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TE WĀHANGA PŪTAIAO

# Determinants of smallholder horticultural farmers' participation in the Impact Accelerator Subsidy (IAS) programme in Botswana

## Case study from Kweneng District

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# Abstract

This study examines the determinants of smallholder farmers' participation in the Impact Accelerator Subsidy (IAS) programme, a horticulture subsidy initiative in Botswana, with a focus on market dynamics and co-financing barriers to smallholder farmer engagement. Despite the IAS programme being ambitious in stimulating horticultural production and improving livelihoods through partial input subsidies and technical support, the participation of smallholder farmers has been uneven and constrained.

The study employed a qualitative case study design, engaging smallholder farmers in three categories: participants, intended participants, and non-participants across Kweneng District in Botswana, through semi-structured interviews, key informant interviews, document reviews, and field observations. The data were analysed guided by Braun and Clarke's six-phase thematic data analysis framework, where the themes are inductively derived from the data.

The findings of this study show that while some farmers participated, enabled by ownership of land, access to adequate borehole water and external funding sources, broader systemic barriers dominated. Chief among these barriers were a high co-financing threshold, which excluded resource-poor farmers and the prevailing unregulated market conditions that subjected farmers to exploitative pricing and inconsistent demand. Other challenges included weak extension service delivery, policy ambiguity, and logistical infrastructure challenges. These challenges undermined the uptake and participation in the IAS programme. The study argues that without adequately addressing the underlying market dysfunctions and offering more inclusive financing models, the transformative goals of the IAS programme remain limited.

This study concludes by calling for revisions that prioritise market formalisation, strengthen farmers' bargaining power, and provide more equitable cost-sharing arrangements. These insights offer insights on designing subsidy models that are accessible and sustainable in the context of Botswana's horticulture sector.

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| | |
|---|---|
| ALDEP | Arable Lands Development Programme |
| ARAP | Accelerated Rainfed Arable Programme |
| BASIS | Broadening Access and Strengthening Input Market Systems |
| BOBS | Botswana Bureau of Standards |
| CEDA | Citizen Entrepreneurial Development Agency |
| FAO | Food and Agriculture Organisation |
| FISP | Farm Input Subsidy Programme |
| GAP | Good Agriculture Practices |
| GDP | Gross Domestic Product |
| HESP | Horticulture Enterprise Support Programme |
| IAS | Impact Accelerator Subsidy |
| IP | Intended Participant |
| ISPAAD | Integrated Support Programme for Arable Agriculture Development |
| KI | Key Informant |
| MoLA | Ministry of Lands and Agriculture |
| NAIVS | National Agricultural Input Voucher Scheme |
| NAMPAADD | National Master Plan for Arable Agriculture and Dairy Development |
| NDB | National Development Bank |
| NP | Non-Participant |
| OSCF | Organic-Substitute-Chemical-Fertiliser |
| PFJ | Planting for Food and Jobs |
| PPRA | Public Procurement Regulatory Authority |
| ROI | Return on Investment |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| USAID | United States Agency for International Development |
| YDF | Youth Development Fund |

# Chapter 1: Introduction

This chapter introduces Botswana and its socioeconomic and environmental context, along with agricultural development and the Impact Accelerator Subsidy (IAS) programme. The chapter further justifies the rationale for this study and provides the structure of this thesis.

## 1.0 Background and rationale

### 1.1Socio-economic and environmental context

The Republic of Botswana, formerly known as Bechuanaland during the British protectorate era, is a landlocked country located in Southern Africa, bordered by South Africa to the southeast and south, Namibia to the west and north, Zambia to the north, and Zimbabwe to the northeast (Parsons, 2024). Botswana has a population of approximately 2.35 million people as of the 2022 census (Statistics Botswana, 2022). Botswana is considered one of the stable multiparty democracies in Africa, since gaining independence on September 30, 1966, from Britain, and has maintained stable macroeconomic stability. The country's economy is primarily driven by diamond mining, tourism, and services (Bank of Botswana, 2023). Botswana features a semi-arid climate, and the country is characterised by variable rainfall and sandy soils, which constrain rainfed agricultural productivity.

The following figures show the map of Botswana, firstly to illustrate the overall geographical location of Botswana in Africa (figure 1), and then to display the geographical position of Kweneng District and the main administrative town (figure 2). It is essential to note that the Botswana map (Figure 2) displays the old district boundaries. An online search for the updated map produced no results. The new Kweneng District, as indicated in the Botswana Government Gazette dated 23 December 2022, shows that the western and southern parts of Kweneng were separated to form two new districts: Letlhakeng and Mogoditshane-Thamaga, respectively (Department of Government Printing and Publishing Services, 2022). The researcher used the new updated district boundaries in this case study area.

Figure 1 and Figure 2 below show the location of the Republic of Botswana in Africa and the location of Kweneng District, the case study area, in Botswana, respectively.


**Figure 1: Location of Botswana within Africa**

Source: (World Atlas, 2023)


**Figure 2: Map of Botswana highlighting Kweneng District**

Source: (Ontheworldmap.com, n.d)

## 1.2 Agricultural development and the Impact Accelerator Subsidy (IAS) programme

The agricultural development agenda remains central to the economic diversification drive in rural development in Sub-Saharan Africa. In Botswana's case, agriculture remains the backbone of the rural economy, contributing approximately 2% of the GDP, while employing around 30% of the country's labour force. (Moepeng, 2013; Seleka, 2022). The agricultural sector in Botswana continues to play a crucial role in ensuring food security and improving rural livelihoods, particularly among smallholder farmers, who constitute the majority of the population. Literature suggests that recurrent climate shocks, limited access to markets, finance, and infrastructure, constrain the growth of the agricultural sector in Botswana. Consequently, the government has introduced several subsidy-based agricultural development programmes aimed at improving productivity and income.

Botswana's unique structural and environmental conditions have shaped the evolution of agricultural support programmes from independence to the present, ranging from the Arable Land Development Program (ALDEP) and Arable Rainfed Agriculture Program (ARAP) to the Integrated Support Programme for Arable Agriculture Development (ISPAAD) and currently the Temo-Letlotlo Programme. Although these agricultural development support initiatives, designed to assist staple crop production such as sorghum, maize, millet, and cowpeas, have often been limited in their impact by design flaws, bureaucratic delays, and, in some cases, the exclusion of resource-poor smallholder farmers. As mentioned earlier, these programmes primarily focused on staple crops, with horticulture neglected until recently, when ISPAAD incorporated the Horticulture Enterprise Support Programme (HESP), which ultimately led to the Impact Accelerator Subsidy (IAS) programme. In response to these issues, particularly the exclusion of horticulture farmers, Botswana introduced the Impact Accelerator Subsidy (IAS) in 2012. Unlike its predecessors, which were fully funded initiatives, IAS adopted a 50% co-financing model whereby both farmers and the government share the costs of the applied package on a fifty-fifty basis. This study examines the engagement of smallholder horticulture farmers with this intervention, highlighting both the enablers and constraints to participation.

The horticulture subsector appears to have attracted policy attention as a high-value, labour-intensive sector with significant potential to boost rural income and enhance dietary diversity. However, there is limited research, if any, on the determinants of smallholder farmers' participation in horticulture subsidy-based development programmes, especially in Botswana. This study examines that gap by investigating the determinants of participation in the IAS programme among various categories of farmers.

## 1.3 Problem statement

Botswana's agricultural subsidy programmes have evolved over the decades, but most have failed to meet their objectives due to a myriad of challenges, such as financial, institutional, and infrastructural barriers. Previous programmes, such as ARAP, ALDEP, and ISPAAD, struggled with sustainability, inclusion, and return on investment (ROI) (Morapedi, 2016; National Development Bank, 2008). The IAS was introduced to address some of these shortcomings, focusing on the horticulture subsector and incorporating the co-financing model to encourage farmer ownership and cost-sharing, thereby increasing accountability and transparency.

Despite this significant policy shift, there are currently limited academic studies on the IAS programme, its implementation, and the factors that determine smallholder farmers' participation in and involvement with the programme. This lack of empirical studies on horticulture-specific subsidy programmes in Botswana, particularly from the farmers' perspectives, represents a significant gap in scholarly literature. As horticulture gains government interest and policy prioritisation, there is a need to study how farmers engage with the programme on the ground to make suggestions for improvements in future iterations.

## 1.4 Research questions

1. How do smallholder horticulture farmers participate in the IAS programme in Botswana?
2. What are the key determinants of smallholder farmers' participation in the IAS programme?

## 1.5 Scope of the study

The primary focus of this study is on the IAS programme as implemented in the Kweneng District of Botswana. The study focuses on three categories of farmers: those who participated in the programme, those who intended to participate but were unable to access the subsidy, and those who did not participate at all. By adopting a case study approach, this study does not aim to produce results that are generalisable to the whole country. Instead, it offers rich, contextualised insights that may inform future evaluations and policy reforms.

## 1.6 Significance of the study

This research contributes to the ongoing debates on the effectiveness of input and infrastructure subsidies in promoting the commercialisation of smallholder farmers in Sub-Saharan Africa. The study purposefully focuses on horticulture-specific programmes to add to a body of literature that has predominantly focused on staple crop interventions. Focusing on the experiences of farmers, both those who participated and those who did not, this study highlights the structural, financial, and institutional enablers and constraints of participation.

The findings of this study will provide policymakers with practical insights, particularly in designing inclusive and accessible programmes that enable resource-poor smallholder farmers to participate in and benefit from interventions.

## 1.7 The structure of the thesis

This study is organised into seven chapters. Chapter 1 introduces the study, outlining the problem statement, research objectives, and the importance of the work. Chapter 2 reviews relevant literature on agricultural development programmes and farmer participation in such support schemes. Chapter 3 presents an outline of the research strategy and data analysis approach. Moving to Chapter 4, it provides a detailed description of the Impact Accelerator Subsidy (IAS) programme and the case study area. Chapter 5 presents the findings of this study, while Chapter 6 discusses these findings in connection with the research objectives and existing literature. Finally, Chapter 7 concludes the thesis by emphasising key policy implications and recommendations for future research.

# Chapter 2: Literature Review

## 2.0 Introduction

Research specifically on evaluating smallholder farmers' participation in horticulture input subsidy schemes is almost absent. Therefore, this review explores participation trends in the broader literature on multi-crop or staple food subsidy programmes, considering various forms of farmer engagement in these schemes as indicators of how smallholder horticulture farmers might experience horticulture subsidy schemes.

