enumerator's Judgement of Household Wealth.

The above table shows a higher rate of rich households (28%) in Goodhope than in any of the other four study villages. Hukuntsi emerged with the highest percentage of very poor households (16%) with Tutume at 14%, Shakawe and Goodhope (10%) and Kanye with the least at 8.8%. The determining scale used in this case slightly varied from one village to the other. Of importance here is that certain variables were used in particular villages to determine the economic status of households but in some cases were not. A good example is housing: While the state of the household compound (ownership of brick houses) was a determining factor in Kanye and Goodhope, this had to be changed in the case of Hukuntsi and Shakawe to suit the regional housing standards in each one of the villages. The same thing applied to ownership and non-ownership of toilets and wheel burrows since these were common in some of the villalges but not common in others. This does have a bearing on the village economy since village location dictates its nature and appearance.

b) Awareness of RIIC and Other similar Institutions

The general response to knowledge by the villagers of RIIC, BTC, BRET and RIP turned out to be very low. This showed a lack of knowledge by most respondents (except KANYE) of any of these institution and of their roles.

INSTITUTION	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
BRET	--	2% (1)	--	--	--
RIIC	67.5% (54)	36% (18)	18% (9)	--	6% (3)
BTC	--	2% (1)	--	--	--
RIP	--	--	--	--	--
Two or more	17.5% (14)	6% (3)	2% (1)	--	--
None	15 % (12)	54% (27)	80% (40)	100% (50)	94% (47)
TOTAL	100 % (80)	100% (50)	100% (50)	100% (50)	100% (50)

Table 41: People's Awareness of RIIC and other related institutions.

In the case of Kanye alone, a high percentage of the respondents was aware of RIIC with only 15% claiming a lack of knowledge of this institution. This could mainly cover respondents who refer to this institution as Tsholetsa. An obvious explanation for this wide knowledge is the fact that RIIC has been operational in this particular village for well over 11 years now. Goodhope presented varying findings in that knowledge of all the institutions was there even though in very small frequencies. 36% of the respondents were aware of the existence of RIIC, 2% of BTC, and 2% of BRET while 6% was aware of two or more of these institutions.

Responses from Hukuntsi indicated that 18% were aware of RIIC and another 2% were aware of two or more of these institutions. The rest - 80% didn't know of the existence of any of these institutions. In Tutume, only 6% was aware of RIIC while the rest (94%) completely lacked any awareness. Shakawe recorded a 100% complete lack of any awareness. Thus, it is clear from the above statistics that RIIC is much more popular in four of the five research villages than BTC, BRET or RIP. In fact nobody in all the five villages was aware of what RIP was. This, in fact, was from the on-set expected. In persuit of finding out any major problems which could have not be addressed to by the questionnaire, an open-ended question was included at the end of the questionnaire. This did not address itself to any particular needy area, but from the results it turned out that people's general and infact persistant needs were mainly centred around food, health and public transport to major towns/villages where all services are located. Results of this exercise are summarized in the table below.

PROBLEMS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
1. Inadequate Food	19.7% (14)	5.6% (2)	2% (1)	8.2% (4)	36.8% (14)
2. Inadequate Health Facilities	1.4% (1)	16.7% (6)	--	2 % (1)	10.5% (4)
3. Inadequate/Unreliable public Transport	7 % (5)	27.8% (10)	8% (4)	18.4% (9)	2.6% (1)
1 and 2 Food and Health	5.6% (4)	2.8% (1)	2% (1)	8.2% (4)	5.3% (2)
2 and 3 Health and Transport	2.8% (2)	19.4% (7)	2% (1)	20.4% (10)	--
1 and 3 Food and Transport	31 % (22)	2.8% (1)	28% (14)	22.4% (11)	--
1, 2 and 3 Food, Health and Transport	25.4% (18)	11.1% (4)	58% (29)	20.4% (10)	2.6% (1)
Other	7 % (5)	13.9% (5)	--	--	34.2% (13)
TOTAL	100 % (71)	100 % (36)	100 %(50)	100 % (49)	100 % (38)

Table 42: General Problems and Needs experienced in Kanye, Goodhope, Hukuntsi, Shakawe and Tutume.

Many respondents in the five different villages expressed a concern over health services. This concern ranged from the need for doctors to visit their villages, expansion of their clilnics, need for more nurses to lack of cooperation by nurses. While this problem might be prevalent, it is at present not within the scope of RIIC's present objectives to help in health related needs nor does RIIC have the ability and capacity to do so.

Transport related problems were mainly concerned with expensive public transport, its unreliability and the need for improved and better roads. There was nothing cited in terms of village level transport. While these problems and needs are noted, it is again felt that they relate minimally to the present RIIC objectives and as such RIIC cannot respond to them. The question of food shortage was secondary to all the other needs but this might have been a bit exaggerated in some cases - especially in the case of Tutume, Goodhope and Shakawe which are agricultural communities. Also, the present ongoing drought could have had influence on the way people conceived their food situation. There is definitely a way in which RIIC can effectively contribute towards the food situation in Botswana. This could be indirectly by way of improving or developing agricultural systems and technologies or directly being involved in the National Food Strategy (NFS) Government Policy . The NFS is intended to develop appropriate responses to the present prevailing situation of growing food shortage and deteriorating nutritional status which is accounted for by the drought. This polilcy encompasses certain objectives such as irrigation which can be of interest to RIIC. The NSF is supposed to be very much closely linked to the SADCC Food Security Programme.

CHAPTER 4

COTTAGE INDUSTRY SURVEY

4.1 Nature of Production

It was a general feeling among the people who were involved in the initial planning of this survey that while RIIC is presently training village artisans in baking, carpentry, tanning and blacksmithery, there are infact certain latent traditional skills in rural areas which can be revived and developed into potential income generating activities. These skills, it was thought, do prevail but in a very obscure form since they are practiced at a very small scale level in the backyard of household compounds. The reason for their being latent would possibly be that they are now practiced only by certain people and mainly without the objective of making money.

In view of their being latent and hence possibly difficult to easily locate, it was decided that a mini-questionnaire should be attached to the main household survey questionnaire. The idea being to try and locate people who could be categorized as cottage artisans. Thus any artisans interviewed in this exercise were only those who could be traced back to the households in the major sample. No further attempts were made to identify any other artisans outside the context of the household survey.

Results from the above survey solely depend on the number of artisans identified in the household survey hence do not in anyway represent the overall existence and survival of artisans in any one particular village. These should be understood within the context of their relationship to households e.g. percentage of households with members holding artisan skills, nature of skills, problems encountered by these artisans and their future plans. It is within this context that the results of this survey exercise can have any meaning since the success rate of the survey highly differed from one village to the other.

VILLAGE	NO OF ARTISANS	% OF HH WITH ARTISANS
Kanye	4	8%
Goodhope	4	8%
Hukuntsi	4	8%
Shakawe	5	10%
Tutume	11	22%

Table 43: Percentage of households with Cottage Artisans.

