

CONSULTANCY FOR THE
POVERTY AND SOCIAL IMPACT ANALYSIS
OF THE INTEGRATED SUPPORT PROGRAMME FOR
ARABLE AGRICULTURE DEVELOPMENT (ISPAAD)

FOR THE

UNITED NATIONS DEVELOPMENT PROGRAMME
REPUBLIC OF BOTSWANA

FINAL REPORT

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List of Abbreviation

AGOA	-	African Growth and Opportunity Act
AISP	-	Agricultural Input Subsidy Programme
ALDEP	-	Arable Lands Development Programme
ARAP	-	Accelerated Rainfed Arable Programme
BCA	-	Botswana College of Agriculture
BCR	-	Benefit – Cost Ratio
BIDPA	-	Botswana Institute of Development Policy Analysis
CAR	-	Centre for Agricultural Research
CEDA	-	Citizen Enterprise Development Agency
CSO	-	Central Statistics Organisation
DAR	-	Department of Agricultural Research
DCP		Department of Crop Production
FAO		Food and Agriculture Organization
GoB	-	Government of Botswana
GSP	-	Generalised System of Preferences
IFAD	-	International Fund for Agriculture Development
ISPAAD	-	Integrated Support Programme for Arable Agriculture Development
LIMID	-	Livestock Management and Infrastructure Development
MDG	-	Millennium Development Goals
MLH		Ministry of Lands and Housing
MoA		Ministry of Agriculture
NFTRC		National Food Technology Research Centre
NAMPAAD	-	National Master Plan for Arable Agriculture and Dairy Development
NPV	-	Net Present Value
OECD	-	Organisation for Economic Cooperation and Development
OPV	-	Open Pollinated Varieties
PHI	-	Poverty Headcount Index
PSIA	-	Poverty and Social Impact Assessment
PTA	-	Preferential Trade Agreement
SACU	-	Southern African Customs Union
SADC	-	Southern African Development Community
SMU	-	Seed Multiplication Unit
SPSS	-	Statistical Package for Social Scientists
SWOT	-	Strengths, Weaknesses, Opportunities and Threats
UN	-	United Nations
UNDP	-	United Nations Development Programme
USA	-	United States of America
VEW	-	Village Extension Worker
WTO	-	World Trade Organization

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Le ka moso Bagaetsho!

EXECUTIVE SUMMARY

Background Information

The United Nations Development Programme (UNDP) awarded a tender to the BCA Consult Pty Ltd, a consulting company of the Botswana College of Agriculture, to undertake a consultancy on the Poverty and Social Impact Assessment of the Integrated Support Programme for Arable Agriculture Development (ISPAAD) in Botswana. The objectives of the consultancy were to: undertake a poverty and social impact assessment of ISPAAD; assess the programme's performance to date and inform adjustments to improve the program's performance, *vis-a-vis* its objectives. This summary presents the design features of the ISPAAD, an overview of the performance of the economy of Botswana and the agricultural sector in particular. It further highlights the major findings of the PSIA of the ISPAAD consultancy, conclusions from the findings and recommendations on how to improve the efficacy of the ISPAAD.

The ISPAAD was introduced on the 30th April 2008 to address the challenges facing arable farmers and the inherent low productivity of the arable subsector. The programme is implemented by the Department of Crop Production in the Ministry of Agriculture. The programme was later extended to include support for horticultural development in 2010. Thus, ISPAAD has two sets of objectives. One set covers rain-fed arable agriculture while the other covers horticulture. The objectives of rain-fed arable agriculture support are (1) to increase grain production, (2) to promote food security at the household and national levels, (3) to commercialize agriculture through mechanization, (4) to facilitate access to farm inputs and credit, and (5) to improve extension outreach. The objectives of the horticulture development programme are (1) to increase production level of horticultural products, (2) to create employment opportunities, (3) to diversify agricultural production base, (4) to provide essential farm inputs and selected equipment, and (5) to improve competitiveness of the horticultural industry. However, this study focused on rainfed arable agriculture because the horticulture support component is relatively new.

The ISPAAD has several service packages offered to arable farmers. All farmers aged 18 years and above with *Omang* or residence and work permits with proof of ownership or access to arable land are eligible to benefit from ISPAAD. Farmers are provided with free seeds of open pollinated varieties of major grain crops (maize, sorghum, millet, and cowpeas) to plant a maximum of sixteen (16) hectares. They can source additional seed for fields more than 16ha directly from any locally registered supplier at 50% subsidy. Farmers have an option of purchasing hybrid and fodder crop (lablab and other recommended fodder crops) seeds from local suppliers and receive 50% subsidy from government. The 50% subsidy on seed has no limit in terms of area to be planted. Farmers are also provided with free fertilizer up to a maximum of 5 hectares at a rate of 200kg/ha. Additional fertilizer can be supplied up to a maximum of 11 hectares at a 50% subsidy from government. However, fertilizer is only available to farmers who row plant and have access to fertilizer applicators. Furthermore, the government assists farmers with draught power and associated implements for arable farming either through Agricultural Service Centres (ASCs) or private

contractors. The ASCs are in the following locations: Leshibitse, Monwane, Hatsalatladi, Tsetsebjwe, Mookane, Mogatsapoo, Sefhare, Tutume, Tonota, Masunga, Gumare, Parakarungu, Jwaneng, Mmathethe, and Moshupa. These locations were selected on the basis of their potential for arable production. Farmers are assisted to plough, harrow, and row plant a maximum of 5ha for free. In addition, farmers could be assisted to plough/harrow/row plant an additional hectare from 6th to 16th ha at 50% subsidy. The government set the prices that are paid to private contractors for each type of farm operation: P400.00/ha is paid for ploughing, P350.00/ha for minimum tillage, P150.00 for harrowing and another P150.00/ha for row planting. Farmers who use animal draught power also qualify for the subsidy provided they carried out the operations correctly. The ASCs let out machinery and associated implements to farmers at rates set from time to time by the Ministry of Agriculture. They also provide skills and knowledge in the acquisition, proper utilization and maintenance of farm machinery and associated implements.

The government provides goat proof cluster fences to arable farmers with cluster fields measuring 150ha - 3500ha for free. These enclosed cluster drift fences may be electric in areas prone to crop damage by elephants. ISPAAD provides potable water to arable production clusters for free. Where possible, the programme could drill/equip boreholes, or purchase existing boreholes in order to provide domestic water to the clusters for free. Maintenance of the cluster fences and operations and maintenance of the boreholes is the responsibility of the cluster management committees. Finally, ISPAAD facilitates access to seasonal loans by arable farmers by subsidizing interest rates through the National Development Bank (NDB). This credit facility covers agricultural inputs such as seeds, fertilizers, diesel, pesticides, farm machinery and implements repairs and maintenance, labour costs for planting, weeding, bird scaring, harvesting, threshing and packaging and transport costs to the market. NDB provides seasonal loans to farmers at a prime rate and then the bank claims the difference between prime and market rates of interest from the Ministry of Agriculture. Given all these service packages offered to arable farmers under ISPAAD, small scale farmers are expected to achieve a minimum of 1 ton/ha whereas commercial farmers should produce at least 2.5tons/ha of cereal grains. Horticultural farmers are expected to achieve a minimum of 40 tons / ha.

Botswana is a middle income country with a human development index value of 0.63; the non-mining sectors contribute 8.9% of the GDP while mining accounted for 28.4% of the GDP. The number of people below the poverty datum line declined from 30.6% in 2002/3 to 20.7% in 2009/10. Absolute poverty in rural areas declined from 36.1 to 8.3% while it declined from 19.3% to 6.1% in urban villages in 2009/10 (Statistics Botswana, 2011). The demographic characteristics of the population in terms of rural and urban population ratio (60:40) and its spatial distribution are influenced by economic opportunities mostly mining; commerce, administration, agriculture and livestock activities are concentrated in the eastern part of the country. Overview of the performance of agriculture shows that it contributes only 2% to Botswana's GDP. The sector's contribution to GDP is low due to growth of other sectors, particularly mining sector, stagnant agricultural productivity, the semi-arid climate, low input use, poor uptake of agricultural technologies, limited use of mechanisation, land degradation and lack of infrastructure and water in arable lands. In response to these challenges government has over the years initiated agricultural interventions to

resuscitate the sub-sector. These interventions include among others, the pupil farmer-master farmer scheme; the Arable Lands Development Programme (ALDEP); the Accelerated Rain-fed Arable Programme (ARAP); National Agricultural Master Plan for Arable Agriculture and Dairy Development (NAMPAAD) as well as Integrated Support Programme for Arable Agriculture Development (ISPAAD) whose performance is currently under review.

Major Findings

The majority (about 81.1%) of ISPAAD beneficiaries earned monthly income of less than P821.73. Amongst these beneficiaries, a total of 70% earned monthly income of less than P465.22 per month. Women constituted about 60% of the beneficiaries in each cropping season. About 63 % of ISPAAD beneficiaries were aged 50 and above, with those aged 65 and above accounting for 28% of the beneficiaries. Approximately 17% of ISPAAD beneficiaries had no formal education. About 48% have primary level education and 14% have secondary level education.

ISPAAD beneficiaries accessed free seed, free draught power and free fertilizer more than other service packages. Maize is the most popular grain seed accessed. The choice and distribution of seed is not based on agro-ecological zones. The ISPAAD has provided machinery and farm implements through the Agricultural Service Centres (ASCs) and private contractors. However, ASCs have never been fully established. There are no facilities (flatbed trucks) to transport ASC machinery to the arable lands where they are needed. The machinery and farm implements were too large to manoeuvre through the narrow roads to the arable lands. The size of most arable lands was relatively smaller for tractors and machinery of that magnitude to operate in. Tractor drivers from ASCs and private contractors were, in most cases, inexperienced or not qualified to operate the machinery and farm implements. About 60% of ISPAAD beneficiaries utilized tractor draught power mainly to produce crops for subsistence purposes. The facilitation of credit through National Development Bank (NDB) has not been well received by farmers in most areas. ISPAAD paid an average of P2 million annually as loan interest subsidy on NDB seasonal loans for arable agriculture. Most of the loans were obtained by Pandamatenga, Mosi and Mmalore commercial farmers.

ISPAAD has added extra operational and administrative work to core business of extension workers. Extension workers in the agricultural extension areas spent more time distributing seeds, measuring fields and preparing payment certificates. The extension worker-to-farmer ratio was very high. The majority of the extension workers did not adequately cover their extension areas because of shortage of transport.

The number of farmers was 31,000 in 2007/08 (before ISPAAD). The number of ISPAAD beneficiaries was 96,000 in 2008/09 when ISPAAD started. The number of beneficiaries increased to 118,000 in 2010/11. The area planted was 104,000 ha in 2007/08. The area planted increased to 298,000 ha in 2008/09 when ISPAAD started and rose to 377,000ha in 2010/11. Total domestic grain production during ISPAAD averaged 58,000 tons per year. Productivity remained low and

continued to decline during ISPAAD. The national average grain productivity was 320kg/ha of grains against an expected ISPAAD target yield of 1000kg/ha. Domestic grain production only satisfied about 10 percent of national staple grain requirement. Botswana imported an average of 300,000 tons of cereal grains per year during ISPAAD.

ISPAAD packages reached groups that are vulnerable to poverty. These include the elderly, the uneducated and women. However, given that ISPAAD has not been able to increase grain yield these groups remain food insecure and poor. ISPAAD is not likely to alleviate these vulnerable groups from poverty as envisioned in Vision 2016.

The annual budget for the Ministry of Agriculture increased almost four-folds between 2006 and 2013. It rose from about P105 million in 2006 to P209 million in 2008 (inception year for ISPAAD) and finally reached P407 million in 2013. The budget for the Department of Crop Production (DCP) rose from P10 million in 2006 to P89 million in 2008 and finally P286 million in 2013. Expenditure on ISPAAD also rose from P159 million in 2008 to P220 million in 2013. Actual expenditure on ISPAAD exceeded budget allocations for three consecutive cropping seasons since its inception. Spending on ISPAAD operations consumed financial resources that exceeded the DCP budget by more than two-folds at inception. However, the share remained at about 80 percent of DCP budget for the subsequent financial years. The largest share of expenditure on ISPAAD is attributed to the ploughing component which accounted for almost 70 percent of annual expenditure on ISPAAD.

At inception, administrative costs of ISPAAD amounted to P20 million (about 9 percent of total spending on ISPAAD). These costs declined to an average of P11 million in the subsequent years, representing 6 percent of total annual spending on ISPAAD. Overtime payments and subsistence allowance accounted for 52 percent of administration costs in 2008/09. However, that share increased to an average of 77 percent in the subsequent years. Government payments as loan interest subsidy averaged P2.5 million per cropping season. Annual expenditure on ISPAAD operations exceeded annual proceeds (estimated total value of production) in all the cropping seasons since inception. The estimated annual proceeds per unit of outlay remained less than unity for the entire ISPAAD period. The net present value (NPV) of benefits that accrued from ISPAAD operations is negative while the Benefit-Cost Ratio (BCR) was 0.6.

ISPAAD is a national agricultural support programme run solely on the basis of implementation guidelines subject to change from time to time and to misinterpretation. It does not have a proper programme design document that would clearly spell out its key design features. There is no functional monitoring and evaluation framework with consistent and uniform reporting template. There are no specific and measurable performance targets for attaining ISPAAD objectives. There are no clearly defined operational assumptions for the programme.

Conclusions

1. Key Design Features of ISPAAD

- ISPAAD is universally accessible. The eligibility criteria allow all active persons with access to arable land to benefit. This makes ISPAAD a non-discriminatory and very inclusive of all vulnerable groups. However, this eligibility criteria exposes the programme to misuse, abuse and makes the programme unsustainable in the long run. Some arable fields have been subdivided into several land parcels of smaller sizes so that the whole land receive 100% subsidy on seeds, ploughing and fertilizer. These subdivisions have inflated the number of “arable farmers” .
- The stated objectives and service packages of ISPAAD programme are relevant but the programme has not reached its intended objectives. It is extremely inefficient from an agricultural development point of view as is. ISPAAD has no programme design document that spells out the outcomes, outputs, activities, inputs and assumptions of the programme. Currently the outcomes and outputs of the programme are not clearly specified. There are no objectively verifiable indicators, means of verification and assumptions under which the expected outcomes and outputs will be achieved. Thus, there is no monitoring and evaluation framework.
- ISPAAD implementation guidelines are not very clear and explicit on outcomes, output, assumptions and performance criteria regarding all the ISPAAD objectives.

2. Assessment of the performance of ISPAAD to date vis-à-vis its objectives

- Total grain production in Botswana has not increased during ISPAAD. Comparative analysis of average grain production for the period 1982 to 2007/08 and during ISPAAD (2008/09 to 2011) indicates no significant difference in average total production between the two periods.
- Food security at both household and national levels has not improved during ISPAAD. Domestic grain production has not increased in terms of both total production and productivity. The national average grain productivity is only 33% of the ISPAAD target yield of 1000kg/ha. Domestic supply of staple grain did not satisfy national demand for grain. There has been steady increase in cereal imports during ISPAAD. Botswana imported approximately 90 percent of its national staple grain requirement.
- The ISPAAD has had insignificant impact on commercializing arable agriculture in the country. The programme has facilitated access to draught power and farm implements. It increased the use of tractor power in primary tillage operations. The main focus of ISPAAD beneficiaries in arable agriculture was to produce enough food to sustain their families. Very

few farmers row planted or used inputs such as improved seeds and fertilizer which are characteristic of commercial farming because they did not have the necessary equipment. Though ISPAAD facilitated access to seed and fertilizer, they did not reach beneficiaries at the right time and in the right quantities.

- ISPAAD facilitated access to credit in the case of commercial farmers. Traditional farmers did not benefit from the credit facility because they did not meet the requirements for obtaining loans at the National Development Bank.
- ISPAAD had a negative impact on extension outreach. The core business of agricultural extension workers has been overshadowed by clerical and administrative work demands of ISPAAD at the expense of modern technology transfer and advice to farmers. The extension worker-to-farmer ratio increased under ISPAAD. The majority of the extension workers did not adequately cover the ever increasing number of arable farmers in their respective extension areas because of shortage of transport.

3. Transmission Channels for the impacts of ISPAAD

- ISPAAD impacts various stakeholders through six transmission channels: prices, employment, access, assets, transfers (tax and subsidy) and authority.
- These identified channels have positive short-term and long-term poverty and socio-economic impacts to various stakeholders in the ISPAAD programme.

4. Delivery Mechanisms of ISPAAD

- ISPAAD is implemented by the right department in the right Ministry. The Department of Crop Production has the technical know-how relevant to ISPAAD implementation. The programme is embedded in the DCP structure and implemented by technical and administrative staff that already has established roles in the department.
- ISPAAD lacks a well-defined and coordinated implementation structure to deliver services to farmers and all key stakeholders in the programme. The Ministry of Agriculture is not well-resourced to effectively and efficiently implement ISPAAD programme. The programme does not have its own staff.
- Record keeping, data and information management in the ISPAAD programme are poor. Some records were missing while others were incomplete at extension area level as well as District and Headquarters level.

5. Sustainability of the ISPAAD

- ISPAAD is not viable in its current form. Generally, the actual expenditure on ISPAAD exceeded its budget allocation. On average, it constituted more than 80% of budget allocation for the Department of Crop Production and more than half that allocated for Ministry of Agriculture. These budget proportions are expected to increase while government funding remains unchanged or declines over time. The ratio of annual proceeds per unit outlay spent on ISPAAD is less than unity. The Net Present Value (NPV) of ISPAAD operations is negative while the Benefit-Cost Ratio (BCR) is also less than unity. Therefore, ISPAAD is unsustainable in the long run.
- ISPAAD does not distribute seed according to land suitability zones for each crop. The majority of farmers received maize seed and grew it in areas not suitable for the crop. This resulted in high incidence of crop failure and a reduction in yield.
- Youth participation in ISPAAD is very low. Only about 8% of beneficiaries aged 18 to 29 years participated in the programme.

6. Environment under which ISPAAD operate

- Linkages of ISPAAD with existing policies and programmes in the country are very weak and synergies between them are not well exploited. ISPAAD promotes fodder production while LIMID promotes use of fodder in animal production. They are both agricultural programmes but they are not supporting each other.

7.0 General Conclusions

- ISPAAD is not fit for purpose in its current form. However, the programme could be greatly improved by changing or fine tuning its design and benefit packages to make ISPAAD become more targeted, efficient and sustainable.
- ISPAAD packages are reaching groups that are vulnerable to poverty. These include the elderly, the uneducated and women. However, given that ISPAAD has not been able to increase grain yield these groups remain food insecure. In its current form, ISPAAD is not likely to alleviate these vulnerable groups from poverty as envisioned in Vision 2016.

Recommendations

1. Ways to Improve on Design Features of ISPAAD

- Where feasible, the eligibility criteria should include a minimum arable land size to minimize excessive cost and field subdivisions purported to abuse ISPAAD support.

- There is need for a full review and redesign of the ISPAAD programme. The Ministry of Agriculture should prepare an ISPAAD programme document that clearly specifies all the key design features: outcomes, outputs, eligibility criteria, products offered, performance criteria, targets, assumptions, and an efficient monitoring and evaluation system.
- The Ministry of Agriculture should introduce transitional reducing-balance subsidy support. Government subsidy per beneficiary should be reduced over time while owner contribution is increased over the same period. This would be a cost-sharing measure that will simultaneously induce personal commitment to ensure maximum returns on investment.
- The cluster fencing component should be reviewed. It has more practical problems than any of the ISPAAD components. Group formation has proved difficult to achieve across the country since inception of the programme.
- Ploughing, harrowing , row planting and fertilizer application be bundled together as a single package. The private tractor contractor must agree to undertake this single package for the farmer.
- Private tractor owners be required to provide proof of access to or ownership of the necessary farm implements (plough, planter and harrow) during registering with Extension Staff.

2. Ways to Improve on Performance of ISPAAD vis-à-vis its objectives

- The Ministry of Agriculture should devise efficient means of delivering farm inputs (seed, fertilizer, draught power) and implements (harrows, planters, and fertilizer applicators) at the right time and in the right quantities to farmers. The private sector should be involved in sourcing and transportation of seed and fertilizer from storage and processing facilities. The private sector should be involved in the operations and maintenance of ASCs.
- Food security is an overarching objective. Any positive change in access to farm inputs and credit, improvement in extension outreach, productivity and total production will improve the food security status at household and national level.
- MoA should mount an intensive training aimed at changing subsistence farmers' mindset towards treating arable farming as a business.
- The ISPAAD credit facility component should be reviewed to accommodate smallholder farmers. These farmers need a special credit guarantee facility that will provide them with access to short-term loans to cover all agricultural inputs currently provided for under the

NDB credit facility. In addition to NDB, other banks should be given the opportunity to provide seasonal loan facility to cover farm production costs.

- The Department of Crop Production should focus on its core business of providing technical knowledge, information and advisory service to arable farmers in order to achieve ISPAAD objectives. The VEWs should be accorded adequate time to train, visit, and demonstrate to farmers relevant and improved technologies on how to grow and manage their crops to maximize yield and returns. The sourcing, delivery and distribution of ISPAAD inputs should be done by the staff of ISPAAD Unit (to be established).
- The MoA should come up with strategies to reduce the extension worker-to-farmer ratio.

3. Ways to Improve on Delivery Mechanisms of ISPAAD

- Currently, the procurement, delivery and distribution of ISPAAD inputs are predominantly done by DCP staff. There should be an ISPAAD Unit under the DCP with its own staff to plan, coordinate and facilitate ISPAAD administrative and clerical services to all stakeholders.
- The MoA should improve record keeping, data and information management systems at all levels.
- The MoA should expedite the construction of functional Agricultural Service Centres (ASCs) across the country to enable farmers to readily access farm machinery, implements and extension advice. Where feasible, the establishment, operations and management of ASCs should be privatized.
- ISPAAD should have a well-defined, coordinated, communicated and understood implementation structure to effectively and efficiently deliver ISPAAD services to farmers and all key stakeholders.

4. Ways to Improve the Sustainability of the ISPAAD

- The ISPAAD implementation guidelines should be reviewed with the aim of making the programme become targeted and offered on cost-sharing basis. This will make ISPAAD less expensive to deliver and efficient in increasing grain productivity and total production.
- The Ministry of Agriculture should reduce high incidences of crop failure due to factors associated with land suitability. The seed (sorghum, maize, millet and cowpea) should be distributed according to land suitability zone map.

- The MoA should come up with innovative ways of motivating youth to venture into arable agriculture. Over 60% of ISPAAD beneficiaries are 50 years of age and above.

5. Environment under which ISPAAD operate

- The Ministry of Agriculture should undertake a comprehensive review of other government policies, programmes and projects to identify linkages and align ISPAAD with those initiatives with similar aims and objectives. This exercise will allow MoA to fully exploit existing synergies to derive maximum benefits out of those initiatives.

6. General Recommendation

- ISPAAD can be improved by changing or fine tuning its design and benefit packages to make it more targeted, efficient and sustainable through implementation of recommendations in section 7 of this report.

CHAPTER 1 BACKGROUND INFORMATION ABOUT THE CONSULTANCY

1.1 Introduction

The Ministry of Agriculture, in collaboration with the Ministry of Finance and Development Planning and the United Nations Development Programme (UNDP) in Botswana awarded BCA Consult (Pty) Ltd a 16-week consulting services-based contract to undertake a Poverty and Social Impact Analysis (PSIA) of the Integrated Support Programme for Arable Agriculture Development (ISPAAD) programme in Botswana. This report outlines the objectives of the PSIA of the ISPAAD consultancy, the terms of reference (ToRs), the methodology for delivering on the assignment, findings, conclusions and recommendations from the findings.

The Ministry of Agriculture (MoA) operates through five departments, three support divisions and five parastatals. The MoA's mandate is to use appropriate technologies and management systems to develop a sustainable and competitive agricultural sector by improving farm incomes and generating employment opportunities and raw materials for agri-businesses. The ISPAAD is an agricultural support programme housed and implemented by the Department of Crop Production (DCP) which has aligned its operations with the ten Districts, 27 Sub-Districts and 270 extension areas. The programme works within the MoA institutional framework. It supports the objective of the DCP, which is to increase productivity through provision of subsidies, inputs and introduction of modern technologies.

The ISPAAD was initiated as a successor programme to, and integrates, the Accelerated Rain-fed Arable Programme (ARAP) and the Arable Land Development Programme (ALDEP), whose objectives were to improve household and national food security, raise farm incomes and improve rural livelihoods. The objectives of the ISPAAD are:

- (i) To increase grain production
- (ii) To promote food security at household and national levels
- (iii) To commercialize agriculture through mechanization
- (iv) To facilitate access to farm inputs and credit and,
- (v) To improve extension outreach.

The ISPAAD is in its fourth year of operation. Its main thrust is to provide free or subsidized inputs and tractor services to farmers. The programme is aimed at improving farm output and productivity by enhancing farmers' access to essential inputs. It provides the following inputs: cluster fencing, potable water, seeds, fertilizer, credit, agricultural services and draught power.

ISPAAD is the subject of this PSIA because of its high profile in national discourse, its strategic intents (its household and national food security implications) and its implications for agricultural policy and household welfare. Even though its implementation is already underway, ISPAAD was formulated without a thorough analysis of what its distributional impacts (both intended and unintended) would be. The programme was established in July 2008 by a Cabinet Directive and operates according to a set of guidelines. However there is no comprehensive design document for

the programme. It is Botswana Government's main development initiative in the arable agriculture sub-sector and has a three-year budget allocation of P 600 million (US\$91 million) making it by far the largest programme within the ministry.

1.2 Project Objectives

The objectives of this consultancy were

- 1 To undertake a poverty and social impact analysis (PSIA) of the Integrated Support Programme for Arable Agriculture Development (ISPAAD) in Botswana.
2. To assess the programme's performance to date
- 3 To inform adjustments to improve the programme's performance vis-à-vis its objectives.

1.3 Background to Poverty and Social Impact Analysis

Poverty and Social Impact Analysis (PSIA) refers to the assessment of the distributional impact of public policy and programme initiatives/reforms on the welfare of different social groups, with particular focus on poor and vulnerable groups. PSIAs are undertaken to provide the evidential basis for dialogue and advocacy to inform policy and programme decisions. The main objectives of PSIAs are: Identifying priority reforms; understanding the impact of a reform on different social groups; understanding the distributional impacts of a reform; understanding the short- and long-term impacts of a reform; understanding the transmission channels of a policy reform; and choice of methods and teams for implementation.

In principle, PSIAs should be done at three stages in the implementation of a policy/programme initiative/reform, namely: *ex ante*, *ex post* and *during implementation*.

During implementation is concerned with the timely reaction to, and/or integration of feedback from implementation, such a PSIA can lead to the timely refinement of an intervention, a reconsideration of the pace and sequencing of interventions, a necessary change in institutional arrangements or the introduction/strengthening of mitigation measures to address the adverse effects timely. The PSIA on the Integrated Support Programme for Arable Agriculture Development (ISPAAD) has been initiated during implementation phase with the aim of assessing the programme's performance to date and informing adjustments to improve the programme's performance vis-à-vis its objectives.

The Vision 2016, the Millennium Development Goals and the National Strategy for Poverty Reduction (2003) require the kind of systematic analysis of the impact of policy and programme interventions on poor and vulnerable groups that good PSIAs ensure.

1.4 Terms of Reference (ToRs)

The terms of reference of this consultancy are derived from the "main objectives of the PSIA of ISPAAD" which are spelt out in the "Request for Proposal" document:

- a) To assess the performance of ISPAAD to date vis-à-vis its objectives, with particular focus on the extent to which the programme has met its key performance targets and the nature of its short and long term distributional impacts. Care should be taken to isolate and interrogate the incentive effects of ISPAAD and its impact on poor people, vulnerable groups and the environment.
- b) To review the key design features of ISPAAD - objectives, outcomes, target beneficiaries, products offered eligibility criteria, performance criteria, institutional arrangements, etc., with a view to determining their suitability for the purpose for which ISPAAD was established.
- c) To determine the transmission channels for the impacts of ISPAAD, assess their strengths and weaknesses, and suggest as appropriate, measures to enhance the efficacy of these channels and impact of ISPAAD.
- d) To review the appropriateness or otherwise of the delivery mechanisms of ISPAAD, including institutional arrangements, project management arrangements, tools and synergies with other programmes.
- e) To identify and review any major changes in the environment in which ISPAAD operates – global economic changes, regulatory reforms, etc. – and how they impact on ISPAAD.
- f) To propose measures to improve ISPAAD from the perspectives of implementation, results and sustainability based on the above objectives.

1.5 Scope of Work

Pursuant to the above TORs, the consultant shall undertake the following tasks / activities

- a) Develop and execute an adequate proposal/methodology for assessing the performance of ISPAAD to date. This shall entail;
 - A detailed outline of the assessment criteria
 - A review of the performance criteria of ISPAAD
 - Application of the methodology to document, analyze and report on, the performance of ISPAAD
 - Analysis and documentation of the distributional impacts of ISPAAD taking care to identify the losers and gainers from ISPAAD and to analyze the impact on poor people, gender, vulnerable groups, youth, and environment.
- b) Review the design features of ISPAAD and ascertain the extent to which the design of the programme is consistent with the programme's objectives. This shall entail;
 - A review of ISPAAD objectives
 - A review of the ISPAAD service package to ascertain consistency with objectives
 - A review of the eligibility criteria of ISPAAD
 - A review of the target beneficiaries of ISPAAD

- c) Identify, analyze and document the transmission channels of ISPAAD. The task will require, amongst others;
- Identification, analysis and documentation of the mechanisms through which ISPAAD affects the behaviour of the target population and other economic agents.
 - Identification and analysis of the incentive effects of ISPAAD, e.g., impact on work effort, impact on private investment etc.
 - Delineation of the short and long term impacts of ISPAAD on the target sectors and beneficiaries.
- d) Review the delivery mechanisms of ISPAAD. This task will require:
- An assessment of the institutional framework
 - An assessment of the project implementation arrangements for ISPAAD
 - An assessment of the implementation tools for ISPAAD, e.g. guidelines, project management tools
 - A review of programmes, policies with a bearing on ISPAAD and how synergies have been built, strengthened and exploited.
- e) Identify and analyze any major changes with influence on the business case for ISPAAD. This would include;
- A review of international developments with a direct impact on the sector in which ISPAAD operates e.g. global demand for food, regional and global trade agreements etc.,
 - A review and analysis of regulatory developments at the national level that could potentially impact on ISPAAD.
- f) Make recommendations for the improvement of ISPAAD. Based on conclusions from the successful completion of the foregoing, tasks, the contractor shall make recommendations for the improvement of ISPAAD.

CHAPTER 2 BACKGROUND INFORMATION ABOUT BOTSWANA

2.1 Economy

Botswana was among the poorest countries in the world when she became independent in 1966. Quite a significant proportion of national income came from traditional agriculture, particularly the sale of cattle, and remittances from migrant labour from the South African mines. Physical and social infrastructure was minimal. The population was largely illiterate and very few Botswana were able to fill professional positions. Independence came in the middle of a severe drought that reduced the national cattle herd by a third. Botswana is now a middle income country. The country's economic and social development indicators have been steadily improving over the past four decades, spurred largely by mineral development. Most of the key development indicators are significantly better than Sub-Saharan averages. Currently, Botswana ranks 98 out of 169 countries with a human development index value of 0.63 in 2010 (UNDP, 2010); infant mortality is 57 per 1,000; adult literacy is 87%; 95% of children are enrolled in primary school; only 12% lack access to safe drinking water; and only 4.3% of children are under-weight (GoB/UN, 2010).

National accounts statistics indicate that most sectors of the Botswana economy contributed positively to the overall GDP growth in 2011. Overall, growth in the non-mining sectors (excluding government) reaching 8.9% in 2011. However, the structure of the economy reflected that mining was the major contributing sector, accounting for 28.4% of overall GDP in the fourth quarter of 2011. In the same period, agriculture accounted for only 2.1% of overall GDP (Statistics Botswana, 2012). Given the country's heavy reliance on diamonds and considering the prospects of continued decline in diamond productivity and income, sustained growth in the non-mining sectors is critical in driving overall economic growth and diversification (Mathambo, 2012).