Participation in this review is broadly defined; it includes (1) the successful acquisition and use of subsidy packages, (2) attempted but failed acquisition of subsidy packages, or (3) outright abstention from acquiring and using subsidy packages for any reason. By examining various studies on multiple crops or staple food crop schemes, some insights into barriers and enablers for horticulture-specific schemes can be identified, especially for the Impact Accelerator Subsidy (IAS), which is the focus of this study.

Global trends show that agricultural development programmes, particularly input subsidy initiatives, are fundamental to rural development. They aim to enhance smallholder farmers' access to vital inputs such as fertilisers, seeds, on-farm infrastructure, and production facilities like tunnels and greenhouses. These programmes have transitioned from broad, government-led measures to more targeted tools designed to boost farmer participation and promote inclusivity. A thorough review of these schemes enables a deeper understanding of participation that extends beyond observable factors and is shaped by the complex environment in which farmers operate.

After reviewing studies from global, Sub-Saharan African, and local perspectives on the role of subsidies and agriculture support mechanisms, hereafter referred to as agriculture development programmes, specific determinants of participation are as follows: **(1)** socio-economic and infrastructural determinants of participation (section 2.1); **(2)** programme level and institutional factors (section 2.1.1); **(3)** socio-cultural determinants (section 2.1.2); **(4)** regional insights from Sub-Saharan Africa (section 2.2); and **(5)** Botswana staple crops subsidies culminating in horticulture-specific subsidies, such as the Impact Accelerator Subsidy (section 2.3).

## 2.1 Socio-economic and infrastructural determinants of participation

Research from around the globe indicates that farmers' involvement in input subsidy programmes is frequently limited by their capacity to meet the co-financing requirements and access to supportive financial infrastructure. These studies find that resource-poor smallholder farmers often cannot meet the co-financing thresholds, which now serve as barriers to participation rather than facilitators.

A study in Albania indicated that it is common for a subsidy programme to offer matching grants of 30%-50 %. (Bardhi, 2016). However, the study further suggested that this high co-financing requirement excludes poor smallholder farmers who cannot meet it. The researchers called for a more inclusive approach to support resource-poor farmers who were often targeted but excluded by the system. (Bardhi, 2016). In Bhutan, for example, wealthier farmers received subsidies for seeds and saplings, whereas poorer farmers did not. Specifically, 52% of wealthier farmers received seed and sapling subsidies, compared to only 35% of poorer farmers. Furthermore, under the same Bhutan programme, none of the poorer farmers received a dairy Jersey cow or biogas due to their inability to meet the co-financing requirements (Wang et al., 2019). Therefore, studies show that the co-financing thresholds disadvantage resource-poor farmers, who are the primary beneficiaries of most agricultural development programmes.

Studies have shown that previous investments in production structures influence participation in agricultural development programmes. Bardhi (2016) also observed increased participation among growers with substantial farm investments, emphasising that prior investment, made before the subsidy, is a significant factor in participation. Yi et al. (2023) share the view that prior investment in the farm determines involvement in the subsidy programme.

In a study on China's Organic-Substitute-Chemical-Fertiliser (OSCF) programme for greenhouse vegetable farmers, the likelihood of participation rose markedly when farmers had invested in agricultural assets such as fertilisation equipment, soil testing tools, and irrigation systems. The above scenario indicates that access alone is insufficient; rather, farmer commitment, as demonstrated by prior investment, is a crucial enabler of participation. This sentiment aligns with findings from a study in Nepal, where higher-income farmers received significantly larger subsidy levels than their lower-income counterparts, highlighting disparities in accessing government support. t (Bharati et al., 2024).

There seems to be a link between co-financing levels and farmer participation. Co-financing thresholds can either encourage or discourage participation, as illustrated by the case in Bhutan, where 52% of wealthier farmers received seed and sapling subsidies compared to 35% of poorer farmers, primarily because the poorer farmers were unable to meet the co-financing threshold conditions (Wang et al., 2019). Similarly, in the Albania case, smallholder farmers faced challenges with a 30%-50% matching grant, effectively excluding resource-poor farmers from the subsidy (Bardhi, 2016). These examples demonstrate that the design of co-financing can be a decisive factor in determining who participates and who is excluded from agricultural support programmes, depending on their design and implementation.

However, when co-financing thresholds are lower and credit terms are more favourable, participation in agricultural development programmes increases, as barriers to credit access are reduced, as was the case in Rwanda, where the availability of low-interest loans improved farmers' access to credit (Taremwa et al., 2022).

Similarly, the flexible loan terms and simplified documentation process in Bangladesh increased the number of farmers seeking credit for production purposes (Yeasmin et al., 2024). These findings emphasise the importance of accessible and affordable co-financing thresholds in encouraging the inclusion of smallholder farmers.

Beyond financial issues, physical infrastructure, such as banks, influences participation. The availability of financial infrastructure plays a crucial role in the participation of smallholder farmers. These infrastructures can be formal or informal; their presence and accessibility determine farmers' ability to meet co-financing requirements. Formal institutions include banks and microfinance providers that offer structured credit to farmers. However, these institutions are often located in urban areas and face difficulties reaching farmers in remote locations. For example, in the Balkans, the density of financial institutions in each location has been found to improve the financial inclusion of smallholder farmers (Ljumović et al., 2023). Despite the limitations of formal credit institutions, they can improve farmers' access to credit, as demonstrated in Tanzania, where smallholder paddy rice farmers with secure land titles and credit experience were able to access better credit terms compared to their counterparts (Kamugisha et al., 2025).

Conversely, informal financial systems, such as savings groups and community-based credit schemes, often complement formal institutions and are more readily available and accessible to rural communities. Studies have found that participation in agricultural value chains increased credit access for farmers in both formal and informal credit arrangements in Ghana. (Osei et al., 2023). However, informal financial institutions also face some limitations, as demonstrated in the study in Bangladesh, where farmers were deterred from accessing credit due to the perceived complexity of application procedures and higher interest rates (Yeasmin et al., 2024). Therefore, a balanced approach that utilises the strengths of both formal and informal financial institutions is necessary.

### 2.1.1 Programme and institutional factors

Finance and infrastructure constitute the macro-level environment, while subsidy programme design and implementation governance form the micro-level climate that influences the allocation of subsidy packages and subsequently shapes participation. A study in Malawi illustrates this: in a decentralised approach involving village leadership in beneficiary selection, chiefs targeted farmers with higher returns on inputs, leading to efficient allocation that achieved the desired return on investment. However, this approach also resulted in the exclusion of resource-poor farmers (Basurto et al., 2019). In contrast, the Farm Input Support Programme (FISP) in Kenya suffered from political interference and poor governance, resulting in inefficiencies in distributing the subsidised packages (Wanyonyi et al., 2024). These studies demonstrate that transparency in governance and institutional support are crucial for the effective and equitable distribution of subsidy packages.

Simplifying the application process can boost farmer participation. In Kenya, the use of vouchers redeemable at private agro-dealers streamlined the process and enhanced targeting, resulting in higher maize yields and a reduction in poverty among smallholder farmers (Mason et al., 2017). This example emphasises the importance of institutional support and participatory governance in encouraging equitable participation among smallholder farmers in subsidy programmes.

Programme criteria and eligibility are crucial elements of agricultural development programmes. These eligibility criteria are to ensure that subsidies reach the intended beneficiaries. However, in practice, these conditions can exclude the very farmers they aim to help. More often, programmes target smallholder, resource-poor farmers by considering factors such as poverty, land ownership, and household size.
For instance, the Malawi FISP prioritised resource-poor farmers with a focus on those who are vulnerable and food insecure (Chirwa & Dorward, 2013), yet, in practice, the subsidy benefited the wealthier farmers more than the poorer ones.

Similarly, in Tanzania, the National Agricultural Input Voucher Scheme (NAIVS) aimed to support smallholder farmers, but it faced issues such as elite capture and delays in voucher delivery (Karata, 2024). Even some well-meaning eligibility criteria can become gatekeeping mechanisms when there are no strong oversight, transparency, and accountability measures in place.

In response to the numerous challenges faced by conventional agricultural subsidies, many governments have experimented with smart subsidies. These are more targeted, usually towards resource-poor farmers, and are complemented by services such as extension and marketing support. Karata (2024) highlighted that the NAIVS programme in Tanzania was designed as a smart subsidy programme; nonetheless, its implementation had flaws in both design and execution. The NAIVS programme initially targeted resource-poor farmers with small farms to increase production and connect them to the market. However, it ultimately benefited many large farms rather than small ones. Although the NAVIS programme had clear guidelines, these were neglected during implementation, leading to a flawed beneficiary selection process, characterised by elite capture, and the election of village voucher committees based on political connections. As a result, the programme failed to reach the most vulnerable farmers it was meant to support, as outlined in the guidelines. These issues, coupled with poor implementation and a lack of oversight, meant that the programme achieved only part of its objectives. Similarly, the Ghanaian Planting for Food and Jobs (PFJ) programme was a targeted subsidy that aimed to support resource-poor farmers carefully, including the development of input supplies to improve accessibility (Pauw, 2022). The PFJ programme demonstrated boosted maize and rice production and improved food security. However, its full potential was hampered by challenges such as crowding of commercial input sales, insufficient funding for critical support services like extension and marketing. Poor monitoring and evaluation also stalled the progress and success of the PFJ. Therefore, it is essential for smart subsidies to be combined with rigorous monitoring to ensure the achievement of the desired outcomes.

### 2.1.2 Socio-cultural determinants

This section examines how cultural norms, social status, and gender roles impact farmers' participation in subsidy programmes. It also emphasises how societal hierarchies and informal power dynamics can either facilitate or hinder access to agricultural subsidies.

Beyond the financial and institutional considerations, cultural norms and social positioning influence participation. Studies from various contexts have shown that societal hierarchies and gender roles can either hinder or facilitate participation in various contexts. A well-known example is Nepal, where male-dominated caste hierarchies meant that the higher caste, primarily wealthy farmers, had greater access to subsidies compared to the lower caste, resource-poor farmers who are the target of the programme (Thapa et al., 2023). For example, the study shows that 77.5% of sampled households had agriculture as their primary source of income, and 91.7% of those were male headed households from the Brahmin caste, a dominant caste in Nepal. The Brahmin caste demonstrated an advantageous position in accessing agricultural subsidies compared to other ethnic groups like Chhetri and Janjati. The study concluded that the Brahmin caste dominance hampered the overall success of the subsidy programme and more deserving beneficiaries were sidelined in favour of the upper caste.