From the above table, it worked out that an average 11.2% of the households in the five villages had members who are involved in some small scale production activities of some sort. Participation was found to be lowest in Kanye, Goodhope and Hukuntsi all of which show an 8% rate of households with artisan. Shakawe and Tutume showed a higher frequency rate of artisans despite their disparities in location, services, market availability etc. From general observation, Tutume was found to have a high rate of villagers engaged in related activities. In fact a survey/register has been conducted and compiled by the Rural Industrial Office the previous year (1986) and the total figures from this exercise was close to 200 artisans. Unfortunately there was no detailed information on any of the these people save their names and type of production activities they were involved, gender (sex), their age, and length of time since they have been in production.

The nature of activities identified were wide in range such that the questionnaire turned out to be unsuitable for use in all the cases. Because of the differences in the nature of artisan skills, marketing, raw materials, training etc all varied and hence could not be fully solicited in one generic questionnaire. This also applies to the producer's survey but unfortunately, this was not realized until late when field research had actually commenced. The different households based artisan skills identified are presented below.

SKILLS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME	TOTAL
1. Sewing	2	-	1	-	1	4
2. Traditional Builder	2	-	-	-	-	2
3. Shoe repairing	-	1	-	1	1	3
4. Gardening	-	-	-	-	1	1
5. Thatching Grass (collection for sale)	-	-	-	-	1	1
6. Basket/mat weaving	-	-	-	3	1	4
7. Knitting/Embroidery	-	-	-	-	2	2
8. Wood Carving	-	-	-	-	3	3
9. Wood Carving/bicycle repair	-	-	-	-	1	1
10. Skin Tanning	-	-	2	-	-	2
11. Leather work	-	-	1	-	-	1
12. Hat making	-	1	-	-	-	1
13. Beer Brewing	-	2	-	1	1	3
TOTAL	4	4	4	5	12	28

Table 44: Nature of household based Artisan Skills.

The scale of production by the above artisans is not exactly known except that all of them operate from their households. While some artisans were involved in making new products and selling these for a profit, others also sell their skills for a profit. This mainly applies to traditional builders. Shoe repairing and sewing were found to be the most common artisan skills even though these cannot be seen as traditional/indeginous skills in Botswana. Because of the smallness of these producers, it was thought that it would be necessary to note their pattern of production and this was as follows:

PRODUCTION PATTERNS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Seasonally	2	1	3	1	10
All year round	2	2	1	4	1
TOTAL	4	3	4	5	11

Table 45: Time spent in production.

Artisans were divided on the question of time spent in production. Some are in seasonal production, others try to produce all year round. In fact, activities, such as collection of thatching grass, traditional building and basket making are definitely seasonal since they are based on raw materails which are seasonal. Other reasons which could possibly account for artisans producing on seasonal basis could be involvement in other activities - especially agriculture which would keep the artisans tied up over one season but free during another.

4.2 Level of Production

Even though producing at a very small scale level, some of these people are in production year round. Their being in production is not affected by involvement in other activities even though their production pattern might be intermittant. A good example was the bicycle repairer in Tutume. According to this man, he would like to be full time in this trade, but because he can't raise enough income from it to support his family, he is also a wood curver and a subsistant farmer. During the ploughing season he spends the morning at the fields ploughing and comes back home in the afternoon to do bicycle repair work or carving wood. This man still finds it hard to survive mainly because of bad location, lack of business skills, capital/finance and general guidance. His work is of very good quality. His attempts to seek help from the R10 has been fruitless and he says he has so far lost faith and hope in ever getting any support.

Asked whether the artisans thoughtthe skills they were involved in are male or female related skills, 50% of the respondents thought that any person could learn the skill while the rest of the respondents were divided

between male and female. Also to note is the fact that the source of skills - where the artisans gained the skills from - range from being taught by other skilled people to those who learnt by themselves. More artisans acknowledged the fact that they had learnt their skills from other family members.

On the question of sales, all the artisans accepted the fact that they do produce to sell or charge for the services they provide with the exception of two cases - one in Goodhope and another one in Shakawe. This was contrary to the initial assumption that the house based artisans are likely not to be market oriented. In fact over 80% of the artisans indicated the fact that they do realize a reasonable income from the proceeds of their skills.

Only 4 cases (14.3%) maintained that they are not making a profit at all and infact would like to expand and be able to make more money. It was not possible to assess the average number of items made by all the artisans nor average sales mainly because of the difference in their activities and the intermittent nature of their practice.

MARKET	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Village Community	3	3	2	4	10
Botswana Craft	-	-	-	-	-
Two or more	1	1	2	1	1
TOTAL	4	4	4	5	11

Table 46: Source of Market.

Indications from this table (above) are that most of the artisans tend to sell their products or services from within their villages. A small proportion (21.4%) tended to rely on an expanded market structure - these artisans tended to sell in their villages and also to neighbouring villages or nearby town(s). A whole range of market problems were identified but these tended to be unique to individuals. This is again due to difference in artisan skill, location etc. Different problems encountered are presented in the table below.

PROBLEMS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Scare Materials	-	2	1	-	-
Poor Market	3	-	-	-	1
Inadequate time to Spend on Production	-	-	1	1	-
Lack of funds	-	-	-	-	2
Two or More	1	2	1	4	8
Other	-	-	1	-	-
TOTAL	4	4	4	5	11

Table 47: Problems encountered by Cottage-based Artisans.

Most artisans as indicated in the above table suffer from two or more problems. Most if not all the problems faced by this category of artisans are not uniqe to them but are also encountered by the much more organized and established rural small scale producers. Most problems related to raw material supplies are mainly tied to either their not being locally available, being seasonal in the case of gathering, or being expensive, especially those problems experienced by artisans who operates in very remote areas where there are no wholesale and retail trading. Usually these artisans operate in very remote areas where there are no wholesale outlets and even if there were such outlets, the artisans, because of their size of operation are usually not licensed to buy from wholesale trade outlets.

Poor markets are definitely an impeding problem in rural industrialization. This problem surfaces in different forms each relating to the nature of a particular artisan skill. Service production oriented skills definitely require a big population requiring those services while material produce oriented skills will require a need for the product, its quality, and competition with commercial products found in shops. Time spent in production was found not to be a problem among this category of producers. Only two cases in Tutume indicated lack of finance/funds as being a stumbling block in their work.

4.3 Future Trends

The future of cottage industries in Botswana seem to be in a tight situation. Much of the long cherished traditional skills seem to be fast disappearing but not effectively being replaced by any emergent skills. Knowing very well that rural producers experience a lot of constraints which highly contribute to their low success rate, attempts were made to explore possibilities of the introduction of the concept of cooperatives. Cooperatives are considered to be a new concept within this context in that while experience has proven it hard to finance rural entrepreneurs and get

them into full time production due to lack of business skills, markets, etc., the introduction of cooperatives would mean introducing a completely new element in their lives. This would mean teaching artisans what cooperatives are, their advantages, and how to operate and manage these cooperatives. Institutions like RIIC are at present not equipped enough to run such a programme. When asked whether the artisans would be interested in operating as cooperatives, opinions were very much divided.

INTEREST IN COOPERATIVES	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Interested	4	1	1	3	7
Not interested	-	3	-	1	4
TOTAL	4	4	1	4	11

Table 48: Artisan's interest or non-interest in Cooperatives.