2.2 Incidence of Poverty in Botswana

Statistics Botswana (2011) reported that the overall number of persons living below the poverty datum line (PDL) was estimated at 499,467 in 2002/03. This represented a national poverty headcount of 30.6 percent as shown in Tables (2.1 and 2.2) **below**. Results of the 2009/10 BCWIS revealed that the proportion of persons living below the PDL in Botswana declined to 20.7 percent. This is equivalent to 373,388 poor people nationally. The distribution of poverty incidence in urban and rural areas also changed over the same period. The cities and towns in Botswana experienced an increase in poverty incidence from a poverty headcount of 10.6 percent in 2002/03 to 14.0 percent in 2009/10. This represented an increase in number of persons living below PDL in cities and towns from 39,113 to 51,793 in the same period. On the other hand, rural areas experienced a decline in poverty incidence from a poverty headcount of 44.8 to 25.5 percent in the same period. This represented a fall in the number of persons living below PDL in rural areas from 321,808 in 2002/03 to 198,544 in 2009/10. Overall, the population living below one US Dollar-a-day absolute poverty line declined from 23.4% in 2002/03 to 6.5% in 2009/10. During the same period, the incidence of absolute poverty in rural areas declined from 36.1% to 8.3%, whilst in urban villages it

declined from 19.3 % to 6.1%. The cities and towns also experienced a decline in incidence of poverty from 5.1 % in 2002/03 to 3.3% in 2009/10 (Statistics Botswana, 2011).

Table 2.1: Average PDLs (Pula/month) by Component for 2002/03 and 2009/10

PDL Component	2002/03 – HIES		2009/10 – BCWIS	
	BWP	% Share	BWP	% Share
Food	445.51	23.8	680.02	16.0
Clothing	42.02	2.2	46.77	1.1
Personal items	14.75	0.8	25.47	0.6
Household goods	25.56	1.4	68.92	1.6
Shelter	37.69	2.0	59.10	1.4
TOTAL	571.65	30.6	878.87	20.7

Source: Adapted from Statistics Botswana (2011)

Table 2.2: Income Poverty Measures by Strata for 2002/03 and 2009/10

Strata / Region	HEIS – 2002/03			BCWIS – 2009/10		
	Head Count Ratio (%)	Percentage households below PDL	Number of persons below PDL	Head Count Ratio (%)	Percentage households below PDL	Number of persons below PDL
Cities / towns	10.6	8.8	39,113	14.0	13.3	51,793
Urban villages	25.4	17.4	138,547	18.8	12.2	123,051
Rural Areas	44.8	33.4	321,808	25.5	17.6	198,544
National	30.6	21.7	499,467	20.7	14.7	373,388

Source: Adapted from Statistics Botswana (2011)

Results of the 2009/10 BCWIS also show that there has been a decline in poverty incidence in rural districts compared to urban districts as shown in **Figure 2.1 below**. Kweneng West, Ngamiland West, Ghanzi and Kgalagadi North districts had the highest incidence of poverty estimated at 48.6, 47.3, 35.7 and 31.2 percent, respectively (Statistics Botswana, 2011). Except for Kweneng West, these were lower rates compared to the 2002/03 estimates, where poverty incidences were estimated at 53.3, 41.6 and 38.3 for Ngamiland West, Ghanzi and Kgalagadi North respectively. Kweneng East, Central Serowe/Palapye and Central Tutume had the largest number of persons living below the PDL.

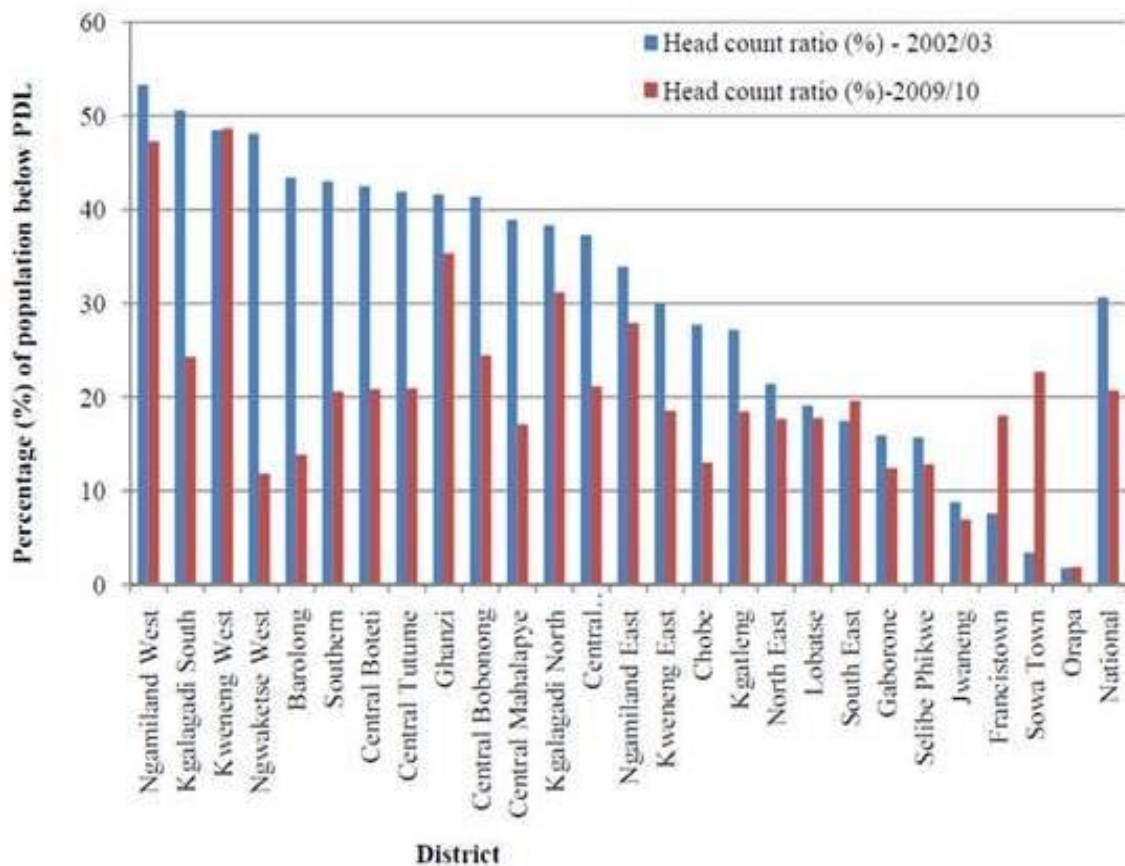


Figure 2.1: Poverty Head Count Ratios by Districts

Source: Adopted from Statistics Botswana (2011)

2.3 Demography

Botswana is sparsely populated with 2 million people spread over 582,000 km² (average 3.5 persons per km²). However, almost 90% of the people live in the Eastern and South-Eastern Regions, which includes the capital, Gaborone. The population is urbanizing rapidly (Statistics Botswana, 2011). The distribution of population reflects the economic opportunities with most of the mining, commerce, administration, agricultural and livestock activities concentrated in the East/South-East.

2.4 Overview of the Agriculture Sector

The agriculture sector in Botswana comprises of livestock, which is cattle and small stock farming, and arable crop production. Cattle dominate the livestock sub-sectors and are predominantly owned by male headed households while smallstock (sheep and goats) are important to poor rural households. Over the last 25 years, the number of cattle has fluctuated between two and three million, whilst the number of goats and sheep has trended upwards and now totals around 1.6 million (Center for Applied Research (CAR) 2005).

Despite the dominance of the livestock sub-sector in the rural economy, arable farming is also a predominant practice among smallholder farmers. In 2004, there were around 60,000 smallholder households engaged in arable farming (CSO, 2007). During the last decade, the area planted with rainfed crops by both smallholders and commercial farms has totaled about 150,000 hectares annually (BIDPA, 2009). Recent reports show that these figures have jumped to almost 300,000 ha on 90,000 holdings (BIDPA, 2009). This is probably associated with the impact of Integrated Support Programme for Rainfed Arable Agricultural Development (ISPAAD), which provides free or heavily subsidized agricultural inputs and services. However, the large increase in cultivated area has not yet been matched by an increase in crop yields, and Botswana remains dependent on imports for the great majority (about 85%) of its food grain requirements of about 150,000 tons per annum (BIDPA, 2009).

The Agriculture sector contributes only 2% of GDP, most of which comes from livestock (MFDP, 2009). However, this obscures the importance of the sector in the rural economy because approximately 40% of Botswana's population live in rural areas and derive most of their livelihood by practicing one or more forms of agriculture. The relative economic decline of the sector is attributed to the strong growth of other sectors, stagnant agricultural productivity, the semi-arid nature of the country, low input use, poor agricultural technology, limited access to mechanization, land degradation, lack of potable water in arable lands (MFDP, 2009).

2.5 Crop Production and its Challenges

The Figure 2.1 below shows the land suitability map for rainfed crop production. Botswana is divided into six zones each representing different suitability conditions for rain fed crop production. These range from 'low to very low'; 'moderate', 'moderately high', 'moderately low', 'not suitable', and 'unreliable'. Except for some parts of the Okavango, Chobe, some pockets of the Central and Southern Districts which exhibit moderately high land suitability for rainfed crop production, the rest of the districts are not very suitable for rainfed arable agriculture.

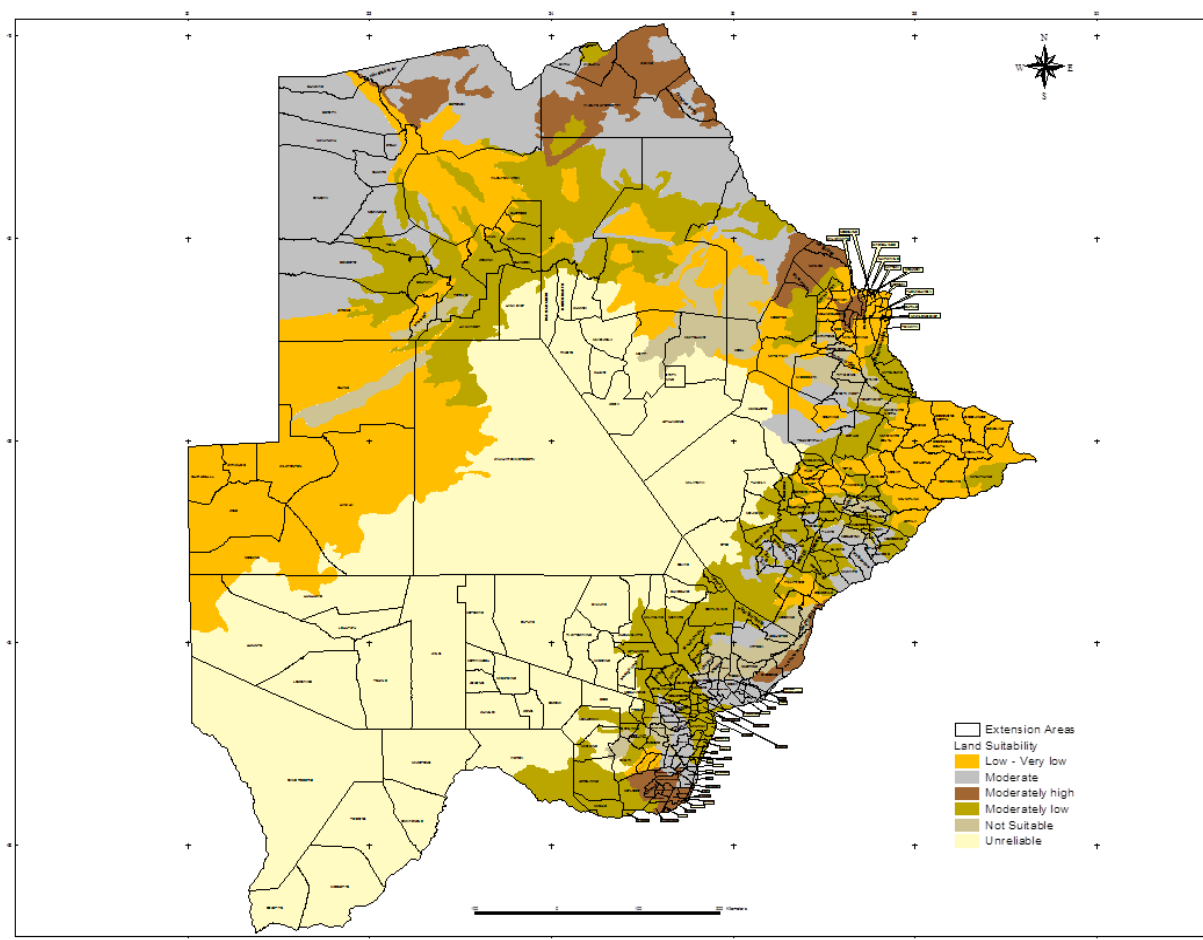


Figure 2.2: Land Suitability Map for Rain-fed Crop Production with Agricultural Extension Areas

The total area planted to field crops is usually in the range of 150,000 ha which is only around 0.2% of the total land area (BIDPA, 2006). With variable percentages, arable crop production is carried out by different categories of arable farmers ranging from purely commercial farmers, commercial smallholder farmers, emerging commercial smallholder farmers, and subsistence smallholder farmers. The major crops grown by these different categories of farmers include cereals (maize, sorghum, and millet), pulses and sunflower.

The environment in which crop production takes place in Botswana as described by CAR (2005) is characterized by low and unreliable rainfall, very high summer temperatures and relatively poor soils. The *sandveld* (in western and northern parts of the country) soils are generally deep, coarse sand with little structure; very low water and nutrient holding capacity. The *hardveld* (the eastern parts of the country) has some more fertile soils consisting mainly of sandy loams and loamy sands. Some rocky outcrops and low hills occur, mostly in the east. However, the cereals, some pulses and sunflower are best adapted to low rainfall, low fertility, and numerous pests (including birds) and disease as often experienced in the agro-ecosystems while others are invariably challenged and

susceptible to the environmental stresses (Mosupi and Masukujane, 2007; Oplinger et al., 1990). Due to this numerous challenges, crop yields are very low and usually only contribute 10-15% (BIDPA, 2009) of annual food grain needs.

In order for the poor resourced farmers to realize increased yields, there is need to apply improve agricultural technologies such as timely land preparation and planting, crop pest, disease and weed control. The provision of inputs and services as envisaged by ISPAAD could partially address some of the problems.

2.6 Land Tenure and Implications in Arable Agriculture

Land is the principal resource on which agriculture takes place, and the tenure system is such that there is state, freehold and tribal land. Most rural people reside on tribal land and have three settlement patterns which are associated with the utilization of tribal land. There are areas designated for livestock rearing and usually situated far away from the areas designated for arable farming and for human settlements. While there is this distinct land tenure and settlement system, quite often, livestock owned by arable farmers are usually found roaming arable land during production periods and can be responsible for reduction of crop yield and loss of income (CAR, 2005). Botswana government policies towards agricultural development are such that all settlements in the country can practice crop farming (Darkoh and Mbaiwa, 2005; LEA, 2011). However, some of the settlements are located in wildlife rich areas where arable farming is highly unlikely to succeed because of damage by wildlife. Some wild animals are predators that kill drought power animals during the ploughing and planting season (Darkoh and Mbaiwa, 2005). The ISPAAD programme is expected to reduce crop destruction by livestock and some wild animals through the cluster fencing component.

2.7 Government Policies towards Arable Agriculture

After independence, the government of Botswana put emphasis on livestock development and less on arable agriculture. Livestock by then was the backbone of the economy for it provided the much needed foreign currency to support development. Arable agriculture on the other hand was predominantly subsistence oriented and provided little or no opportunity to bring in much needed foreign currency to augment the grant-in-aid that was provided by the British government (Tselaesele, 2007).

From independence until 1991, government's main objective in agriculture was to promote self-sufficiency in food production. Other objectives that guided agricultural development were: provision of adequate and secure livelihood for those engaged in agriculture; increased agricultural output; conservation of agricultural land resources and meeting employment demands of a growing labour force (MFDP, 1997 and Tselaesele, 2007).

2.7.1 The Pupil Farmer – Master Farmer Scheme

The arable agriculture program that supported these objectives was the pupil farmer- master farmer scheme that was introduced by the colonial government in the early sixties and was carried over after independence. The scheme motivated arable farmers to improve crop husbandry practices in order to improve their livelihood. To qualify as a pupil farmer, a farmer had to own a plough, drought oxen, have cleared the bush and de-stumped his or her field. As the pupil farmer progressed and production methods improved, that farmer would be promoted using a scale of pupil farmer, progressive, improved, and then the master farmer, being the highest rank (Tladi and Tselaesele, 2010).

2.7.2 Arable Lands Development Program

The Arable Lands Development Programme (ALDEP) phase I was introduced in 1979 and was incrementally modified into phase two and three to suit socio-economic challenges in arable agriculture. Originally, ALDEP had three overall objectives: to improve crop production in order for the country to become food self-sufficient, thereby reducing food imports; raise income from crop production by poor farm households and generation of employment by the agricultural sector in order to reduce rural to urban migration (Picard, 1987). This programme had five major components. These were: the provision of subsidies and credits to facilitate farmers to buy farm implements, provision of draught power in the form of donkeys and cattle to resource poor farmers; provision of underground water catchment tanks at the arable fields to alleviate shortage of water for human and draught power; and provision of fencing material to eligible farmers in order to reduce destruction of crops by animals.

2.7.3 Accelerated Rain-fed Arable Programme

In 1985, government introduced another programme, the Accelerated Rainfed Arable Programme (ARAP), which was a drought relief programme targeting arable farmer. The programme assisted arable farmers to destump up to ten hectares of arable land, provision of farm inputs such as seed and fertilizer, ploughing and planting subsidy (Tsie, 1996).

The new agricultural policy was introduced in 1991 and it advocated food security at household and national level (Ministry of Finance and Development Planning 1997, 2003). The policy objectives that were adopted by the Ministry of Agriculture were the diversification of agricultural production base into horticulture, pulses, dairy and poultry; increased agricultural output and productivity; increased employment opportunities for the fast growing labour force; provision of a secure and productive environment for agricultural producers and conservation of scarce agricultural and land resources for future generations (Ministry of Finance and Development Planning 1997& 2003).

To carry out the objectives of the new agriculture policy, ALDEP Phase II and III were introduced successively. The second and third phases of ALDEP emphasised on strengthening of extension services, technology transfer and adoption, training and supporting previous and current beneficiaries of the programme to utilise the acquired packages (Ministry of Agriculture, 2006).

Additional components to the ALDEP phase one included purchase of threshing machines, chaff cutters, mini silos, canoes and paddles as well as fertilizers (ibid). The evaluation of ALDEP revealed that its existence did not significantly improve the performance of arable agriculture. At the same time, the cost of delivering ALDEP was estimated to be twice the import parity value of cereals (Ministry of Agriculture, 2002).

The National Master Plan for Arable Agriculture and Dairy Development (NAMPAAADD) was introduced in 2002. The specific objective of NAMPAAADD was to improve the performance of the sector and ensure the sustainable use of the country's natural resources. The master plan identified rainfed crop production, irrigated agriculture (mainly horticulture) and dairy farming. There are two options in NAMPAAADD under which rainfed arable agriculture is considered: the socially oriented scenario and economically oriented scenario (Ministry of Agriculture, 2002).

The socially oriented scenario of rainfed arable agriculture required government to continue to intensify its intervention and support to farmers. The expected result under this policy scenario would be low capital investment, low grain production and low economic benefits all of which are a result of low efficiency and utilization by farmers of less advanced methods of production (Ministry of Agriculture, 2002). ALDEP Phase II & III operated under the socially oriented scenario of NAMPAAADD.

The economically oriented scenario was envisaged to have less government support and more participation of private sector. Under this policy scenario, the introduction of farm mechanization and improved farm management practices would be cardinal to its success. The 150 ha farm was found to be ideal for an economically oriented rainfed arable Integrated Support production (Ministry of Agriculture, 2002).

2.7.4 The Integrated Support Programme for Arable Agriculture Development

The ISPAAD was introduced on the 30th April 2008 to address the challenges facing arable farmers and the inherent low productivity of the arable subsector. The programme is implemented by the Department of Crop Production in the Ministry of Agriculture. The programme was later extended to include support for horticultural development in 2010. Thus, ISPAAD has two sets of objectives. One set covers rain-fed arable agriculture while the other covers horticulture. The objectives of rain-fed arable agriculture support are (1) to increase grain production, (2) to promote food security at the household and national levels, (3) to commercialize agriculture through mechanization, (4) to facilitate access to farm inputs and credit, and (5) to improve extension outreach. The objectives of the horticulture development programme are (1) to increase production level of horticultural products, (2) to create employment opportunities, (3) to diversify agricultural production base, (4) to provide essential farm inputs and selected equipment, and (5) to improve competitiveness of the horticultural industry. However, this study focused on rainfed arable agriculture because the horticulture support component is relatively new.

The ISPAAD has several service packages offered to arable farmers. All farmers aged 18 years and above with *Omang* or residence and work permits with proof of ownership or access to arable land

are eligible to benefit from ISPAAD. Farmers are provided with free seeds of open pollinated varieties of major grain crops (maize, sorghum, millet, and cowpeas) to plant a maximum of sixteen (16) hectares. They can source additional seed for fields more than 16ha directly from any locally registered supplier at 50% subsidy. Farmers have an option of purchasing hybrid and fodder crop (lablab and other recommended fodder crops) seeds from local suppliers and receive 50% subsidy from government. The 50% subsidy on seed has no limit in terms of area to be planted. Farmers are also provided with free fertilizer up to a maximum of 5 hectares at a rate of 200kg/ha. Additional fertilizer can be supplied up to a maximum of 11 hectares at a 50% subsidy from government. However, fertilizer is only available to farmers who row plant and have access to fertilizer applicators. Furthermore, the government assists farmers with draught power and associated implements for arable farming either through Agricultural Service Centres (ASCs) or private contractors. The ASCs are in the following locations: Leshibitse, Monwane, Hatsalatladi, Tsetsebjwe, Mookane, Mogatsapoo, Sefhare, Tutume, Tonota, Masunga, Gumare, Parakarungu, Jwaneng, Mmathethe, and Moshupa. These locations were selected on the basis of their potential for arable production. Farmers are assisted to plough, harrow, and row plant a maximum of 5ha for free. In addition, farmers could be assisted to plough/harrow/row plant an additional hectare from 6th to 16th ha at 50% subsidy. The government set the prices that are paid to private contractors for each type of farm operation: P400.00/ha is paid for ploughing, P350.00/ha for minimum tillage, P150.00 for harrowing and another P150.00/ha for row planting. Farmers who use animal draught power also qualify for the subsidy provided they carried out the operations correctly. The ASCs let out machinery and associated implements to farmers at rates set from time to time by the Ministry of Agriculture. They also provide skills and knowledge in the acquisition, proper utilization and maintenance of farm machinery and associated implements.

The government provides goat proof cluster fences to arable farmers with cluster fields measuring 150ha - 3500ha for free. These enclosed cluster drift fences may be electric in areas prone to crop damage by elephants. ISPAAD provides potable water to arable production clusters for free. Where possible, the programme could drill/equip boreholes, or purchase existing boreholes in order to provide domestic water to the clusters for free. Maintenance of the cluster fences and operations and maintenance of the boreholes is the responsibility of the cluster management committees. Finally, ISPAAD facilitates access to seasonal loans by arable farmers by subsidizing interest rates through the National Development Bank (NDB). This credit facility covers agricultural inputs such as seeds, fertilizers, diesel, pesticides, farm machinery and implements repairs and maintenance, labour costs for planting, weeding, bird scaring, harvesting, threshing and packaging and transport costs to the market. NDB provides seasonal loans to farmers at a prime rate and then the bank claims the difference between prime and market rates of interest from the Ministry of Agriculture. Given all these service packages offered to arable farmers under ISPAAD, small scale farmers are expected to achieve a minimum of 1 ton/ha whereas commercial farmers should produce at least 2.5tons/ha of cereal grains. Horticultural farmers are expected to achieve a minimum of 40 tons / ha.

THE PERCULIARITY OF ISPAAD FROM ALDEP and ARAP

Table 2.3: Components Offered by Programmes

COMPONENT	ALDEP	ARAP	ISPAAD	COMMENTS
Ploughs (primary tillage implements)	√			
Cultivators (secondary tillage implements)	√			
Planters	√			
Donkey carts	√			
Canoe/paddles	√			
Mini-Silos	√			
Chaff cutter	√			
Threshers	√			
Provision of draught power animals to farmers	√			
Fencing materials (individual farms)	√	√		
Cluster fencing			√	
Provide underground water tank (potable water)	√			Assisted Individual farmers
Borehole drilling/equipping (Potable Water)			√	Assisted Cluster farmers
Destumping (Land clearing)		√		Destumping up to ten hectares
Seeds		√	√	
Lab lab seed/Fodder	√		√	
Fertilizer	√	√	√	For ALDEP, the fertilizer was only for ADF. For ARAP fertilizer was for 3 ha
Ploughing		√	√	For ARAP maximum 10ha and ISPAAD up to 16 ha
Minimum tillage			√	
Row Planting		√	√	
Harrowing (mechanical weeding)		√	√	
Tractor ploughing and planting (broadcasting)		√	√	Farmers paid only for ploughing and not for broadcast planting
Animal draught power ploughing & planting		√	√	Farmers paid only for ploughing and not for broadcast planting
Strengthening Extension service	√			ALDEP provided houses and office accommodation for Extension workers
• Farmer training				
• ALDEP Demonstration Farm (ADF)				
Monitoring and evaluation unit	√			ALDEP was the only programme that had an M&E unit
Agricultural Service Centres			√	
Facilitation of Access to Credit			√	
Improve Extension out reach			√	

The analysis of the types of the components offered under each of the three programmes show that in general, ALDEP provided animal drawn farm machinery, farm structures and an emphasis on strengthening the extension services. Resource poor arable farmers were targeted by the programme.

The Accelerated Rainfed Arable Programme (ARAP) was a drought relief measure that introduced subsidies on farm inputs and operations. The programme introduced an incentive for land clearing in to increase the size of arable lands. The target beneficiaries were farmers who did not qualify under ALDEP but who had the potential to produce more.

ISPAAD has continued to offer subsidies on inputs and farm operations. The introduction of Agricultural Service Centers and facilitation of access to credit are two radical changes that were introduced by ISPAAD. The programme has given arable farmers the option of utilizing government farm machinery to improve their farm operations or engaging contractors (private tractor owners) to do the same to increase the chances of timely planting. At the same time, farmers have the opportunity of accessing credit from National Development Bank with easier terms and conditions than ever before facilitate early ploughing and planting.

The lessons learnt from these programmes that can help inform the ISPAAD.

Each agricultural programme that was introduced added value to its predecessor. The policy changes that took place during the same period (from food self-sufficiency to food security) had to take into account the extent of existing commitments by government toward developing the arable sector, as well as acknowledging the effort invested by decision-makers and interest groups (farmers) in achieving the objectives. Therefore, each programme addressed specific needs of the interest groups (farmers) that they articulated to decision makers to modify the previous programmes by adding new dimensions in the new programme.

The incremental changes brought about by these successive programmes started by empowering resource poor smallholder farmers with appropriate technology which was at the time, suitable for their farming needs. The next programme (ARAP) moved to accommodate the medium scale farmers with technologies that addressed their concerns. For example the change from animal to mechanical draught power as well as addition of organic fertilizer. A further incremental decision is with ISPAAD where aspects of credit facilitation and service provision to group are incorporated in the programme. In fact a report by the Africa Development Bank Group (1996:18) had recommended that there “be a ... drive to increase the provision of wells and boreholes, both for agricultural development and promotion of preventative health care.”

An evaluation of the programmes that preceded ISPAAD indicates that they did not achieve their intended objectives. The Ministry of Agriculture (1991) & Børhaug (1992), argued that ALDEP may not have succeeded in total fulfilment of its objective and that both ALDEP and ARAP were not very promising in terms of general poverty alleviation in the rural areas. Msambo *et al.* (1993) indicated that the economic rate of return for ALDEP at completion stage was negligible. At appraisal stage, the economic rate of return stood at 12% only to go down to 5.22% at completion

stage. Africa Development Bank (1996) concluded that ALDEP achieved little regarding the attainment of the national objectives set for the arable sector.

CHAPTER 3 FOOD SECURITY AND AGRICULTURAL SUBSIDIES

3.1 Introduction

The concept of food security emerged in the mid-1970s as a result of rapid increase in prices that caused global food crises. The global food crises motivated countries to focus their attention first on food availability and then shifted to food access and food use (World Bank, 2007). The World Food Summit of 1996 reaffirmed the right of every individual to have “access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger (FAO, 1996:1).” This preamble of the ‘Rome Declaration on World Food Security’ set the agenda for the countries to tackle food insecurity using diverse paths in order to reach a common objective of providing food security at the individual, household, national, regional and global levels (FAO, 1996).

Clover (2003) cautioned that food insecurity should not be interpreted as failure of agriculture to produce sufficient food at national level, but rather be viewed as failure of livelihood strategies of individuals to guarantee access to sufficient food at the household level. However, agriculture plays three key roles by providing food availability, globally, nationally and at household or individual levels; it is an area where income can be generated and used for purchasing food and provides foods with high nutritional status (World Bank, 2007).

The World Food Summit Plan of Action indicated that “food security exist when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 1996:3; IFAD, 2012:17 & World Bank, 2007:95).” Le Vallée (2006) indicates that for this action plan to hold, countries should uphold the principles of good governance which include the rule of law, transparent and sound public administrative processes, zero tolerance on corruption, effective mechanism to prevent and resolve conflicts, as well as human rights protection. Thus, sustainable food security is dependent on issues of governance as well as the political will of governments.

3.2 Food Security in the Context of Sub-Saharan Africa

The major challenge facing much of sub-Saharan Africa is food insecurity among the rural population which depend on agriculture for its livelihood. Clover (2003) indicated that chronic food insecurity in Africa affected 28% of the population or about 200 million people who are affected by malnutrition. Millner (2010) reported that from a total of 925 million people in the world who were malnourished in 2010, 239 million were from Sub-Saharan Africa, representing the second largest number of malnourished people after Asia and the Pacific. In order to reduce this scenario, the food production will need to nearly double by 2050 in developing countries (IFAD, 2012) including the Sub-Saharan Africa.

The 1996, World Food Summit motivated countries to adopt food security objectives as a priority area in their development plans. For example, Botswana changed the national objective of self-sufficiency in food production to food security during the seventh National Development Plan (NDP VII) (Ministry of Finance and Development Planning, 1997; Twyman *et. al.* 2004). The

implementation of food security option in Sub-Saharan countries experienced difficulties which related to a large population of poor resource endowed farmers; undeveloped rural credit markets; the small size of land under cultivation; poor infrastructure; high transport costs; regular drought, conflicts; and level of poverty (Dorward, Chirwa & Jayne, 2010; Clover, 2003; Wiggins & Brooks, 2010). All these factors hampered the capacity of smallholder farmers to achieve the food security at household level and could not achieve the national level food security. In order to increase the productive capacity of smallholder farmers, a deliberate effort was taken by governments to come up with programmes that would facilitate agricultural input subsidies.

Renewed interest in introducing agricultural input subsidies in developing countries stems from the fact that farmers (who are less resource endowed) are unable to use the inputs and technologies that are known to be effective in improving agricultural productivity. The following arguments are provided by Wiggins & Brooks (2010) about reintroduction of agricultural input subsidies: slow growth of food production per capita in Africa; which led to the rising imports of cereals and other staple food; stagnant yields of staple food per hectare; high input costs which have necessitated the re-introduction of agricultural input subsidies.

The other reasons provided by Wiggins & Brooks (2010) that make agricultural input subsidies more attractive are the political imperative where they are a visible gesture to rural voters, where they serve as an instrument of patronage; they are able to meet a wide range of objectives spanning economic, social and political. They can lead to higher incomes, reduce poverty and improve food security when viewed from economic objectives of stimulation of agricultural production; compensation for high costs of transport; improvement of soil fertility, making inputs affordable to farmers who cannot buy them; allows for learning, adoption of new technologies and innovations; as well as creation of social equity. In addition, some developing countries spend large proportion of their resources to develop agriculture because it is an important contributor to their Gross Domestic Product (GDP), foreign exchange earners and major employer of labour (Olawepo, 2011).

The negative impacts of agricultural input subsidies include the following (Wiggins & Brooks, 2010): They may be ineffective in raising use of inputs and increasing yields; they potentially distort the relative costs of factors of production, leading to inefficient allocation of inputs, with the subsidized inputs substituted for other factors; they may be ineffective because of leakages to unintended target groups; they may suppress the development private suppliers of inputs; they sometimes take a substantial ratio of the national budget; and once they have been put in place, they are difficult to remove.