Similarly, in Zambia, male-managed plots disproportionately benefited from the subsidy due to existing gender productivity gaps, marginalising female-managed plots. The research shows that significant gender disparities exist in agricultural benefits, with male plots often outperforming female-managed plots. This difference stems from various factors, including unequal access to resources, distinct input use patterns and socio-cultural norms that disadvantage women. These cultural norms and social positioning highlight the need for a policy that tackles structural inequalities hindering equitable participation (Machina et al., 2017). Thus, societal hierarchies and gender inequalities can act as subtle filters that determine who ultimately benefits from the subsidy, despite the structural design targeting resource-poor smallholder farmers.

Alongside patriarchal hierarchies, social capital—reflected in social standing and relationships—does influence participation in agricultural development programmes. In Tanzania, households with higher social capital, such as those with members in leadership positions, were found to be more likely to participate in the programme and receive more input vouchers than households with lower social capital (Pan & Christiaensen, 2011). In cases where decentralisation empowers local communities to oversee resource allocations, care should be taken to ensure that the benefits reach the resource-poor farmers who lack high social capital.

In programme designs and implementation guidelines, equitable access to resources appears simple, but in practice, it is complex. A tangled interaction of formal policy rules, local norms, and cultures shapes the programme implementations and ultimately determines who benefits from the agricultural development programme.

## 2.2 Perspectives from Sub-Saharan Africa

Sub-Saharan Africa includes over forty countries south of the Sahara Desert. Agriculture remains the backbone of this region, contributing about 60% of the labour market and up to 20% of the GDP. Smallholder farmers dominate the agricultural landscape, significantly contributing to food security by primarily growing staple food crops, such as cassava, corn, and sorghum, as well as cash crops like cotton and coffee (Jayne & Rashid, 2016).

Many governments in this region have adopted input subsidies, mainly through fertiliser vouchers and discounted or free improved seeds, to enhance productivity and rural income. When well-targeted, these programmes could boost the production of staple food crops such as maize by up to thirty per cent, thereby improving food security and income in rural areas (Chirwa & Dorward, 2013). However, evidence of uneven distribution, elite capture, and regional disparities abounds.

For a more in-depth examination of these dynamics, this section discusses major themes from Sub-Saharan Africa: Section 2.2.1, Land and Resource Constraints; Section 2.2.2, Delivery and Institutional Influence; and Section 2.2.3, Socio-Spatial and Political Economy Factors.

### 2.2.1 Land and resource constraints

The participation of smallholder farmers in subsidy programmes in Sub-Saharan Africa remains uneven and context-specific. The region has seen a resurgence of input subsidy programmes over the past few decades, with countries adopting various forms of 'smart subsidies' to enhance productivity and reduce rural poverty by increasing incomes (Jayne & Rashid, 2016).

Land tenure security and the size of cultivable land are crucial factors influencing participation in agricultural development programmes in Sub-Saharan Africa. Farmers with secure land tenure are more likely to invest in their land and adopt new technologies and practices promoted by subsidy programmes. Farmers with title deeds in Kenya have higher maize productivity and better access to credit, which are essential for taking part in a co-financing subsidy scheme (Mbudzya et al., 2022). Similarly, in Burkina Faso, Genesquin et al. (2023) found that land tenure security led to higher adoption rates of stone cordons and improved labour efficiency, which resulted in increased production. Moreover, in Zambia, farmers with secure land tenure were more likely to invest in costly and long-term land improvements, which translates into increased participation in the agricultural sector (Persha et al., 2015).

Because land tenure can be used as collateral, smallholder farmers with secure land tenure have access to funding, enabling them to fulfil the co-financing requirements of subsidy programmes. A study in Malawi found that household assets and large areas of cultivable land were positively linked to participation, suggesting that resources are necessary for participation and that resource-poor farmers were marginalised (BASIS USAID, 2016). On the other hand, insecure land tenure and small landholdings can hinder participation in agricultural development programs.

In Ghana, weak land rights among smallholder farmers have resulted in reduced farm sizes, lower productivity, and increased food insecurity (Nara et al., 2020). Thus, land and household resources influence participation in agricultural development programmes in Sub-Saharan Africa.

### 2.2.2 Delivery and institutional influence

Even when financial constraints of smallholder farmers are alleviated, programme delivery and institutional structures also hinder farmer participation in agricultural development programmes. Salma (2015) found that administrative bottlenecks and elite capture reduced participation among resource-poor farmers in Nigeria. These hindrances occur despite deliberate targeting efforts in the e-wallet fertiliser distribution programme. Another interesting study by Kinuthia (2020) is that the voucher-based subsidy system in Tanzania experienced logistical failures and political interference. The subsidy benefits did not adequately reach the most vulnerable poor farming population, undermining participation.

Beyond administrative bottlenecks, extension, both private and public, plays a vital role in ensuring farmers know, understand, and can participate in and benefit from the subsidy programme. Studies have shown that the effectiveness of agricultural extension services varies considerably depending on whether they are public or private. For example, in Ghana, private extension services excelled in areas such as information, support, and communication, whereas public extension was more effective in addressing environmental and social impact issues (Tham-Agyekum et al., 2024). Consequently, when public extension is ineffective, even well-targeted subsidies may fail because farmers lack sufficient knowledge to participate in the programme.

### 2.2.3 Socio-spatial and political influence

Proximity and access roads play a crucial role in decision-making for farmer participation in subsidy programmes. A systematic review by Hemming et al. (2018) synthesised evidence from fifteen Sub-Saharan Africa subsidy schemes, consistently ranking inadequate rural infrastructure among the top barriers hindering the redemption of vouchers for seeds and agrochemicals, including those intended for high-value horticultural crops. This observation confirms that spatial location may have a direct impact on farmer participation in subsidy programmes.

For instance, in Malawi, the Farm Input Subsidy Programme (FISP) demonstrated that farmers in geographical areas characterised by poor roads and longer travel times were 40% less likely to redeem legume seed vouchers than farmers near major market towns (Dorward & Chirwa, 2011). This disparity highlights how general seed schemes can exacerbate geographical inequalities in participation in horticultural input subsidies.

Lunduka, Ricker-Gilbert, and Jayne (2013) used district-level panel data to demonstrate that poor road conditions were associated with a 25% decrease in the adoption of subsidised legume and vegetable seeds and lower commercial fertiliser use, leading to poor crop diversification. These researcher echoes the broader findings that location and infrastructure play a significant role in enabling or constraining farmers' participation in these programmes.

This pattern is not unique to Malawi, as similar trends have been observed across Sub-Saharan Africa, where poor rural infrastructure regularly hampers farmers' ability to participate. In various contexts across Sub-Saharan Africa, poor rural road networks and great distances from input suppliers often decrease the likelihood that smallholder farmers will access subsidy packages. Their findings highlight the necessity for decentralised dealer networks or improved road connectivity to better serve farmers in rural areas.

A study in Togo found that farmers living nearer to fertiliser sale points were more likely to utilise the fertiliser subsidy than those living farther away (Yovo & Ganiyou, 2023). This difference happened because farmers living near fertiliser sale points incur lower travel costs, thereby reducing the overall co-financing threshold. Similarly, this disparity was observed in Nepal, where households located near roads were found to have higher levels of access to input subsidies, highlighting the importance of proximity in facilitating participation (Bharati et al., 2024).

Likewise, the Indian study by Nawal (2023) concluded that access roads are a significant obstacle for farmers in cultivating their land and engaging in subsidy programmes. This view is further supported by another Indian researcher, De (2018), who demonstrated that rural road infrastructure development has significantly contributed to agricultural growth, enhancing earning capacity, productivity, and improving access to various rural development schemes.

Furthermore, the political economy of large-scale input subsidies often undermines programme design, as elite capture and clientelism divert benefits away from smallholder farmers. Chisinga (2011) documented how village headmen and ruling party operatives in Malawi systematically rerouted coupons for legume and vegetable seeds to households with political connections, thus eroding trust and genuine participation in subsidy programmes. Another case study in Malawi, by Dionne and Horowitz (2016), on the political effects of agricultural input programs, proved that higher FISP uptake correlated with an 8% increase in vote shares, demonstrating that political actors manipulated seed distribution to appease the electorate.

Ricker-Gilbert, Jayne and Shively (2013) described programme elite capture as the ‘wicked problem’ of African input subsidies, where political interests in staple food crops often undermine the long-term nutritional and market development benefits of horticultural diversification, resulting in malnutrition due to the inconsistent supply of vegetables and legumes. Similar views are expressed in the literature, demonstrating that political interference can lead to the diversion of seed coupons to patronage networks, resulting in no significant improvement in dietary diversity and exposing the vulnerability of input subsidies to political capture (Walls et al., 2023).

In summary, although input subsidy schemes have demonstrated positive improvements in productivity and livelihoods in certain parts of Sub-Saharan Africa, these gains are counterbalanced by numerous challenges in other areas of the region. These challenges include structural barriers, land insecurity, infrastructure gaps, institutional deficiencies, and political manipulations. It is essential to consider how the subsidy schemes in the region impact Botswana's programs and recognise how they may have influenced horticulture-specific subsidies, such as the IAS programme.

## 2.3 Botswana's historical evolution in subsidy programmes and the emergence of horticulture subsidies

To put the evolution of Botswana's horticulture-specific subsidies into perspective, we will examine the historical development of subsidy programmes in Botswana, starting with more general and staple food crop subsidies. Specifically, this discussion focuses on early multisector programmes (section 2.3.1), the evolution of more commercial and mechanised efforts (section 2.3.2), and concludes with horticulture-specific efforts (section 2.3.3).

### 2.3.1 Early programmes: ALDEP, ARAP and NAMPAADD

Botswana's input subsidy policies have evolved, reflecting changes in national priorities and international trends. Since the early 1970s, Botswana has implemented agricultural development programmes, including subsidy programmes aimed at rural development and food self-sufficiency, a concept which later evolved into food security. These include the Arable Lands Development Program (ALDEP), the Accelerated Rainfed Arable Program (ARAP), the National Master Plan for Arable Agriculture and Dairy Development (NAMPAADD), the Integrated Support Programme for Arable Agriculture Development (ISPAAD) which had small horticulture component called the Horticulture Enterprise Support Programme (HESP) which was later changed to Impact Accelerator Subsidy (IAS) programme. IAS has undergone a few tweaks in a short period. Initially, the fund was disbursed by CEDA, and subsequently, after some revisions, it was transferred to NDB.