It worked out that a majority of the artisans interviewed were interested in working in small groups or cooperatives, provided these are self-sustaining and can support the artisans. Only 36% (8) of the respondents indicated a non-interest in cooperatives. Skill up-grading and/or improvement was also included. Asked whether the respondents would be interested in further training to improve their skills, only three (3) cases indicated a non interest in this. Reasons given were mainly that the artisan(s) was too old to go for training or in another case the respondents cited a complete lack of interest. Otherwise the majority of respondents (22) expressed a strong interest in skills improvement and upgrading.

With the exception of one respondent in Tutume, all the other respondents expressed a wish to expand their practice further with the hope of increasing their income. Sources of finance capital were indicated as either from personal savings 19% (4), help from RIO e.g. FAP 28.6% (6), acquire a family loan 9.5% (2), use two or more sources 9.5% (2), or use other unspecified sources 33.3% (7) such as proceeds from sale of livestock, agricultural produce etc.

The fact that RIIC could at one point possibly develop an interest in their skills, some of the artisans interviewed prompted the inclusion of a question related to future follow-up and further interviews and the responses got are presented in the table below.

RESPONSE	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
Yes	3	-	4	4	1
No	1	4	-	1	10
TOTAL	4	4	4	5	11

Table 49: Attitude towards future RIIC follow-up work.

Responses given in the above table indicated that more of the respondents were not in favour of being interviewed again. This could mainly be that most if not all the people interviewed had not had any previous interaction with RIIC hence were not aware of the training packages which RIIC can offer.

Having so far gone through the statistics, one would be inclined to conlcude that there isn't much in terms of cottage industries. The little effort in existence does not vary much from the established rural producer sector and infact these two share almost similar problems.

CHAPTER 5

RURAL PRODUCER'S SURVEY

5.1 Background Information

Much effort is being made in Botswana to promote rural industrilization in an attempt to curb rural - urban migration. This, in fact is in line with the realization in many third world countries that, whilst the potential for the creation of full time jobs in the modern or formal sector has many limitations, there is a concealed potential for increased productivity in the informal sector. So far the pattern of growth has been well documented and it is obvious that in many instances rural industrialization has been found to be a sad joke.

In many instances, as is presently the case in Botswana, limited industrial growth has intended to be concentrated around the urban areas and their industries have tended to be very much capital intensive. In response to the above situation, numerous development organizations in Botswana (RIIC included) are at work in an attempt to tap the full potential of small scale rural industries with the ultimate objective of creating jobs and income sources in rural areas. The target groups in many cases are rural producers and/or traditional artisans who are already in production or potential producers who are not in production. For purposes of this particular survey, a producer was defined as anyone who is self-employed and is combining resources to produce something new, repairing old products, gathering natural resources for a market or is providing a service which otherwise is not easily available in a community.

It was as such the objective of the producer's survey to identify these producers in the five study villages and closely study the nature of problems they encounter and their aspirations and plans. It may be worth noting that a great deal of information is available at RIIC on various types of appropriate village based technologies (blacksmithery, village bakeries, carpentry and tannery) and of late, work has been done on evaluating these in an attempt to identify stumbling blocks encountered by producers.

SKILLS	KANYE	GOODHOPE	HUKUNTSI	SHAKAWE	TUTUME
1. Tinsmith	1	-	-	-	-
2. Knitting/embroidery	2	-	-	-	-
3. Shoe Repairing	1	-	-	-	1
4. Leather work	1	-	-	-	-
5. Metal work/welding	2	-	-	-	-
6. Baking	3	-	1	8	-
7. Sewing	3	-	-	2	-
8. Gardening/Horticulture	1	1	-	-	-
9. Bicycle Repairing	-	-	-	-	1
10. Fishing	-	-	-	3	-
11. Beer Brewing	-	-	-	6	-
12. Carpentry	2	-	-	4	-
13. Skin Tanning	-	-	1	1	-
14. Other	-	1	-	-	-
TOTAL	16	2	2	24	2

Table 50: Distribution of producers in the five study villages.

From the above table it is evident that the occurance (rate) of production activities tended to vary from one village to the other with Kanye and Shakawe registering the highest number of producers. From a survey carried out by the Rural Industrial Office in Tutume (June - July 1985), a whole list of producers was registered hence the figure shown in the table above does not show the actual situation. This particular survey identified a hundred and sixteen producers in Tutume and surrounding locations. The range of production activities identified by the R10 survey is presented in the table below.

PRODUCTION ACTIVITY	NUMBER	PERCENTAGE
Sewing/Tailoring	14	12.1%
Knitting, Weaving and Embroidery	53	45.7%
Traditional Building	2	1.7%
Horticulture	1	0.9%
House Painting	2	1.7%
Brick Making	5	4.3%
Traditional Thatching	4	3.4%
Tin Smithery	2	1.7%
Pottery	5	4.3%
Basket Weaving	7	6 %
Wood Curving	8	6.9%
Bicycle Repair	4	3.4%

Shoe Repair	2	1.7%
Beer Brewing	2	1.7%
Embroidery	2	1.7%
Modern Building	2	1.7%
Carpentry	3	2.6%
Baking	1	1.7%
TOTAL	116	100 %

Table 51: Nature of production activities found in Tutume and its localities.

As indicated in the table above, the majority of producers in Tutume are involved in sewing and knitting activities. In fact two producers had previously received National Development Bank loans while a third one had received an FAP (financial assistance policy) grant. Other artisans' skills were found to be in existence and these could be of immediate interest to RIIC. These include wood-curving, traditional thatching, pottery and a few others. General observation during our study period indicated that most of these production activities are practised mainly on part time basis.

As shown in table 50, about 16 artisans or rather producers were identified in Kanye. A good number of these producers were found to be RIIC and BEDU ex-trainees. In fact the welders and knitters use BEDU facilities. Kanye was the only place where established workshops were found to be in existence. These include a Metal Workshop (Momoso Engineering), a Leather Workshop and Kopano Sewing Centre. Despite the financial and administrative problems that such workshops could be encounting they still remain impressive in so far as rural industrialization is concerned and in fact ought to be an example in setting rural industrialization policy targets.

Shakawe poses as one of the few industrious villages as shown by the high rate of involvement in production activities. The number presented in table 50 does not accurately present the situation in Shakawe. This particular village is clearly distinguished by an effective use of the Village Market - SKITIKITI, where much of the informal sector trading occurs. The number of producers found at the market place is amazingly big despite the fact that its not a modern well serviced market place like the ones found in Kanye, Tutume and Hukuntsi. Baking seemed to be a major activity but unfortunately, there is an absence of any producer with an established small scale bakery in the village. In fact the Rural Industrial Officer was in the process of trying to set up one bakery project in the village. All bread sellers were mainly concerned with production and sale of fat cakes.

Beer brewing is also a major production activity in Shakawe. This activity involves the brewing of Mohetola, Mberera and to some extent Khadi. From observation beer brewing was found to be an important contributory factor towards the existence and survival of the Village Market since it is the major product. Fishing is also an important activity in the village economy mainly because of easy access to the Okavango river on whose banks Shakawe is located. A large number of people were always observed selling fish at the central Market but unfortunately many of these people refused to be interviewed maintaining that they are not in business.