Output Subsidies

Output subsidies are direct payments linked to commodity production. They are often coupled to production and/or prices. These subsidies directly encourage higher levels of production of a given commodity. Market price support provides producers with a price generally higher than the world market price to support producer incomes. This intervention has a direct, but secondary effect, of encouraging domestic production of the commodity whose price is being supported. This increased domestic production induced by either the output subsidy or the market price support has the

potential to decrease the level of imports of the commodity in question and increase the level of exports of the same commodity to dispose the excess production.

Output subsidies and market price supports can also leak to the industries that supply the inputs used in the production process of the commodity in question. In the short run, an increase in production may result in an increase of input demand to produce the commodity, which in turn, may lead to an increased input price. In the long run, this increase in the input price may result in producers changing the inputs used toward more cost effective inputs or lead to the adoption of alternative production technologies.

However, though direct output subsidies and market price increase the price received by producers for a specific commodity, the higher these forms of support, the greater is the incentive for monoculture, for increasing the use of inputs (such as chemicals), and/or for using environmentally sensitive land, and the higher is the pressure on the environment. Moreover, these payments have the lowest effectiveness in achieving environmental goals, as they are sector-wide payments that cannot be targeted to any environmental goal or situation that are generally local.

Subsidies based on area planted reduce the cost of land for current plantings. As producers have to plant a specific crop these subsidies may be an incentive for keeping environmental sensitive land producing commodities non-environmentally-friendly in such land. Although these subsidies may be targeted to a specific environmental goal or situation, they provide an incentive to bring additional land into specific production and encourage monoculture in the same way as the subsidies based on output. However, as producers are not encouraged to increase yields and to produce as intensively as they are with the forms of support outlined above, the environmental impact of these payments is potentially lower.

On the basis of the preceding advantages and disadvantages of input versus output subsidies and the fact that the majority of farmers in Botswana are seriously constrained by lack of productive farm inputs and high market prices of such inputs, we believe that agricultural support programmes that facilitate access to productive farm inputs will be more plausible at the moment.

3.3 Input Subsidies and Food Security: Experience from Malawi

One of the success stories of agricultural subsidies in Malawi is the fertilizer and seed subsidy. The agricultural input subsidy was introduced in Malawi against the backdrop of the following facts: About 94% of the population reside in rural areas and the majority of them are poor. The majority of the poor people are food-deficit small scale farmers who have limited land available for arable agriculture (Dorward, *et.al.* 2008). The continuous planting of maize on the same small piece of land led to low nutrient capacity of the soils, which in turn affected the maize yield and food security (Dorward, 2010).

The fertilizer subsidy was introduced in Malawi in the mid-1970s and briefly suspended in the 1990s out of pressure of International Monetary Fund's (IMF) structural adjustment initiatives (Dorward, *et.al.*, 2008) that sought to reduce price distortions and promote diversification of the

rural economy of Malawi (Buffi e& Atolia, 2009). The historical trends indicate that the Government of Malawi continued to introduce variants of agricultural input subsidies after the IMF and World Bank structural adjustment initiatives because of the recurrence of drought which led to food crisis and resumption of maize imports (ibid). These agricultural input subsidies were variously called, Drought Recovery Input Program, in 1995; the Starter Pack Program where fertilizer and hybrid maize seed were distributed in 1998-2000 and the current Agricultural Input Subsidy Program (AISP) (Ibid).

The evaluation of this programme identified the following impacts: Before the implementation of the project in 2005, Malawi experienced 43% food deficit and three years after, she experienced 53% food surplus (Denning, *et.al*, 2008 & Millner, 2010). In fact (Millner, 2010) argued that with that level of food surplus, Malawi achieved the Millennium Development Goal (MDG) of eradicating extreme poverty and hunger. Dorward, *et.al*, (2008) indicated that the evaluation of the Agricultural Input Subsidy programme revealed that maize inputs increased; improved household security; and increased private sector participation.

CHAPTER 4 PROJECT METHODOLOGY

4.1 Introduction

This chapter deals with the methodology that was used to collect data. It addresses the detailed *modus operandi* of collecting both primary and secondary data. The sampling strategy used, determination of the sample size, and the instruments (both quantitative and qualitative) that were used during data collection are described in this chapter. Data analysis tools and techniques are also discussed.

4.2 Methodology

This section outlines the study approach, process, and analyses carried out in the PSIA of the ISPAAD. A mixed method and sequenced data collection approach was used to obtain in-depth insights on the performance of ISPAAD since its inception in 2008. Relevant primary and available secondary data were collected about the programme. This included data that had a bearing on the programme before and during its period.

4.3 Five - Criteria Evaluation Approach

The Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD) set out broad principles for the evaluation process for DAC members in the early 1990s. These principles were refined into five criteria that have been widely used in the evaluation of development initiatives—*relevance, effectiveness, efficiency, impact, and sustainability* (OECD-DAC, 2000). BCA Consult (Pty) Ltd adopted and applied these five-criterion evaluation approach in conducting the poverty and social impact analysis of ISPAAD. However, this approach was used within an adapted five-tiered approach to formative programme evaluation by Jacobs (1988) to review the performance of the ISPAAD because it is an on-going programme.

4.4 Sampling Procedure

The sampling process followed to select agricultural districts and respondents is described in Figure 2.1. Two maps of Botswana were sourced from the Ministry of Agriculture. One map showed agricultural extension areas in each district and sub-district. Another map showed land suitability zones for arable rainfed production developed by Radcliffe *et al.*, (1992). The two maps were merged to create a single map (see Figure 2.1) which showed the agricultural districts/sub-districts, agricultural extension areas and the land suitability zones in which they are located. This process enabled the clustering of all agricultural districts /sub-districts and agricultural extension areas by land suitability zones to generate six clusters across the country with varying potential for rain-fed crop production namely: (1) low to very low zone, (2) moderate zone, (3) moderately low zone, (4) moderately high zone, (5) not suitable zone, and (6) unreliable zone.

In each cluster, 33-40% of the sub-districts were randomly selected for data collection. The results of the selected sub-districts are presented in Table 4.1. At sub-district level, 15-20% of the agricultural extension areas were selected and this resulted in 30 extension areas selected to

represent the country, which covers all the ten agricultural districts in the country (Table 4.2). At extension area level the sample size was determined according to the formula

$$n = \frac{\pi(1 - \pi)}{[S.E(p)]^2}$$

Where

n = the extension area sample size

π = proportion of people who are taking part in ISPAAD in an extension area, which was estimated as 30%.

$S.E(p)$ = is the standard error of the proportion (0.05)

Table 4.1 shows the number of individual respondents to the questionnaire from each agricultural extension area.

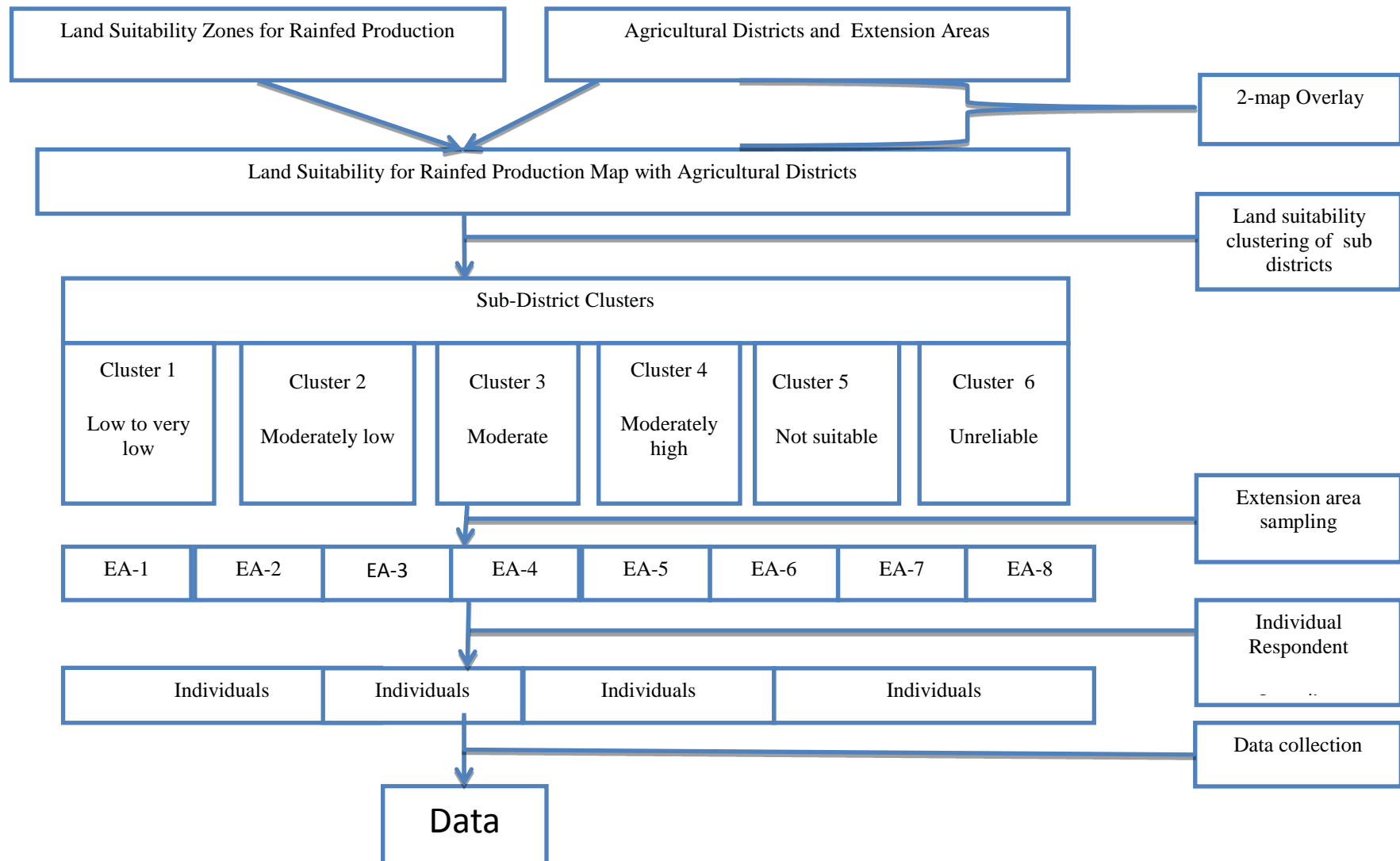


Figure 4.1: Sampling Strategy for Primary Data Collection

Table 4.1: Agricultural Sub-Districts Clustered by Land Suitability for Rain-fed Crop Production

Sub-District Clusters					
Low to Very Low	Moderate	Moderately Low	Moderately High	Unreliable	Not Suitable
*Ghanzi	*Kgatleng	*South East	*Ngwaketse South	*Kweneng West	Tonota
*North-East	NgwaketseNorth	Kweneng North	Barolong	Ngwaketse West	
SelibePhikwe	Machaneng	Kweneng South	Tutume	Boteti	
Bobonong	*Ngwaketse Central	Serowe	*Okavango	Tsabong	
	Ngamiland West	*Mahalapye	*Chobe	Kgalagadi	
		Palapye			
		*Ngamiland East			

*Randomly sampled agricultural sub-districts for primary data collection

Table 4.2: Number of Respondents Sampled per Study Area

District	Sub-district	Sub-district Headquarters	Extension area	Individual Beneficiary interviews
Kgalagadi	Kgalagadi	Hukuntsi	Tshane	31
			Kang	74
Ghanzi	Ghanzi	Ghanzi	Kalkfontein	33
			Qabo	41
Northwest	Ngamiland East	Maun	Kareng	79
			Makalamabedi	74
	Okavango	Shakawe	Ngarange	47
			Seronga	34
Chobe	Chobe	Kasane	Satau	39
			Parakarungu	41
			Pandamatenga	54
North East	North East	Masunga	Moroka	96
			Tsamaya	102
			Mapoka	102
Central	Tonota	Tonota	Shashemooke	76
			Mabesekwa	51
	Mahalapye	Mahalapye	Modiane South	82
			Shoshong west	74
			Mookane	83
Kgatleng	Kgatleng	Mochudi	Artesia	132
			Sikwane	160
			Oliphants Drift	124
South East	South East	Ramotswa	Ramotswa North	124
			Tlokweng North	70
Southern	Ngwaketse South	Mmathethe	Mokgomane	47
			Kangwe	45
	Ngwaketse South	Kanye	Letlhakane West	48
			Segwagwa	54
Kweneng	Kweneng West	Letlhakeng	Ditshegwane	100
			Moshaweng	101
10	13	13	30	2218

4.5 Primary Data Collection Methods

The study required collection and use of both primary and secondary data. A combination of four different methods to collect primary data necessary for the review of the performance of the ISPAAD programme since its inception in 2008 was employed. The four methods outlined in the following subsections are; individual interviews of beneficiaries, focus group discussions, key informant interviews and personal observations.

4.5.1 Individual Interviews

Individual interviews were conducted with randomly selected ISPAAD beneficiaries in the sampled agricultural extension areas. A pre-tested structured questionnaire was administered to individual respondents (Appendix 1)

4.5.2 Focus Group Discussions

Focus group discussions were held with key stakeholders (professionals and beneficiaries) in the ISPAAD programme in all the sampled agricultural districts. These discussants were drawn from civil organizations, local community, youth groups, women's groups and farmers associations. The discussions were conducted using a semi-structured questionnaire. These provided information on the perceptions on ISPAAD objectives, service package to ascertain consistency with objectives, illegibility criteria, and target beneficiaries.

4.5.3 Key Informant Interviews

Interviews were conducted with key informants (such as programme administrators, policy makers, political representatives, local government representatives, etc.) who were familiar with the operations and the environment within which the ISPAAD operates in all sampled agricultural districts. These personal interviews were of open-ended type purported to provide insight on a particular subject matter that has a bearing on the performance of the ISPAAD programme. The interviews were important in the identification and analysis of transmission channels of the ISPAAD programme.

4.5.4 Personal Observations

On-site observations about the operations of the ISPAAD and its beneficiaries were documented in all the selected agricultural districts. Observation on environmental and socio-economic conditions, opinions of various stakeholders in ISPAAD, delivery mechanisms, institutional framework, implementation arrangements and implementation tools for the ISPAAD programme were documented.

4.5.5 Primary Data Requirements

The four PRA methodologies generated datasets comprising of (among others):

- Demographic characteristics of beneficiaries and key informants
- Utilization of ISPAAD packages
- Distributional impacts of ISPAAD on poor people, gender, vulnerable groups, youth, and environment.
- Stakeholders' perceptions on ISPAAD objectives, service package to ascertain consistency with objectives, illegibility criteria, and target beneficiaries.
- Identification and analysis of transmission channels of ISPAAD

- Assessment of the institutional framework, project implementation arrangements, and implementation tools for ISPAAD
- Reflection on programmes and policies with a bearing on ISPAAD and how synergies have been built, strengthened and exploited.
- Identification and analysis of any major changes with influence on the business case for ISPAAD.
- Suggestions on how to enhance the efficacy of the ISPAAD programme.

4.5.6 Primary Data Analysis

The Statistical Package for Social Sciences (SPSS) software was used to analyze primary data using descriptive statistics (means, standard deviation, and percentages).

4.6 Secondary Data Collection Methods

Desk-top studies were carried out to review relevant literature, official documents and publications on the ISPAAD and other relevant documents that were of interest in addressing all the terms of reference for the PSIA of the ISPAAD. Particular emphasis was placed on obtaining the following data:

- ISPAAD implementation guidelines
- ISPAAD operation environment (policies, programmes, projects, delivery mechanism)
- Fiscal expenditure on ISPAAD over time
- Number of ISPAAD beneficiaries by components and district (2008 to present)
- Demographic characteristics of the registered beneficiaries
- Production data over time (before and during ISPAAD)
- Economic prices of inputs and outputs
- Agricultural development indicators (before and during ISPAAD)
- Poverty datum lines for Botswana
- Poverty data (before and during ISPAAD)
- Household income and expenditure data
- Population data by districts
- General agricultural statistics

4.7 Data Analyses

4.7.1 Stakeholder and Benefit Distribution Analysis

ISPAAD affects different stakeholders or economic agents and these stakeholders can also influence implementation and performance of the ISPAAD programme. For this reason it was important to identify people, and organisations that are important to take into account when conducting the PSIA. Stakeholder analysis identified and analysed those who are affected by ISPAAD, as well as those that can potentially affect ISPAAD implementation and attainment of its intended objectives.

The costs and benefits of the ISPAAD programme are shared among different groups. The consultancy determined the distribution of programme effects or net benefits among different ISPAAD beneficiary groups or programme participants. It is essential to know the proportion of who gets what (and how much) from ISPAAD and to identify gainers and losers from the programme.

4.7.2 Delineation of Transmission Channels

After stakeholders identification the next step was to delineate the channels by which the ISPAAD programme is expected to impact various stakeholder groups. The study identified ISPAAD transmission channels that dominate and have distinct impacts on different stakeholders.

4.7.3 Institutional Analysis

Institutions mediate the transmission of certain policy impacts to people. For this reason they affect the impact that ISPAAD will have on poverty and welfare of different households or groups. This study identified government agencies, non-governmental organizations and firms that are involved in the design and implementation of the ISPAAD programme. It also identified the characteristics of such institutions and their dynamic relationships.

4.7.4 Poverty Impact Analysis

The poverty headcount index (PHI) was used to measure the number (or percentage) of ISPAAD beneficiaries that fall below the poverty datum line. The poverty headcount index can be expressed as:

$$PHI = \frac{q}{n}$$

Where q = number of ISPAAD beneficiaries below the poverty datum line and

n = the total number of ISPAAD beneficiaries.

The PHI was used to determine the relative number of poor people who participated in the ISPAAD programme. The average monthly poverty datum lines for the years 2002/3 and 2009/10 are P571.65 and P878.87 respectively as shown in Table 2.1.

4.7.5 Cost-Benefit Analysis

It was necessary to establish whether the quantity and quality of the results of the ISPAAD programme justify the quantity and quality of the means used to achieve them. It was necessary to assess whether the process of transforming the means into results has been cost effective. Performance indicator ratios (annual proceeds per unit of fiscal investment on the ISPAAD) were computed for the period 2008-2010. The ratios were used to track changes in the return on investment on ISPAAD over time. The magnitude of these ratios would indicate the returns from

investing on the programme. The smaller the size of the ratio, the lesser is the return on investment in the ISPAAD programme. An increase in the ratio would imply higher annual proceeds per unit of fiscal investment each year. We further employed discounted measures of project worth, the Net Present Value (NPV) and Benefit-Cost Ratio (BCR) techniques to estimate the economic worth of the ISPAAD programme.

4.7.6 SWOT Analysis

Participatory evaluation by key stakeholders in the ISPAAD programme (beneficiaries, focus group discussants, and key informants) identified the strengths and weaknesses, its opportunities and potential threats. Personal observations and literature review were used to supplement the data obtained through other methods.

CHAPTER 5 FINDINGS

5.1 Introduction

This chapter presents results from the analysis of both primary and secondary data. It contains a review of key design features of ISPAAD, assessment of performance of ISPAAD *vis-à-vis* its objectives, the extent to which different components of the programme have been utilized or adopted by the target population, poverty and socio-economic impacts of ISPAAD and cost-benefit analysis.

5.2 Design Features of the ISPAAD

5.2.1 Objectives of ISPAAD

The ISPAAD programme has two sets of objectives. One set covers rain-fed arable agriculture while the other covers the horticultural sector. The objectives of rain-fed arable agriculture are (1) to increase grain production, (2) to promote food security at the household and national levels, (3) to commercialize agriculture through mechanization, (4) to facilitate access to farm inputs and credit, and (5) to improve extension outreach. The objectives of the horticulture development programme are (1) to increase production level of horticultural products, (2) to create employment opportunities, (3) to diversify agricultural production base, (4) to provide essential farm inputs and selected equipment, and (5) to improve competitiveness of the horticultural industry.

A closer look at the objectives spelt out for rain-fed arable agriculture reveals that promotion of food security at the household and national levels is the ultimate objective that can be achieved through increased grain production, which in turn, would come about through improved access to farm inputs and credit, improved extension outreach and by commercializing arable agriculture.

Both sets of objectives for arable agriculture and horticulture are relevant in the sense that they address critical needs of farmers in both subsectors. Majority of farmers currently face serious production constraints because they do not have adequate and appropriate farm inputs such as draught power, seeds, fertilizer, pesticides, farm labour, water, credit and fencing material. The food security objective is also in-line with international call of 1992 to adopt food security.

However, the objectives of ISPAAD are not specified in very specific, measurable, attainable, realistic and time-bound manner. There are no clearly specified objectively verifiable indicators, means of verification, and assumptions under consideration in the programme design. This absence of performance indicators and operational assumptions has not only made it difficult to gather baseline data, but has also made it even more difficult to implement ISPAAD and monitor its progress. Furthermore, these deficiencies in the programme design make it difficult to evaluate ISPAAD as to whether or not the programme is effective and efficient in achieving its intended objectives.

5.2.2 Outcomes of ISPAAD

ISPAAD implementation guidelines present inputs and activities of the programme but fail to adequately outline expected outputs and how they are linked to achieving intended outcomes. The intended outcomes are not clearly specified in the ISPAAD implementation guidelines. The current design of ISPAAD does not sufficiently spell out the inputs, activities, outputs, and outcomes of the programme. Neither does the design provide linkages between inputs, activities, outputs and the expected outcomes.

5.2.3 Target Beneficiaries of ISPAAD

Rain-fed arable agriculture support is intended for all farmers aged 18 years and above with Omang or resident and work permits with proof of land accessibility (dully allocated or leased). Horticultural development support is meant for citizens of Botswana, 18 years of age and above. In the case of rain-fed agriculture, ISPAAD is open to any person provided they have proof of land accessibility. This makes ISPAAD a non-targeted programme because it includes “all farmers.” In its current form and practice, ISPAAD does not target farmers but people who farm. These people need not have demonstrated commitment to farming at all before they are registered as beneficiaries. Neither are these people who farm deriving their income largely from farming. It is observed that they are “people who farm during weekends” because they have major off-farm sources of employment and income that make them have divided attention to arable agriculture. This non-targeted nature of ISPAAD exposes the programme to misuse, abuse and makes it support an increasingly large number of beneficiaries that render the programme unsustainable in the long run.

5.2.4 Products Offered

ISPAAD components include cluster fencing, provision of potable water to clusters, provision of free and subsidized seed, provision of free and subsidized fertilizer, provision of free and subsidized draught power, facilitation of access to credit, provision of farm machinery and implements through agricultural service centres, and horticultural enterprise support. The majority of ISPAAD components are consistent with objectives of the programme and address farmers’ needs across the country. However, a few components need to be reviewed in order to align them with the programme objectives.

The provision of seeds is necessary, but observation reveals that these seeds are not distributed on the basis of agro-ecological or land suitability zones. ISPAAD is providing seeds to “farmers” in places where it is known that chances of growing a successful crop are minimal. This is a counterproductive practice. The majority of “Beneficiaries” are poor uneducated elderly women, who in essence not being assisted in the long run by growing crops which will almost certainly fail in their agro-ecological zone.

The provision of potable water is tied to cluster fencing. Only beneficiaries of cluster fencing have access to the potable water component. The cluster fencing component itself has not been

successful across the country because of the minimum land requirement of 150 ha and problems associated with group formations in Botswana. However, individual farmers who are not in clusters also need potable water in their arable lands.

A credit facility which provides access to seasonal loans to finance farm production inputs is necessary. However, the design of the current ISPAAD credit facility makes it only accessible to large commercial farmers than majority of subsistence arable farmers in Botswana. This owes to the fact that subsistence arable farmers do not meet the loan requirements of the national development bank. Thus, very few arable farmers are accessing the available credit facility.

Agricultural Service Centers (ASCs) are an important component of agricultural development. However, none of the planned ASCs has been constructed since the inception of ISPAAD in 2008. Some farm machinery and implements have been purchased and delivered in respective agricultural districts. The machinery is said to experience frequent breakdowns. They are not well maintained while others have never been used since delivery at “ASCs” in 2008. The majority of arable farmers complained about lack of access to these machinery and implements across Botswana because they are not enough and are restricted to operate within only 20km radius from the “ASCs”. Most arable farmers complained that the machinery and implements are too big to undertake farm operations in their fields. In other words, most of the machinery and implements at “ASCs” are not suitable for the majority of fields in the country.

Provision of access to draught power to arable farmers is necessary. However, the private tractor contractors do not have the right farm implements and use inexperienced operators. These lead to late ploughing/planting and substandard tillage operations which eventually result in bad crop stands or total crop failure. Furthermore, ploughing, harrowing, and row planting are treated as separate farm operations. Thus, private tractor contractors prefer ploughing to harrowing and row planting because of different subsidy rates for the said farm operations.

Horticultural development support is important to expand the agricultural economic base, diversify the economy and eventually reduce imports of horticultural produce. Unlike in arable agriculture support, projects approved for funding under horticultural development support have met minimum commercial requirements. However, input requirements for horticultural enterprises require huge financial resources. The current horticultural support ceiling under ISPAAD is relatively low to adequately finance capital intensive horticultural projects.

5.2.5 Eligibility Criteria

ISPAAD implementation guidelines specify eligibility criteria for each ISPAAD component. However, the general eligibility criteria is that beneficiaries must be all farmers aged 18 years and above with Omang or resident and work permits and proof of land accessibility (dully allocated or leased). The eligibility criteria for ISPAAD allow all active persons with access to arable land to benefit. That makes the programme universal or non-discriminatory. It is very inclusive in the sense that poor people, women, youth, people with disability and serious illnesses, elderly, formally employed or not, educated or not, urban, rural and Remote Area Dwellers are free to access the programme. However, this eligibility criteria exposes the ISPAAD to misuse, abuse and makes the programme unsustainable in the long run.

5.2.6 Performance Criteria

ISPAAD lacks well defined performance criteria. Most of the objectives of ISPAAD are not specified in very specific, measurable, and time-bound manner. ISPAAD guidelines do not clearly specify objectively verifiable indicators, means of verification, and assumptions considered in the planning and implementation phase. ISPAAD guidelines, however, state productivity indicators. It is expected that subsistence farmers should attain grain yield targets of 1 tons/ha while commercial farmers should obtain at least 2.5 tons/ha. In the case of horticulture, producers are expected to obtain a target yield of 40 tons/ha. Still, the grain and horticulture yield targets are not specified by crop.

5.2.7 Institutional Arrangements

The ISPAAD programme is housed in the relevant Ministry of Agriculture (MoA) and implemented by the right Department of Crop Production (DCP). It is, however, implemented following the generic DCP structure and using DCP personnel who have other designated duties besides ISPAAD. Thus, ISPAAD as an agricultural support programme lacks a well-defined and coordinated implementation structure to deliver services to farmers and all key stakeholders in the programme. The roles are not clearly specified. Given the ill-coordinated implementation structure, practices, knowledge and access to information are not uniform in the current implementation structure. ISPAAD lacks an efficient monitoring and evaluation system. Record keeping, data and information management in the ISPAAD programme are poor. Some records were missing while others were incomplete at extension area, district as well as MoA headquarters level.

MoA is not well-resourced to effectively and efficiently implement ISPAAD programme. ISPAAD does not have its own designated staff at district and extension area levels to deliver services timely and adequately to farmers as per ISPAAD implementation guidelines. ISPAAD guidelines are not very clear and explicit. Thus, they are subject to misinterpretation and inconsistent application across implementers and districts. There are frequent amendments to the guidelines, most of which do not reach frontline extension workers in good time. Private sector involvement in ISPAAD planning, implementation and control (monitoring and evaluation) is minimal. Private sector

participation is limited to provision of draught power, seeds, fertilizer, fencing materials, and drilling/borehole equipment.

The Ministry has started routine national level consultation process (*Pitso*) with farmers and their representatives to find ways to improve the ISPAAD operational guidelines and address concerns from farmers.

5.3 The Effectiveness of ISPAAD Programme

The objectives of ISPAAD as stated and the components that address them were analysed systemically because any exclusive analysis can distort the final conclusion. However, for purposes of exposition, an attempt has been made to discuss the objectives and associated components that drive them separately but bearing in mind their inherent holism. To address the question of the extent to which the ISPAAD components lead to the realization of the programme's intended objectives, primary and secondary data were collected and analysed to gain insight on the performance of the programme. Views of agricultural extension workers, ISPAAD beneficiaries, key informants and other stakeholders such as village leadership were solicited.

The ISPAAD programme has five major objectives as listed in Table 5.1. ISPAAD beneficiaries rated their perceived effectiveness of ISPAAD in achieving the stated objectives using a Likert-scale of 1 (*extremely ineffective*) to 7 (*extremely effective*) as indicated in the key below Table 5.1. ISPAAD beneficiaries rated the programme as moderately effective in achieving the following three objectives: increasing grain production, promoting food security at household and national level as well as improving extension outreach. However, they rated ISPAAD as slightly ineffective in commercializing agriculture through mechanization and extremely ineffective in facilitating access to finance by traditional smallholder farmers.

Table 5.1: Mean Scores on the Effectiveness of ISPAAD on Attaining Objectives

Objective of the ISPAAD Programme	Experienced Change on Indicator	
	Mean Score	Standard Deviation
1.To increase grain production	5.0	0.8
2.To promote food security at household and national level	5.0	0.8
3.To commercialize agriculture through mechanization	2.9	0.6
4a.To facilitate access to farm inputs	5.0	0.6
4b.To facilitate access to credit	1.4	0.6
5.To improve extension outreach	4.9	0.8

KEY: 1 = *Extremely Ineffective* 2 = *Moderately Ineffective* 3 = *slightly ineffective*
4 = *slightly effective* 5 = *Moderately Effective* 6 = *extremely effective*

5.3.1 Objective 1: To Increase Grain Production

Data on production of sorghum, maize, millet and pulses for the period 1979-2011 as well as data on crop yield between 1984 and 2010 was sourced from Statistics Botswana at the Ministry of Finance and Development Planning and the ISPAAD office from the Ministry of Agriculture. These sets of data were sectioned into 3-year periods from which means and their standard deviations were calculated and presented in Figure 5.1. The national average production since 1980 (including the ISPAAD period), before ISPAAD and ISPAAD period averages were calculated. Data on crop yield was also subjected to similar analysis as above.

The results presented on Figure 5.1 show that grain production of the above crops has been fluctuating over the years with a range of between 13,000 and 100,000 tons, while yield per hectare harvested was fluctuating between 130 and 410 kg/ha (Figure 5.1c and d). These fluctuations may have been caused by rainfall amounts, rainfall patterns and other climate factors over these years, which impact on production and yield per hectare. The Food and Agriculture Organization has observed that in Botswana, crop production indicators depend on the rainfall during the growing season (<http://www.fao.org>). The national production average for the period 1979-2011 was 42,554 (± 27185) (including ISPAAD), and 40,322 (± 28561) tons (excluding ISPAAD). During the ISPAAD period the average grain production stood at 58,177 (± 8615). Analysis of yield revealed that between 1985 and 2010 period, the national average was 383 kg/ha, and 328 kg/ha when the ISPAAD period is included. This yield of 375 kg/ha during ISPAAD period is included in the analysis. Comparative analysis of the ISPAAD period production with the national average for crop production and yield indicates that while there appear to be differences in results, these are however not significant (Figure 5.1a,b,c and d). If the 2007/08 cropping season data is used as a benchmark, it can be concluded that grain production increased during ISPAAD. However this one-year reference point is misleading and not scientifically credible. If a multi-year reference is used as a benchmark as is the case in this study, the ISPAAD programme did not significantly increase both production and yields per hectare over the long term based on historical records.