This policy marked a shift from staple food-only support programmes to staple food and fresh produce support programmes. Currently, the IAS subsidy programme is running in conjunction with Temo Letlotlo, a subsidy for staple food production.

ALDEP was launched in 1981 to provide draft power and inputs to resource-poor farmers to improve productivity in the arable sector. The programme supports staple food production and provides subsidies for animal draft power (donkeys, mules, oxen), animal-drawn implements and other inputs, targeting resource-poor farmers to enhance productivity. However, studies such as Seleka (1999) revealed low participation due to bureaucratic delays, disbursement delays, and inappropriate input packages. In 1985, a new ARAP programme replaced ALDEP, aiming to shift rainfed agriculture towards a more commercial model. However, the programme faced significant challenges relating to sustainability, equitable access, and the impacts of climate change, which ultimately limited its success (Masocha et al., 2024).

While these subsidies laid a solid foundation for subsidy programmes in Botswana, they were focused on staple food crops. Horticulture farmers often found themselves marginalised as these subsidies focused on broad staple food crops and livestock development.

### 2.3.2 NAMPAADD and ISPAAD

NAMPAAD was launched in the early 2000s, aiming to modernise and commercialise agriculture, focusing on both rainfed and irrigated production, and integrating Dairy development. The programme required high capital investment due to prerequisites such as a borehole and fencing for participation (Ministry of Agriculture, 2002). These gatekeeping mechanisms marginalised smallholder resource-poor farmers who could not afford such developments. As a result, the programme benefited established and well-resourced farmers (Moseley, 2016).

In 2008, ISPAAD was introduced with a broader offering, emphasising mechanised ploughing, hybrid and open-pollinated seeds, and fertiliser support. Although the programme broadened access to tractor services, weak departmental coordination, unclear guidelines, and administrative issues have hampered the effective delivery of service packages. These programmes deliberately favoured rainfed production, thus marginalising horticulture farmers (Marumo et al., 2014).

It is important to note that NAMPAADD and ISPAAD are two distinct programmes, however, both emphasised farm mechanisation and commercialisation, sometimes to the detriment of resource-poor farmers. There has consistently been a gap in horticulture-specific support, a need that motivated the design of the Horticulture Enterprise Support Programme (HESP) and the Impact Accelerator Subsidy (IAS) programme, which we will examine in the following section.

### 2.3.3 Emerging horticulture focus: HESP and IAS

It was not until the 2010s that Botswana developed horticulture-specific interventions, which are evolving rapidly and adapting accordingly. Such interventions include two programmes that are discussed below.

The Horticulture Enterprise Support Program (HESP) and the Impact Accelerator Subsidy (IAS) program were both embedded in the 'mother programme,' which focused more on staple food production. HESP was a matching grant fund programme which gave more subsidies to farmer groups, either cooperatives or companies and less to individuals. CEDA administered the fund (Ministry, 2013). The HESP review gave rise to the IAS programme, which CEDA also facilitated; however, the disbursement has now been transferred to the National Development Bank (NDB) (*ISPAAD*, 2024).

The IAS programme was launched in 2021, aiming to enhance food security by providing subsidies for protected cultivation, including shade nets, tunnels, greenhouses, inputs, and irrigation. Eligible citizens could receive a matching grant of up to BWP 300,000, approximately USD 22,000, to invest in one or more of the predefined packages (Ministry of Agriculture, 2022).

Although the recent development, especially the IAS programme, represents a clear focus on developing the horticulture sector with a clear aim to improve food security, the co-financing requirement acts as a gatekeeper, limiting access for the resource-poor smallholder farmers. Other challenges include limited access to quality inputs and inadequate access to extension services; the following discussion seeks to expand on these points.

A recent study identified several limiting factors, including high production costs and expensive inputs, low technical knowledge and poor extension services, limited access to credit, market access and infrastructure challenges, poor processing capabilities and postharvest losses, and food safety and regulatory shortcomings (Malope et al., 2025). The researchers further noted that farmers experience high losses at both the production and post-harvest stages. Again, the 50% co-financing has been identified as a barrier to participation for resource-poor smallholder farmers, who must pay their contribution upfront without any instalment option (Malope et al., 2025).

It is evident that the horticulture industry in Botswana is still in its early stages of development and is experiencing significant growth. As the sector develops, understanding the complex nature of agricultural development design and its real-world implementation remains crucial. The interaction of financial, infrastructural, institutional, and market barriers influences the overall outcomes of the programme. Although AIS represent concerted efforts to bridge gaps in earlier programmes by providing well-targeted, large-scale matching grants, their success depends on whether the programme can address real-world challenges such as lack of knowledge, upfront lump sum payment barriers, and weak extension support. These challenges are not theoretical; they are the daily realities faced by farmers, particularly those without formal horticulture training or access to financial support systems.

## 2.4 Literature review summary

The review examined various determinants of smallholder participation in agricultural development programmes, which encompassed financial barriers, infrastructural challenges, institutional limitations, and socio-cultural interference at global, Sub-Saharan African, and local Botswana contexts.

Literature sources, in the global context, repeatedly emphasised stringent co-financing requirements, typically between thirty and fifty per cent, which tend to exclude many resource-poor smallholder farmers. In agricultural development programmes, where farmers are required to own certain enabling assets or to generate a certain amount of money upfront, participation rates have been reported to decline significantly (Bardhi, 2016; Yi et al., 2023). In contrast, agricultural development programmes that provided loans at low interest rates and or flexible financing options or repayment plans have recorded higher participation from smallholder farmers (Taremwa et al., 2022; Yeasmin et al., 2024).

Apart from financial considerations, the availability of good rural infrastructure, including roads, accessible financial institutions, and transport, is seen as a contributing factor to the uptake of agricultural support programmes. For instance, in the case of Rwanda, transaction costs have been found to outweigh returns or be beyond the reach of resource-poor farmers due to poor road infrastructure and unreliable transport systems, leading to lower subsidy voucher redemption rates (Hemming et al., 2018; Yovo & Ganiyou, 2023).

The literature from Sub-Saharan Africa suggests additional region-specific limitations. The land tenure system affects productivity and farmer engagement in support programmes. Large cultivable land coupled with secure land titles has proven to increase subsidy programme utilisation; farmers with secure land tenure could use them as collateral to secure funding and meet the subsidy co-financing requirements or improve production, while their counterparts with insecure customary land titles could not (Genesquin et al., 2023; Mbudzya et al., 2022).

Programme delivery limitations, such as late delivery of input supplies, ambiguous beneficiary selection, and bureaucratic delays, resulted in elite capture and political interference (Chinsinga, 2011; Karata, 2024). Furthermore, discrepancies in the delivery of agricultural extension services leave farmers with inadequate knowledge and skills, which could hinder their ability to engage effectively with subsidy programmes (Lundukaa et al., 2013; Tham-Agyekum et al., 2024).

These policy issues, coupled with inadequate rural infrastructure, further exacerbate the inequitable distribution of resources in agricultural development programmes. Poor rural infrastructures deepen the spatial disparities, with farmers living far away from roads or market towns being twenty-five to forty per cent less likely to redeem input subsidy vouchers (Dorward & Chirwa, 2011).

The evolution of agricultural development programmes in Botswana has followed a distinct trajectory. The early agricultural development programmes such as ALDEP (1981), ARAP (1985) and NAMPAADD (2000) emphasised production mechanisation, draft power and staple food crops, but had gatekeeping requirements such as ownership of boreholes or fencing, which marginalised smallholder farmers who do not possess such assets (Moseley, 2016; Seleka, 1999). The introduction of ISPAAD in 2008 prioritised staple food crop production under the rainfed system (Marumo et al., 2014) and did not include horticulture. However, later on, the ISPAAD included the horticulture component, which was termed HESP.

It was not until 2021 that a horticulture-specific and elaborate development programme was designed, the IAS programme. The IAS programme provided a 50% matching grant for protected production, solar or grid electricity, inputs, and irrigation equipment (Malope et al., 2025). Despite this shift, literature identifies insurmountable barriers, such as smallholders struggling to meet the fifty per cent co-financing requirement, which must be paid upfront; challenges with extension service delivery; expensive inputs; and water scarcity, which escalates production costs in the semi-arid Botswana environment.

These findings underscore the complex relationship that enables or impedes smallholder farmers' engagement with agricultural development programmes. The same core issues continue to resurface throughout the literature: high core financing thresholds, poor infrastructure, institutional weaknesses, and limited extension support.

The review of Botswana-specific agriculture development programmes revealed a long history of using multi-staple crop subsidies and a shift towards more horticulture-focused programmes, such as IAS. Despite this change in focus, many of the same obstacles persist, particularly the ongoing challenge of co-financing requirements, inadequate rural infrastructure such as roads and market access points, and limited extension services that hinder farmers' capacity. These challenges highlight that policy design alone is not sufficient without fundamental changes on the ground. Farmers continue to face affordability constraints, capacity gaps, and limited support structures, particularly those operating on smaller scales.

This literature review chapter sets the stage for the empirical analysis, which will explore the diverse experiences of participants, intended participants, and non-participants in the IAS programme. Drawing on semi-structured interviews, the following chapters will unpack how farmers navigate eligibility issues, financing hurdles, and institutional processes on the ground. The themes identified in the literature review, particularly those related to access, implementation, and support, will inform the interpretation of the experiences of different farmer groups participating in Botswana's IAS programme. This understanding will enable us to observe how global and regional trends manifest in the specific lived realities of Botswana's smallholder horticulture sector. Ultimately, the review will not only identify recurring barriers but also provide a grounded lens through which to interpret the voices of farmers in the following chapters.

# Chapter 3: Research Design and Analytical Strategy

## 3.1 Research Design and Approach

This study employs a qualitative, exploratory case study approach. Qualitative case studies are suitable for in-depth examination of contemporary phenomena within real-life contexts, particularly when answering exploratory questions focused on the 'how' and 'why' (Baskarada, 2014; Nowell et al., 2014). The case study design enables a contextualised exploration of smallholder farmers' experiences and perspectives regarding participation in agricultural development programmes, such as the Impact Accelerator Subsidy (IAS), without favouring or following any specific theoretical framework.

## 3.2 Case Study Context

This study focuses on understanding the determinants of smallholder farmers' participation in Botswana's Impact Accelerator Subsidy (IAS) programme, using Kweneng District as a case study area. The IAS programme is a national initiative introduced by the government of Botswana under the Ministry of Lands and Agriculture (MoLA), aimed at revitalising the horticultural sector and smallholder participation in commercial production. The programme addresses historical barriers in the horticultural value chain by providing partial input subsidies (matching grants), promoting modern production technologies, and linking farmers to markets (Ministry of Agriculture, 2022).