It turned out that Hukuntsi and Goodhope had the least number of producers among all the five research villages. A women's group in Hukuntsi was found to be trying to run a bakery project but unfortunately had a lot of problems. The ovens and pans then in use were of a very crude type but despite this, bread produced was sold through the local shop and also openly to the general public. According to the group, market demand for bread was there and infact could not be so easily met given their level of operation. Another potential market source was the Community Junior Secondary School which is located in Hukuntsi. This school provides boarding facilities to students and as such it was assumed that once a bakery is set up, a substantial amount of bread could be marketed to them on a much more regular basis and hence providing a reliable marketing channel.

Unfortunately, this group was caught up with a lot of organizational problems which have since resulted in some members breaking away and setting up another independent bakery. Several attempts have so far been made by RIIC to support this women's group by way of providing an oven and training group members since the initially trained members who were trained at Matsha Brigades (Kang) had left the group. Initial attempts to support this group failed but with continued cooperation from the Community Development Office and the RIO - Tsabong, progress is likely to be achieved in the near future. Apart from this bakery project, skin tanning seem to be a cherised traditional skill in Hukuntsi mainly because of the abundance of game skins. But this skill is practiced at a very small scale.

5.2 Producers in Kanye and Shakawe: An Overview

Because of the unbalanced nature of the data obtained from the five villages, a comparison of all the study cases could not be made. Thus, it was felt that a comparison of two villages with the largest number of producers actually interviewed during this particular survey would be much more meaningful.

GENDER

Sex was thought to have an effect on the nature of productive activities since there tends to be male and female oriented activities. As such participation in production activities according to sex is presented in the table below.

SEX	KANYE	SHAKAWE	TOTAL
Male	4 (40%)	9 (39.1%)	13 (39.4%)
Female	6 (60%)	14 (60.7%)	20 (60.6%)
BOTH	10 (100%)	23 (100 %)	33 (100 %)

Table 52: Distribution of producers by Sex.

It is clear from the above table that female participation in production activities was found to be higher in both villages than male participation. Also, the four cases found in Hukuntsi and Goodhope (two in each village) were both females. These figures prompt a convincing argument that rural women in some parts of Botswana are economically active and industrious. Like their male counterparts who in many instances have migrated to urban areas or elsewhere in a bid to fend for the family, the women remain at home actively engagedin income generating activities to supplement their household income.

Like gender, age was thought to be one of the important factors in influencing the level of participation in production activities. While it is true that every grown up and able bodied adult needs money, access to means of acquiring this money differ according to access to finance, skill acquisition, personnal motivation and interest etc. The table below shows the distribution of producers according to age.

AGE	KANYE	SHAKAWE
Less than 20 years	1 (10%)	2 (9.1%)
21 - 40 years	4 (40%)	9 (40.9%)
41 years and above	5 (50%)	11 (50 %)
TOTAL	10 (100%)	22 (100 %)

Table 53: Age distribution of producers.

A very small percentage of people under the age 20 years were identified as producers while in both cases 50% of the producers were over 41 years of age. Another 40% was aged between 21 to 40 years. Thus, one would be

correct to say that many of the producers are found in the adult age group.

WORKSITE AND TIME IN PRODUCTION

The nature and state of worksite was also a point of focus by the survey since this was thought to be a good indicator of the extent to which producers were established. It was found that in Kanye, 80% of the producers produced their products from their compounds, 10% had their production places located somewhere in the village while another 10% was using both. In Shakawe, 75% were producing from their households compound, 8.3% somewhere in the village and 16.7% from other sources. Thus, the majority of producers were found to be using their household compounds for production purposes. In this report, most of the producers thus indicated the fact that they own their work sites (Kanye: 90% and Shakawe: 95.5%).

It worked out that more producers interviewed had been in production for a reasonably long period of time (over two years) and this is presented in the table below.

TIME	KANYE	SHAKAWE	TOTAL
Less than 1 year	1 (10%)	4 (16.7%)	5 (14.7%)
1 - 2 years	1 (10%)	4 (16.7%)	5 (14.7%)
2 years and above	8 (80%)	16 (66.7%)	24 (70.6%)
TOTAL	10 (100%)	24 (100 %)	34 (100 %)

Table 54: Length of time in production.

In both cases, more producers had been in production for more than 2 years. This could mainly be due to the fact that the survey focused on those producers who could be easily traced and interviewed. Thus, the chance of finding the younger and less established producers was limited.

The source of their skills varied a lot. Most of the producers indicated that they had learnt their skill from other family members (40% in Kanye and 66.7% in Shakawe respectively). A few cases indicated brigades and formal employment as the source of their skills. The rest (30% in Kanye and 29.2% in Shakawe) indicated some other unspecified sources. It was not possible to assess the impact of organized training institutions such as RIIC and BEDU on this particular group. This was so since none of the respondents acknowledged the fact that any of these institutions had been the original source of their skills. This does not necessarily mean that none of the artisans in any of the five study villages had first acquired their skills at RIIC and BEDU.

Surprisingly, a substantial number of producers had employed some other community members over the period of time they had since been in production. More producers of this kind were found in Kanye (80%) and to a far lesser extent in Shakawe (9.5%). Such statistics could be quite encouraging in so far as job creation in the rural areas is concerned. The reason given by those producers who had never employed other people were mainly lack of capital or rather money as the main prohibiting factor.

5.3 Economic Trend and Constraints

MARKETING:

Because of the level of production, much of what is produdced in this sector is sold in and around the village with the local population being the main buyer. In both villages 80% or more of the producers interviewed did confirm the above statement. The remaining 33.3% and 12.5% in Kanye and Shakawe respectively had access to two or more market sources. Market sources included the village, neighbouring villages, towns and other.

Very poor responses were got pertaining to the nature of transport used by producers to market their products. This could mainly have been due to the fact that because of their small level of operation, rural producers tend to attach very little or no attachment to transportation of their final products. Of the responses got, most of the producers indicated that they foot to the market while the rest use public transport to travel to find the market.

PRODUCTION:

Production in many cases remained at very small scale. Asked whether producers would be interested in producing more products or not, the responses were as follows.

RESPONSE	KANYE	SHAKAWE
Yes	10 (100%)	12 (60%)
No	--	8 (40%)
TOTAL	10 (100%)	20 (100%)

Table 55: Producer's views towards increasing production.

As indicated in the above table, a majority of the producers in both the two villages would be keen on increasing production. This also applied in the case of Hukuntsi, Goodhope and Tutume where all the respondents indicated an interest to do this. The only exception was in Shakawe where 40% of the producers indicated a lack of interest in increasing their production rate. Despite a wish by producers to increase production a

number of reasons were pointed out as limiting factors in implementing this wish. These are presented in the table below.

PROBLEM	KANYE	SHAKAWE
Raw Material Shortage	2 (20%)	6 (66.7%)
Low Demand	1 (10%)	2 (22.2%)
Other	7 (70%)	1 (11.1%)
TOTAL	10 (100%)	9 (100%)

Table 56: Factors prohibiting production increase.