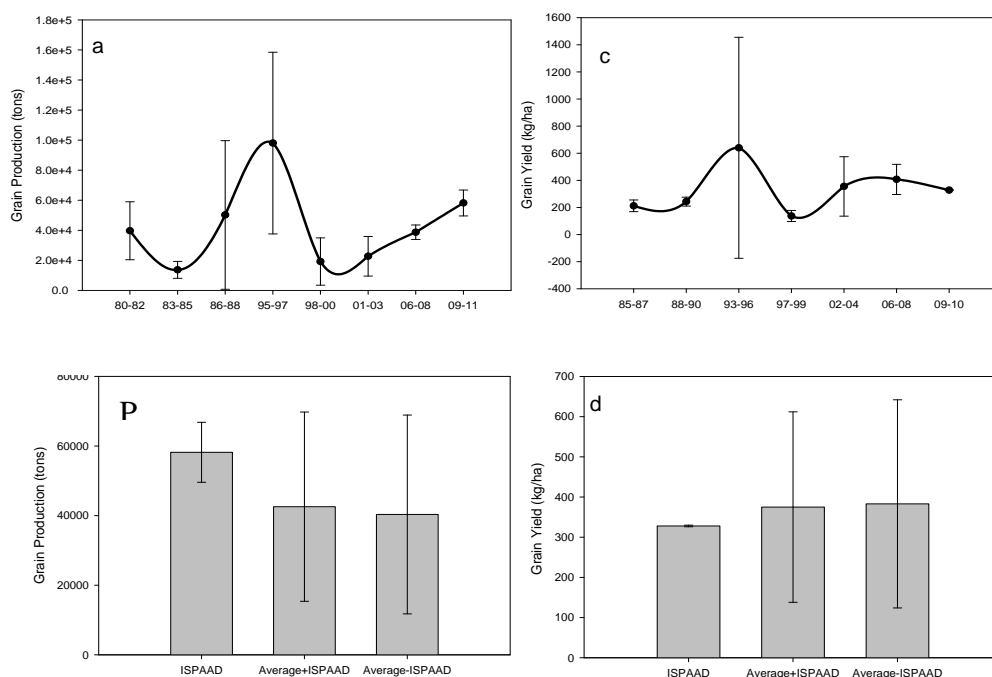


Figure 5.1: Effects of ISPAAD on some Grain Crops Production Indicators (maize, sorghum, millet & pulses)

Figures 5.2 to 5.5 below present actual yield per hectare for sorghum, maize, millet and pulses under traditional and commercial production systems compared to target yields specified under ISPAAD guidelines. The results indicate that commercial farmers are achieving much better yields per hectare in all types of supported grains compared to traditional farmers irrespective of whether yield is calculated on area planted or area harvested basis. Traditional farmers (who are the majority beneficiaries of ISPAAD) have not been able to achieve the set yield targets in all the cropping seasons since 2008. On average, traditional farmers were only able to achieve about 20 percent of the ISPAAD target yield per hectare in all ISPAAD-supported grains. Commercial farmers achieved a minimum of 80 percent of the target yield on average. It is important to note that commercial farmers achieved yields that exceeded the set yield targets in some of the cropping seasons.

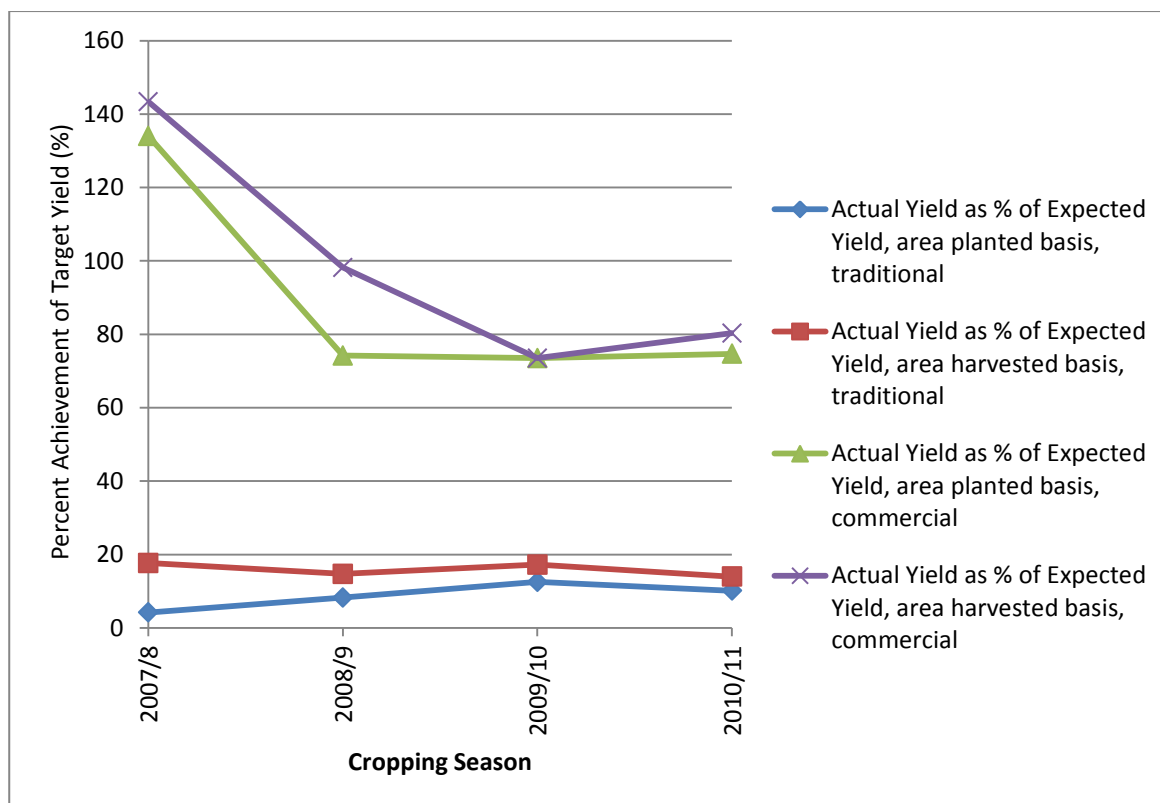


Figure 5.2: Actual per Hectare Yield of Sorghum as a Proportion of Target Yield, 2008-2012

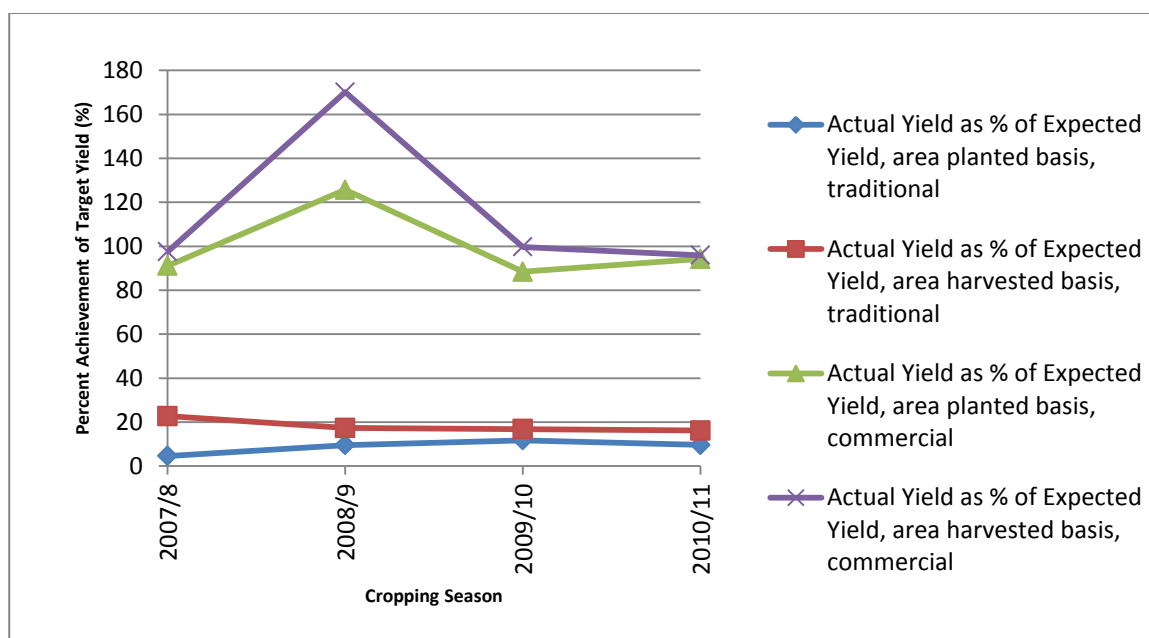


Figure 5.3: Actual per Hectare Yield of Maize as a Proportion of Target Yield 2008-2012

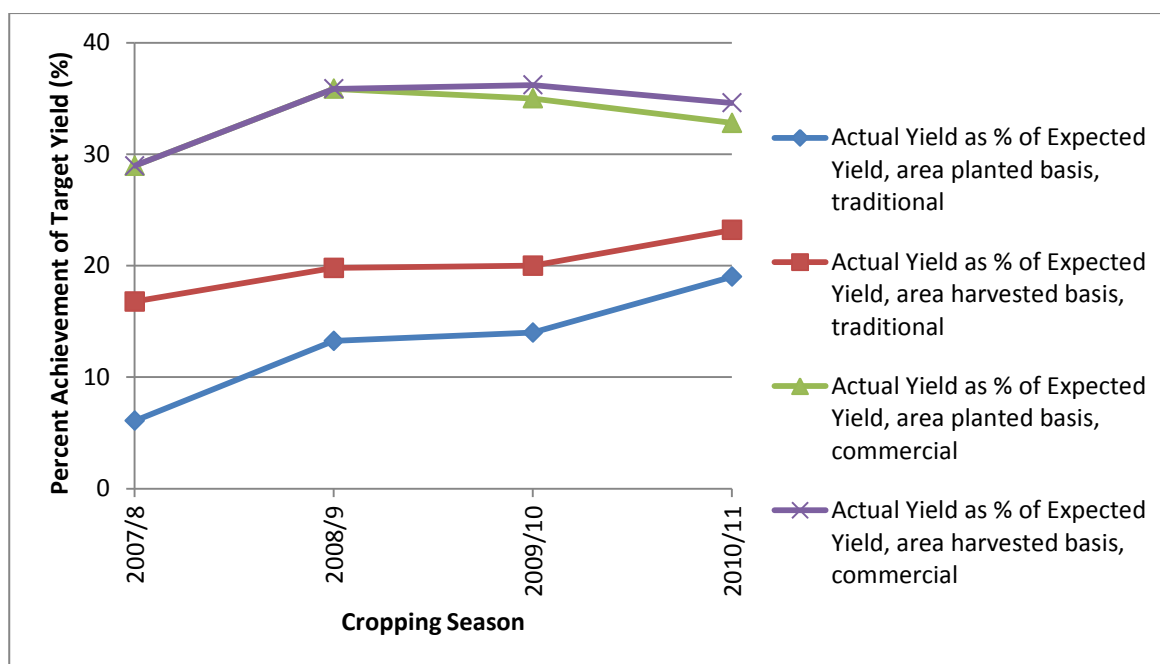


Figure 5.4 : Actual per Hectare Yield of Millet as a Proportion of Target Yield. 2008-2012

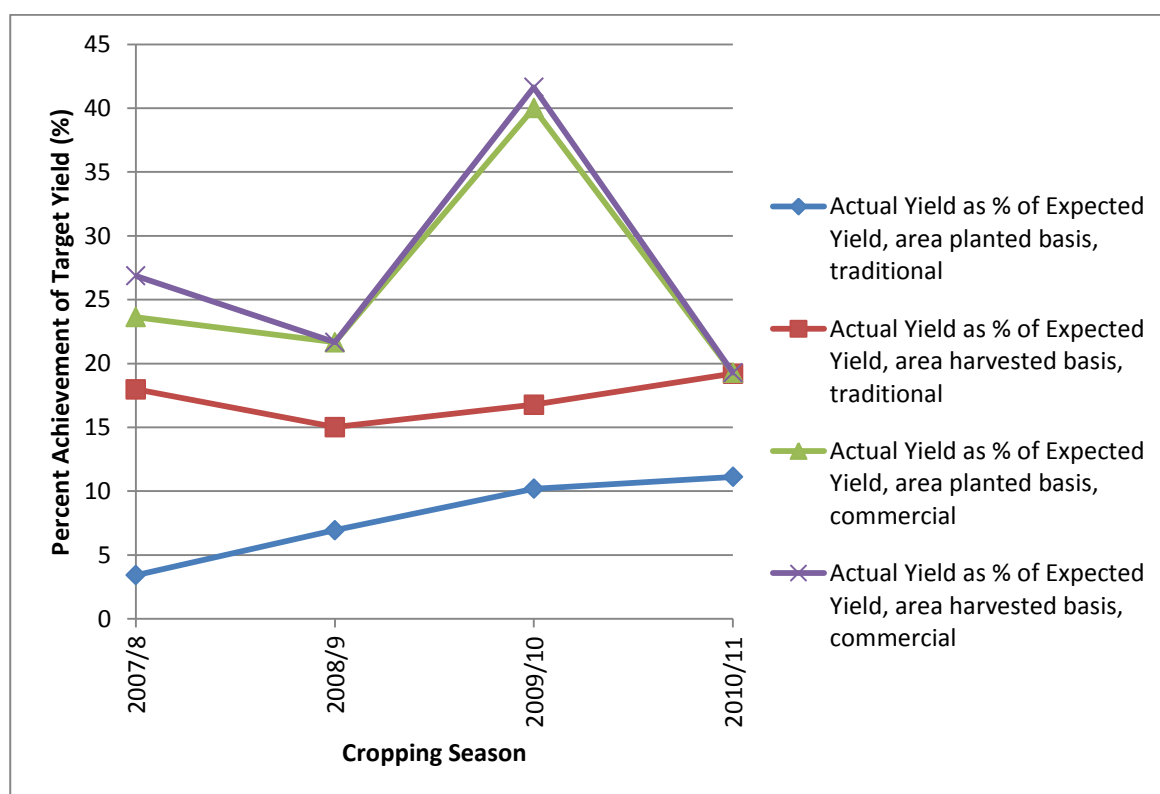


Figure 5.5: Actual per Hactare Yield as a Proportion of Target Yield, 2008-2012

Domestic Grain Production versus Cereal Imports

Figure 5.6 shows domestic grain production and grain imports. Results show that domestic grain production is far from meeting national demand for grain in Botswana. Domestic grain production is shown to satisfy only 10 percent of national demand. The supply gap is filled by imports, amounting to about 90 percent of the required grain annually. The ISPAAD has not increased grain production beyond historical production levels prior to its inception. Domestic grain supply is still 10 percent of national requirement. Botswana remains a net importer of grain.

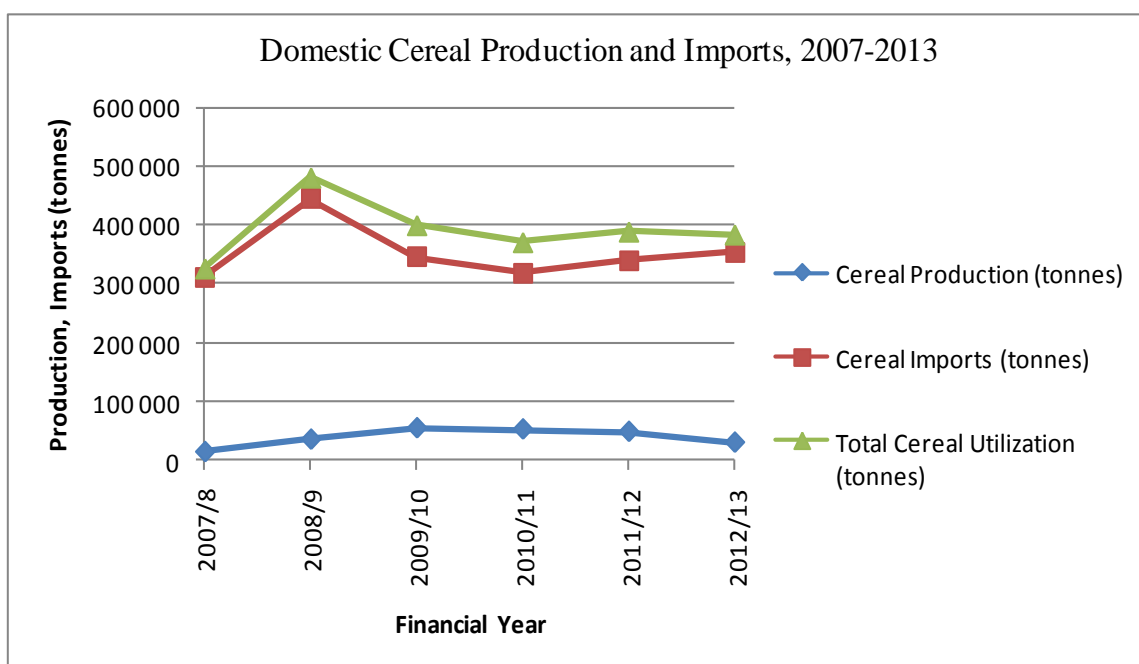


Figure 5.6: Domestic Cereal Production and Imports, 2007-2012

Causes of Low Production

Shortage of Inputs and Poor farm Operation

Secondary data on seed and fertilizer supply by the Ministry of Agriculture during the ISPAAD programme shows that for all the three years that the programme was running, there were seed and fertilizer shortages supplied to farmers. The deficit ranges from 20-120% for seed and as high as 1600% for fertilizer as indicated in Figure 5.7a and 5.7b.

Analysis of the primary data on input supply revealed that except for maize seed, ploughing, harrowing, planting, fertilizer and sorghum, millet and cowpea seed were largely in short supply, not at the right time and quantities in figure 5.8. These findings agree with the secondary data that there was deficit supply of seed and fertilizer. Focus group discussions substantiated that it was difficult to source seed and fertilizer from the Ministry of Agriculture. It is also worth noting that only one type of fertilizer (N: P: K) is issued and applied throughout the Country. This means that fertilizer is applied regardless of the nutrient status of the soil, type of crop and stage of crop development. Therefore, narrow range of fertilizer, its inadequacy and that of seed caused low production.

Low grain production per unit area was attributed to the fact that most farmers could not row plant their fields due to shortage of draught power (both tractor and animal), harrows and row planters in all the area visited. It was reported through discussions with farmers and stakeholders that most farmers and private contractors did not own harrows and planters. Under such circumstances they would resort to plough/planting (broadcasting) in order to take advantages of the rains which are very unreliable, variable and erratic throughout the country. Broadcasting seed results in uneven distribution, and inefficient use and wastage of seed, and above all, it is difficult to manage broadcasted field by mechanization. Broadcasting seed therefore impacts negatively on yield, which has caused non-significant increase in grain yield during the ISPAAD programme.

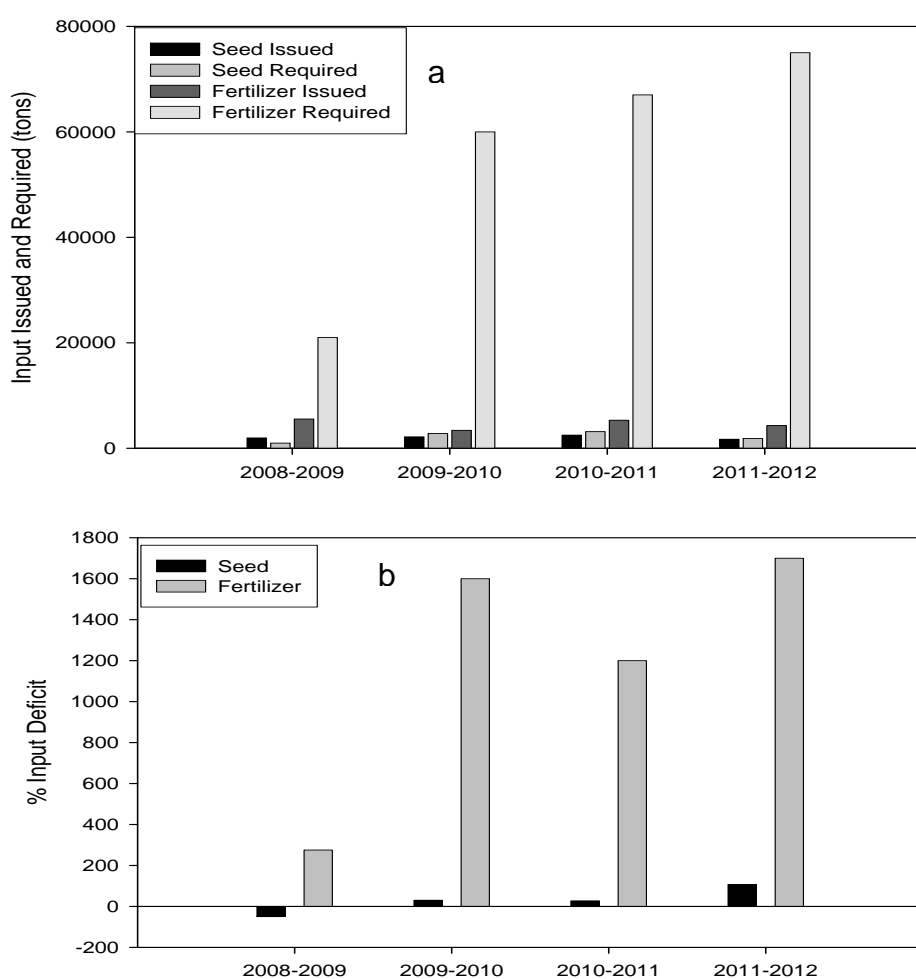


Figure 5.7: Input Distribution and Requirements during the ISPAAD

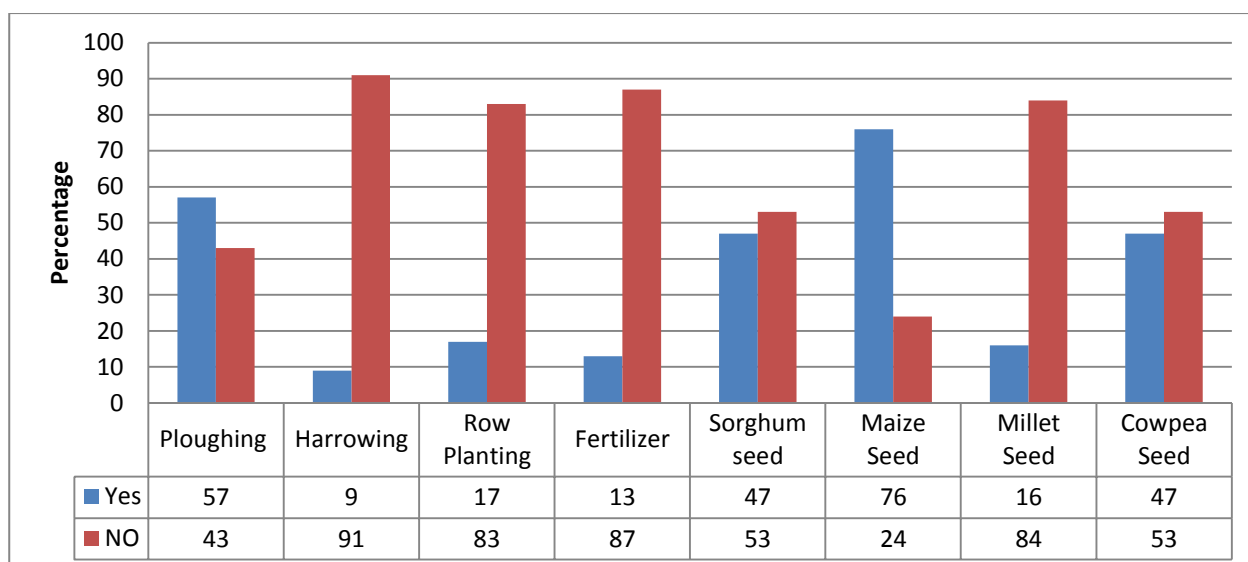


Figure 5.8: Access to Inputs during ISPAAD

Poor Land Preparation and Planting Practices

Poor land preparation by private contractors was reported in all the areas where focus group or individual discussions with Extension Workers, Farmers or their representatives and the village leadership were held. They indicated that private contractors, especially those who own tractors, were not taking their time to plough well but were always in a rush to cover as many arable fields as possible in order to maximise returns at the expense of the quality of work. The reason for this rush by contractors is due to the fact that the money paid to contractors for ploughing per hectare under ISPAAD is higher than that paid for other operations such as harrowing and row planting (refer to appendix on ISPAAD guidelines). Poorly prepared seedbed causes low yield, especially in low rainfall areas.

The results in figure 5.9a show that 60% of respondent used private tractor contractors for their farm operations. About 10% of respondents used tractor draught power from Agricultural Service Centre. About 3% owned and used their own tractors to perform farm operations.

Over 40% of farmers still use animal draught power instead of tractors for land preparation operation (figure 5.9b). On the other hand, those who use tractor power, source them from contractors. The Ministry of Agriculture tried to circumvent these by introducing tractor service through the Agriculture Service Centres, who for various reasons are unable to cope with the number of farmers as shown by 13% in Figure 5.9a.

It was reported through discussions with farmers and stakeholders that most farmers and private contractors did not own harrows and planters, as shown by their respective low utilization of 25 and 37% in figure 5.9c&d. When they use the equipment, it will be not under their control as only 6 and 13% own harrows and planters respectively. These cause them to resort to seed broadcasting in order to take advantages of the rains which are very unreliable, variable and erratic throughout the country.

Unavailability of row planters meant that most ISPAAD beneficiaries could not properly apply fertilizers to improve the nutritive quality of the soils in their arable farms. The physical properties of soils render them poor in terms of plant nutrient retention. In addition the low crop yield is exacerbated by inadequate fertilizer, its inappropriate application and limited range.

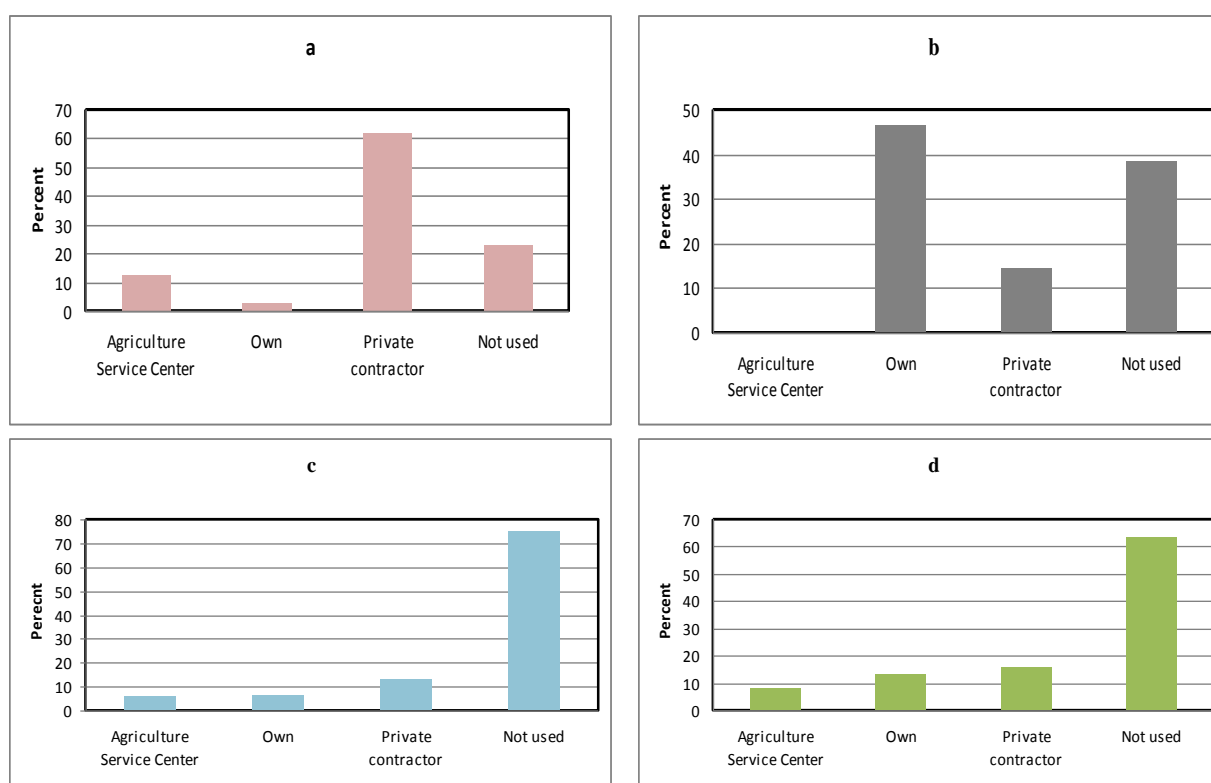


Figure 5.9: Utilization and Sources of Farm Operations by ISPAAD Farmers. (a) Tractor power, (b) Animal Draught power, (c) Harrowing, (d) Row Planting

Destruction of Crops by Animals

One of the main problems of crop production in the country is unfenced or improperly fenced fields. Under 40% of the fields were fully wire fenced, while a combined and large percentage (60%) were either unfenced, partially wire fenced or bush fenced (Figure 5.8). In some areas, unprotected arable lands are located within wildlife management areas. In other cases, both wildlife and domestic animals destroy crops. This leads to reduction in crop yields and loss of income. It was expected that during the ISPAAD programme, fencing of arable land through the cluster model will exclude animals from the fields. The high number of unfenced fields and clusters formed as revealed by group discussion and personal observations, point to that unfenced arable lands could also contribute to non-significant increase of crop production during the ISPAAD period.

Cluster fencing and provision of potable water have not been taken up by farmers because the process of group formation on its own requires time. This has led to reported cases of wild life and livestock destruction of crops which contributed to the low grain yield. In some cases the procurement of fencing material has been delayed due to budget constraints or due to suppliers not providing the material on time. Cluster fencing component to address both wild and domestic animal problems is still at its infancy stage. In all the areas that were covered during the survey, cluster fencing component was largely at cluster (group) formation or construction stages in Okavango (Mohembo East), North East (Masunga), and Mahalapye (Mookane).

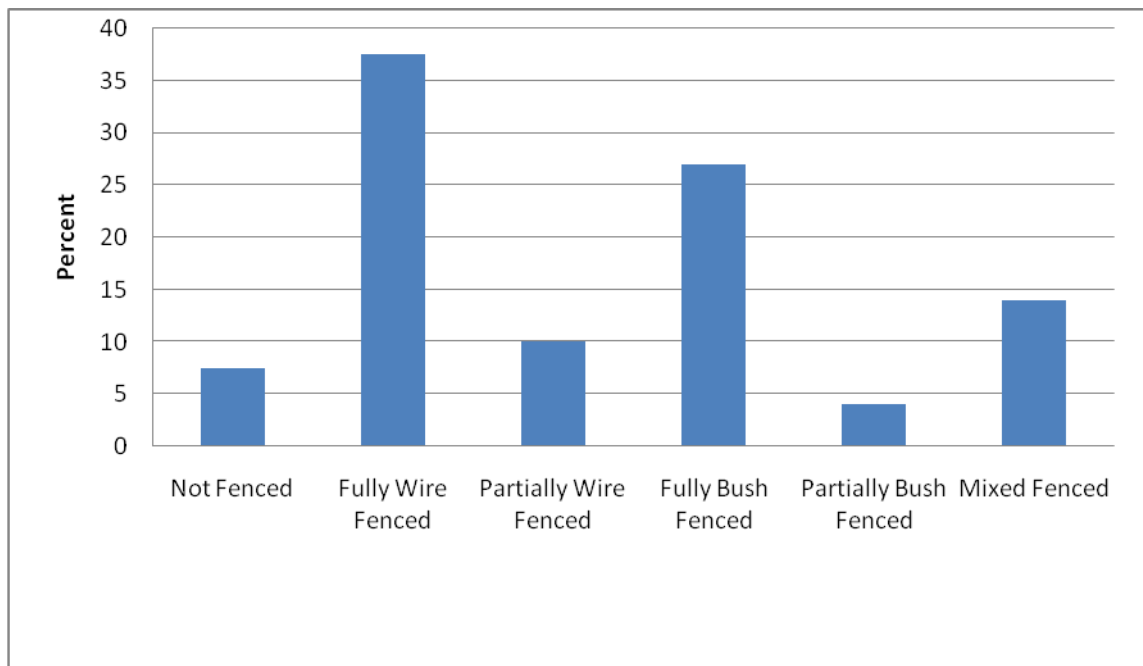


Figure 5.10: Fencing Methods used by ISPAAD Beneficiaries

Despite the efforts made by the MoA to provide farm inputs and technologies through ISPAAD, grain productivity targets have not been met and total production is still very low compared to national demand. Thus, ISPAAD has not met the objective of increasing grain production in Botswana. This could be ascribed to: shortage or late arrival of supplies, poor and inappropriate land preparation, planting practices and crop destruction by domestic and wild animals. The Ministry of Agriculture needs to put in place measures that would ensure timely delivery of farm inputs and in the right quantities. Accessibility to farm machinery for land preparation and planting should be improved. Protection of crops from wild and domestic animal should be addressed through accelerated cluster fencing or alternative means.