Botswana's overreliance on food imports, particularly horticultural products, has long been identified as a threat to national food security and economic diversification (Statistics Botswana, 2021). As a result, the government of Botswana has launched several initiatives targeting smallholder farmers, with the IAS programme standing out as one of the most targeted and transformative interventions in recent years.

The researcher selected Kweneng District as the study site because of its diverse agroecological conditions, strong presence of smallholder horticultural farmers, and active participation in the IAS programme. The district represents the peri-urban and rural horticulture contexts, making it a useful microcosm for examining national-level trends.

The research aims to respond to two core questions:

1. How are smallholder farmers participating in the IAS programme?
2. What are the determinants of smallholder farmers' participation in the IAS programme?

The study examines participation patterns, enablers, and barriers using qualitative data from smallholder farmers and key informants in the implementation of the IAS programme. Understanding the rationale and implementation of the IAS programme is crucial for this analysis. The programme aims to accelerate productivity through an innovative subsidy model, where farmers co-invest with government support rather than relying solely on full subsidies. This approach aligns with recommendations from the FAO and the African Development Bank (AfDB), which suggest that blended finance models can better empower smallholders and ensure programme sustainability (Boamah et al., 2019; Food and Agriculture Organisation (FAO), 2021).

Online searches on common databases, such as Google Scholar, Scopus, and Discover, yielded no results regarding literature on the Impact Accelerator Subsidy (IAS) programme in Botswana or any horticulture-specific subsidy programmes. However, a study by Malope et al. (2025) in Botswana, which focuses on horticulture value chain opportunities and constraints, was conducted within the context of the IAS programme. It sheds some light on the challenges that farmers face, including implementation gaps such as delays in disbursement, limited extension support, and inadequate monitoring. The scarcity of literature underscores the need for empirical evidence that reflects farmers' experiences and institutional intentions.

This case study will, therefore, contribute to the broader discourse on agricultural subsidies in Sub-Saharan Africa by presenting evidence from Botswana's evolving horticulture development mechanisms. The study will provide essential policy-relevant insights that can enhance programme delivery and promote inclusive participation among smallholder farmers.

## 3.3 Data collection and sampling strategies

The data collection and sampling employed a purposive sampling approach to ensure that the diverse views and experiences of farmers were represented in this study. The following table shows the sample groupings used, which included key informants, participants, intended participants and non-participants. Table 1 below shows the groups of study participants, along with an explanation of each grouping and the number of participants in each group.

### Table 1: Sample groups

| **Sample group** | **No. of participants** | **Explanation** |
|---|---|---|
| Key informants (KI) | 9 | People with key knowledge of the design and implementation of the programme |
| Participants (P) | 6 | Horticulture smallholder farmers who benefited from the IAS programme, either by taking one or more packages from the programme. |
| Intended participants (IP) | 6 | Horticulture smallholder farmers who applied for the IAS package but withdrew for any reason. |
| Non-participants (NP) | 6 | Horticulture smallholder farmers who are reluctant to apply for IAS packages. |
| **Total number of participants** | **27** | |

Due to time and resource constraints, only twenty-seven (27) participants were interviewed.

The data collection employed a two-method strategy consisting of:
Semi-structured interviews were conducted with nine key informants, including programme implementers, representatives from farmer groupings, market actors, and input suppliers, as well as nineteen farmers categorised into participants, intended participants, and non-participants. Guided conversations facilitated rich, detailed, and unconstrained narratives from respondents, thereby enhancing data depth (Gray, 2014).

Purposive sampling was chosen strategically to ensure that the sample represents a comprehensive range of diverse experiences and perspectives related to IAS participation. This approach supports targeted theoretical sampling, ensuring data relevance and quality (Baskarada, 2014; Palinkas, 2013).

The following table shows the semi-structured interview guides for both farmers and key informants (Table 2).

## Table 2: Key informants and farmers' interview guide

| No. | Key informants' interview guides | Smallholder horticulture farmers' interview guides |
|---|---|---|
| 1 | Background of the key informant | Background of the farmer |
| 2 | Objectives of the IAS programme | Farmers' experiences in the sector |
| 3 | Patterns and determinants of farmer participation in the IAS | Farmers' understanding, experiences and perception of the sector and IAS |
| 4 | Farmers' perceptions of the horticulture sector and the IAS | |

Other data collection methods included document analysis and on-field observations. The study utilised one end-of-year District Horticulture Office report for the year ending December 2024, along with the IAS 2022 and 2024 programme implementation guidelines, to place the findings within broader organisational and operational contexts. Field observation notes were also taken to enhance the findings. The issues noted comprise infrastructure observed on the farm, farmers' feelings and emotions when discussing various matters, and the current condition of the roads leading to the farm.

## 3.4 Data analysis strategy

The thematic analysis was conducted following Braun and Clarke's robust six (6) phase framework (Ahmed et al., 2025), and the process is elaborated below.

### 3.4.1 Phase 1: Familiarisation with the data

The process began with the verbatim transcription of interviews with eight key informants. A quick analysis of these led to 3 groupings of farmer categories: participants, intended participants and non-participants. Then, two interviews from each category of 'participants', 'intended participants', and 'non-participants' were transcribed. Transcription involved casually listening to the recorded interview to get a general overview.

Then, listening to the interview and transcribing verbatim, taking a health break, listening to fill in any omissions made, and lastly, listening to confirm that the transcription is a true reflection of the record. The transcripts were read four times, with notes taken in the margins to capture key ideas and ensure that no critical points were overlooked.

Questions about the 50% contribution, frustrations with poor extension service, references to dry boreholes, market gatekeeping, and similar issues were raised. On the fourth reading, no new themes emerged, so the process was stopped. The remaining interviews were transcribed, and notes were taken on key issues raised. Likewise, no new themes appeared on the fourth listening, so the process was halted. These processes were conducted according to the categories outlined above for the respondents. The annotations on the margins formed the basis for systematic coding in phase 2.

Figure 3 below shows an annotation example from a non-participating farmer.

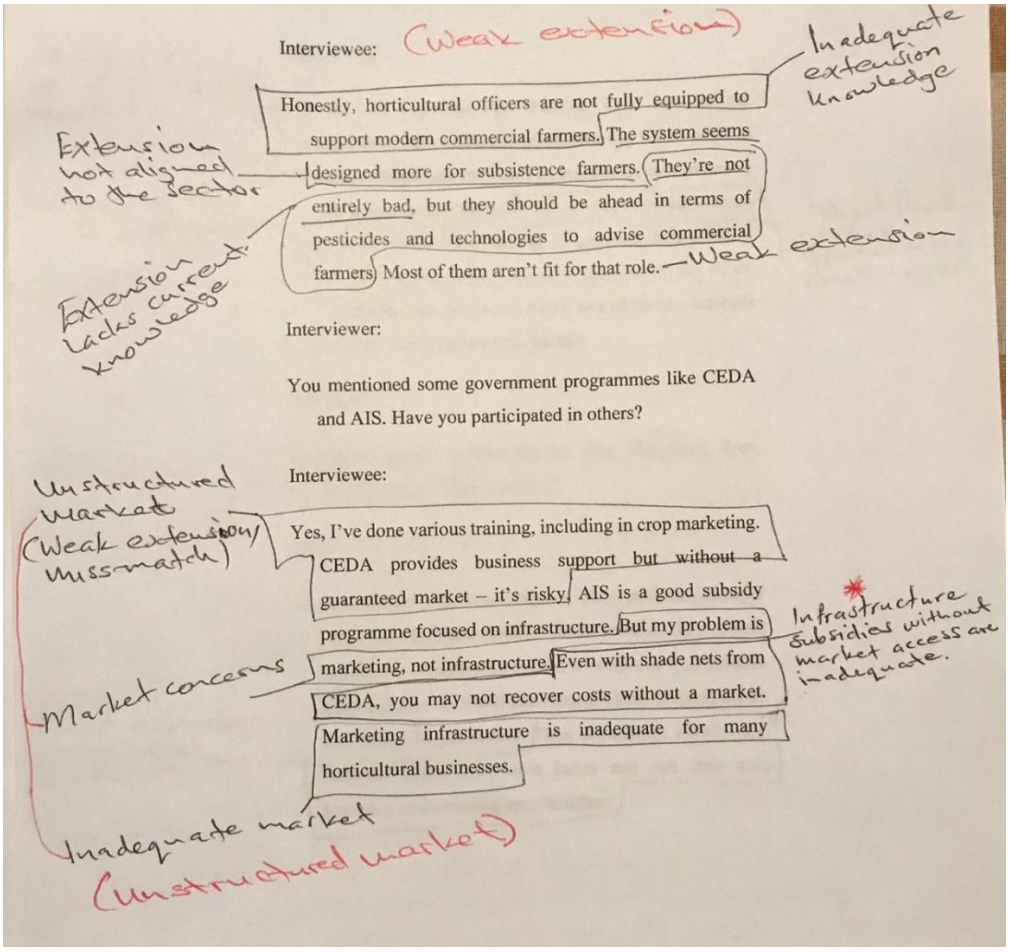


**Figure 3: Example of interview transcript annotation**

### 3.4.2 Phase 2: Generating initial codes

When an important idea is identified, data-driven code is developed to represent that idea or ideas. The following Table 3 presents codes and supporting quotes from the interview data. Respondents' names are coded as follows: KI for Key Informants, P for Participants, and NP for Non-Participants. Each code is assigned a number to distinguish individual participants while maintaining confidentiality.

**Table 3: Data codes and corresponding quotes (sample)**

| No | Codes | Quotes |
|---|---|---|
| 1 | High mandatory contribution | "Raising 50% of 400,000 Pula is not easy. Where will you get that money?" -NP1<br>"The only barrier with the programme is that you have to raise your 50% before the government can pay the other 50%." – P1.<br>"They struggle to raise a 50% contribution. Look, some of the applications in that box have long been approved, and the farmers are not paying."-KI4. |
| 2 | Extension service gaps | "Extension officers stay in their offices; they do not know what is happening on the ground." – NP2.<br>"They oversimplify the issues… they do not understand the marketing side." -NP1.<br>"They are not doing enough to check on us or advise us."-P1<br>"Extension is not visible; even when people use sewage water, they are not there to check if they follow the regulations." – KI4 |

### 3.4.3 Phase 3: Searching for candidate themes

The following code groupings were made, and initial themes were developed as candidate themes (Table 4).