In the case of Kanye, 70% of the producers suffered from other problems other than those indicated in the above table as their prohibitive factors. Only 20% had problems with raw material supply while 10% linked their problems to low market demand. Shakawe, like the other three villages (Hukuntsi, Goodhope and Tutume) had a high frequency of raw material supply shortage as the major factor. The production pattern varied very much in between the two villages.

Asked when they produced, the responses were as follows.

FACTORS	KANYE	SHAKAWE
Material Availability	--	3 (12.3%)
On Order	--	2 (8.3%)
Producing Continuously	8 (80%)	17 (70.8%)
Two or more	2 (20%)	1 (4.2%)
Other	--	1 (4.2%)
TOTAL	10 (100%)	24 (100%)

Table 57: Factors determining production.

The majority of producers were found to be in production all the time. Figures in Kanye show 80% to this effect and in Shakawe 70.8%. Another wide range of reasons determining production include availability of raw materials and the case of artisans/producers who produce on order. The latter factor would mainly be applicable to service oriented producers e.g. roof thatching. The majority of producers in Kanye maintained that they do experience high sales and low sales period. This means that demand on their products tends to boom over a certain period but then deteriorate over the next. This has not been the case in Shakawe. Here, the majority of the producers indicated that sales tend to be consistant throughout

their time in production. Because of the high rate of baking in Shakawe, one would be inclined to see this activity as having an effect on the results since demand for bread is constant.

All the respondents factually pointed out that they were not the only ones in their villages involved in the nature of production they are engaged in. Thus, there prevails an awareness of some business competition that they are involved in. This awareness also extended to charges made on products with the many producers asserting that other producers sell more or less at the same prices as they did.

RAW MATERIALS:

Access to raw materials is one of the determinant factors in the success of small scale rural producers. Depending on the nature of production activity involved, problems related to raw material supply range from scarcity, prohibitive costs, to anything. While some production activities are seasonal, others are practiced year round hence a difference in the nature of problems involved. A whole range of problems related to material supply was found to be impinging on the producer's activities and these are presented in the table below. In fact most of the producers interviewed in all the five villages indicated that they do experience such problems with the exception of 20% in Kanye and 8.3% in Shakawe.

PROBLEMS	KANYE	SHAKAWE
Transport	1 (11.1%)	1 (5.3%)
Distance to source	1 (11.1%)	--
Expensive	3 (33.5%)	9 (47.4%)
Two or More	1 (11.1%)	4 (21.1%)
Other	3 (33.5%)	5 (26.3%)
TOTAL	9 (100 %)	19 (100 %)

Table 58: Problems affecting raw material supply.

Because of the vast differences in the nature of production activities and the vast regional location of the two study villages, problems encountered by producers were vast and hence were not easy to relate to each other. It was found that each category of producers in a particular area experiences its own unique problems.

BUSINESS MANAGEMENT:

Business management is one important aspect closely related to the success and possible failures of rural enterpreneurs. From our experience with the

village Artisan Training Programme at RIIC, we found out that training of artisans in an attempt to impart artisan skills alone is a minute part of their requirements for success thereafter. Thus the survey went further to enquire on the extent to which rural producers are skilled in managing their business. Asked whether the producers had any background training related to business management skills, the responses were as follows.

RESPONSE	KANYE	SHAKAWE
Yes	6 (60%)	6 (25%)
No	4 (40%)	18 (75%)
TOTAL	10 (100%)	24 (100%)

Table 59: Producers with background training in business skills.

Figures from the table above show a higher frequency of producers in Kanye (60%) who have been exposed to training in business management as opposed to only 25% in Shakawe. The contributory factor here might be due to the pressure of a developed small scale business network in the Kanye catchment region as opposed to the remote Shakawe region. In addition to this existence of trained producers, 50% maintained that they do keep business records as opposed to only 16% in Shakawe. Their feelings towards further training in this field was very much pronounced and favourable as indicated below.

RESPONSE	KANYE	SHAKAWE
Yes	9 (90%)	17 (73.9%)
No	1 (10%)	6 (26.1%)
TOTAL	10 (100%)	23 (100%)

Table 60: Response towards further business management training.

From the above responses and from further discussions with the producers, it was obvious that the need for improved business management skills was realized by the concerned people hence their high response in all the survey villages towards a need for further training in this field. At present, a number of organizations are actively involved in the training of village artisans in this field but it is still as yet too early to evaluate the success rate of these numerous training programmes. Feelings about the present status of production varied in all instances as indicated in the table below.

STATUS OF PRODUCTION	KANYE	SHAKAWE
Growing	5 (50%)	5 (20.8%)
Constant	1 (10%)	12 (50 %)
Decreasing	4 (40%)	7 (29.2%)
TOTAL	10 (100%)	24 (100 %)

Table 61: Present Performance in production.

Half of the producers in Kanye felt that they were in a way expanding as shown by an increase in production while 40% felt that their production rate was deteriorating. This is a contrast of Shakawe where only 20% felt that they were expanding and another 29.2% saw a decrease in their production rate. Figure on those who felt that they were constant also varied with 10% in Kanye and 50% in Shakawe.

In both villages, producers indicated involvement in other activities such as arable farming, livestock farming, casual employment or other activities. The extent of their involvement was unfortunately not assessed despite the fact that the majority of producers saw their artisan activity as a primary source of cash income (85.7% in Kanye and 72.7% in Shakawe). Responses to sources of initial finance capital tended to be all centered around private sources. This mainly came from personal savings, help from other family members or sale of livestock. Only two (2) cases in Kanye got initial financial backing from the banks.

5.4 Future Prospects

There seems to be a lot of uncertainty pertaining to the future of some small scale industries in Botswana. This uncertainty is not only confined to this country alone but also to other third world economies. Given a correct diversification policy, this minute industrial sector could effectively contribute in rural development. Survey results indicated that over 80% of the respondents acknowledged the fact that they experienced numerous problems in their business. In this respect they felt that assistance was needed in a number of fields as indicated in the table below.

FORM OF ASSISTANCE	KANYE	SHAKAWE
Technical	--	--
Management	2 (22.2%)	5 (25%)
Financial	--	2 (10%)
Marketing	--	1 (5%)
Material Supply	7 (77.8%)	9 (45%)
Two or more	--	--
Other	--	2 (10%)
TOTAL	9 (100%)	19 (100%)

Table 62: Nature of Assistance required by producers.

While it is apparent from the above table that none of the producers were concerned with technical help, each respondent had one or more problems related to management, finance, marketing or raw material supply. As already mentioned earlier, the nature of problem encountered tend to differ according to individual artisan skills, level of training of individual artisans and their regional locations. Unfortunately there was no probe as to how producers planned to alleviate some of these problems.

The question of Cooperatives was also taken seriously in relation to these established producers. Attempts were made to find out the extent to which producers could be interested to go into cooperative production with other artisan producers in their respective areas. The results of this are presented below.

RESPONSE	KANYE	SHAKAWE
Yes	4 (40%)	16 (69.6%)
No	6 (60%)	7 (30.4%)
TOTAL	10 (100%)	23 (100%)

Table 63: Producer's responses TOWARDS COOPERATIVE Production.