5.3.2 Objective 2: To Promote Food Security at Household and National Level

Farmers or their representatives, Extension Workers and Village leaders indicated that the existence of government programmes that compete with ISPAAD for already scarce farm labour such as *Ipelegeng* programme and destitute programs (where food hand-outs are distributed to able bodied people), make it difficult for this objective to be realized. The ISPAAD records show that there has

been an increase in the number of beneficiaries over the years since the programme was introduced. At the same time, there has also been an increase in hectares plough/planted. The increase in the number of beneficiaries and the hectares plough/planted has not translated into increase in total grain production. As observed earlier, grain productivity per farm has not improved despite the provision of critical inputs through ISPAAD. The low productivity levels are an indicator that majority of the beneficiaries are not yet able to produce adequate grain to satisfy household requirements. In aggregate, this failure to satisfy household grain requirement translates into failure to meet national grain requirement from domestic production. This failure to meet national requirement from domestic production is exhibited in the rising imports of cereals, which account for 90% of total cereals utilized in Botswana annually. Thus, ISPAAD has not achieved the objective of promoting food security at household and national level.

5.3.3 Objective 3: To Commercialize Agriculture through Mechanization

The main components that facilitate the operationalization of this objective are the establishment of ASC and the engagement of private contractors for ploughing, harrowing and row planting. The ASC were meant to alleviate shortage of primary and secondary tillage operations in those areas where they are located. This has not been the case because in some instances, the ASC are still to be established. Where they are established, there are no qualified tractor operators and there are no facilities (flatbed trucks) to transport the machinery to the arable lands where they are needed. The machinery is reported to be too large to manoeuvre through the narrow roads to the arable lands. The size of most arable lands is relatively smaller for tractors and machinery of that magnitude to operate in.

In areas where machinery for Agricultural Service Centres (ASC) existed, indications were that the machinery was constantly breaking down or awaiting repairs. The breakdown of tractors and machinery from ASC was mainly worsened by hiring of unqualified farm operators who could not operate them to required specifications and standards. Planters used in these ASC are four row planters which are not easy to transport to the arable lands because of their size and the narrow roads that they had to be transported through to the arable areas. In some areas, it was reported that the 20 km radius which is recommended for the ASC machinery to travel and operate within made it difficult for the centres to cover the majority of the farmers who could have hired them for ploughing, harrowing and row planting.

In some cases, the land is not well de-stumped which result in break downs of machinery especially plough shears. In the northern parts of the country, especially in the North West district, the flood recession farming system (*molapo* or *dikhuti* farming) render it impossible to use the ASC machinery because of heavy black cotton soils, dense grasses that grow on the flood plains and the steep slopes.

Private tractor contractors hired inexperienced tractor drivers who lacked knowledge and skill to operate the majority of farm implements used in different operations. Some 60% of ploughing/planting was done by private tractor contractors. However, the private tractor contractors

are reluctant to undertake harrowing and row planting because they each attract a lower subsidy of P150/ha compared to the ploughing component which attracts a subsidy of P400 / ha.

The ISPAAD has provided machinery and farm implements through the “ASCs” and through private contractors. Though beneficiaries are utilizing tractor draught power, it is only undertaken mainly to produce crops for subsistence purposes. The majority of arable farmers still do not have the business mind set to transform their subsistence farming to commercial farming practices. Private tractor contractors and “ASCs” are using inexperienced drivers. The majority of ISPAAD beneficiaries own very small pieces of land. The value of production from these small fields do not cover the costs of ploughing, harrowing and row planting using a tractor. It is thus not economic to use tractor power on small fields. The majority of farmers themselves are not into arable agriculture for commercial purposes. They want to produce food to sustain their families. As a result, the objective of commercializing agriculture through mechanization is not being achieved.

5.3.4 Objective 4: To Facilitate Access to Farm Inputs and Credit

The components that facilitate the operationalization of this objective are the provision of free seeds, free and subsidized fertilizer, ploughing, harrowing and row planting components. The components that have been mostly utilized by beneficiaries are the free seed and free ploughing. Very few beneficiaries have utilized the fertilizer, harrowing and row planting components. The major obstacle to adoption of these practices has been shortage of draught power and secondary tillage implements in some areas as stated earlier in this report.

The facilitation of credit through NDB has not been well received by farmers in most areas. The main reason given was lack of knowledge on how to access the facility. Unlike other components which are facilitated by Extension Workers, the NDB credit component is facilitated by NDB staff at district level. This makes it difficult for the District Crop Production staff to monitor its uptake at Village Extension Area level. This arrangement has the potential for abuse because there is a likelihood of a loan recipient benefitting from other components without knowledge of the VEW. For example, a farmer can acquire a loan from NDB with the intension to purchase agricultural inputs and at the same time register for free seeds, fertilizer, ploughing, harrowing and row planting from the VEWs’ office.

The records from ISPAAD Office show that very few farmers utilized the facility as indicated in figure 5.11. The NDB credit facility was utilized in five agricultural districts only. These are Chobe, Kweneng, Central, Southern and South East Districts. The Chobe District had the highest number of beneficiaries followed by Southern District. The high utilization of the loan facility by these districts is because they have the highest number of commercial farmers who need the loan compared to other districts in the country.

Those who had knowledge of this facility were risk averse and expressed reservations that if they take a loan from NDB and later fail to repay on time, the Bank may confiscate their property.

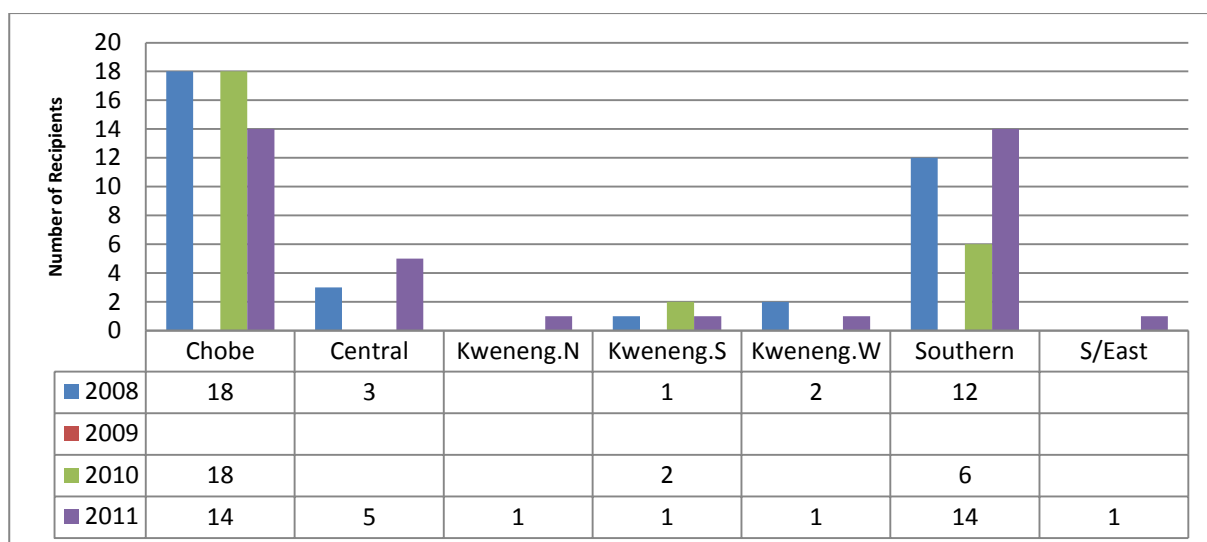


Figure 5.11: Number of Recipients of NDB Credit Facility from 2009 to 2011.

NB: No information for 2009

5.3.5 Objective 5: To Improve Extension Outreach

Extension outreach implies the provision of information or services to the farming communities to help them improve their standard of living. Therefore, the expectation from extension workers at whatever level is to disseminate relevant technical information and advice to the farmers.

There are different conflicting views from different stakeholders concerning the achievement of this objective. The ISPAAD beneficiaries and village leadership strongly believe that Extension Workers are rendering a great service to them by way of seed, fertilizer distribution and measuring of ploughed arable land. This has drawn the Extension Workers and farmers closer to each other more than ever before making it possible for Extension workers to learn about their farming systems and understand their farming problems.

The views expressed by Extension workers (Crop Production Officers at different levels) were that the introduction of the programme has diminished the quality of extension delivery. There is a lot of operational and administrative work involved in the implementation of activities of ISPAAD. They argued that more time is spent by Village Extension Workers on the following activities in any given active cropping season:

- Farmer registration for seed and fertilizer distribution
- Receiving of seeds and fertilizers from suppliers
- Seed and fertilizer distribution
- Measuring of arable fields for ploughing , harrowing and planting
- Calculation of hectares ploughed/ planted or row planted
- Preparation of payment certificates
- Recording of yield obtained by farmers.

All these activities take the Village Extension Workers' time away from their core mandate of advising and teaching farmers on crop management practices such as planting, fertilizer application weeding, and pest and disease control, advising on post-harvest practices, and marketing of the produce.

The role of agricultural extension in agricultural development cannot be over emphasised. The long-term solution to achievement of food security in Botswana lies with assisting the small scale farmers to produce more and better-quality staple food efficiently in order for them to step out of poverty (Rivera, *et al.* 2001). This can be achieved only when extension workers are relieved from performing administrative, stores and supplies related tasks. The present extension delivery arrangements under ISPAAD only serve to misdirect and destroy the mandate of agricultural extension system in arable agriculture development. The ISPAAD has had a negative impact on the timely delivery of advice critical to the achievement of increased grain production and promotion of food security. Agricultural extension services are operating below expectation since inception of ISPAAD. Thus, the programme has not improved extension outreach.

5.4 Eligibility Criteria of ISPAAD and how they Impact on Beneficiaries

The programme has three eligibility criteria which are discussed in details below:

5.4.1 Farmers should register with the Village Extension Worker in order to benefit from the programme.

The prevailing practice is that farmers are required to register the components that they would like to receive when they are ready for distribution in October with their Village Extension workers from April to June. The respondents did not find this criterion to be disadvantaging them. They appreciated the need to register themselves so that the extension worker can procure adequate components for them on time. However, a concern was raised by very few farmers that the period is not convenient for some of them because it coincide with late harvesting and threshing period. During this time, farmers would be at the arable lands far from the Extension workers office where registration is usually done. This office is usually situated in the village.

5.4.2 All farmers aged 18 years and above with Omang or residence and work permit will have to demonstrate to the extension staff that they own arable fields or have consent of the owners to use such field.

The basic requirement during the registration to enrol in ISPAAD with the Extension Worker is that the potential beneficiaries should have access to a piece of land. Where an individual needs the consent of owner to use the arable field, practically the owner of the land make a certified copy of the arable land certificate and write a letter indicating that consent.

In all the areas covered, some respondents indicated that they allocated portions of arable lands to their children and close relatives who are over 18 years so that they can be able to benefit from the programme. The process is called *gophatolela*, in the Shakawe area and it is where siblings and

relatives are allocated portions of land to utilize in an already small size of land. Observations from VEW record books show that in some cases, the portions can be as small as 0.1 hectare. Interestingly, after the siblings have collected the share of their money from the VEW, the parents are left with the burden of taking over the management of the whole arable land. This partly explains why there are annual increases in the number of ISPAAD beneficiaries.

While on the surface this arrangement socialises those who are not yet into arable farming such as the youthful members of the families, in essence it is used by parents to avoid conflict within the family by apportioning the money paid for primary and secondary tillage operations before receiving it. In other instances, the beneficiaries take advantage of the process to avoid the 50% subsidy that they are supposed to pay when the size of their arable land is beyond the maximum requirement. For example, beneficiaries who own 10 hectares of land and need fertilizer to cover the whole area may allow children to register the other 5 hectares in order to receive enough fertilizer for the total hectares.

5.4.3 Farmers who benefitted from the programme but could not take care of their fields could be blacklisted and not assisted in future.

The intension of this guideline was to motivate potential beneficiaries of ISPAAD components to put more effort in order to reap something from their arable land. The reality on the ground was that some unscrupulous ISPAAD beneficiaries abandoned their arable lands for non-farm activities. Village Extension Workers and District Crop Production Officers across the country indicated that they usually motivate these farmers to manage their arable fields by continuously advising and checking the progress they make towards following correct crop husbandry practices. Notwithstanding the attempts made by extension workers, some of these unscrupulous farmers would not follow the extension advice, which result in them being blacklisted. Extension workers indicated that in some instances, some farmers would be facing challenges which force them to neglect their arable lands and these included nursing a sick person in the family (especially in female headed households), destruction of crops by wildlife such as elephants or quelea birds which cannot be deterred by fences.

Blacklisting of farmers is not very popular among both farmers and extension workers. It breeds conflict between the farmers and their extension workers by creating a hostile environment that is detrimental to delivery of extension advice and teaching. There were complaints from VEW that no officially established standards and procedures are in place to guide the blacklisting process. In some cases, the blacklisted farmers would complain to the political leadership who then put pressure on Extension Workers to reinstate them. This paints a bad picture of the VEWs who can be viewed by their clientele as practising double standards.

5.5 Impact of Eligibility Criteria on Poor People, Gender, Vulnerable groups and Youth

The Integrated Support Programme for Arable Agriculture Development (ISPAAD) is open to all people who have access to a piece of arable land. There is no minimum size of land set except 16 ha which government set as the maximum hectares for ISPAAD open pollinated seed subsidy. The

results in Table 5.2 show that the majority (69.7%) of ISPAAD beneficiaries earned less than P465.22 per month. Some 10.4 % of them earned between P465.23 and P821.73 while 6.4 % had a monthly income between P821.74 – P1410.34. Some 8.5% of respondents were in an income range of P1410.35 – 2893.40 and only 5% earned more than P2893.40.

Table 5.2: Estimated Monthly Income of ISPAAD Beneficiaries

Monthly Income	Percentage of Respondents
< 465.22	69.7
465.23 – 821.73	10.4
821.74 – 1410.34	6.4
1410.35 – 2893.40	8.5
> 2893.40	5.0

The figure 5.12 shows the major source of income of respondents. The majority of respondents depended on dry land farming (41.1%) and mixed farming (40.9%) respectively. Very few people depended on irrigated (0.2%) and pastoral (2.2%) farming respectively. Some 15.7 % had other sources of income, among others old age pension and *Ipelegeng* programme were mostly cited during focus group discussions with respondents.

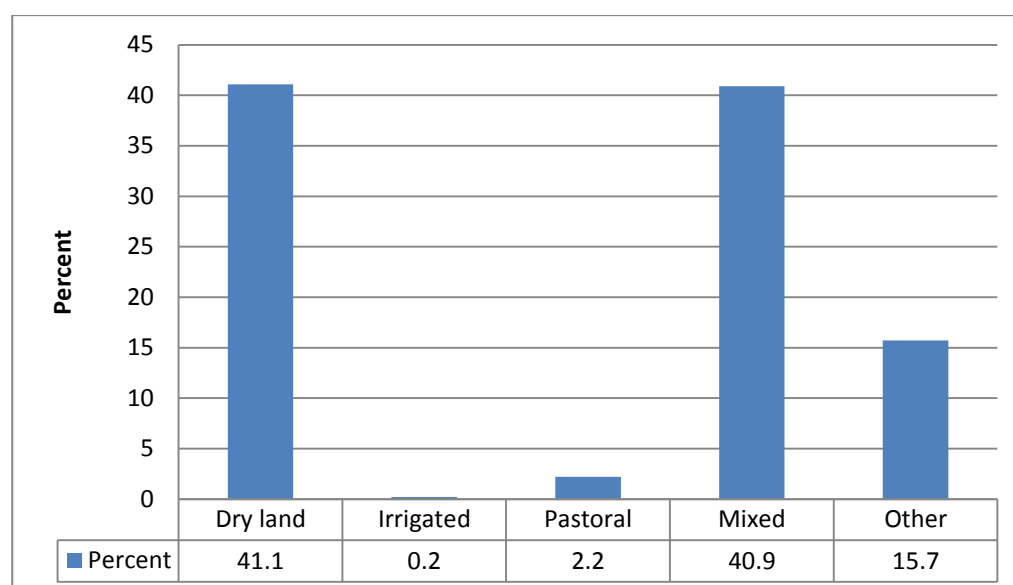


Figure 5.12: Respondents' Main Source of Income

The age distribution in the above figure 5.13 shows that 27% of farmers are over 65 years. The further analysis shows that the majority (63.3%) of ISPAAD beneficiaries were over the age of 50 years which is an indication that old people are the ones who are actively participating in ISPAAD. At the same time, 27.8% represent adults who are able bodied. That is from the age range of 30-34 to 45-49 years and only 7.7 % are youths from an age range of less than 20 to 25-29 years.

From discussion with stakeholders, the youth may not be actively involved in ISPAAD because in Botswana, dry land farming is usually associated with old people; its monetary returns are unattractive given the grain prices offered by Botswana Agricultural marketing Board (BAMB), the major buyer of grain and pulses in Botswana; the youth have a wide range of financial assistance offered by government (such as, Young Farmers' Fund from Citizen Enterprise Development Agency (CEDA), Youth Development Fund under the Department of Youth and Culture, as well as LIMID) that encourage them to venture into the world of business; and migration of youth to urban villages, towns and cities to look for employment opportunities which was also reported by Bendsen (2002).

The major concern is that the low participation of youth in dry land arable agriculture will in the long run affect the achievement of ISPAAD objectives, especially food security. In addition, if a deliberate effort is not taken to motivate the youth into arable agriculture, an age vacuum will be created which will affect crop productivity as the already ageing farm population naturally move out of production. This will perpetuate poverty.

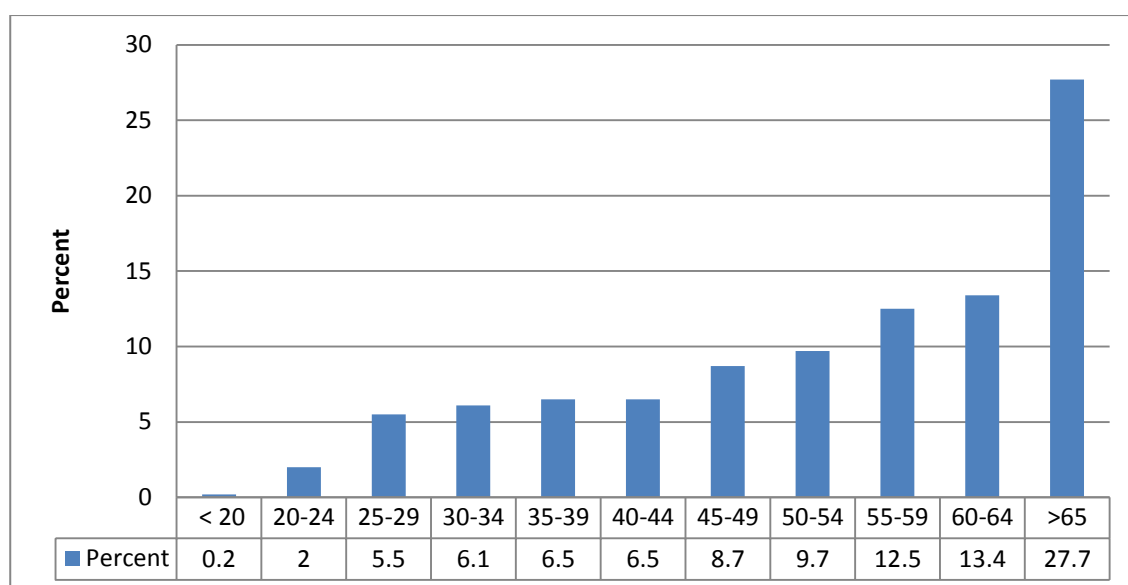


Figure 5.13: Age Distribution of Respondents

Table 5.3 shows that the majority of ISPAAD beneficiaries were married, single and cohabiting. The results show that 29.9% of respondents who have benefitted from ISPAAD were married and 28.4% were single. Some 22% of respondents were cohabiting, while 16.4% were widowed. A smaller percentage of respondents were either separated (1.3%) or divorced (1.8%). These results show that beneficiaries are not restricted to benefit from ISPAAD on the basis of their marital status.

Figure 5.14 shows the gender distribution of ISPAAD beneficiaries for the period 2008/09 to 2011/12. There were more females than males who participated in ISPAAD in each of the cropping seasons. On average, women constituted 60 % of ISPAAD beneficiaries each cropping season.



Figure 5.14: Gender Distribution of ISPAAD Beneficiaries

Table 5.3: Marital Status of Respondents

Marital Status	Percentage
Single	28.4
Cohabiting	22.3
Married	29.9
Separated	1.3
Divorced	1.8
Widowed	16.4

The other way of analysing the vulnerable group was by marital status and gender. Figure 5.15 shows that there more women than men who participated in ISPAAD in each cropping season.

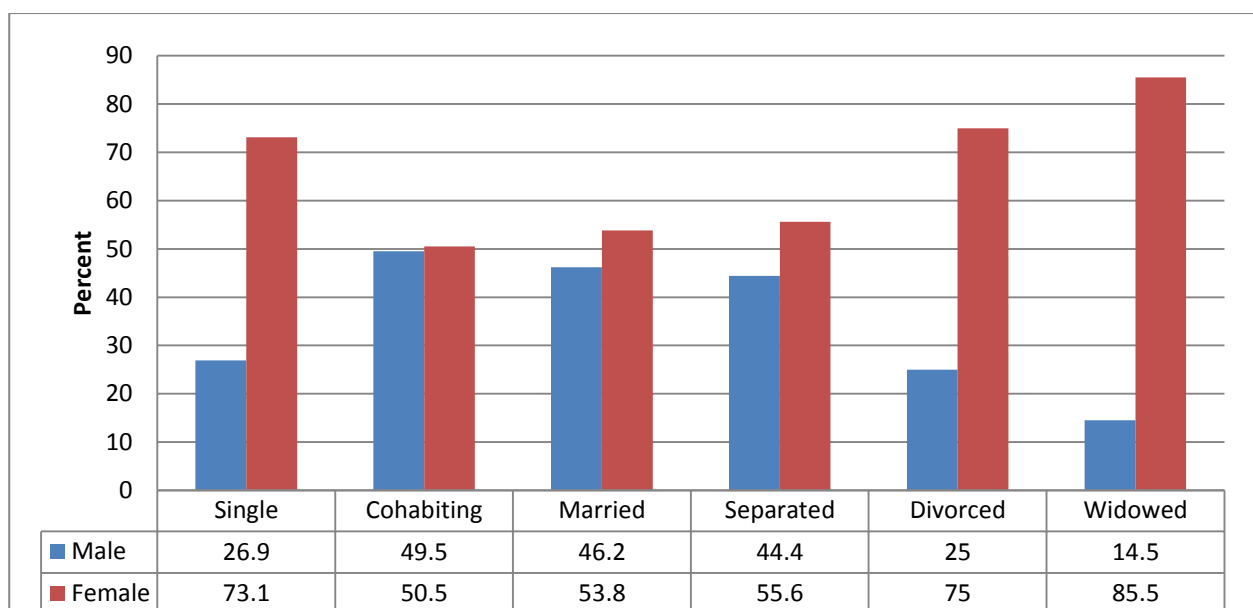


Figure 5.15: Marital Status and Gender of Respondents

5.6 Transmission Channels of ISPAAD

Observations, interviews with beneficiaries and key informants, focus group discussions with various stakeholders and review of ISPAAD implementation guidelines revealed that ISPAAD impacts on various stakeholders through six main transmission channels shown in Table 5.5. The programme triggers results at different levels and time horizons. Table 5.5 provides details of the change initiated by ISPAAD through each of the six main channels. It also describes the output, outcome or impact as well as risks associated with each transmission channel category. A summary rating is provided to show whether the likely results from ISPAAD via the channel are positive or negative for relevant stakeholders and whether they are short- or long-term impacts. In addition, potential risks are outlined that may lead to the stated results not being achieved for each channel.

Results show that ISPAAD is a multi-channel programme that impacts on its various stakeholders through employment, prices, access to goods and services, assets, transfers and authority channels. This is an important feature of the ISPAAD because by being a multi-channel programme, it aims to address farmer needs in different pathways that complement each other to maximize attainment of its stated objectives. All the identified transmission channels of the ISPAAD have potential to generate at least positive short-term impacts and very positive medium-and long-term impacts.

ISPAAD lowers prices of factors of production and farm operations (seeds, fertilizer, credit, and draught power for ploughing, planting, and harrowing) to promote production of the supported crops. This is the major transmission channel for ISPAAD with very positive short-term and medium-to-long term impacts on the stakeholders and the arable (and horticulture) subsector. ISPAAD further changes the level and nature of employment in the country. This intervention impacts on the cash or in kind income flowing to households and individuals employed in the arable (and horticulture) subsector.

ISPAAD increases beneficiaries' access to private and public goods and services or improves the quality of the goods and services enjoyed by particular households or groups in certain geographic areas. The programme increases the value of, and return to, any of the physical, natural, human, social and financial assets of beneficiaries or stakeholders. These changes have positive short term impacts but the medium-to-long-term impacts are very positive on the livelihood options of various stakeholders in ways which may impact significantly on their welfare.

ISPAAD also affects household welfare by transfers to and from the households. These transfers take the form of private flows (such as gifts and remittances) or public flows (such as subsidies and taxes). The ISPAAD grants additional resources to particular groups (clusters and horticultural enterprises) through transfer policies in the form of subsidies / grants. Finally, ISPAAD, through support of cluster formations, induces change in political, legal, social or cultural factors that have very positive short-term and medium- to long term impacts on issues of empowerment, equity and inclusion.

Table 5.4: Transmission Channels for the ISPAAD Programme

Transmission Channels for the ISPAAD Programme		Details of the change initiated by ISPAAD	Output/Outcome/Impact by Transmission Channel Category			
			Short Term	Medium Term	Details	Risks
(1)		(2)	(3)	(4)	(5)	(6)
Prices	Production	Reduced costs of seed, fertilizer, ploughing, harrowing, planting, and credit to arable farmers	++	++	Improved agricultural productivity; increased grain production; promotion of food security at household	Majority of farmers may not meet NDB loan requirements; Subsidized farm inputs may not be readily available
Employment	Public formal	Wage employment for temporary staff on ISPAAD	++	++	Increased incomes and increased economic activity	Arable sector expansion might be limited and in turn limit local employment for casual labourers
	Private formal	Increased work opportunities for farm workers	+	++		
	Informal	Self-employment	+	++		
Transfers	Taxes	Increased tax revenue to government	+	++	Improved provision of public goods and services	Arable sector expansion might be limited and in turn limit tax revenue
	subsidy	Cluster fence subsidy; ploughing/harrowing/planting subsidy; seed and fertilizer subsidies; interest rate subsidy;	++	++	Reduced cost of farm inputs in arable and horticulture subsector	Farmers may not be able to form clusters; Majority of farmers may not afford improved seeds or access NDB loans

Table 5.4 Continued.

Transmission Channels for the ISPAAD Programme		Details of the change initiated by ISPAAD	Output/Outcome/Impact by Transmission Channel Category			
			Short Term impact	Medium Term impact	Details	Risks
Access	Public services	Arable farmers gain access to training, farm machinery and implements, and funds (grants/loans)	+	++	Improved agricultural productivity	Farmers may not participate in training or credit subsidy facility
Authority	Formal organizations	Clusters are formed	++	++	Cluster management committees are responsible for management of cluster fence	Clusters may not be formed; lack of capacity and ability to manage cluster fences
Assets	Physical	Productive capacities and capabilities of the land increases	+	++	Increased grain; ownership, maintenance and repair of farm machinery / implements	Inadequate and unreliable rainfall may hamper grain production
	Natural	Abandoned arable land is cultivated	++	--	Poor use of fertilizer may result in damage to water systems	Excessive use of fertilizer may pollute water sources
	Human	Training in use of farm machinery, implements and fertilizer	+	++	Help farmers to maximize yields without environmental damage; risk that farmers won't attend or won't apply new skills	Majority may not participate in training activities
	Social	Help farmers form production clusters	++	++		
	Financial	Access to NDB seasonal loans	+	++		Majority of farmers may not participate in credit facility

Key: -- = very negative impact - = negative impact 0 = no impact + = positive impact ++ = very positive impact

5.7 Delivery Mechanisms of ISPAAD

A SWOT analysis was conducted to gain insight on the views of stakeholders (beneficiaries and programme implementers) regarding delivery mechanisms of ISPAAD. The analysis in Table 5.5 partly explains the impacts on delivery of the programme to the target beneficiaries who are all those involved in arable agriculture. The ISPAAD is a programme that was formulated with objectives that intended to transform the socio-economic structure of agriculture, especially among the small holder farmers in Botswana. The result of the SWOT analysis indicate the internal (the strengths and weaknesses) as well as the external environment (opportunities and threats) features of ISPAAD respectively.

The internal features of the ISPAAD show weaknesses that were not taken into account prior to and during the formulation stage of the programme to ensure its smooth implementation. No concerted effort was taken during scoping and policy formulation stage to identify and establish enabling environment and institutions that would make the programme successful by achieving its set objectives. If all the issues listed are attended to immediately, and converted into strengths, they will enhance and add value to the success of ISPAAD, which will in turn reduce the levels of poverty among the farming population.

Opportunities and threats are considered as issues that operate externally to the programme. It is common knowledge in policy discourse that threats are always abound during the implementation of a programme or project. Part of the problem lies with policy formulation process which assumes a mechanical and linear relationship between formulation, implementation and outcome stages of policy. The process disregards the transactional processes that involve negotiations over goals and means between conflicting and diverging interests of policy makers, implementers and recipients (Long, 2001). Therefore socio-cultural, economic, technical and administrative issues become emergent properties that should be identified, acknowledged and converted into opportunities as and when they arise during the implantation stage. Failure to appreciate these emerging properties by implementers has led to ISPAAD programme performing poorly in achieving its objectives.

Table 5.5: SWOT Analysis of ISPAAD

<p>Strengths</p> <ul style="list-style-type: none"> • People with low income have been assisted. • Encouraged people to go back into arable farming. • Arable Fields that have been left fallow are back into production • Unemployment has been reduced • Poverty levels have been greatly reduced in Rural areas • Ability to provide fresh produce to Primary Schools feeding program. • Developed awareness and interest about improved farming technologies (row planting, Fertilizer application, minimum tillage etc.) • There is systematic replacement of animal draught power by tractor power 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Expenditure on dry land farming is high when production is low • Not everyone participating in ISPAAD is a farmer. Some beneficiaries do not have time to put effort on crop husbandry practices • ISPAAD has no target recipients • Too much political influence • No Specialized staffs to implement ISPAAD as is the case with LIMID. • No support staff to ensure smooth implementation of the program such as tractor mechanics. • There is no minimum number of hectares set for beneficiaries. • Lack of capacity at Agricultural Research to conduct soil fertility analysis • No in-built monitoring system in ISPAAD similar to ALDEP
<p>Opportunities</p> <ul style="list-style-type: none"> • ISPAAD has the potential to increase food security at household and national level • It assist families to socialize their children on arable agriculture • Potential to diversify the economy from minerals revenue. • Opportunity for encouraging winter ploughing operation 	<p>Threats</p> <ul style="list-style-type: none"> • Mixed farming in some places discourages cluster fencing • The process of group formation may hinder adoption of cluster fencing. • Blacklisting farmers may lead to litigation of extension workers. • Blacklisting of farmers leads to destruction of trust between farmers and Extension workers. • Cultural beliefs and values • Competition for labour with government safety net programs, e.g., <i>Ipelegeng</i> and <i>destitute</i> program. • Poor infrastructure in the arable areas, e.g. wide roads to transport farm equipment • Process of servicing tractors at CTO is too long. • Escalating production costs. • Abuse of ISPAAD

In addition to the SWOT analysis, there mapping of stakeholders involved in the delivery of the programme to the beneficiaries was carried out. The Figure 5.15 indicates that there are three major stakeholders who are involved with the initiation, coordination and implementation of ISPAAD. The three major stakeholders are briefly explained below.

a) **The Political stakeholders** – consisting of the legislature and cabinet (executive) who proposed and legitimised the programme. The political stakeholders play an oversight role on the program to ensure that what the legislature agreed upon is implemented by the line ministry. The Ministry of Finance and Development Planning (MFDP) is tasked with financing the budget of ISPAAD. The Ministry of Agriculture is the implementing agency and report to the cabinet (executive) and legislature all matters relating to the programme. The Presidency as head of the executive is also kept informed about implementation of the programme.

b) **The Technocratic stakeholders** – They coordinate and implement the program. The staff of the Department of Crop Production in the Ministry of Agriculture coordinates all activities from procurement, delivery and distribution of all required inputs under ISPAAD. The officers of the department provide agricultural extension advice to all the farmers including the ISPAAD beneficiaries.