**Table 4: Candidate themes (sample)**

| No | Theme | Codes | Quotes |
|---|---|---|---|
| **1** | Financial barriers and co-financing | High mandatory contribution | "Raising 50% of 400,000 Pula is not easy. Where will you get that money?" -NP1<br>"The only barrier with the programme is that you have to raise your 50% before the government can pay the other 50%." – P1, IP2, NP1.<br>"They struggle to raise a 50% contribution. Look, some of the applications in that box have long been approved, the farmers are not paying."-KI3, IP2, NP1. |
| | | Loan approval and disbursement delays | "Sometimes CEDA takes a long time to approve their loans." -KI2, P1.<br>"The farmers sometimes do not have money to pay the 50%." -KI2, P2<br>"Some farmers have long paid their 50% contribution 5 months ago, but have not been funded. We are waiting for the new financial year." -KI2. |
| **3** | Institutional support and extension delivery | Extension service gaps | "Extension officers stay in their offices; they do not know what is happening on the ground." – NP1, P1, IP3.<br>"They oversimplify the issues… they do not understand the marketing side." -NP1.<br>"They are not doing enough to check on us or advise us."-P1, NP2<br>"Extension is not visible, even when people use sewage water, they are not there to check if they follow the regulations." – KI3, P1 |

### 3.4.4 Phase 4: Reviewing themes

Candidates' themes were reviewed to determine whether they form meaningful and distinct patterns in the data. This step also ensured that no critical data had been left out. The reviewing process went through three iterative loops, checking for ‘within theme coherence,’ to see if all extracts under the theme belong together; ‘Between theme distinction,’ ensuring that not two themes say the same thing; and lastly, ‘Data coverage,’ to assess that the themes capture the breath of relevant data and no critical data is omitted.

This systematic approach, which involved within-theme coherence, between-theme distinction, and data coverage reviews, led to the identification of nine distinct inductive themes that comprehensively capture farmers’ experiences with the IAS programme. The following table outlines the review process for the nine themes presented above (Table 5).

## Table 5: Review process for final themes

| No. | Theme | Within theme coherence | Between theme distinction | Dataset coverage |
|---|---|---|---|---|
| 1 | Finance barrier and co-financing | Integrated inadequate water capacity rejections by funders under co-financing and ensured that all quotes pointed to access to funding. | Maintained a clear separation between the barrier and the response. Kept separate from alternative funding. | The late disbursement quote was added to ensure saturation. |
| 3 | Institutional support and extension delivery | Consolidated all advisory gaps such as visibility, relevance, and quality. | Focused on service delivery only and excluded policy-level discrepancies. | Added transport and monitoring constraints from unconnected lines |

### 3.4.5 Phase 5: Defining and naming final themes

Final themes are outlined and defined in Table 6 below.

## Table 6: Final themes and their definitions

| No. | Theme | Definition |
|---|---|---|
| 1 | Financial barriers and co-financing | Hinderances due to mandatory upfront farmer contributions and delays in loan or subsidy disbursement. |
| 2 | Market dynamics and price taking | The impact of fragmented retail channels, vendor networks, and pricing practices on farmers' ability to secure fair prices and stable market access. |
| 3 | Institutional support and extension delivery | Adequacy, visibility and responsiveness of agricultural extension services in guiding and supporting farmers under the IAS programme. |
| 4 | Infrastructure and environmental constraints | Inadequate water infrastructures, transport logistics and weather variability that undermine programme uptake. |
| 5 | Social and association dynamics | Labour availability, farmer associations, cultural norms, and government social programs shape participation in the IAS programme. |
| 6 | Programme design, policy uncertainty and mistrust | Limitations of the IAS packages, frequent policy changes, and poor information dissemination generate confusion and cause mistrust in the subsidy programme. |
| 7 | Transformative IAS packages | The positive impact of the IAS programme includes solar irrigation, the acquisition of large reservoirs, and the production of off-season crops. |
| 8 | Using alternative funding sources | Farmers are resorting to using alternative means, such as self-financing and the Youth Development Fund, as they perceive the IAS as unfavourable to them. |
| 9 | Market manipulation | Retailers' price-cutting practices (gatekeeping) that undermine farmers' competitiveness and justify the imports of fresh produce. |

Figure 4 below shows Braun and Clarke's six phase thematic analysis framework, illustrated in a simple visual form by McLead (2024).

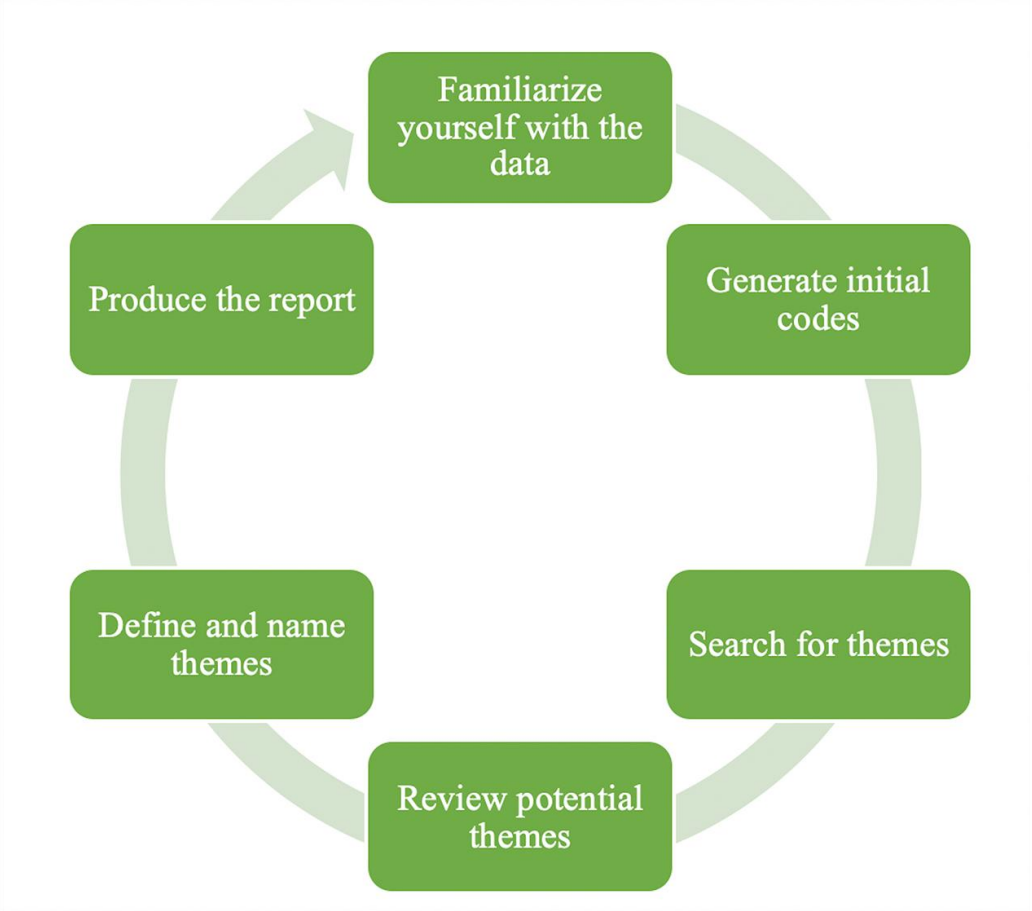


**Figure 4: Six-phase thematic analysis diagram**

Source: (McLead, 2024)

### 3.4.6 Phase 6: Writing the report

(see chapter 5, Findings of the research)

Findings were synthesised into a coherent narrative, clearly linking themes with the research questions. Representative quotes provided evidence and proof, enhancing analytical depth and interpretative clarity. Findings were organised using thematic tables (see Chapter 4: Research Findings).

## 3.5 Trustworthiness

To assure trustworthiness, two validation strategies were employed:

### 3.5.1 Methodological and data source triangulation

To enhance the credibility and depth of the findings, this study employed triangulation by using multiple data collection methods and sources. The data were collected through semi-structured interviews with farmers and key informants, document analysis of IAS implementation guidelines and official reports, and direct field observation notes. This combination of methods enabled a comprehensive understanding of how smallholder farmers engage with the IAS programme, while allowing cross-validation of insights across different stakeholder groups and types of information. (Baskarada, 2014; Nowell et al., 2017).

### 3.5.2 Reflexivity

Reflexivity was consistently upheld, recognising the researcher's positionality as a smallholder farmer and agriculture expert. Continuous awareness and intentional reflection were employed to minimise biases and accurately represent the participants' voices. When interviewing the respondents, the researcher was mindful of allowing them to express themselves without influencing their responses. When discussing the findings, the researcher was careful not to infuse their understanding but to allow themes to emerge from the data.

## 3.6 Ethical considerations

Ethical considerations were carefully addressed. Ethical clearance was obtained from the Massey University ethics committee, application ID No. 4000029939, and the study was classified as low-risk (clearance letter attached). All participants provided informed consent before the commencement of the interviews (Appendix 1: Information sheet; Appendix 2: Participant consent form, and Appendix 3: Participant consent form-Photos and video clips). Participation was voluntary, and participants could withdraw at any time without penalty. Two key informants and five farmers withdrew or declined to participate, emphasising the voluntary nature.

Anonymity and confidentiality were guaranteed, and all data were securely stored on the laptop with a user password to prevent unauthorised access. The respondents' names were replaced with a code ID, and their positions were not mentioned, except for their categories, such as participants, intended participants, non-participants, and key informants.

## 3.7 Scope of the Study

The scope of this study is clearly defined, focusing on the participation of smallholder farmers in the Impact Accelerator Subsidy (IAS) programme in Botswana's Kweneng District. The research focused on horticulture farmers with varying levels of engagement with the IAS programme. Purposeful sampling was used to ensure that a range of experiences, whether positive or negative, were captured directly from participants involved in the subsidy programme. The study excluded any farmer primarily focusing on agricultural sectors other than horticulture.

Although the narrow focus improved the depth and contextual relevance of the findings, it also introduced some challenges. The research strategy, case study, and qualitative approach meant that the results are specific to the context and may not be generalised beyond smallholder horticultural farmers in Kweneng District (Nowell et al., 2017).

Qualitative research prioritises depth over breadth. Therefore, transferability to other districts and or programmes must be approached cautiously.
Ongoing reflexivity reduced the researcher's positionality biases. However, the researcher's professional background and experiences in horticulture may have subtly influenced the interpretation of the data. The study also relied on the participants' self-reported experiences, which may be subject to recall bias or social desirability bias. The absence of a formal reflexive journal is also recognised as a methodological omission that limited the thoroughness of the thematic analysis. Acknowledging these discrepancies aligns well with qualitative research standards, which emphasise a bounded context and reflexive awareness to enhance the credibility of the findings and the depth of interpretation (Creswell & Poth, 2018).