The idea of cooperatives was not so much appealing to producers in Kanye where only 40% was interested as opposed to Shakawe where 69% indicated an interest in this kind of operation. A convincing argument here could be that because of their exposure to the modernized cash economy for a longer period of time, producers in Kanye tend to be very individualistic and capitalistic in character. This is not so in Shakawe where traditional societal values are still much more prevalent hence a relative interest in cooperative production. This should not be taken as saying that

cooperatives are here thought to be a better system of operating small scale industries.

Plans pertaining to future business by producers were more or less uniform in the two villages and this is presented below.

PLAN	KANYE	SHAKAWE
Continue as it is	1 (10%)	5 (25%)
Quit Business	--	--
Expand	7 (70%)	9 (45%)
Move to new location	--	--
Two or more	2 (20%)	6 (30%)
Other	--	--
TOTAL	10 (100%)	20 (1010%)

Table 64: Producer's Future Plans.

Unsurprisingly, a large proportion of the producers in the two villages were very much interested in expanding their production operations. None of the respondents indicated any interest to quit business. This is very encouraging to whatever party is engaged in rural industrialization in that rural producers do show determination despite the odds they are continuously encountering. Certain cases of desperation have been reached before - especially among the official circles, pertaining to a lack of interest by producers in their work despite money having been spent on them on training. This usually happens in the case of beginners who after training find it hard to get established and as such gradually loose their interest and turn to seeking for greener pastures.

This does not seem to be the case with producers who are to some extent established and have been in production for a couple of years. Also, it turned out that nine out of ten of the producers interviewed in Kanye knew about RIIC - a finding which is unsurprisingly obvious. In Shakawe, only 12.5% had ever heard of RIIC while the rest had never heard of this place. This does not come as a surprise when their regional location in the country is taken into consideration.

CONCLUSION

Usually there is a mismatch between the needs and problems felt by villagers and the assumptions of the individuals and institutions developing and attempting to diffuse appropriate technologies. Consequently, there always is a need for those individuals and/or institutions to try and keep themselves informed of what is happening among the communities they are intending to serve. While this process is quite expensive there tends to be an absence of any well defined method which can be successfully applied to bridge the above mentioned mismatch. In this respect the process of needs assessment is like a blind man looking for a black cat in a dark room. At the end of this exercise, the researcher is not sure as to whether he has the right cat he was looking for.

As far as this Survey is concerned, some of the original objectives laid out in the terms of reference were not achieved. The basic objective was to identify broad areas of work in which RIIC could possibly develop and disseminate technologies. Given the areas outlined in this research paper, hopefully the above objective has been met. It is worth pointing out that socio-economic problems found in rural areas tend to be endless and as already mentioned, the processes used to identify and assess these needs leaves much to be desired. This is so mainly because of the broad nature of the concept "Need". Apart from identifying broad areas of work, the Survey managed to cite a few specific potential areas of work such as harvesting, threshing and grain storage.

Because of the nature of the Survey i.e. the methods used, both felt and perceived needs of the five rural communities surveyed were addressed to despite their being limited to specific areas such as arable farming. In line with RIIC objective of creating and supporting rural industrialization, the Survey did attempt to identify potential mini-industrial enterprises but unfortunately with limited success. All in all, a bulk of the objectives spelled out in the terms of reference can be said to have been achieved by the Survey and a few have for different reasons not been addressed to.

This Survey was not able to address itself to the needs of the marginalized urban poor. This was so mainly, due to lack of adequate manpower and time resources. In addition to this, it is not as yet within RIIC objectives to actively involve itself in urban development in the near future. While the terms of reference further called for a coverage of country-wide needs, this was not possible to achieve given the present RIIC resources. All the same, the findings of this particular survey can be effectively applied to five regions in Botswana. To some extent the Survey was able to address itself to the question of rural industrialization even though this was not an indepth exercise which left much to be desired. Given its structure,

the Survey was not able to identify methods of supporting rural production enterprises. Fortunately, this aspect of rural industries has since been covered and accomplished under the "Village Artisan Training Programme Evaluation Survey".

Other areas not covered but pointed out in the terms of reference are soil preparation and conservation and rural institutions. No work was done on the former in an attempt to avoid a duplication of efforts since Agricultural Research - MOA is actively involved in this kind of work. Needs pertaining to rural institutions could not be included due to limited resources. Despite the failures spelled out above, the Survey managed to solicit some interesting findings which hopefully are going to be of use to the RIIC research and development committee and the Extension department.

Basically, the Survey exercise was based on the 'demand push approach' to innovation in which the needs, priorities and demands of the target groups are studied before attempting to develop and introduce a new technology or system. This does not necessarily mean that this exercise does assure success to any future work moulded around its findings. In fact many people tend to get confused between needs and wants. It is the want that make a technology or system a success and not the need. It is therefore the duty of the planners and implementors to understand the complexities of village society, to know the needs and wants of these societies and ultimately to match these two concepts.

RURAL NEEDS ASSESSMENT SURVEY

TERMS OF REFERENCE

1. The overall purpose of the survey is to provide direction for future Research and Development programmes at RIIC. It should provide information to identify broad areas in which RIIC can develop and dessiminate technologies and to develop criteria to evaluate specific project proposals. Example of broad areas would be: low cost housing, soil preparation and conservation; rural water supply; etc. Examples of specific projects would be: CINVA RAM blocks; spike tooth harrow; plough planters; ADPs etc.

2. The survey should identify both perceived and observed needs. The survey should not be confined to household needs but should cover all aspects of rural life. Rural institutions such as clinics and schools should also be included.

3. The survey should also cover the "poor" urban centres and the specific needs in these areas. Review of existing literature i.e. Naledi baseline survey * stage 3 of survey.

4. The survey should attempt to identify country wide needs. It is recommended that sample villages in Northwest, Central, Southern and Southeastern Districts be surveyed. Both widespread and local needs can be specified.

5. One overall goal of RIIC is to create and support rural enterprizes. In line with this the survey should attempt to identify areas that will lead to the creation of rural jobs, small scale industries and formal employment and to identify methods of supporting these enterprizes.

RURAL INDUSTRIES INNOVATION CENTRE - KANYE BOTSWANA

RURAL NEEDS IDENTIFICATION SURVEY

AIM:

To carry out an information gathering exercise in five villages throughout Botswana with the objective of identifying both felt and perceived needs of the rural population for RIIC.

INSTITUTE PROPOSING RESEARCH:

The Rural Industries Innovation Centre (RIIC), Private Bag 11, KANYE - Botswana, a subsidiary of Rural Industries Promotions (BOTSWANA).

PROJECT LEADER:

Mr Teedzani Woto - Sociologist - RIIC Kanye.

OTHER COOPERATING AGENCIES:

1. Applied Research Unit (MLGL): General professional advice on planning and implementation of the survey.

2. Rural Sociology Unit (MA): Advice on implementation of the survey.

3. Central Statistics Office: Advice on implementation of the survey and coordination with similar research activities.

4. University of Botswana: Help with recruitment of enumerators.

LOCATION OF FIELD RESEARCH:

In five villages that are located all over Botswana. Population ranges from 841 to 20 215 persons. These five villages are:

1. Kanye (20215)
2. Goodhope (841)
3. Tutume (3736)
4. Gomare (1794)
5. Hukuntsi (2009)

The strategy is to choose villages which would give us a wide range of situations, such as differences in land situation, predominant production systems, the number of inhabitants in the village and their present level of access to services.