The Seed Multiplication Unit (SMU) in the Department of Agricultural Research procures open pollinated varieties (OPV) of seeds from contracted farmers. The unit is charged with the responsibility of certifying the seed viability, packaging and distribution to different agricultural districts.

c) **Private sector** – These may be international or national input suppliers. The farm machinery (tractors and equipment) and fertilizer are all sourced from outside the country by local private retailers.

The main concern about the current ISPAAD delivery arrangements is the limited role of the private sector. The private sector plays the role of supplying inputs (fertilizer, farm machinery and other inputs) but is not involved in their distribution. Much of the distribution of inputs is done by the Department of Crop Production and Department of Agricultural Research (SMU) which may not be as effective and efficient if it was performed by the private sector. During focus group discussions, stakeholders raised concern that seed and other inputs at times arrive to their places late due to transport shortage. If the private sector was involved in the distribution, the concerns raised by stakeholders would have been eased.

A closer look at the delivery mechanism of ISPAAD shows that farmers are not involved in the decision making process regarding design, planning and implementation of the ISPAAD.

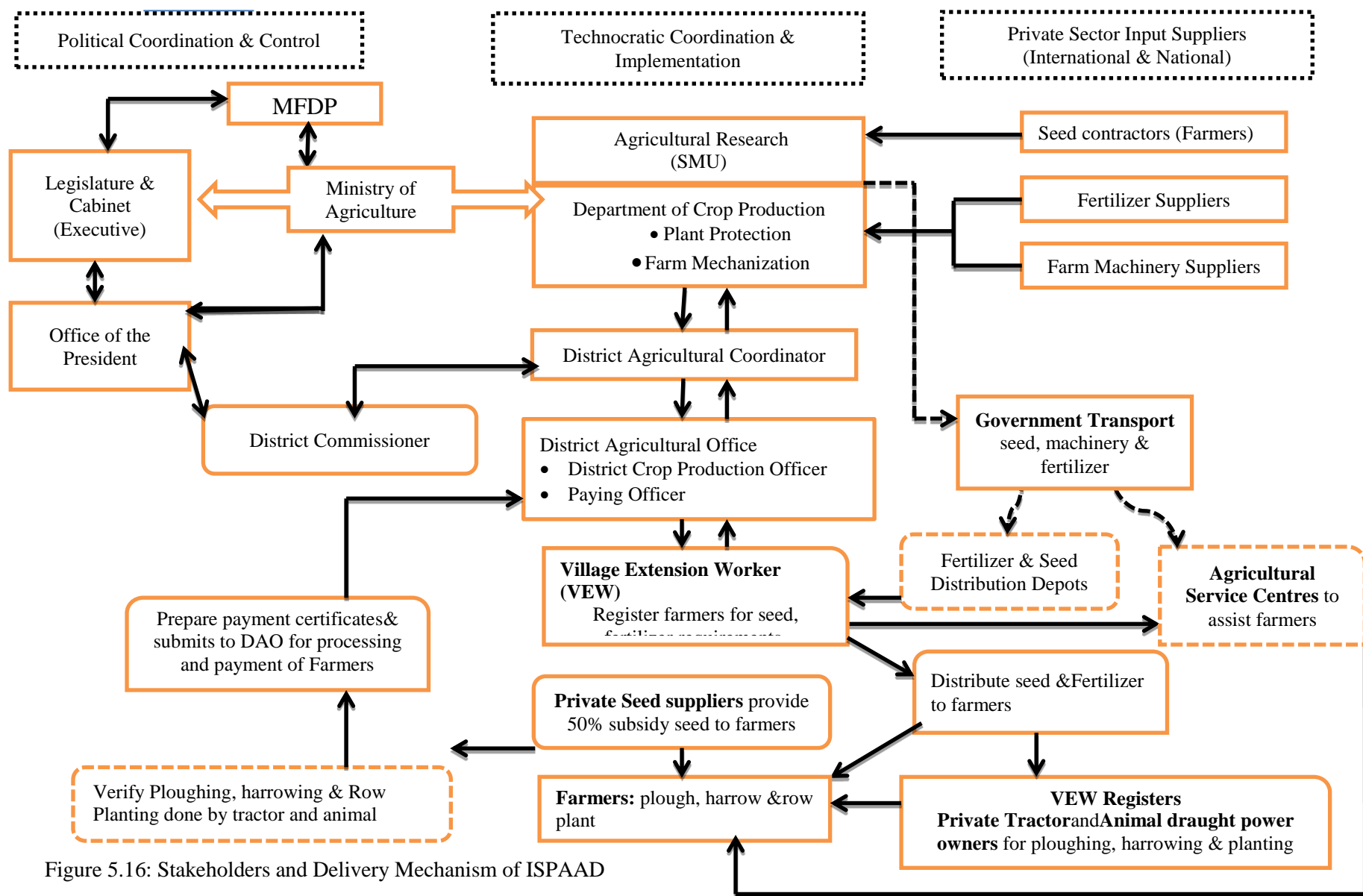


Figure 5.16: Stakeholders and Delivery Mechanism of ISPAAD

5.8 Policies, Programmes and Projects with Bearing on ISPAAD

The Government of Botswana has developed and implemented policies, programmes, and initiatives aimed at rural development and poverty alleviation. These are implemented by different sectors at the national and district levels. While these initiatives are many, this section deals with synergies and linkage of programmes and policies that are closely related with the ISPAAD and which have a direct bearing on its implementation and operations. The review seeks to determine the appropriateness in terms of links and synergies with other programmes and initiatives. The initiatives include; Vision 2016 Strategy on arable Agriculture, National Development Plan 10 (NDP10), Revised Policy for Rural Development of 2002, The Land Policy 2003, National Policy on Agricultural Development of 1991, The National Master Plan for Arable Agriculture and Dairy Development (NAMPAAD) of 2002, The National Water Master Plan Review of 2006, The Livestock Management and Infrastructure Development (LIMID) project of 2002, The *Ipelegeng* programme, Poverty Eradication Programme 2010, the Agricultural Service Support Projects (ASSP) and the Agricultural Gender Policy Framework.

5.8.1 Vision 2016 Strategy on arable Agriculture

Vision 2016 is Botswana's strategy to propel its socio-economic and political development into a competitive, winning and prosperous nation. The Vision 2016 identified the following challenges in arable agriculture: to improve food security, rural employment and incomes under semi-arid and marginal environments; to be more innovative in making use of modern agricultural techniques such as use of recycled water for irrigation and review the application of technologies such as fertilizer.

With regard to arable crop production, the country envisioned increased production levels of dry land and horticultural crops to three times more than the 1996 production. In line with this, a strategy was put in place to develop a stronger system of agricultural research and extension. The officers are expected to visit farmers regularly and advise them on the adoption of modern husbandry and cultivation techniques. The Vision 2016 strategy to increase crop production through improved technologies and extension outreach is promoted through ISPAAD. However, under the current operations of ISPAAD, it has been determined that farmers could not apply fertilizers in anticipated numbers; extension officers perform more administrative tasks than technical and field functions. The officers do not have adequate transport to regularly visit and advise farmers as espoused by the Vision 2016 strategy. The result was that production did not increase as expected. As a programme within the Vision 2016 period, it was expected that production targets under ISPAAD would be in line with the Vision 2016 strategy.

On the poverty front, Vision 2016 states that "by the year 2016, Botswana will have eradicated absolute poverty, so that no part of the country will have people living with income below the poverty datum line (PDL)". It is documented in this report that ISPAAD has failed to increase grain yields (see Figure 5.6). ISPAAD has failed to drive the strategy of poverty eradication as contained in the Vision 2016.

5.8.2 The National Development Plan 10

The theme for NDP 10 is “*Accelerating Achievement of Vision 2016 through NDP 10*”. This requires greater emphasis on growth of the non-mining private sector, such as agriculture, in order to reach the Vision targets. The NDP 10 strategies for agriculture are to commercialise and improve productivity of the sector through; increased employment opportunities for the fast growing labour force, provision of a secure and productive environment for agricultural producers and private sector participation.

In order to drive the NDP 10 strategy, the focus is on provision of subsidised services, inputs, skills and the promotion of clustering through service centres to be distributed strategically across the country. It is worth noting that the services above form most of those that are provided by ISPAAD to achieve increased production, commercialization of agriculture, improved extension outreach. There are linkages between the NDP 10 and the ISPAAD. However, the aspect of private sector participation in ISPAAD as indicated in NDP 10 is not strongly pursued. Lack of private sector participation has a bearing on achieving ISPAAD objective of ‘commercialisation of agriculture through mechanization’. As it stands now, government provides tractors, implements and extension services to farmers. This takes up opportunities for private sector participation in rural based enterprises. In this regard, the two should be harmonized so that ISPAAD becomes a better driver for NDP 10 strategies in arable agriculture.

5.8.3 The Revised National Policy on Rural Development of 2002

The Revised National Policy on Rural Development (RNPRD) was adopted in 2002 with the primary goal to “enhance the quality of life of all people who live in Botswana’s rural areas” by reducing rural poverty, promoting sustainable livelihood, stimulating rural employment, generating rural income, diversifying the rural economy, reducing dependence on government and maintaining and improving rural capital. The ISPAAD programme is linked to this policy through the following specific objectives to; increased grain production and promotion of food security at house hold and national levels, which in turn reduce poverty, promote sustainable livelihood, provide opportunities for income generation and employment creation and in turn diversify the rural economy.

However, this study has found that ISPAAD did not increase grain production. The programme impacted negatively on extension outreach. Youth participation in the programme is negligible and that it offers services which could be provided by the private sector. ISPAAD has failed to drive the intended objectives of the Revised National Policy on Rural Development. The objective of poverty alleviation has not been achieved as mechanisms are not put in place to strengthen the synergies and linkages between the policy and ISPAAD in order to maximise their gains and linkages.

5.8.4 The Botswana Land Policy

According to Mathuba (2003), land tenure system in Botswana is divided into three categories: the customary land (72%), state land (23%) and Freehold (5%). The majority of ISPAAD beneficiaries reside and utilize customary/communal land for both livestock and arable production. The success

of ISPAAD is dependent on the availability of land for arable purposes and this is sanctioned through the land policy. All arable farmers who want to benefit from ISPAAD are required to produce a land certificate or proof of consent from the land owner. This requirement eliminates the illegal ownership of arable land by individuals and the illegal arable land transfers which always disadvantage the poor (Mathuba, 2003).

There is a strong linkage between ISPAAD and Land policy with regards to the cluster fencing component. The Land Board Authorities are important stakeholders in the allocation of arable land for fencing as well as application for borehole siting in these clusters. This institutional arrangement creates strong links between ISPAAD and Land Board Authorities to ensure smooth land utilization and administration respectively.

5.8.5 The National Policy on Agricultural Development of 1991

This policy was put in place to increase agricultural productivity to acceptable levels with minimum adverse effects on resources and the environment (MoA, 1991). The ISPAAD programme is linked with this policy through the objectives which are common to both initiatives: increase grain production and promote food security at household and national levels. While these are strong linkages to the programme and the policy, it cannot be said that the two have any strong synergy because the implementation of ISPAAD has so far not increased grain production and cannot be expected in the near future to achieve food security at both household and national levels.

The National Policy on Agricultural Development should be able to have a sustainable and broad based recovery plan in the arable subsector after a drought period, and be able to build up and maintain the national capacity to deal with drought. The ISPAAD programme provides crop seeds and services to plant them throughout the country without due regard for their ability to withstand adverse conditions such drought. The arable subsector does not have a strategy to manage or deal with drought through inputs and services provided by ISPAAD. When drought hits it is the poor who will feel it the most, as such climate change adaptation strategies suggested elsewhere in this consultancy should be seriously considered by government and other stakeholders.

5.8.6 The National Master Plan for Arable Agriculture and Dairy Development (NAMPAAD) of 2002

NAMPAAD is a government agricultural master plan that focuses on the development of dairy, horticulture and rain fed arable farming. The primary objective of the master plan is to make agriculture competitive and reduce the country's reliance on agricultural imports that can be viably produced locally. This objective is to be achieved through programmes that enable traditional/subsistence farmers to transform their operations to commercial level as well as to enable commercial farmers to upgrade their level of management and technology application. ISPAAD is a programme that was set to achieve this objective. As a result the expectations and goals of ISPAAD link very well with NAMPAAD. The findings contained in this report point to the fact that the achievement of commercialization of agriculture through mechanization under ISPAAD has not been achieved because the majority of beneficiaries do not have a commercial mind set, and still

largely practice traditional and non-mechanized farming. Therefore, ISPAAD should have established strong linkages and synergies with NAMPAAD in order to achieve the objectives of the two initiatives.

5.8.7 The National Water Master Plan Review of 2006.

Water policy in Botswana is guided by the Botswana National Water Master Plan (NWMP) developed in 1991 and its reforms and recommendations made in the 2006 review (MMEWR, 2006). The 2006 review of the master plan in relation to agriculture established that; (1) surface water was not available for irrigation, (2), large quantities of groundwater were not available for irrigation, and irrigation using groundwater will be limited to subsistence/garden crops in rural areas, (3) a potentially large resource for irrigation is available from sand rivers and further investigations to establish quantities are necessary, (4) NAMPAAD estimates of available treated water for irrigation have been overestimated and the potential irrigable areas are much smaller than predicted, (5) water for livestock will generally be from boreholes.

These brings into question whether the horticulture component of ISPAAD has enough surface and ground water resources to efficiently irrigate and maintain a 40 ton/ha production, and whether providing potable water in clustered arable fields is not going to create arable versus livestock farming conflict because sources of water for livestock are largely from boreholes. The intention to promote horticulture in the midst of water shortage such as those highlighted by the plan review suggests that ISPAAD and Water Development Authorities operations are not linked and there is no synergy between them. Among others factors, water is one component of a strategy to reduce poverty (Paul, 2003). However, its contribution to ISPAAD development appears to have been not well-articulated between the relevant ministries.

5.8.8 The Livestock Management and Infrastructure Development Scheme of 2010

The scheme came as result of the review of the Services to Livestock Owners in Communal Areas (SLOCA) and Livestock Water Development Programme (LWDP). The review brought about the Livestock Management and Infrastructure Development (LIMID). Ideally, LIMID would gain a lot from ISPAAD by utilizing the fodder produced under ISPAAD arrangement. However, the situation on the ground shows that LIMID is not able to utilize the comparative advantage inherent in ISPAAD. The two programmes should be aligned to each other in order to maximise synergy between the two of them.

5.8.9 The *Ipelegeng* Programme of 2008

According to the Ministry of Local Government, *Ipelegeng* is a government initiative whose main objective is to provide short term employment support and relief whilst at the same time carrying out essential development projects that have been identified and prioritized through the normal development planning process. The programme offers short term employment for unskilled and semi-skilled labour, the vulnerable group (although not limited to) focussing on poverty alleviation.

The majority of ISPAAD beneficiaries are unskilled or semi-skilled and they also qualify to benefit from *Ipelegeng* programme. Unlike ISPAAD, which requires labour on seasonal basis, *Ipelegeng* is offered all year round irrespective of the season. The implication is that *Ipelegeng* competes with ISPAAD for scarce farm labour force especially in the rural areas to the extent that farmers are tempted to neglect their fields in order to enrol in the *Ipelegeng* programme to receive quick cash at the expense of crop management. Therefore, there is no linkage and synergy between the two programmes. There is a need for the programmes to be aligned such that both have a positive impact on the poor and unemployed farmers, who form the majority of ISPAAD clientele.

5.8.10 Poverty Eradication Programme of 2010

In an effort to reduce absolute poverty, the government of Botswana has come up with the Poverty Eradication programme of 2010. The programme is aimed at improving livelihood of the poor by addressing all aspects of poverty through attainment of food security among disadvantaged individuals and/or families in Botswana. The poverty eradication programme has packages which include agricultural projects. There is the Backyard Garden package for the people who are extremely poor and for people with visual impairment. The package is coordinated by the Ministry of Agriculture. While this package does not necessarily target the rural poor, it is predicted that most of its clients will be in the rural areas where most of the beneficiaries of ISPAAD horticulture and dry land farming are located.

The proper implementation and management of the backyard garden and other poverty eradication projects have a profound impact on poverty eradication. The backyard gardens are intended to improve food security of the poor members of the community. On the other hand, ISPAAD is targeting arable farmers who have access to arable land to engage into dry land farmers. These two programmes allow for resource poor people to have a room to develop from backyard into arable and horticulture farmers.

The major concern is that the two initiatives share the same extension personnel, who provide technical advice and administrative support. This adds work to the already stretched Village Extension Workers in the Department of Crop Production who are inundated with ISPAAD demands. The two are also linked by the objective to attain food security.

5.8.11 The Agriculture Services Support Project (ASSP)

This is a partnership between the Government of Botswana and The International Fund for Agricultural Development (IFAD) to improve rain-fed and irrigated agricultural technologies. The major objective of this project is to achieve a viable and sustainable smallholder agriculture sector based on farming as a business, and not to rely on subsidies and welfare measures. The project has two key components which are; (1) sustainable agricultural production through mechanization, improved rain fed agricultural practices and waste water use for irrigation scheme, (2) enabling environment for smallholder agriculture through improved delivery of extension services and construction of Agriculture Service Centres. Through a Project Management Committee, the focal point of the project is the Department of Crop Production in the Ministry of Agriculture and will operate in all the agricultural districts, sub-districts and extension areas.

There are several linkages between ISPAAD and ASSP in that most of the beneficiaries of ISPAAD are smallholder farmers and ASSP is going to promote mechanization and improve extension services among them. Both the ISPAAD and ASSP projects are implemented by Department of Crop Production. Although the ASSP is relatively new, the two have synergies in that the ASSP will increase farm machinery which at the moment is in short supply. In addition the ASSP will improve extension services delivery through capacity building, provision of transport and pilot scheme for waste water irrigation.

The project will in part enable ISPAAD to achieve some of its objectives such as improving extension outreach and commercialization of agriculture through mechanization.

5.8.12 Agricultural Gender Policy Framework of 2003

Ministry of Agriculture (MoA) initiated the development of the Agricultural Gender Policy Framework of 2003 to address the needs of different groups, men, women and youth so that they can actively participate in agriculture and contribute to food security, employment creation and ultimately, to increase the contribution of the agricultural sector to the National Gross Domestic Product (MoA. 2008). The policy is aimed at addressing critical problem of access, ownership and control of agricultural resources; gender differences in roles and responsibilities; women empowerment and access to decision-making in agriculture as well as addressing security issues in arable lands (Ibid). The government has taken the initiatives to address some of the issues. The ISPAAD does not discriminate in terms of gender and age. This enables them to participate in arable agriculture.

5.9 Distributional Impacts of ISPAAD

This section outlines the impact of the ISPAAD programme in relation to the poor, vulnerable groups, gender and youth. It specifies the social and economic impacts of the ISPAAD programme on its beneficiaries. The section further presents insights on how the beneficiaries and key informants perceive the importance of ISPAAD in alleviating poverty in the country.

5.9.1 Social Impacts of ISPAAD

Several social indicators were used to measure perceived social impacts of ISPAAD on beneficiaries and their communities. Table 5.6 shows beneficiaries' perceived impact of ISPAAD on selected social aspects. ISPAAD beneficiaries rated impact of ISPAAD on each of the selected social aspects using a Likert scale of 1 (*extreme negative*) to 7 (*extreme positive*) as indicated in the key below Table 5.7.

Table 5.6: Mean Scores of Beneficiaries' Perceived Social Impact of ISPAAD

Social Indicator	Experienced Change on Indicator	
	Mean Score	Standard Deviation
Your way of Life	4.9	0.8
Your culture	4.6	0.8
Your community	5.0	0.8
Your environment	4.8	0.8
Your health and wellbeing	5.1	0.9
Your political systems	4.9	0.8
Your personal and property rights	5.0	0.8
Your fears and aspirations	5.1	0.9

KEY: 1 = Extreme negative 2 = Moderate negative 3 = Slight negative 4 = No impact
5 = Slight positive 6 = Moderate positive 7 = Extreme positive

Results show that all social indicators were rated above a mean score of 4.0 (which would have implied that ISPAAD has no impact on a given social indicator). Overall, ISPAAD beneficiaries believed ISPAAD has a slight positive impact on their way of life, culture, community, environment, health and wellbeing, political systems, personal and property rights, fears and aspirations.

5.9.2 Attitude toward ISPAAD Programme

Ten statements regarding ISPAAD were used to determine respondents' attitude towards the programme (see Table 5.7). ISPAAD beneficiaries indicated the extent to which they agreed or disagreed with the statements using a Likert-scale of 1 (*Strongly Disagree*) to 5 (*Strongly Agree*) as indicated in the key below Table 5.7. Results show that respondents agreed with 70 percent of the statements provided. It is evident from Table 5.7 that ISPAAD is a vital social safety net that is effective in alleviating poverty and creating employment in Botswana. However, there is universal agreement among respondents that the programme should be reviewed and be continued for an extended period of time. Respondents believed that the allocation of government resources to ISPAAD is not a waste of national resources. Overall, respondents were opposed to termination of the ISPAAD and believed the programme is sustainable.

Table 5.7: Attitudes of Beneficiaries towards ISPAAD

Statement regarding the ISPAAD programme	Experienced Change on Indicator	
	Mean Score	Standard Deviation
The ISPAAD programme is effective in alleviating poverty	4.3	0.6
The ISPAAD programme is okay as it is designed currently	1.6	0.6
The ISPAAD programme should be reviewed	4.5	0.6
The ISPAAD programme is sustainable	4.0	0.6
The ISPAAD programme helps the poor people	4.3	0.6
The ISPAAD programme is a source of employment	4.0	0.6
The ISPAAD programme wastes national resources	1.7	0.6
The ISPAAD programme should be terminated	1.6	0.6
The ISPAAD programme is a vital social safety net	4.0	0.6
The ISPAAD programme should be continued forever	4.4	0.6

KEY: 1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

It is worth noting that attitudes towards ISPAAD are bound to be fairly positive because arable farmers value free handouts (seed, fertilizer, cluster fence) and money for ploughing, harrowing and row planting from ISPAAD. Beneficiaries are not likely to say ISPAAD wastes national resources because those resources are spent on them. We interpret results in Table 5.7 to mean that the beneficiaries view ISPAAD as a social protection programme. That is, a society's social safety net that alleviates poverty (not eradicates it) and offers seasonal temporary employment and not permanent jobs.

5.9.3 Potential Impact of ISPAAD on the Environment

Widespread intensification of arable crop production has been reported to have adverse impact on the environment; which include damage, pollution and removal of top soil, aquatic contamination with agrochemicals, change in landscapes, siltation of rivers and wetlands as well as loss of natural habitats. All these impact upon biodiversity within the agro-ecosystem and associated non-cropped habitat such as grass lands, field boundaries and areas beyond. The impact of ISPAAD on the environment is therefore discussed in view of the subsidies which have or have the potential to pose risks to the environment.

The country's arable production is mainly rain-fed with some areas in the Okavango and Chobe river basins practising flood recession farming. Subsistence/traditional farmer operation is of low external input because most farmers do not use machinery, fertilizer, pesticides, and herbicides. On the other hand, there are commercial farmers in the Chobe and Southern districts whose operations are mechanized and agro-chemicals are mostly used for insect and weed control. However, according to the United Nation, Botswana has recognized that reliance on agro-chemicals for the control of pests and weeds is unsustainable in the long term (<http://www.un.org>). Pesticides and

herbicides are not presently part of the ISPAAD subsidy. As a result, only 4% of the surveyed traditional farmers apply them, while as much as 96% did not. However, agro-chemical usage by commercial farmers should be monitored to establish levels at which they may be harmful to the environment. In general, the current use of these chemicals in crop production should not pose a threat to the environment as commercial farmers are concentrated in specific area, which should make monitoring an easy task for the ministry.

Fertilizer use is estimated to have increased due to ISPAAD subsidy and increases in cropping intensities. The supply and use of fertilizers, especially by farmers in areas adjacent to wetlands should be monitored. During this consultancy, discussions held with stakeholders in the Okavango and Chobe districts suggest that farmers practising flood recession farming are not allowed to use the ISPAAD fertilizer.

The introduction of ISPAAD promoted mechanized farming by provision of tractor draught power. It is required that for farmers to use mechanized draught power, land has to be cleared and/or destumped. It has been learnt from the survey conducted by this consultancy that demand and use of private contractor tractors has since increased. The machinery is mostly old, hardly serviced and inefficient. Their intensive engagement poses the risk of environmental pollution through greenhouse emissions and spread of dust particles.

The practice of land clearing during ISPAAD is indicated in Figure 5.16 to have increased by 33%. Information from BIDPA indicates that about 150 000 ha of land is usually cultivated (BIDPA, 2006). During the ISPAAD period cultivated area was in excess of 300 000 ha, which is double the amount of land usually used for field crops. The increase in the size of arable land used and additional land clearing indicates that fallows and virgin land have been put into use. These are potential threats to soil and biodiversity conservation, which are the most important part of the agro-ecosystem environment. However, the observation that land clearing has stagnated since 2009, is a positive indicator from environmental protection perspective.

It has also been observed that almost all subsistence farmers and majority of commercial farmers practice conventional tillage. The practice uses more fossil fuel, damages top soil and releases more dust than minimum tillage. It also increases soil inversion, and aeration thereby accelerating organic matter breakdown and release of CO₂ in the atmosphere that contributes to global warming.

Cluster fencing is an ISPAAD component that was intended to exclude wildlife and livestock animals from arable land. Within these clusters, potable water will be provided by drilling/equipping boreholes to enable farmers to have access to potable water whenever they are residing at the lands. However, no proper environmental impact assessment of cluster is conducted to determine the potential threat to environment prior to its construction. It is therefore, advised that where large areas are required for clusters, proper environmental impact assessment should be carried out prior to construction.

In summary, some ISPAAD activities such as promotion of mechanized farming, use of fertilizer and fencing have the potential to adversely affect the environment. This calls for the Ministries of Environment, Wildlife and Tourism (MEWT), Land and Housing (MLH), and Ministry of Agriculture (MoA) to put measures in place to prevent negative impacts of ISPAAD on the environment.

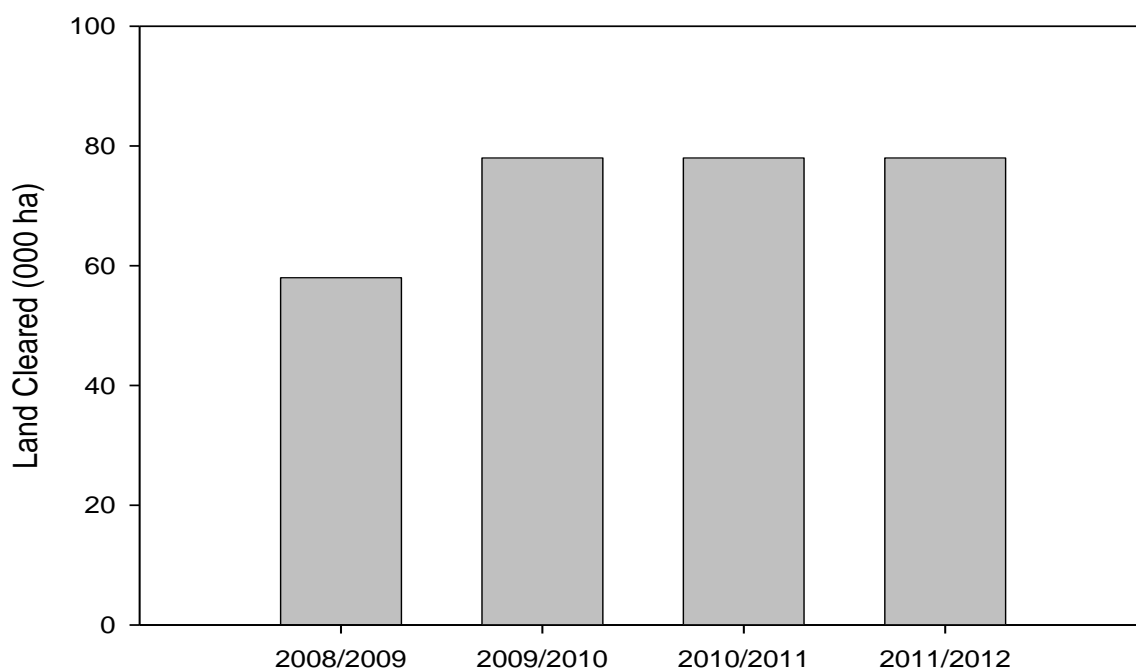


Figure 5.17: Land Clearing Trends during the ISPAAD

5.9.4 Potential Consequences of Climate Change on Arable Sub-sector

The primary concerns in crop production are water availability, pest and disease control. Climate change in many parts of developing world brings about shortage of water as a result of changes in rainfall patterns and rise in temperatures. Southern Africa, which includes Botswana, is highlighted as a potential hotspot of climate change, with region becoming warmer and drier (Hulme et al., 2001; Stringer et al., 2009; Tubiello et al., 2007). Rising temperatures and evaporation rates would exacerbate water scarcity problems for crop production. Depending on the species, shifts in crop phenology (primary productivity and flowering) are also expected to accompany the predicted rise in temperature will be some of the secondary effects of climate change. As natural ecosystems respond to temperature and rainfall changes, many insect pests, diseases and disease vectors may emerge. Long term effects of climate change and responses to it will disrupt agro-ecosystems and reduce food productivity and quality of product in the semi-arid arid areas.

In Botswana, simulation of potential yields for sorghum and maize using the **CERES** models shows that yield reduction may reach a maximum of 31 and 36% respectively (Chanda, *et al.*, 1999). The models also predicted that the growing season will shorten when climate change manifests itself

resulting in shifts in crop phenology, and probably new crop pest and diseases outbreaks. These demonstrate that the arable sub-sector faces severe agro-environmental conditions, which are likely to worsen during the next millennium due to the further desiccation of the climate predicted over the next several decades.

In view of the above scenarios and predictions, the Ministry of Agriculture, could adapt the following strategies to match the predicted changes:

- a) Introduce improved breeding of crop varieties that can withstand a drier and short growing season and pest and disease challenges. The major objective will be to develop crop varieties which will withstand the hostile environment.
- b) Encourage communities to grow water use efficient crops like sorghum and millet. Given the wide variation in rainfall amount and patterns across the Country, crops should be targeted to areas where they have the potential to express their potential. Crops such as maize should not be recommended for production in low rainfall areas or whenever a drought year has been forecasted.
- c) It should be recognized that various soils types have different management requirements for fertility, moisture conservation and erosion prevention. Soils in each agro-ecological zone should be managed according to their usage history, current chemical and physical properties as determined from time to time.
- d) Where arable agriculture is not viable such as some parts the Kgalagadi District, economic diversification could be pursued through pastoralism, exploitation of veld products and tourism.
- e) Collaboration with relevant Ministries to establish synergies with policies and programmes aimed at creating employment and various income-generating opportunities, especially in rural areas. These programmes include Young Farmers Fund, Youth Development Fund, Poverty Eradication, Ipelegeng programmes and LIMID.

ISPAAD has the potential to be one of the promoters of adaptive strategies to climate change. Synergies and linkages between the DCP, DAR, NFTRC, and the Private Sector should be exploited to enable the Ministry of Agriculture to develop and disseminate information about climate adaptable varieties, soil management, and alternative agricultural activities for various agro-ecological zones in order to explore their comparative advantages.

5.9.5 Impact of ISPAAD on Poverty

The main effort of ISPAAD is to develop the arable sector in order to improve food security of the country. The study has revealed that there are critical areas which work against the realisation of ISPAAD objectives. These are gender, age and educational level of farmers who enrol in ISPAAD.