# Chapter 4: Patterns and context of smallholder farmer participation in the IAS programme

## 4.0 Introduction

This chapter examines the engagement of smallholder farmers in Kweneng District with the Impact Accelerator Subsidy (IAS) programme. Based on interviews, official reports, and insights from key informants, farmers are categorised into three distinct groups: participants, intended participants, and non-participants. This classification aims to answer Research Question One (RQ1): How are smallholder farmers participating in the IAS programme? This structure will facilitate an in-depth examination of participation patterns, institutional mechanisms, and socio-economic contexts that influence farmers' engagement with the programme. Furthermore, the chapter provides the context in which the IAS programme is implemented, which may influence how farmers engage with the programme.

Although the farmers were categorised based on their level of engagement with the IAS programme, they faced similar challenges across all three categories, especially regarding market access, water scarcity, transport, and weak extension support. Whether a farmer was successful in their application, abandoned it halfway, or was excluded altogether, they encountered comparable struggles, such as navigating unstructured horticulture markets, high input costs, and insufficient institutional support. What sets these groups apart is not necessarily the nature of their challenges but how they were positioned to handle them. Participants often had more resources available to support them in overcoming these barriers because they were mainly from the working class. In contrast, the intended participants and non-participants, who were either retired or unemployed, faced these challenges unaided, which influenced their level of engagement with the programme.

A search in common databases, such as Scopus, Google Scholar, and Discover, for demographic information on horticulture farmers in Kweneng District yielded no results. However, a recent study by Malope et al. (2025), titled "Opportunities and Constraints in the Horticulture Sector in Botswana: A SWOT Analysis," focusing on nine districts, including Kweneng, revealed important insights. The study sampled 102 farmers. It showed that 71% of the horticulture farmers interviewed were male, while 29% were female. Of these, 99% had received formal education: 58% had completed secondary education, 36% had pursued tertiary education, and only 1% had received non-formal education. Additionally, 56% of the farmers had received short courses in horticulture, while 44% held certificates, diplomas, or degrees in the field of horticulture. The farmers' ages ranged from 30 to 70 years, with the following distribution: 40-49 years, 31%; 30-39 years, 28%; 50-59 years, 20%; 60-69 years, 9%; and 70 years and above, 2% (Malope et al., 2025).

According to Malope et al. (2025), the total hectarage of the surveyed 102 farmers was 289 hectares, giving an average of 2.83 hectares per farmer; thus, all fall under the Ministry of Lands and Agriculture classification of small-scale horticulture farmers. Of this hectarage, 85% was open field, 12% had shade nets, 7% had tunnels, and only 2.4% had greenhouses. There was no hydroponic production reported. This suggests that a substantial amount of the horticultural output occurs on open fields, despite harsh weather conditions.

Although this study did not focus on the respondents' demographic information, only one out of twenty-seven was under 40 years old, three were females, and all had tertiary education. They were either working or retired, with only one being an unemployed graduate.

## 4.1 Participants: farmers who successfully accessed the IAS programme

This category is of farmers who applied, were approved, and paid the 50% co-payment required under the IAS programme. The majority benefited under the 2022 guidelines.

Five out of the seven farmers in the participant category had some form of protected cultivation structure, with four utilising shade nets and one using tunnels; all of them used solar pumps for their boreholes. All the respondents utilise drip irrigation systems. None of the respondent farmers live on the farm; although a few have houses on their farms, all live in villages or cities, and mostly commute to the farm on weekends or as needed.

All respondents, including participants, intended participants, and non-participants, used the same marketing channels and faced similar challenges regarding these markets.

### 4.1.1 Supermarket channel

The respondents in this study sell their produce through various channels within the district and in the capital city, Gaborone, due to its proximity. These outlets include retailers and supermarkets, which appear to be the most preferred because they buy in bulk. However, gaining access is challenging because of strict quality standards, issues with price manipulation, and barriers such as the need for connections or paying bribes to register for delivery, as reported by the respondents. The farmers are required to deliver the vegetables to the supermarkets at the agreed time, often travelling from one shop to another, which increases their overhead costs.

### 4.1.2 School feeding programme

The second preferred market is government primary schools. Farmers report reasonable prices but inconsistent supply. Farmers must alternate the supply to the schools, with two or three farmers per school. The challenge is that farmers often end up with excess produce during school vacations. Another issue with the primary school market is that the food supply from the Local Council is inconsistent, and they often lack the oil or spices needed to cook the vegetables.

Farmers reported needing to make agreements with the schools to buy either oil or spices so they can deliver to the schools. If they fail to do so, the schools stop the farmers from delivering since there are no oil or spices to use. The arrangement is such that if a farmer supplies a hundred bundles of rape, they may only supply seventy bundles and use the value of the remaining thirty bundles to buy the needed oil or spices. The farmer will then be paid as if they provided the full hundred bundles. This means farmers should have cash available on the day of delivery to buy the oil or spices.

### 4.1.3 Hawkers

The third market is the hawkers, who operate roadside informal markets. Although they may place orders, they usually buy from the farmers who arrive first in the market in the morning. Unlike other market channels, they are reported to pay cash on delivery, and in rare cases, they pay the following day. They buy in small quantities enough to sell in one go, so a farmer needs several hawkers to sell reasonable quantities. Like supermarkets, farmers have to run from place to place to deliver their produce.

### 4.1.4 Direct roadside sale

Some farmers reported selling directly to customers by parking their trucks by the roadside and selling. The farmers mentioned that they have to spend the whole day selling. This option is not convenient for the working class, as they often do not have time, since they mainly work on farms and are only available on weekends. Also, most farmers, except for two, do not have dedicated farm trucks. Instead, they use their small trucks, which they also use to go to work, to sell the produce. Some of them reported having to be late for work because they had to deliver the vegetables in the morning before going to their jobs.

### 4.1.5 Letsema Horticulture Market

Of all the interviewed farmers, none are selling to the newly established Letsema Horticulture Market in Gaborone, citing a complex registration process and accreditation requirements, and claiming that the market offers nothing different from other channels. Letsema Horticulture Market is a new government initiative under the Citizen Entrepreneurial Development Agency (CEDA), aimed at structuring the horticulture market. The market commenced operations in 2024. Farmers must register with the market; then, a team of inspectors will visit their farms to assess whether they meet the required standards before approving them to supply. Once approved, the market will place orders for the farmers to supply as needed, when demand arises. The market is also said to provide a cold storage facility for the farmers.

There is currently only one marketplace facility for Letsema Horticulture Market in Gaborone. The market buys from farmers, promises to pay within five days, and then adds a markup before selling to its customers. Respondents felt that this process is tedious and does not offer anything different from other market channels. Registration is completed online (Letsema Horticulture Market, n.d).

## 4.2 Intended participants

Intended participants are farmers who applied but abandoned the process halfway through. The report from the Kweneng District Horticulture Office, dated January 2025, revealed that 237 farmers in Kweneng had applied for the subsidy since the programme's inception in 2021. Of these applicants, 222 were approved, with 157 managing to pay the 50% contribution, while 65 had not yet made the payment. Twelve applications were awaiting assessment, two were deferred pending farmer compliance, and one was rejected. Among the applicants, 93 were female and 144 were male. The total subsidy disbursed in Kweneng District since the programme's inception amounted to 12,846,237.75 BWP.

The intended participants accounted for approximately 34% of the applicants, which is a significant proportion. These farmers demonstrated intent but were unable to complete the process due to cost barriers, unmet requirements, or delays in the application procedure. Their aborted engagement efforts still reflect the broader reach and limitations of the IAS programme.

## 4.3 Non-participants: farmers who did not apply for the IAS programme

Key informants, who are leaders in the farmers' associations, revealed that many farmers did not participate in the subsidy compared to those who did. Combining this information with the insights from key informants involved in implementing the IAS programme and the District Horticulture Office report, farmer categories were defined as participants, intended participants, and non-participants. These categories reflect the different levels of farmer participation in the IAS programme in Kweneng District.

There are a total of sixteen extension areas in Kweneng District, with ten in the north and six in the south. Key informants revealed that there are more farmers in the north than in the south, with over 300 farmers farming in the northern part of Kweneng. The high density of farmers in Kweneng North may be due to its proximity to the capital city, Gaborone, which is the central market hub and has a relatively shallow water table. Farmers in the south report boreholes as deep as 200 to 300 metres, while in the north, they mostly report water at around 100 metres, with high borehole yields. Only two horticulture specialists manage the sixteen extension areas: one is stationed at the district office in the south, serving six extension areas, and another is at an extension office in the north, which serves ten extension areas.

Most of these areas have general extension officers who focus on all aspects of crop production. Farmer respondents have complained that these officers are more experienced in staple crop production rather than horticulture. Many of these non-participants face exclusion due to these institutional constraints or a lack of trust in the system. Yet, they remain active horticulture farmers, often operating independently.

These farmer categories exist and operate within specific policies, agro-ecological, and socio-economic contexts. Below, we will explore the environment in which these farmers operate and engage with the IAS programme. These contextual issues are important as they influence how different farmer categories, given their distinct contexts and positionality, interact with the policy.

## 4.4 Institutional and policy context embedded in participation

### 4.4.1 Policy background

The Impact Accelerator Subsidy (IAS) programme is a horticulture-specific subsidy initiative in Botswana that aims to help farmers acquire necessary production infrastructure and inputs to boost production and enhance food security. The programme offers a 50:50 matching grant, where farmers pay 50% of the required package to receive the government's 50% subsidy. Launched in 2021, formal implementation began in early 2022.

The subsidy fund was initially administered by the Citizen Entrepreneurial Agency (CEDA) but was later transferred to the National Development Bank (NDB). Each farmer could access a maximum of 300,000 Botswana Pula (BWP), equivalent to approximately USD 22,600. This amount served as the ceiling for all packages, with each package having its ceiling. The subsidy was redeemed through an upfront lump sum cash payment, paid directly to the supplier, without an option for a payment plan.

By December 2023, the IAS programme was reviewed to include some packages not covered in the 2022 guidelines and the total subsidy was reduced to 250,000 Botswana Pula (BWP) from 300,000 Botswana Pula (BWP). More details on these packages will be provided in the following sections. The application for the IAS subsidy was submitted at the local extension office, routed through the District Crop Production Office, and then forwarded to the NDB for subsidy disbursement.