BACKGROUND INFORMATION:

Different sectors of the rural population have a whole range of socio-economic needs which require a magnitude of technical solutions. On the contrary, RIIC has over the past eleven (11) years attempted to work in the direction of providing technical solutions to some of these rural population needs but unfortunately these attempts have not meet the expectations of both RIIC research staff and the intended rural beneficiaries. What has increasingly become obvious to RIIC R & D staff is the lack of adequate data and information on both the felt and perceived needs of rural communities as a definite starting point in their work.

As a way of trying to alleviate the above problem, RIIC has decided to carry out a rural need identification exercise through which relevant data will be collected on the basis of which future R & D work could be based on. In this respect, the survey will address itself to the long-term problems such as rural employment, food production, water sanitation etc.

REVIEW OF CURRENT KNOWLEDGE:

Two survey exercise of the same nature have so far been undertaken by RIIC. But unfortunately none of these have ever been utilised in planning or in any other form by RIIC. The first study was carried out in 1977/78 by RIIC Conjunction with the Southern District. This survey "Survey of Rural Needs in Southern District - 1977/78", is generally critisised for the following reasons:

a) The survey was carried out about ten years ago hence the data in the report tends to be outdated and as such out of context.

b) The bulk of the information gathered was meant to help the Southern District council in planning. Thus the information in the report relates minimally to RIIC objectives and planning activities.

c) A lot of data was collected but never properly analysed and presented in a coherent form. Thus many people have never come to understand the findings of the survey.

The second survey carried out around 1981/82 by Deepa Narayan-Parker was also focussed on Southern District. Findings of this survey are found in the report which was published in March 1982 called "Factors Affecting Small Scale Production in Rural Botswana (Southern District - FCDA)". This study, as carried out in conjunction with Ministry of Commerce and Industry has had limited benefit to RIIC due to its nature and limitations. These limitations are as follows:

a) The study was undertaken to provide southern district authorities with basic information related to production activities in their First Communal Development Area. As a result the study failed to closely relate to RIIC's objectives as a development organisation.

b) The report has more detailed information on demographic and income related activities than factors affecting production as originally intended. As a result no specific needs are pin-pointed in the research.

In summary one would say that none of the existing information relates to the present RIIC operational goals and objectives hence the need to conduct a more or less similar exercise with the view of directly benefiting RIIC's research and development and extension sections.

GENERAL OBJECTIVES:

a) Identifying rural population needs which could provide a base for possible future work for RIP/RIIC.

b) Provide a readily available pool of information for both RIICs Extension and the R & D sector to start immediately drawing from.

SPECIFIC OBJECTIVES:

a) Identify broad and specific areas of possible future work to direct future Research and Development programmes at RIIC.

b) Identify both felt and perceived needs of rural communities which need technical solutions affordable by RIIC. This includes household and Institutional needs.

c) To identify country wide needs hence draw a representative sample of five villages covering four nation wide regions.

d) Identify income generating activities which could lead to the creation of rural jobs, small scale village/rural industries or/and any other type of rural employment.

e) Identify methods of supporting the above activities hence immediately create an activity to be immediately undertaken by the extension section.

PERSONNEL REQUIRED:

A seven (7) person team will be required to carry out the field

- Project Leader - T Woto
- Chief Extension Officer - as resource person.
- 2 RIIC Extension Officers to do field work and enumeration in Kanye (Mooka Moetse and Judith Sekelenyane).
- 4 part-time university students as enumerators in the four other villages.

RESEARCH METHODOLOGY:

a) The strategy is to choose five villages which would give us a wide range of situations throughout the country so as to be able to identify broad and specific areas of work depending on different needs in different areas.

b) Much emphasis will be on participant observation but this will be combined with household and institutional surveys, open ended interviews and group discussions. Our focus will be concentrated on gathering information which is attitudinal in character rather than quantitative except in the case of identifying producers (small scale industry) and potential producers.

c) Eight weeks will be spent in doing the field work which will cover five villages and these are:

Kanye - Southern District
Goodhope - Southern District
Tutume - Central District
Gomare - North West District
Hukuntsi - Kgalagadi District

RECRUITMENT OF PERSONNEL AND PROJECT MANAGEMENT:

The project team will consist of seven (7) persons:

Project Leader - Sociologist
Chief Extension Officer - RIIC
2 Extension Officers - RIIC
4 Part-time UB Students

At present there is a project leader who is also a project co-leader for the small scale desalination project - RIIC. He will be wholly available for the time required for the project.

The Chief Extension Officer will be available as a resource person to provide the necessary extension service in the field i.e. consultation with local authorities and government extension network to be affected by the survey.

Two officers from the extension office will be available for a period of three (3) months to do the field work in Kanye.

Four (4) university students will be hired on a part-time basis as enumerators. These people will be recruited through the sociology department of the University of Botswana.

The General Manager (RIIC) will be readily available to provide the necessary management supervision and support.

Fort-nightly sessions will be held between the project leader, chief extension officer and the general manager to review progress and make the necessary decisions.

FUNDING AND ADMINISTRATIONS OF FUNDS:

The General Manager has been delegated the responsibility of acquiring the necessary funds for the project. Any expenditure from now on will be charged to L1 account. Thus there will be no need to open a separate account when the necessary funds are acquired. All funds will be administered by the RIIC accounts department.

PROJECT BUDGET

A. PERSONNEL

4 enumerators @ P10.00 per day per individual for 12 man months (3 months each)

= (P10.00 x 30 x 3)4 NB (rate x 1 month x for 3 months) x for 4
= P3 600.

B. ALLOWANCES

Per diems for 2 officers and a driver for 50 days an average for each officer:

= P12.00 x 60) 3
= P2 160.

C. TRANSPORT

Transport rate for LAND CRUISER @ 50t per kiolometre for 22 600 km = P11 300.

D. TRAINING

Expenses for accomodation in Kanye

TRAINING	:	18th - 31st May = 14 days.
REPORT WRITING:		1st - 15th August - 15 days
TOTAL	:	29 days

The enumerators will be accomodated in the transit house hence no expenses will be incurred.

E. FIELD EQUIPMENT

4 stretchers @ P50.00 each	= P200.00
4 paraffin stoves @ P12.00 each	= P 48.00
4 plates @ P1.25 each	= P 5.00
12 piece cutlery set	= P 10.00
4 cooking pots @ P12.00 each	= P 48.00
4 face tubs @ P5.00 each	= P 20.00
4 clip boards @ P2.00 each	= P 8.00
TOTAL	= P359.00

RURAL INDUSTRIES INNOVATION CENTRE

RURAL PRODUCER'S SURVEY

NAME OF INTERVIEWER: ..... DATE: .....
VILLAGE: ..... CODE NO: .....
NAME OF INTERVIEWEE: .....

Note: 1. Please tick ( ) where appropriate

A. DEMOGRAPHIC DATA AND BACKGROUND INFORMATION

1. Type of production: .....

2. Location of work site:
   - Compound ( )
   - In the Village ( )
   - Other ( )

   Specify .....