Gender of ISPAAD respondents

The results of this study show that women participated in acquiring ISPAAD package more than their male counterparts. This can be out of the gender based division of labour. Gender roles in traditional subsistence farming (which ISPAAD is attempting in part to transform to commercial status) practices are such that women select and store seeds for the next planting season. As a result, they are more likely to register for seeds and other primary tillage operations than men. Traditionally, men are responsible for ploughing operations, especially when using animal draught power. Other arable operations such as weeding, bird scaring and harvesting are predominantly female oriented activities and these are critical crop husbandry practices which, in part, determine the productivity of the crop grown.

The fact that women perform much of farm operations without much assistance from their male counterparts reduces the labour needed to efficiently perform them. It is even worse in the case of both *de jure* and *de facto* female headed household. Without the necessary family labour (which is competing for with other sectors of the economy) these households continue to be poor as they are unable to fully utilize the benefits of ISPAAD from input to expected outputs.

Age distribution of ISPAAD farmers

The result shows a disturbing trend in that the majority of respondents are in the age categories of 50 years and above. The reasons for this huge gap can be explained in terms of rural to urban migration of youth which usually increases the proportion of older persons who are left behind in the villages and the migration of urban people who retire and relocate in rural areas. The implication is that ageing poses a major challenge to the sustainability of agriculture and rural development (Gonzales, undated). If ISPAAD continue to be accessed by ageing people, in the long run, there will be food shortage which in turn, will exacerbate the incidence of poverty especially among the ageing category of farmers. The ISPAAD should be seen to develop agriculture both structurally and economically and not as a social security measure meant to sustain the welfare of the old farmers.

The participation of youth (from 18 to 29 years category) in arable farming is very poor This is supported by Statistics Botswana(2012) who observed that the engagement of youth in farming activities is less pronounced, particularly in the age group 12-19 years. These are youth whose participation in agriculture production is limited because they are still attending school. However, those over 18 years are eligible to enrol in ISPAAD and the results show that about 7.7% of them participated in the programme. The ISPAAD offer an opportunity for unemployed youth to take up agriculture as a source of livelihood to economically support them and create jobs for others. Failure of the youth to take up dry land arable farming in great numbers has affected the food security drive in that the very few that take up arable farming through ISPAAD are not using technologies that improve productivity such as fertilizer and row planting components. This situation perpetuates and traps youth in a circle of poverty.

The Level of Education

The level of education among ISPAAD beneficiaries is very low. The lower the level of education an individual has, the higher the vulnerability to poverty. The levels of education of beneficiaries are a critical factor for adoption of the technologies that the programme such as ISPAAD provides. Education is about acquisition of knowledge and learning of skills (Haralambos, Holborn & Heald, 2000) that improves the socio-economic wellbeing of individuals in the society.

An educated farming individual is receptive to innovations and technologies that are introduced in their farming system. The ISPAAD provide a wide range of arable agricultural technologies, a proper mixing of which can result in increased production. The low level of adoption of technologies in the ISPAAD as demonstrated by the findings is a result of functional illiteracy. That is, situations where people are lacking reading and writing skills that are needed for manipulating the environment they live in for survival (Macionis, 2003).

The findings show that the ISPAAD packages are reaching groups that are vulnerable to poverty. These include the elderly, the uneducated and women. However, given that ISPAAD has not been able to increase grain yield these groups remain food insecure. ISPAAD is not likely to alleviate these vulnerable groups from poverty as envisioned in Vision 2016.

5.9.6 Economic Impacts of ISPAAD

Several economic indicators (see Table 5.8) were used to measure perceived economic impacts of the ISPAAD on beneficiaries and their communities. ISPAAD beneficiaries rated impact of ISPAAD on each of the selected economic indicators using a Likert scale of 1 (*extreme negative*) to 7 (*extreme positive*) as indicated in the key below Table 5.8.

Results show that ISPAAD has a slight positive impact on all of the selected economic indicators. Beneficiaries found ISPAAD to have a slight positive contribution towards poverty alleviation by creating employment, increasing farm incomes and their wealth. The programme has slightly increased the level of business activity and secured livelihoods of the beneficiaries. Beneficiaries believe that ISPAAD has made them slightly more self-reliant and contributed marginally towards economic diversification. However, respondents indicated that ISPAAD has not led to establishment of major industrial sectors in their communities. Majority of ISPAAD beneficiaries (most of whom are traditional / subsistence farmers) found ISPAAD to have not improved their access to finance.

Table 5.8: Mean Scores of Beneficiaries' Perceived Economic Impact of ISPAAD

Economic Indicator	Experienced Change on Indicator	
	Mean Score	Standard Deviation
Unemployment level	5.2	0.9
The quantity of jobs in a community	5.4	0.9
The quality of jobs in a community	5.4	0.9
Income level	5.4	0.9
Wealth level	5.2	0.9
Poverty level	5.3	0.9
The presence of major industrial sectors	4.7	0.8
The level of business activity	4.9	0.8
Aesthetic quality of the community	5.2	0.9
Secure livelihoods	5.2	0.9
Social safety nets	5.4	0.9
Self-reliance	5.4	0.9
Economic diversification	5.3	0.9
Access to finance	4.8	0.8

KEY: 1 = Extreme negative 2 = Moderate negative 3 = Slight negative 4 = No impact
5 = Slight positive 6 = Moderate positive 7 = Extreme

On average, beneficiaries rated ISPAAD as having a “slight positive” impact on all economic indicators under consideration. We believe for a support and free handouts-based programme, like ISPAAD, having a “slight positive” impact is a very poor rating. This implies that ISPAAD is not

improving the income status of arable farmers or increasing their wealth. Neither is the programme alleviating the majority of arable farmers (who are uneducated, the elderly and women) from poverty. Furthermore, it means ISPAAD has not created enough quality jobs that can raise employees' and farmers' incomes levels above the poverty datum line. Commercialization of agriculture is unlikely if ISPAAD is viewed to be unsuccessful in promoting business activity on the side of arable farmers.

5.9.7 Costs and Returns of the ISPAAD Programme

The sections that follow provide insights on budget allocations for the Ministry of Agriculture (MoA), the Department of Crop Production (DCP) and the ISPAAD programme. Furthermore, expenditures on various components of the ISPAAD programme are discussed. Finally, a comparison of costs and returns from the ISPAAD programme is presented. Figure 5.18 presents the budget allocations for MoA, DCP and the ISPAAD programme over the period 2006 - 2013. Results show that MoA budget increased almost four-folds between 2006 and 2013. It rose from about P105 million in 2006 to P209 million in 2008 (inception year for ISPAAD) and finally reached P407 million in 2013. The DCP budget rose from P10 million in 2006 to P89 million in 2008 and finally P286 million in 2013. The budget for ISPAAD also rose from P159 million in 2008 to P220 million in 2013.

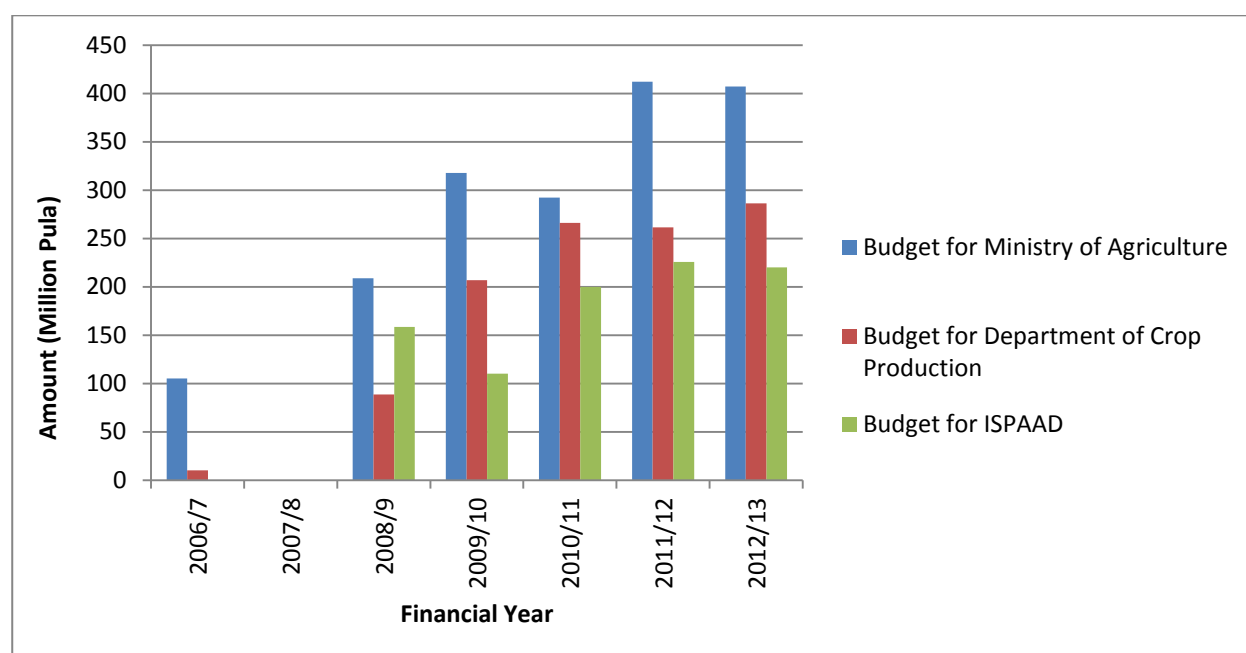


Figure 5.18: Budget Allocations for MoA, DCP and ISPAAD, 2008-2012

Figure 5.19 presents the budgets for ISPAAD and actual expenditure on ISPAAD over the period 2008 – 2012. A comparison of levels of actual expenditure to budget allocations reveals that actual expenditure on ISPAAD exceeded budget allocations for three consecutive cropping seasons since its inception. However, actual expenditure on ISPAAD was lower than actual budget in 2011/12 cropping season. This owes to the fact that expenditures on plough/plant operations declined because farmers did not plough as expected because of lack of rain.

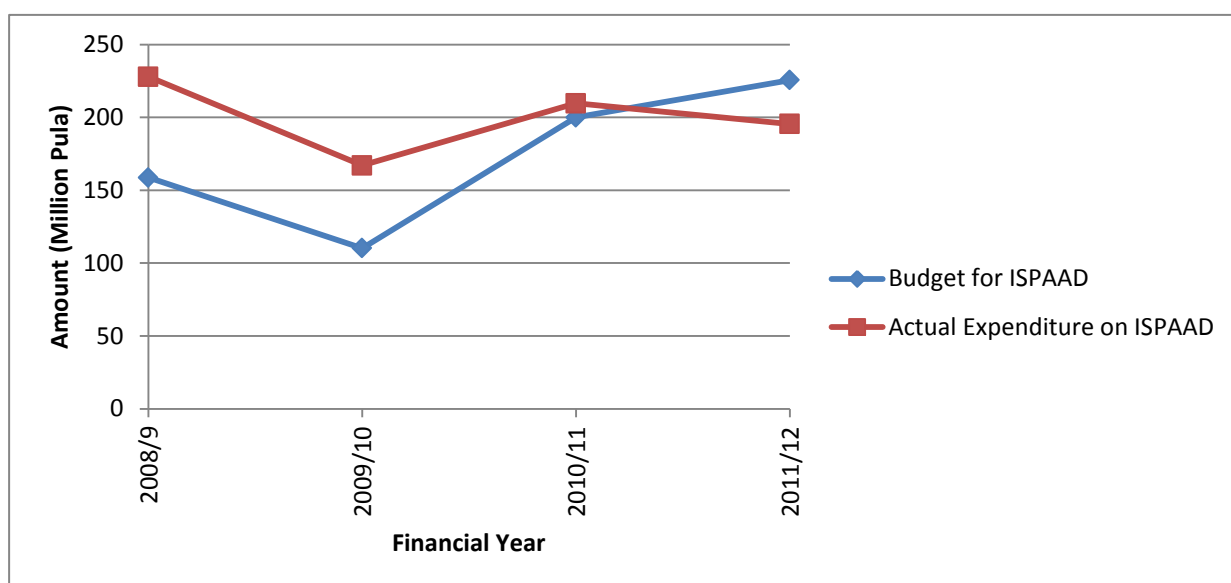


Figure 5.19: Actual Expenditure on ISPAAD versus Budget for ISPAAD, 2008-2012

Figure 5.20 shows spending on ISPAAD as a proportion of MoA and DCP budgets over the period 2008 – 2012. Results show that spending on ISPAAD operations consumed financial resources that exceeded the MoA budget in 2008/09. Though the percentage share declined to approximately 51 percent in the 2009/10 financial year, it rose to over 80 percent of MoA budget in 2010/11 cropping season. Though spending on ISPAAD accounted for 46 percent of MoA budget in 2011/12, we believe that share would have been much higher had the rain situation been better than it was. Furthermore, results show that spending on ISPAAD operations consumed financial resources that exceeded the DCP budget by more than two-folds at inception. However, the share remained at about 80 percent of DCP budget for the subsequent financial years.

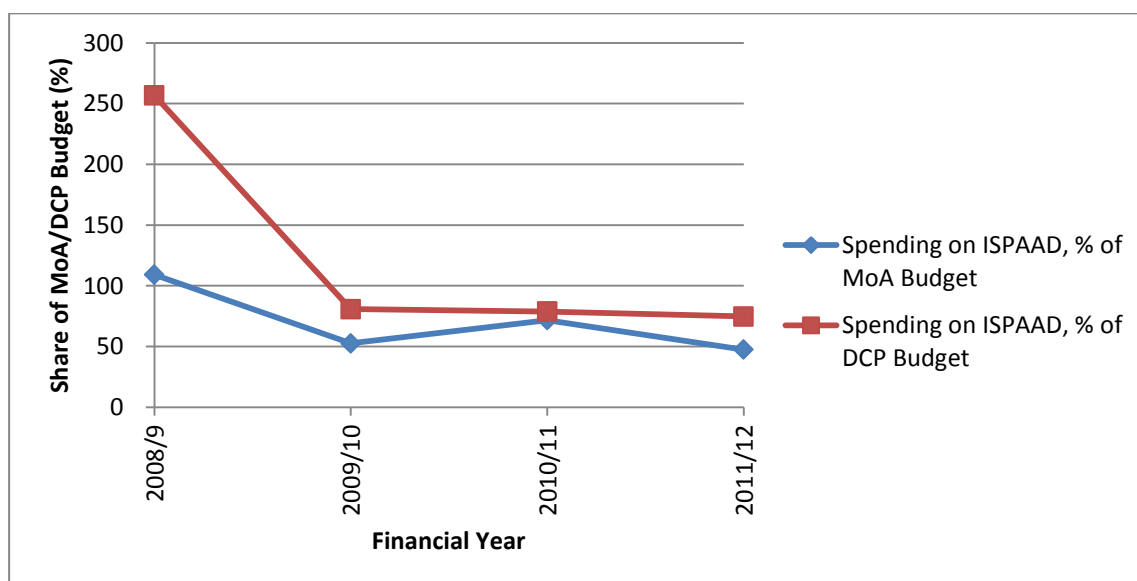


Figure 5.20: Spending on ISPAAD as Proportion of MoA and DCP Budgets, 2008-2012

Figure 5.21 presents total expenditure on ISPAAD and expenditure on ploughing, harrowing, and planting components. This figure indicates that the largest share of expenditure on ISPAAD is attributed to ploughing, harrowing, and planting components. On average, these three components account for 70 percent of expenditure on ISPAAD each year.

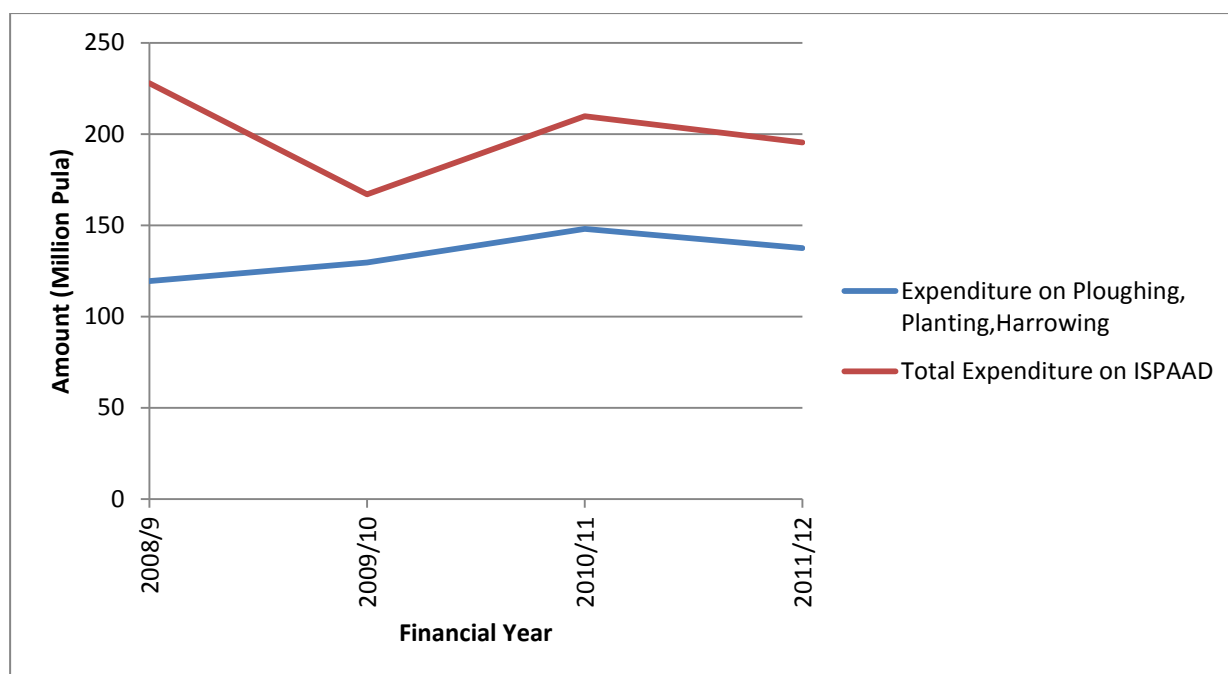


Figure 5.21: Total Expenditure and Expenditure on Ploughing, Harrowing/Planting Components of ISPAAD

Figure 5.22 presents government expenditures on fertilizer, seed and interest rate subsidies. Fertilizer subsidy accounted for 23 percent of expenditure on ISPAAD in the 2008/09 financial year. The share dropped to about 8 percent in subsequent years. However, the fertilizer share of expenditure on ISPAAD increased each year since 2010/11 until it reached 14 percent in 2011/12. Expenditure on seed subsidy rose each year between 2008/09 and 2010/11. The seed share of expenditure on ISPAAD increased from 2 percent at inception to 9 percent in 2010/11. Expenditure on seed declined in 2011/12, accounting for only 5 percent of total expenditure on ISPAAD. Government expenditure on interest rate subsidy was relatively low compared to expenditure on other programme components. On average, the share of interest rate subsidy of expenditure on ISPAAD accounted for about 1.2 percent over the period 2008 and 2012.

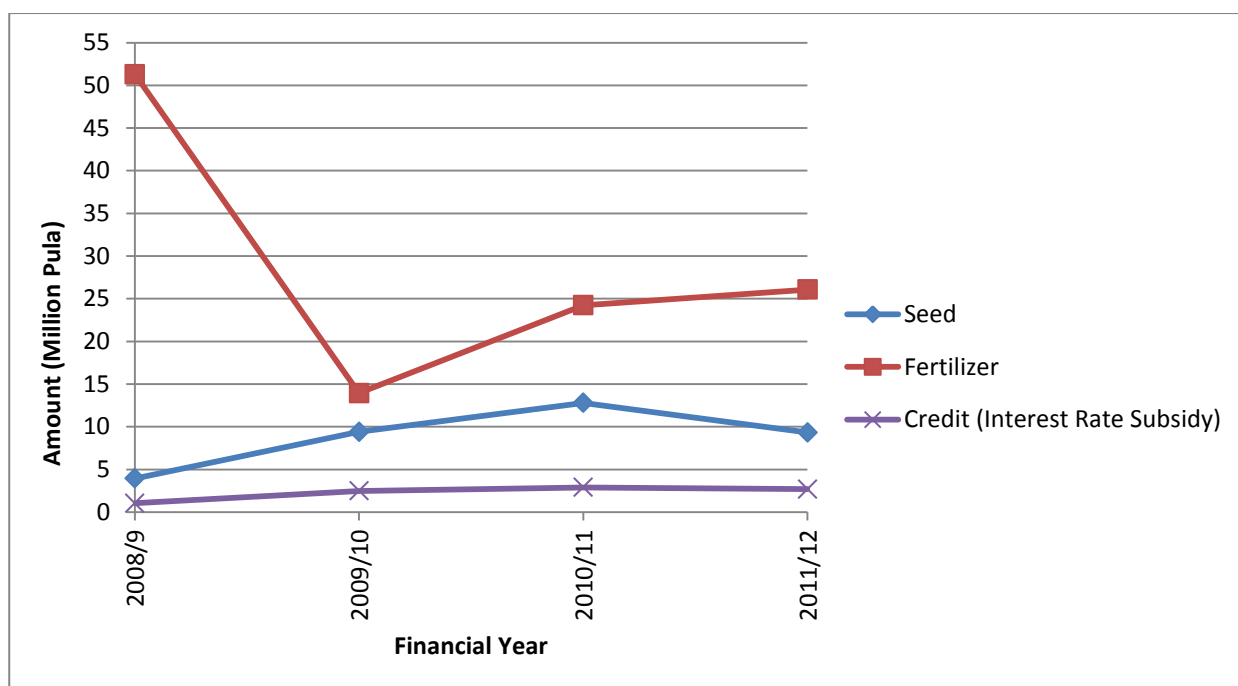


Figure 5.22: Expenditure on Fertilizer, Seed and NDB Interest Rate Subsidy, 2008-2012

Figure 5.23 presents expenditure on cluster fencing, farm machinery and implements and horticultural components over the period 2008 - 2012. Results show that MoA did not spend money on the cluster fencing component in the first two financial years since inception of the ISPAAD. However, a total disbursement amounting to approximately P10.4 million was made in 2010/11 and 2011/12 cropping seasons. This represented about 4.8 percent of total expenditure on ISPAAD in the two financial years. Horticulture is a newly added component of ISPAAD that started in 2010. Available ISPAAD records indicate that expenditure on horticulture amounted to approximately P4 million in 2011/12. This level of expenditure accounted for about 2 percent of total spending on ISPAAD. The largest expenditure on farm machinery and implements was made in 2008/09 at a tune of P32 million. This accounted for about 14 percent of expenditure on ISPAAD that year. No machinery and implements were purchased in 2009/10 but expenditure on these items averaged P1 million for the years that followed.

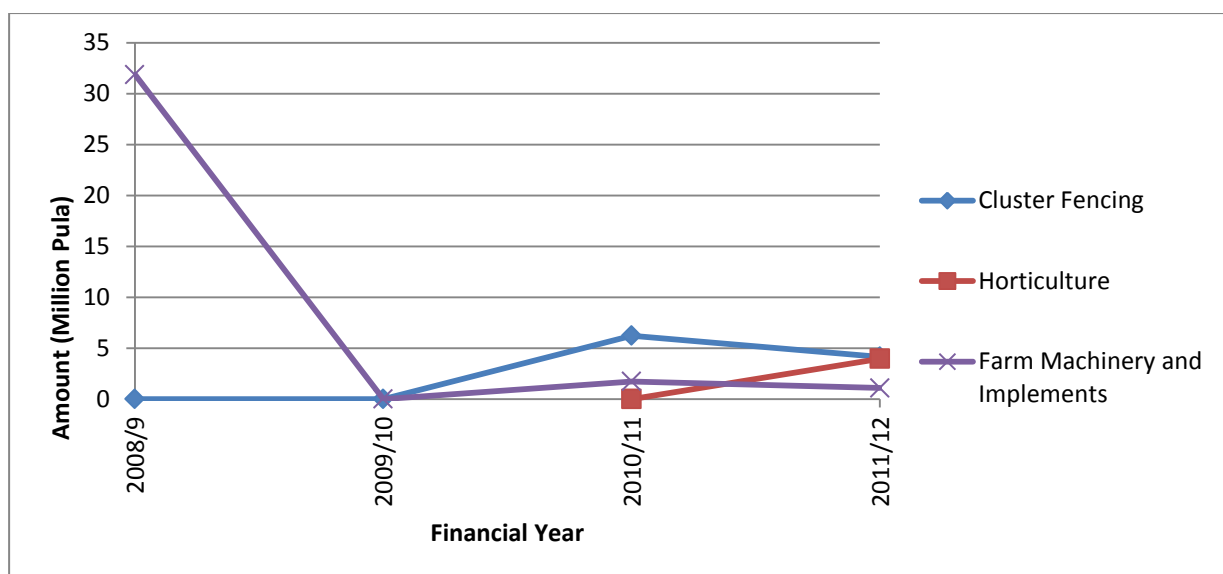


Figure 5.23: Expenditure on Cluster Fencing, Machinery, Implements and Horticulture

Figure 5.24 shows administrative costs associated with the ISPAAD programme over the period 2008 – 2012. At inception, administrative costs amounted to P20 million (about 9 percent of total spending on ISPAAD). These costs declined to an average of P11 million in the subsequent years, representing 6 percent of total annual spending on ISPAAD. Staff salaries, overtime payments and subsistence allowance accounted for 52 percent of administration costs in 2008/09. However, that share increased to an average of 77 percent in the subsequent years. Expenditure on fuel and oil, hire charges, and casual labourers has been increasing since 2009/10. We expect this trend to continue in the 2012/13 cropping season given the recent increase in fuel prices and salaries.

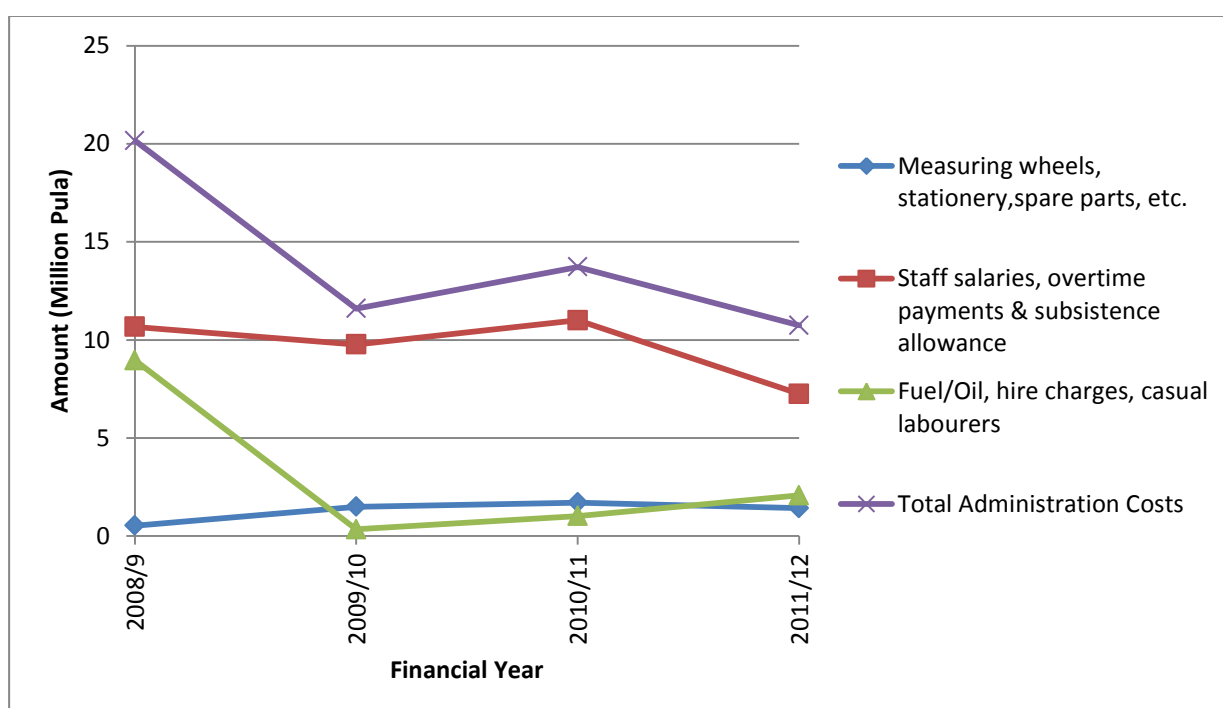


Figure 5.24: Administrative Costs of ISPAAD, 2008-2012

Cost-Benefit Analysis

One of the objectives of ISPAAD is to commercialize agriculture through mechanization. This implies that farmers must be able to identify measure and value their costs and benefits in all agricultural enterprises they undertake. Government, as well as the Ministry of Agriculture, thus recognize the importance of the value for money principle and encourage farmers to engage in activities with highest return on investment. A cost-benefit analysis of ISPAAD operations was undertaken using both undiscounted and discounted measures of project / programme worth.

Figure 5.25 presents estimated annual proceeds per unit of outlay for the period 2008/9 to 2011/12. Results show that annual expenditure on ISPAAD operations exceeded annual proceeds in all the years under review. The estimated annual proceeds per unit of outlay remained less than unity for the entire period. We believe that this ratio will continue to decline as the number of beneficiaries increases over time while productivity remains as low as reported earlier. The ratio would even be much lower (worse than this) if data on all on-farm production costs were available and accounted for in the analysis. From an investment analysis point of view, this outcome means that ISPAAD is not a viable venture in its current form. There is no business case for the programme.

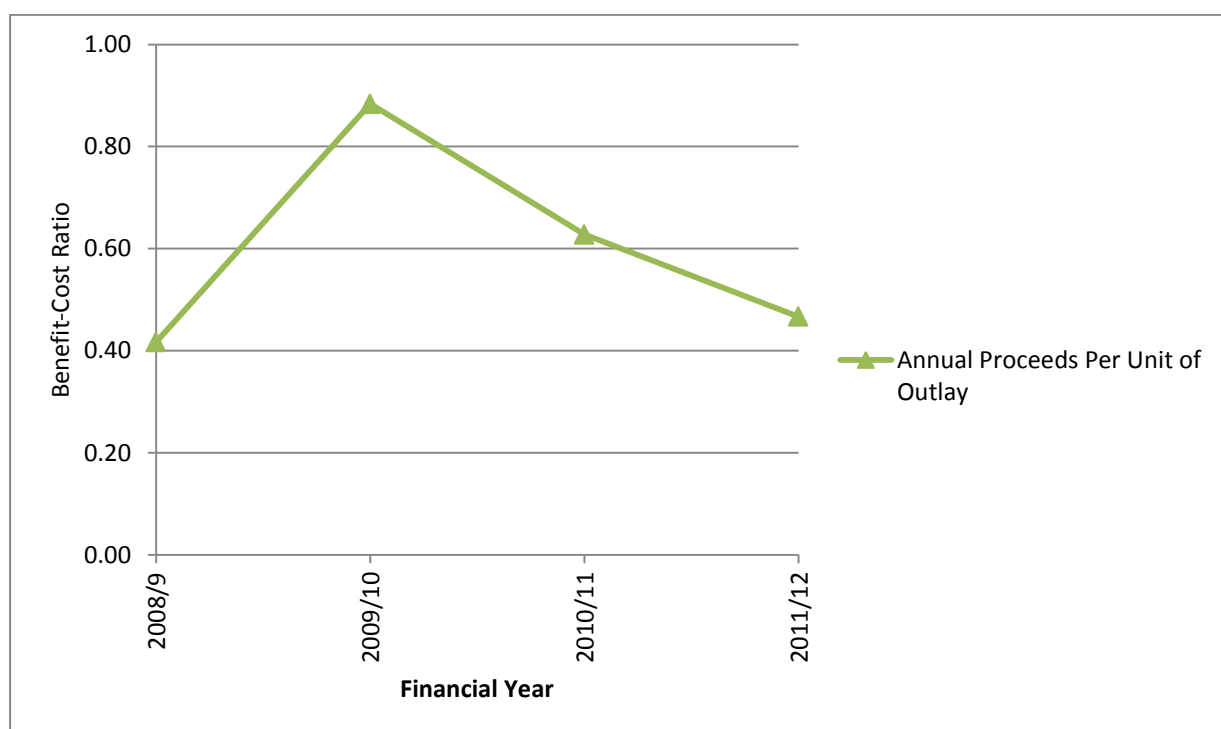


Figure 5.25: Estimated Annual Proceeds Per Unit of Outlay, 2008-2012

The annual proceeds per unit of outlay approach employed above does not account for time value of money. Thus, we also applied commonly used discounted measures of project worth to determine the economic worth of the ISPAAD programme. Table 5.9 below shows both the net present value (NPV) and benefit-cost ratio (BCR) for the ISPAAD programme. The NPV is negative while the BCR is less than unity. Both measures imply that the cost of ISPAAD operations outweigh resultant

benefits associated with such operations. These results reinforce earlier findings. Again, from an investment analysis point of view, ISPAAD is not a viable venture in its current form.