3. Work place description:
   - Temporary structure ( )
   - Mud/thatch workshop ( )
   - Cement/brick workshop ( )
   - Other ( )

   Specify .....

4. Status of interviewee:
   - Owner ( )
   - Other ( )

   Specify .....

5. Estimate of age:
   - 20 and below ( ) Please specify age
   - 31 - 40 ( )
   - 41 and above ( )

6. Sex:
   - Male ( )
   - Female ( )

7. **What products do you produce?** .....
   .....

8. How long have you been producing?

Less than a year	( )
1 - 2 years	( )
Over 2 years	( )

9. How did you acquire your skills?

Family	( )
Brigades	( )
School	( )
Formal Employment	( )
On-the-job	( )
Other	( )

Specify .....

10. Do you have anyone employed?

Yes	( )
No	( )

10.1 If yes, how many .....

10.2 Do you pay them? Yes ( )
No ( )

10.3 If not, why

No money	( )
Not enough sales income	( )
Employee(s) not qualified	( )
Employee(s) unreliable	( )

B. MARKET DEMAND

11. Who are your main customers?

Local people	( )
Traders	( )
Tourists	( )
Botswana Craft	( )
Other	( )

Specify .....

12. Where do you sell your products?

In the village	( )
Near-by villages	( )
Towns	( )
Other	( )

Specify .....

13. If you sell your goods outside the workplace, how do you transport the goods to the selling place?

On foot	( )
Bicycle	( )
Donkey cart	( )
Public transport	( )
Other	( )

Specify .....

14. Could you produce more?

Yes	( )
No	( )
Do not know	( )

14.1 If yes, why don't you do that?

Busy with other HH activities	( )
Busy with agriculture	( )
Shortage of raw materials	( )
Low market demand	( )

Specify .....

15. Are there others who sell this product (provides this service) in your village?

Yes	( )
No	( )

15.1 If yes, do they charge:

More	( )
The same	( )
less	( )

C. RAW MATERIALS

16. What raw materials do you use in production and how do you obtain these?

PRODUCT	RAW MATERIAL	SOURCE	MEANS OF TRANSPORT
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

Code No. Source

1. Gather local materials
2. Buy from Locals
3. Buy from local shops
4. Other

Means of Transport

1. On foot ( )
2. Bicycle ( )
3. Donkey cart ( )
4. Car (own) ( )
5. Public transport ( )
6. Hire vehicle ( )
7. Other ( )

17. Are the raw material(s) abundant?

Yes ( )
No ( )
Sometimes ( )

18. What problems do you usually encounter in getting the materials?

Transport ( )
Distance to source ( )
Price ( )
Other ( )

Specify .....

D. TOOLS

19. Please list:

NAME OF TOOL	NO.	ORIGIN HOME MADE/BOUGHT	OWNERSHIP OWNED/BORROWED
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

20. Who repairs your tools?

Self ( )
Local Craftsmen ( )
Other ( )

Specify .....

E. MANAGEMENT

21. Do you have any background training related to business skills?

Yes ( )
No ( )

22. Do you keep any business records?

Yes ( )
No ( )

23. Do you think you need further training on business management?

Yes ( )
No ( )

24. When do you produce?

When supply is available ( )
When an order is placed ( )
All the time ( )
Other ( )

Specify .....

F. BUDGETS

25. What are your most common products?

PRODUCTS	SELLING PRICE
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

26. Do you experience a high sales period?

Yes ( )
No ( )

26.1 If yes, when and why? .....
.....

27. Do you experience a low sales period?

Yes ( )
No ( )

27.1 If yes, when and why? .....
.....

28. What is the current level of production?

Growing ( )
Constant ( )
Decreasing ( )

29. What other activities do you do?

Farming ( )
Livestock ( )
Casual employment ( )
Other ( )

Specify .....

30. Is this activity your primary source of income?

Yes ( )
No ( )

31. How did you obtain the money to start your business?

Personal savings	( )
Family loan	( )
Bank loan	( )
Livestock sales	( )
Government aid	( )
Other	( )

Specify .....

G. PROBLEMS

32. Do you have any problems with this business?

Yes	( )
No	( )

32.1 If yes, what are they?

Lack of skills	( )
Lack of raw materials	( )
Low demand for products	( )
Transport	( )
Lack of enough equipment	( )
Lack of working capital	( )
Workshop facilities	( )
Marketing of product	( )
Record keeping	( )
Lack of water	( )
Other	( )

Specify .....

33. Have you ever received any technical assistance?

Yes	( )
No	( )

Specify source .....

34. Do you think you need any assistance with your business?

Yes	( )
No	( )

34.1 If yes, what kind? FROM WHOM

Technical	( )	.....
Management	( )	.....
Financial	( )	.....
Marketing	( )	.....
Material supply	( )	.....
Other	( )	.....

Specify .....

35. Would you mind operating in a cooperative form with other producers?

Yes	( )
No	( )

36. What are your future plans for this business?

Continue as it is	( )
Quit the business	( )
Expand the business	( )
Move to a new location	( )
Other	( )

Specify .....

37. Have you ever heard of RIIC?

Yes	( )
No	( )

H. INTERVIEWER'S COMMENTS AND OBSERVATIONS

1. State of business:	Progressive	( )
	Not doing very well	( )
	Disorganized	( )
2. Quality of goods:	Very good	( )
	Good	( )
	Standard	( )
	Poor	( )
3. Problems facing the Business:	Lack of technical skills	( )
	Lack of materials	( )
	Distance to market	( )

FOOTNOTES

1. Guide for Designing and Executing Small Scale Surveys in Botswana (ESO) page 3.

2. A. H. Barclay, Jr et-al, Botswana Rural Sector Study (1979) page 9.

3. Min. of Finance and Development Planning, National Development Plan 1985 - 1991 page 168.

4. Ibid page 181.

5. A. G. Hamilton, A Review of Post-Harvest Technologies in Botswana page 43.

6. U.S.A. Government (1967) The World Food Problem page 539.

7. A. G. Hamilton, Op-cit page 43.

8. Small Form Grain Storage Vol. 7 page 59.

9. A. G. Hamilton, op-cit page 43.

10. Energy Planning Associates, Energy Utilization and Requirements in Botswana page 23.

11. National Development Plan - op-cit page 112.

12. Economic Consultancies (PTY), Report to the Government of Botswana page 23.

13. National Development Plan op-cit Page 122.

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14. Appropriate Technology for Grain Storage Storage in Tanzanian Villages: Report of a Pilot Project (Community Development Trust Fund of Tanzania, January 1977).

15. National Development Plan 1985 - 1991, (Min. of Finance and Development Planning; Gaborone, December 1985).

16. A Survey of Rural Needs in Southern District (Southern District Council and RIIC; Kanye 1978).

17. A Guide for Designing and Executing Small Scale Surveys in Botswana, (Central Statistics Office; Min. of Finance and Development Planning, 1982).

18. U.S.A. Government, The World Food Problem: Report of the President's Science Advisory Committee (Washington D.C. 1967).

19. Prospects for Diversification of the Small Scale Enterprises Sector in Botswana (Economic Consultancies (PTY) Ltd, Gaborone 1985).

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