Table 5.9: Net Present Value and Benefit-Cost Ratio for ISPAAD, 2008-2012

Year	Annual Proceeds (Pula)	Annual Costs (Pula)	Discount Factor @ 15.5%	Discounted Annual Proceeds (Pula)	Discounted Annual Costs (Pula)
2008/9	95,009,200	227,427,451	0.8658	82,259,048	196,906,884
2009/10	147,550,000	165,817,062	0.7496	110,605,124	124,298,317
2010/11	131,606,800	216,544,974	0.6490	85,414,652	140,540,714
2011/12	91,191,936	195,425,789	0.5619	51,242,286	109,813,046
TOTAL				329,521,110	568,411,458
				Net Present Value	-238,890,348
				Benefit - Cost Ratio	0.58

5.10 Environment in which ISPAAD Operates

This section provides a review of the environment in which the ISPAAD operates. It highlights any major changes with influence on the business case for ISPAAD. This covers international developments with a direct impact on the sector in which ISPAAD operates e.g. global demand for food, regional and global trade agreements. The section highlights regulatory developments at the national level that could potentially impact on ISPAAD.

Botswana is a signatory to a number of bilateral, regional and international trade agreements through the Ministry of Trade and Industry, through the Department of International Trade.

5.10.1 Botswana / Zimbabwe Trade Agreement

Botswana has been and continues to trade with Zimbabwe. The two countries signed a trade agreement initially in 1956. It was then amended in 1988 and in 2010. The bilateral agreement provides for duty-free access of goods produced or grown in the territories of either country. The traded goods should have been grown, extracted or raised in Botswana or Zimbabwe. This category covers animals born and bred, crops grown or minerals extracted in the two countries. Another category of goods allowed for trade in the agreement covers goods that meet the local content requirement. They should have been processed from the materials and labour sourced from the exporting country. The cost of such raw materials and labour should constitute 25% of the total cost of production of a particular product. This is a beneficial agreement to Botswana because it does not only present a much larger market for her potential exports from ISPAAD-supported products, but also broadens her scope of investment and enhances her economic co-operation with Zimbabwe.

5.10.2 The African Growth and Opportunity Act (AGOA)

The AGOA started in May 2000 with the objective of improving trade and economic co-operation between the United States of America (USA) and the eligible sub-Saharan African countries. The

AGOA provides duty-free access for over 6500 product lines from sub-Saharan Africa eligible for exportation to the USA market. Botswana is currently enjoying Duty Free Quota Free access into the USA market under the AGOA. Botswana traders can export to USA under benefit of preferential treatment on customs duty and quotas until 2015. Products that can be traded under this scheme are both non-textile and textile products. This trade arrangement is beneficial to Botswana. Besides encouraging regional integration, AGOA presents an opportunity for export diversification and provides market security for exporters and potential USA investors in the country.

5.10.3 The Southern African Customs Union (SACU)

The main purpose of SACU is to advance the economic development of its member countries, diversify their economies and afford all parties equitable benefits from intra-union and international trade. Botswana is a member of the SACU. Goods that she exports to South Africa, Namibia, Lesotho and Swaziland enjoy free movement without payment of customs duties and quantitative restrictions. This trade arrangement ensures Botswana much larger and dependable market access for goods and services in the SACU region. ISPAAD-supported goods may benefit from this larger SACU market.

5.10.4 The Southern African Development Community (SADC) Trade Protocol

The SADC Trade Protocol came into effect in 2000. The aims of the protocol include (1) liberalising intra-regional trade in goods and services with member states, (2) ensuring efficient production in SADC reflecting comparative advantage of member states, (3) contributing towards improvement in climate for domestic, cross-border and foreign investment, (4) enhancing economic development and industrialization, (5) establishing a free trade area, a customs union, a common market and a monetary union by 2016. Botswana is a signatory to this trade protocol. The free trade area allows free movement of goods and services produced within SADC. Goods originating from Botswana and destined for any of SADC member states will on arrival at country of destination enjoy reduced tariff rates, no non-tariff barriers and reduced quantitative restrictions. However, each SADC member still has its own external tariff with respect to non-members. Thus, the free trade area offers Botswana exporters of goods and services access to a larger SADC market with no internal tariffs. However, local producers also face stiff competition from other SADC members.

5.10.5 World Trade Organization (WTO)

The WTO is an institution aimed at facilitating integration of developing countries into the global trading system. Its generalized system of preferences (GSP) allows developing countries to export to developed country markets without any import duties and quota restrictions. The value of the GSP is being realized across several developing countries. For example, Botswana is currently accessing Norwegian markets through WTO GSP facility for certain products including agricultural products such as beef. This facility will be of great benefit to Botswana exporters who will be trading in ISPAAD-supported goods.

5.10.6 SACU-MERCOSUR Preferential Trade Agreement

This Preferential Trade Agreement (PTA) was signed in 2009 by SACU member states. It established fixed preference margins towards the creation of a free trade area between SACU and MERCOSUR (comprising of Argentina, Brazil, Paraguay and Uruguay). Botswana has since ratified the Agreement with the understanding that such trade arrangement will provide special and differential treatment to SACU exports including Botswana, provide market access to even larger South American states and thence strengthen economic co-operation ties with MERCOSUR.

5.10.7 SACU-USA Trade, Investment and Development Cooperation Agreement

The SACU-USA Agreement was signed in 2008 as a cooperative framework under which the SACU and USA would identify specific trade and investment issues and seek to advance those issues through appropriate agreements or understandings. This agreement is intended to provide several benefits including (1) assisting Botswana and her SACU partners to achieve economic development and growth, (2) enhancing integration of developing countries into global economy, (3) strengthening the bonds of friendship and spirit of cooperation, (4) enhancing expansion of trade and its facilitation, (5) promoting attractive investment climate, and (6) boosting economic relations between the USA as an economic super-power and SACU.

At the present moment, Botswana is a net importer of most goods used in the economy. Almost all the farm inputs, especially fertilizer, machinery and implements, fuel and oil, are imported from elsewhere. These international trade agreements can only facilitate the importation of these products at negotiated (reduced) prices. Domestic grain production does not meet national requirement which makes Botswana a net importer of grain. There is global increase in population and demand for food (including grain). This means there is an ever increasing competition for food on the world market. The resultant effects of this are higher prices set for the commodities that are imported by Botswana. Over time, the country will not be able to import much as it would require from the world market. These conditions will perpetuate the food insecurity in Botswana.

Botswana would not be able to export ISPAAD-supported products at least by the year 2016. This owes to the fact that the country is unable to produce enough grain to satisfy its national demand.

CHAPTER 6 CONCLUSIONS

This section presents the conclusions drawn from the findings of the study with regard to the terms of reference for the PSIA of the ISPAAD consultancy. The next section outlines a set of recommendations made on the basis of the conclusions herein.

6.1 Key Design Features of ISPAAD

- 6.1.1 ISPAAD is universally accessible. The eligibility criteria allow all active persons with access to arable land to benefit. This makes ISPAAD a non-discriminatory and very inclusive of all vulnerable groups. However, this eligibility criteria exposes the programme to misuse, abuse and makes the programme unsustainable in the long run. Some arable fields have been subdivided into several land parcels of smaller sizes so that the whole land receive 100% subsidy on seeds, ploughing and fertilizer. These subdivisions have inflated the number of “arable farmers” .
- 6.1.2 The stated objectives and service packages of ISPAAD programme are relevant but the programme has not reached its intended objectives. It is extremely inefficient from an agricultural development point of view as is. ISPAAD has no programme design document that spells out the outcomes, outputs, activities, inputs and assumptions of the programme. Currently the outcomes and outputs of the programme are not clearly specified. There are no objectively verifiable indicators, means of verification and assumptions under which the expected outcomes and outputs will be achieved. Thus, there is no monitoring and evaluation framework.
- 6.1.3 ISPAAD implementation guidelines are not very clear and explicit on outcomes, output, assumptions and performance criteria regarding all the ISPAAD objectives.

6.2 Assessment of the performance of ISPAAD to date vis-à-vis its objectives

- 6.2.1 Total grain production in Botswana has not increased during ISPAAD. Comparative analysis of average grain production for the period 1982 to 2007/08 and during ISPAAD (2008/09 to 2011) indicates no significant difference in average total production between the two periods.
- 6.2.2 Food security at both household and national levels has not improved during ISPAAD. Domestic grain production has not increased in terms of both total production and productivity. The national average grain productivity is only 33% of the ISPAAD target yield of 1000kg/ha. Domestic supply of staple grain did not satisfy national demand for grain. There has been steady increase in cereal imports during ISPAAD. Botswana imported approximately 90 percent of its national staple grain requirement.
- 6.2.3 The ISPAAD has had insignificant impact on commercializing arable agriculture in the country. The programme has facilitated access to draught power and farm implements.

It increased the use of tractor power in primary tillage operations. The main focus of ISPAAD beneficiaries in arable agriculture was to produce enough food to sustain their families. Very few farmers row planted or used inputs such as improved seeds and fertilizer which are characteristic of commercial farming because they did not have the necessary equipment. Though ISPAAD facilitated access to seed and fertilizer, they did not reach beneficiaries at the right time and in the right quantities.

6.2.4 ISPAAD facilitated access to credit in the case of commercial farmers. Traditional farmers did not benefit from the credit facility because they did not meet the requirements for obtaining loans at the National Development Bank.

6.2.5 ISPAAD had a negative impact on extension outreach. The core business of agricultural extension workers has been overshadowed by clerical and administrative work demands of ISPAAD at the expense of modern technology transfer and advice to farmers. The extension worker-to-farmer ratio increased under ISPAAD. The majority of the extension workers did not adequately cover the ever increasing number of arable farmers in their respective extension areas because of shortage of transport.

6.3 **Transmission Channels for the impacts of ISPAAD**

6.3.1 ISPAAD impacts various stakeholders through six transmission channels: prices, employment, access, assets, transfers (tax and subsidy) and authority.

6.3.2 These identified channels have positive short-term and long-term poverty and socio-economic impacts to various stakeholders in the ISPAAD programme.

6.4 **Delivery Mechanisms of ISPAAD**

6.4.1 ISPAAD is implemented by the right department in the right Ministry. The Department of Crop Production has the technical know-how relevant to ISPAAD implementation. The programme is embedded in the DCP structure and implemented by technical and administrative staff that already has established roles in the department.

6.4.2 ISPAAD lacks a well-defined and coordinated implementation structure to deliver services to farmers and all key stakeholders in the programme. The Ministry of Agriculture is not well-resourced to effectively and efficiently implement ISPAAD programme. The programme does not have its own staff.

6.4.3 Record keeping, data and information management in the ISPAAD programme are poor. Some records were missing while others were incomplete at extension area level as well as District and Headquarters level.

6.5 Sustainability of the ISPAAD

6.5.1 ISPAAD is not viable in its current form. Generally, the actual expenditure on ISPAAD exceeded its budget allocation. On average, it constituted more than 80% of budget allocation for the Department of Crop Production and more than half that allocated for Ministry of Agriculture. These budget proportions are expected to increase while government funding remains unchanged or declines over time. The ratio of annual proceeds per unit outlay spent on ISPAAD is less than unity. The Net Present Value (NPV) of ISPAAD operations is negative while the Benefit-Cost Ratio (BCR) is also less than unity. Therefore, ISPAAD is unsustainable in the long run.

6.5.2 ISPAAD does not distribute seed according to land suitability zones for each crop. The majority of farmers received maize seed and grew it in areas not suitable for the crop. This resulted in high incidence of crop failure and a reduction in yield.

6.5.3 Youth participation in ISPAAD is very low. Only about 8% of beneficiaries aged 18 to 29 years participated in the programme.

6.6 Environment under which ISPAAD operate

6.6.1 Linkages of ISPAAD with existing policies and programmes in the country are very weak and synergies between them are not well exploited. ISPAAD promotes fodder production while LIMID promotes use of fodder in animal production. They are both agricultural programmes but they are not supporting each other.

7.0 General Conclusion

7.1 ISPAAD is not fit for purpose in its current form. However, the programme could be greatly improved by changing or fine tuning its design and benefit packages to make ISPAAD become more targeted, efficient and sustainable.

7.2 ISPAAD packages are reaching groups that are vulnerable to poverty. These include the elderly, the uneducated and women. However, given that ISPAAD has not been able to increase grain yield these groups remain food insecure. In its current form, ISPAAD is not likely to alleviate these vulnerable groups from poverty as envisioned in Vision 2016.

CHAPTER 7 RECOMMENDATIONS

7.1 Ways to Improve on Design Features of ISPAAD

- 7.1.1 Where feasible, the eligibility criteria should include a minimum arable land size to minimize excessive cost and field subdivisions purported to abuse ISPAAD support.
- 7.1.2 There is need for a full review and redesign of the ISPAAD programme. The Ministry of Agriculture should prepare an ISPAAD programme document that clearly specifies all the key design features: outcomes, outputs, eligibility criteria, products offered, performance criteria, targets, assumptions, and an efficient monitoring and evaluation system.
- 7.1.3 The Ministry of Agriculture should introduce transitional reducing-balance subsidy support. Government subsidy per beneficiary should be reduced over time while owner contribution is increased over the same period. This would be a cost-sharing measure that will simultaneously induce personal commitment to ensure maximum returns on investment.
- 7.1.4 The cluster fencing component should be reviewed. It has more practical problems than any of the ISPAAD components. Group formation has proved difficult to achieve across the country since inception of the programme.
- 7.1.5 Ploughing, harrowing , row planting and fertilizer application be bundled together as a single package. The private tractor contractor must agree to undertake this single package for the farmer.
- 7.1.6 Private tractor owners be required to provide proof of access to or ownership of the necessary farm implements (plough, planter and harrow) during registering with Extension Staff.

7.2 Ways to Improve on Performance of ISPAAD vis-à-vis its objectives

- 7.2.1 The Ministry of Agriculture should devise efficient means of delivering farm inputs (seed, fertilizer, draught power) and implements (harrows, planters, and fertilizer applicators) at the right time and in the right quantities to farmers. The private sector should be involved in sourcing and transportation of seed and fertilizer from storage and processing facilities. The private sector should be involved in the operations and maintenance of ASCs.
- 7.2.2 Food security is an overarching objective. Any positive change in access to farm inputs and credit, improvement in extension outreach, productivity and total production will improve the food security status at household and national level.
- 7.2.3 MoA should mount an intensive training aimed at changing subsistence farmers' mindset towards treating arable farming as a business.
- 7.2.4 The ISPAAD credit facility component should be reviewed to accommodate smallholder farmers. These farmers need a special credit guarantee facility that will provide them with

access to short-term loans to cover all agricultural inputs currently provided for under the NDB credit facility. In addition to NDB, other banks should be given the opportunity to provide seasonal loan facility to cover farm production costs.

7.2.5 The Department of Crop Production should focus on its core business of providing technical knowledge, information and advisory service to arable farmers in order to achieve ISPAAD objectives. The VEWs should be accorded adequate time to train, visit, and demonstrate to farmers relevant and improved technologies on how to grow and manage their crops to maximize yield and returns. The sourcing, delivery and distribution of ISPAAD inputs should be done by the staff of ISPAAD Unit (to be established).

7.2.6 The MoA should reduce the extension worker-to-farmer ratio.

7.3 Ways to Improve on Delivery Mechanisms of ISPAAD

7.3.1 Currently, the procurement, delivery and distribution of ISPAAD inputs are predominantly done by DCP staff. There should be an ISPAAD Unit under the DCP with its own staff to plan, coordinate and facilitate ISPAAD administrative and clerical services to all stakeholders.

7.3.2 The MoA should improve record keeping, data and information management systems at all levels.

7.3.3 The MoA should expedite the construction of functional Agricultural Service Centres (ASCs) across the country to enable farmers to readily access farm machinery, implements and extension advice. Where feasible, the establishment, operations and management of ASCs should be privatized.

7.3.4 ISPAAD should have a well-defined, coordinated, communicated and understood implementation structure to effectively and efficiently deliver ISPAAD services to farmers and all key stakeholders.

7.4 Ways to Improve the Sustainability of the ISPAAD

7.4.1 The ISPAAD implementation guidelines should be reviewed with the aim of making the programme become targeted and offered on cost-sharing basis. This will make ISPAAD less expensive to deliver and efficient in increasing grain productivity and total production.

7.4.2 The Ministry of Agriculture should reduce high incidences of crop failure due to factors associated with land suitability. The seed (sorghum, maize, millet and cowpea) should be distributed according to land suitability zone map.

7.4.3 The MoA should come up with innovative ways of motivating youth to venture into arable agriculture. Over 60% of ISPAAD beneficiaries are 50 years of age and above.

7.5 Environment under which ISPAAD operate

- 7.5.1 The Ministry of Agriculture should undertake a comprehensive review of other government policies, programmes and projects to identify linkages and align ISPAAD with those initiatives with similar aims and objectives. This exercise will allow MoA to fully exploit existing synergies to derive maximum benefits out of those initiatives.

8.0 General Recommendation

ISPAAD can be improved by changing or fine tuning its design and benefit packages to make it more targeted, efficient and sustainable through implementation of recommendations in section 7 of this report.

9.0 Possible studies to be undertaken to improve ISPAAD

- 9.1 The Ministry of Agriculture should conduct a feasibility study to establish a fertilizer and seed processing plants across Botswana. Establishment of these plants will alleviate current shortages of the farm inputs in question.
- 9.2 A comprehensive baseline study on impact of ISPAAD on food security in Botswana.
- 9.3 The socio-economic study of the horticultural development component of ISPAAD

REFERENCES

- Africa Development Bank Group (1996). Arable Lands Development Programme Phase I Project, Project Performance Evaluation Report. Operations Evaluation Department
- Bendsen, H. (2002), Livelihood Options and Strategies: Arable Agriculture and its Significance in Terms of Spatial Coverage, Job and Income Generation Potential, *Working Paper 4.1*, HOORC/DED.
- BIDPA (2006). Consultancy on the Viability and Long term Development Strategy for the Livestock Subsector in Botswana. Final report. Gaborone.
- BIDPA (2009). Botswana Agricultural Sector Review. Second Draft Report. Gaborone.
- Børhaug, K, (1992), Politics, Administration and Agricultural Development: The Case of Botswana's Accelerated Rainfed Arable Programme. CHR Michelsen Institute. The Department of Social Sciences and Development, Bergen
- Buffie, E.F. &Atolia, M., (2009), Agricultural Input Subsidies in Malawi: Good, Bad or Hard to Tell? *FAO Commodity and Trade Policy Research Working Paper*, Rome.
- Centre for Applied Research (2005). Crop-livestock System Development in Southern Africa: Priorities for Future Research. Botswana County Report. UN-ICRSAT and ILRI. Nairobi.
- Chanda, R., Chipanshi, A.C., Totolo, O., Magole, L. 1999. Vulnerability and adaptation to climate change of the crop sub-sector: The cases of sorghum and maize in the Barolong and Ngamiland agricultural districts (unpublished draft consultancy report). University of Botswana, Department of Environmental Sciences, Gaborone, Botswana.
- Clover, J., (2003), Food Security in Sub-Saharan Africa, *African Security Review*, Vol. 12, No1, pages 1-15.
- Collison, S.T., Clawson, E.J., Azam-Ali S.N., and Black, C.R. (1997). Effects of Soil Moisture Deficit on the Water Relations of Bambara Groundnut (*Vigna subterranean L. Verdc*). *Journal of Experimental Botany*, Vol. 48: 877-884.
- Darkoh, M.B.K., and Mbaiwa, J.E. (2005). Natural Resource Utilization and Land-use Conflicts in the Okavango Delta, Botswana. University of Botswana. Gaborone.
- Denning, G., Kabambe, P., Sanchez, P., Malik, A., Flor, R., Harawa, R., Nkhoma, P., Zamba, C., Banda, C., Magombo, C., Keating, M., Wangila, J., Sachs, J., (2009). Input Subsidies to Improve Smallholder Maize Productivity in Malawi: Towards an African Green Revolution. *PLoS Biology*, Vol 7, page 2-10

- Dorward, A., Chirwa, E., Boughton, D., Crawford, E., Jayne., Slater, R., Kelly, V., Tsoka,M., (2008), Towards ‘Smart’ Subsidies in Agriculture? Lessons from Recent Experience in Malawi., *Natural Resource Perspectives 116*, Overseas Development Institute.
- Dorward, A., Chirwa, E., Jayne,T.S, (2010), The Malawi Agricultural Input Subsidy Programme, 2005/5 to 2008/9.www.worldbank.org/AFRICAEXT.../MAIP_may_2010.pdf. Viewed 10th September 2012
- Food and Agriculture Organisation., (1996). Rome Declaration on World Food Security. www.fao.org/docrep/003/w3613e/w3613e00.htm. Viewed 01.09.2012
- Gonzales, G., (undated) Population Ageing, Sustainable Development and Food Security in Rural Areas of Bolivia and Chile. A Paper prepared for Population and Development Service Sustainable Development Department., Food and Agriculture Organization of the United Nations http://www.fao.org/sd/dim_pe1/docs/pe1_050906d1.pdf, viewed on the 29th October 2012
- Government of Botswana (GOB) and United Nations (2010). Millennium Development Goals Status Report 2010.Gaborone.
- <http://www.un.org>. Sustainable Development. Natural Resources Aspects of Sustainable Development in Botswana (Accessed September 2012).
- IFAD, (2012). The Future of World Food and Nutrition Security: Investing in Smallholder Agriculture – an International Priority.[www. Ifad.org](http://www.ifad.org), viewed 04.09.2012
- Jacobs, F. H. (1988). The Five-tiered Approach to Evaluation: Context and Implementation. In Weiss H. B. & Jacobs F. H. (Eds.), *Evaluating Family Programs*, Aldine DeGruyter, New York.
- Krejcie, R.V. and D. W. Morgan (1970), Determining Sample Size for Research Activities. *Educational and Psychological Measurement* 30: 607-10.
- Le Vallee, G.C. (undated). Ten Years after the 1996 World Food Summit – 3 October 2006: Fostering Political Will for Food Security. http://www.sarpn.org/documents/d0002192/Le-Vallee_Food-security_Oct2006.pdf. Viewed 04.09.2012
- Local Enterprise Authority, (2011). Socio-economic Study of Nxaraga Farm. BCA Consult (Pty) (Ltd). Gaborone.
- Matambo. O. K. (2012). Budget Speech-2012.Ministry of Finance and Development Planning. Government Printer, Gaborone

- Mathuba, B.M (2003). Botswana Land Policy. *Paper presented at an International Workshop on Land Policies in Southern Africa. Berlin, Germany, May 26-67.*
- Millner, D. A., (2010). The MDG Summit: Strengthening the U.S. Role in Accelerating Progress. Bread for the World Institute. Briefing Paper, No. 10
- Ministry of Agriculture (2002), National Master Plan for Arable Agriculture and Dairy Development, Government white paper No.1 of 2002. Government Printer, Gaborone.
- Ministry of Agriculture (2006), Agricultural Support Schemes Guidelines, Government Printer, Gaborone.
- Ministry of Agriculture, (1991), Nine Years of Arable Lands Development Programme (1982-1991), Information Section of the Ministry of Agriculture, Gaborone.
- Ministry of Agriculture. (Undated), Guidelines for Integrated Support Programme for Arable Agriculture Development, Government Printer. Gaborone
- Ministry of Finance and Development Planning (1997) National Development Plan VIII, Government Printer, Gaborone.
- Ministry of Finance and Development Planning (2003) National Development Plan IX, Government Printer, Gaborone.
- Ministry of Finance and Development Planning (2007). Botswana Agricultural Census – 2004, Central Statistics Office. Government Printer, Gaborone.
- Ministry of Finance and Development Planning (2009) National Development Plan 10. Government Printer. Gaborone.
- Ministry of Finance and Development Planning, (1997), National Development Plan 8 1997/98-2002-03. Government Printer, Gaborone
- MMEWR, 2006. National Water Master Plan Review 2006, (Executive Summary). Ministry of Minerals, Energy and Water Resources, Government of Botswana, Gaborone.
- Mosupi, P.O.P., and Masukujane, M. (2007). A Handbook on the Control of Agricultural Pests in Botswana. Department of Agricultural Research, Government Printer, Gaborone.
- Msambo, R.B, Lekorchi, D & Armah, M., (1993) Project Completion Report: Arable Lands Development Project. Africa Development Bank, Agriculture and Rural Development Department
- Olawepo, R.A., (2011), Food Security and Challenges of Urban Agriculture in the Third World Countries, In Aladjadjiyan, (Ed) (2011). *Food Production-Approaches, Challenges and Tasks*, InTech, Croatia.

- Organization for Economic Cooperation and Development (2000). DAC Criteria for Evaluating Development Assistance. Development Assistance Committee.
- Paul, R. (2003). Sectional Trends in the Water Sector (technology, policy and poverty) in South Asia. *South Asia Conference on Technologies for Poverty Reduction, New Delhi, 10 -11 October, 2003*.
- Picard, L. (1987), The Politics of Development in Botswana, A Model for Success? Lynne Rienner Publishing Inc. Colorado.
- Radcliffe, D.J., Terteeg, J.L., P.V. De Wit (1992). Land Resources Assessment for Agricultural Land-use Planning: Map of land suitability for Rainfed Crop Production. FAO. Government of Botswana and UNDP. Gaborone.
- Rivera, W.M, Qamar, M.K., & van Crowder, L., (2001). Agricultural and Rural Extension Worldwide: Options for Institutional Reform in Developing Countries. Food and Agriculture Organisation of the United Nations. Rome.
- Statistics Botswana (2011). Population and Housing Census Preliminary Results Brief. Government Printer, Gaborone
- Statistics Botswana (2011). Preliminary Results of the Botswana Core Welfare Indicators (Poverty) Survey 2009 / 10. Government Printer, Gaborone.
- Statistics Botswana (2012). Preliminary Results of the Botswana Core Welfare Indicators (Poverty) Survey 2009 / 10. Government Printer, Gaborone
- Stringer, L.C., Dyer, J.C., Reed, M.S., Dougill, A.J. 2009. Adaptation to climate change, drought and desertification: Local insights to enhance policy in Southern Africa. *Environmental Science Policy* 12: 748-765.
- Tladi, F. M & Tselaesele, N.M (2010), Agricultural Extension in Botswana: Growing a Hybrid over Decades of Selective Experience. In Kimaro W.H, Mukandiwa L and Mario E.Z.J (Eds), (2010). Towards Improving Agricultural Extension Service Delivery in the SADC Region. Proceedings of the Workshop on Information Sharing among Extension Players in the SADC Region, 26-28 July 2010, Dar es Salaam, Tanzania.
- Tselaesele, N.M. (2007), Influence of Culture and Stakeholders in Botswana's dairy System. Unpublished PhD Thesis. School of Natural and Rural Systems Management. University of Queensland, Brisbane.
- Tsie, B. (1996), The Political Context of Botswana's Development Performance. *Journal of Southern African Studies*. Vol. 22. No. 4. Pages 599-616.

- Tubiello, F.N., Soussana, J-F., Howden, S.M. 2007. Crop and pasture response to climate change. Proceedings of the National Academy of Science, USA. 104: 19686-19690.
- Twyman, C., Sporton, D., Thomas, D.S.G., (2004), 'Where is the Life in Farming?': The Viability of Smallholder Farming on Margins of the Kalahari, Southern Africa. *Geoforum*, Vol. 35, pages 69 – 85.
- United Nations Development Program (2010). Human Development Report 2010. Gaborone.
- Wiggins, S., & Brooks, J., (2010), The Use of Input Subsidies in Developing Countries. *Global Forum on Agriculture*, OECD.

ANNEX 1 : TERMS OF REFERENCE (TORS)

The terms of reference of this consultancy were derived from the “main objectives of the PSIA of ISPAAD” which are spelt out in the “Request for Proposal” document:

- a) To assess the performance of ISPAAD to date vis-à-vis its objectives, with particular focus on the extent to which the programme has met its key performance targets and the nature of its short and long term distributional impacts. Care should be taken to isolate and interrogate the incentive effects of ISPAAD and its impact on poor people, vulnerable groups and the environment.
- b) To review the key design features of ISPAAD - objectives, outcomes, target beneficiaries, products offered eligibility criteria, performance criteria, institutional arrangements, etc., with a view to determining their suitability for the purpose for which ISPAAD was established.
- c) To determine the transmission channels for the impacts of ISPAAD, assess their strengths and weaknesses, and suggest as appropriate, measures to enhance the efficacy of these channels and impact of ISPAAD.
- d) To review the appropriateness or otherwise of the delivery mechanisms of ISPAAD, including institutional arrangements, project management arrangements, tools and synergies with other programmes.
- e) To identify and review any major changes in the environment in which ISPAAD operates – global economic changes, regulatory reforms, etc. – and how they impact on ISPAAD.
- f) To propose measures to improve ISPAAD from the perspectives of implementation, results and sustainability based on the above objectives.

SCOPE OF WORK

Pursuant to the above TORs, the consultant shall undertake the following tasks / activities

- a) Develop and execute an adequate proposal/methodology for assessing the performance of ISPAAD to date. This shall entail;
 - A detailed outline of the assessment criteria
 - A review of the performance criteria of ISPAAD
 - Application of the methodology to document, analyze and report on, the performance of ISPAAD
 - Analysis and documentation of the distributional impacts of ISPAAD taking care to identify the losers and gainers from ISPAAD and to analyze the impact on poor people, gender, vulnerable groups, youth, and environment.
- b) Review the design features of ISPAAD and ascertain the extent to which the design of the programme is consistent with the programme’s objectives. This shall entail;

- A review of ISPAAD objectives
 - A review of the ISPAAD service package to ascertain consistency with objectives
 - A review of the illegibility criteria of ISPAAD
 - A review of the target beneficiaries of ISPAAD
- c) Identify, analyze and document the transmission channels of ISPAAD. The task will require, amongst others;
- Identification, analysis and documentation of the mechanisms through which ISPAAD affects the behaviour of the target population and other economic agents.
 - Identification and analysis of the incentive effects of ISPAAD, e.g., impact on work effort, impact on private investment etc.
 - Delineation of the short and long term impacts of ISPAAD on the target sectors and beneficiaries.
- d) Review the delivery mechanisms of ISPAAD. This task will require:
- An assessment of the institutional framework
 - An assessment of the project implementation arrangements for ISPAAD
 - An assessment of the implementation tools for ISPAAD, e.g. guidelines, project management tools
 - A review of programmes, policies with a bearing on ISPAAD and how synergies have been built, strengthened and exploited.
- e) Identify and analyze any major changes with influence on the business case for ISPAAD. This would include;
- A review of international developments with a direct impact on the sector in which ISPAAD operates e.g. global demand for food, regional and global trade agreements etc.,
 - A review and analysis of regulatory developments at the national level that could potentially impact on ISPAAD.
- f) Make recommendations for the improvement of ISPAAD. Based on conclusions from the successful completion of the foregoing, tasks, the contractor shall make recommendations for the improvement of ISPAAD.

ANNEX 2 CONSULTANTS AND PROJECT MANAGEMENT TEAM

The team of BCA consultants is based in Sebele at the Botswana College of Agriculture, an associate institution of the University of Botswana.

Composition of the Team of Consultants

The BCA Consult (Pty) Ltd team that conducted the poverty and social impact analysis (PSIA) of the ISPAAD was composed of the following professional consultants:

Dr. Davis Marumo - Agricultural Economist / Project Planning and Evaluation Expert (Team Leader)

Dr. Nelson Tselaesele-Rural Sociologist/Agricultural Extension – (Team Member)

Dr. Utlwang Batlang - Plant Scientist – (Team Member)

UNDP MFDP Contact Persons

For purposes of effective communication with the reference group, the team leader is the communication manager and he is the one who communicates all issues relating to the consultancy. On the other hand, Mr. Ruud Jansen, Mr Boatametse Modukanele and MrSennye Obuseng are the contact persons at MFDP / UNDP to communicate all issues coming from MFDP / UNDP about the consultancy to the consultancy team.