The 2022 guidelines required the farmer to pay directly to the supplier and then provide proof of payment to the NDB, which would then pay the supplier and redeem the package. However, under the 2024 guidelines, the farmer pays NDB first, which then authorises the supplier to supply and install the required package and subsequently pays the supplier in full upon satisfactory completion of the project. The following sections detail the IAS modality.

### 4.4.2 Programme objectives

The IAS supports horticulture farmers with capital investment subsidies to help reduce production costs and promote the adoption of climate-smart technologies. The programme aims to assist farmers with development up to a maximum of one hectare. It began in 2022 and was revised by December 2024.

The 2022 IAS implementation guidelines, under which this study's respondents benefited, had the following objectives:

1. To enhance the production levels of horticultural products
2. To generate employment opportunities
3. To provide infrastructure for production and essential inputs
4. To encourage protected cultivation
5. To promote the use of green technologies to boost food production efficiency

While the 2024 IAS implementation guidelines list the following objectives:
1. To provide essential inputs
2. To promote horticulture cultivation
3. To improve horticultural irrigation and mechanisation
4. To promote green energy and post-harvest management

Although there is a slight difference in the wording of the objectives, they largely remain the same and aim to achieve the same results.

### 4.4.3 IAS eligibility criteria

Under both the 2022 and 2024 frameworks, the IAS assist both existing and new farmers, including those who previously benefited from other programmes. Existing farmers can choose any package they prefer. New farmers, on the other hand, can also select any package. However, they are required to choose packages that enable full production, meaning they must include inputs such as seeds and agrochemicals, or demonstrate the ability to purchase them.

The eligibility criteria for both programmes include:

1. The applicant must be a citizen of Botswana aged 18 years or older.
2. Be a full-time owner-managed business or have a full-time manager with the necessary skills.
3. Applicants must provide proof of land tenure, such as a ploughing field certificate or lease. The minimum lease period is five years for vegetables and ten years for fruit trees.
4. Availability of irrigation water through a valid borehole certificate or water right.
5. The irrigation water quality must meet BOBS standards BOS 463:2011 standards.
6. An assessment report of the field conducted by the Ministry of Lands and Agriculture.
7. Water and soil analysis reports from an accredited laboratory.

Furthermore, the 2024 guidelines include:

8. An in-kind contribution as part of the 50% cost share, subject to assessment and verification.

### 4.4.4 The structure and components of the IAS packages

The IAS operates on a 50-50 cost-sharing or matching grant, where the farmer contributes 50% of the cost of the package or packages upfront in full payment, and the government contributes the other 50%. There are minor differences between the 2022 and 2024 guidelines, with the 2022 guideline allowing strictly cash payments, while the 2024 guideline permits pre-investment infrastructure to be used as an in-kind payment. It should be noted that the in-kind contribution infrastructure must be related to the package being applied for; for example, you cannot use borehole equipment as in-kind payment for erecting a shade net. However, if you have poles and wires for erecting a shade net house, such items can be used as in-kind payment towards purchasing the net needed.

The government has set ceiling prices to curb unreasonable price inflation. These prices represent the maximum amount a package can cost, with the farmer paying half this price and the government covering the other half. The 2022 packages and their limits are as follows:

1. Shade house or tunnel structure - BWP250,000
2. Irrigation equipment and reservoir – BWP100,000
3. Borehole equipping – BWP50,000
4. Power connection (GRID OR SOLAR) – BWP300,000
5. Packhouse infrastructure – BWP 250,000
6. Production inputs:

Seeds/seedlings – BWP50,000

Fertiliser/pesticides – BWP50,000

Packaging – BWP25,000

The 2024 guidelines provided the same packages and included some machinery, such as small walk-behind tractors and other production equipment for small-scale farms, as well as mushroom structures. They also specified the specifications of all the packages for quality control. The main difference between the 2022 and 2024 arrangements is the reduced ceiling, from 300,000 in 2022 to 250,000 in 2024. The 2024 guidelines introduce more rigorous implementation and monitoring to enhance compliance, including the inspection of goods by the Ministry of Lands and Agriculture staff upon delivery. Suppliers will be paid only after the complete and satisfactory delivery and installation of the required package.

Table 7 below compares the 2022 and 2024 IAS guidelines.

## Table 7: Comparison of the 2022 and 2024 IAS guidelines

| No. | Aspect | 2022 IAS guidelines | 2024 IAS guidelines |
|---|---|---|---|
| **1** | Funding cap | 300,000 BWP per application | 150,000 BWP general cap and 250,000 BWP for greenhouse and centre pivot irrigation system |
| **2** | Packages | Tunnels, irrigation, packhouse, shade nets, borehole equipping, inputs | Expanded the list to include drones, mushroom structures, ICT gadgets, hydroponics, and tractors |
| **3** | Contribution type | Cash only | Cash plus or in-kind through prior investment in infrastructure |
| **4** | Application frequency | Every 6 months, on full utilisation of the purchased packages | As needed, if the cap is not reached |
| **5** | Water requirements | Borehole yield 2.5$m^3$/hrs minimum | Same with 1.5$m^3$/hr for mushroom and hydroponics |
| **6** | Supplier rules | Not elaborated | No self-supply, conflict of interest, blacklisting companies which do not abide by the rules |

In summary, the IAS is a key policy in Botswana's efforts to promote the commercialisation of smallholder horticulture farmers. The 2022 version offered higher value per package, which might have encouraged greater uptake, but lacked close oversight. While the 2024 version has enhanced monitoring and incorporates more technology, such as machinery for production and post-harvest processes, it has reduced the value and could lead to slower adoption. However, the 2024 framework was short-lived as the programme was halted due to a shortage of funds and may be under review.

The following diagram (Figure 5) summarises the IAS implementation process, providing a visual and comparative overview of the 2022 and 2024 guidelines.

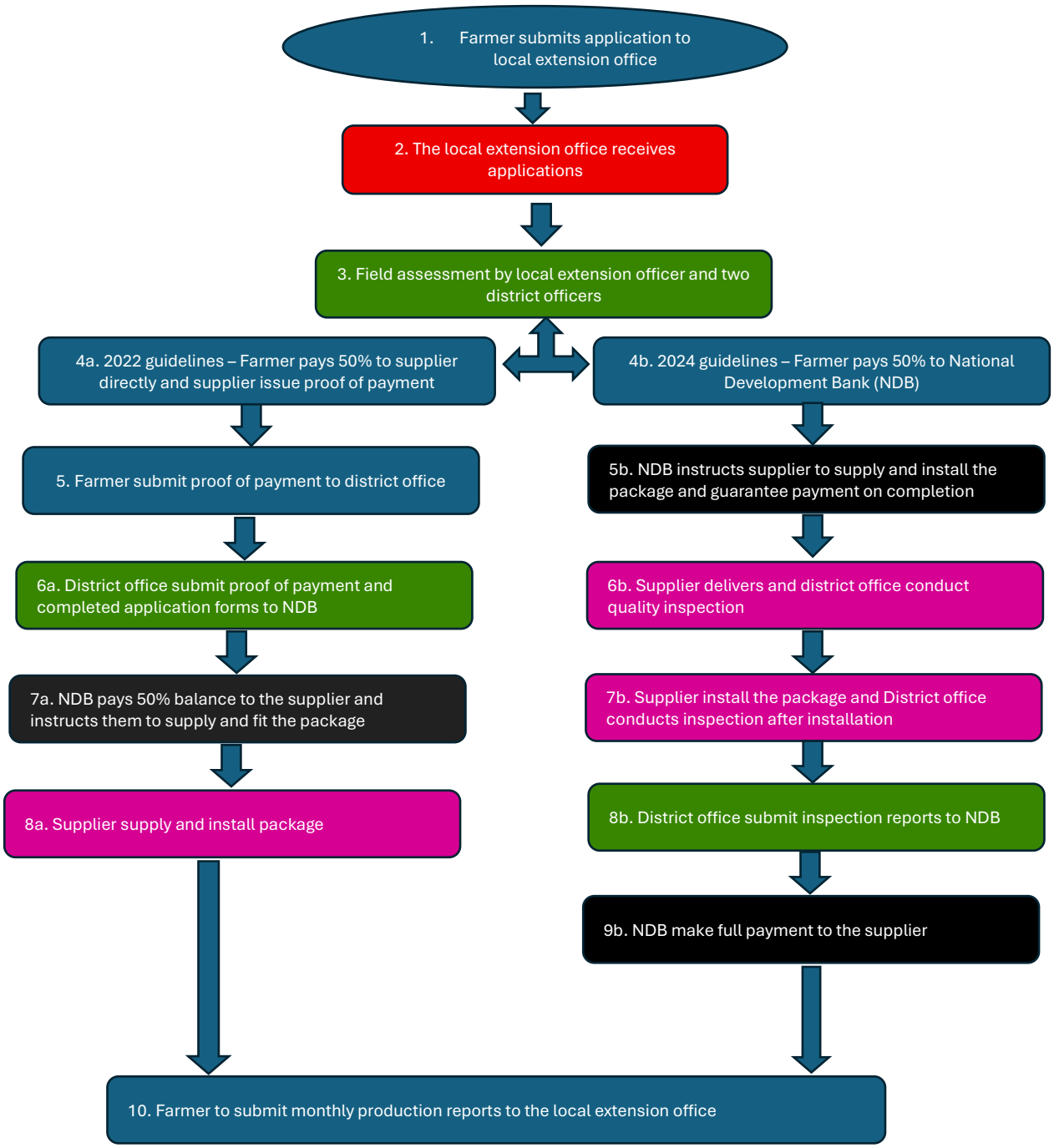


**Figure 5: Comparative diagram of IAS implementation process under 2022 and 2024 guidelines**

## 4.5 Case context: Socio-economic, agro-ecological and policy dimensions of IAS participation

The Impact Accelerator Subsidy (IAS) is a flagship horticulture development programme in Botswana that aims to boost food security by subsidising infrastructure, equipment, power, and inputs for primary horticultural production and on-farm postharvest handling. It encourages smallholder farmers to engage in the sector's development and growth. This chapter presents the socio-economic, institutional, and policy background of the IAS programme by highlighting its objectives, activities, and local implementation context. It further describes the case study area to contextualise the findings within a specific geographical and socio-political setting.

### 4.5.1 Botswana national agricultural and horticultural policy context

Historically, Botswana's agriculture was the cornerstone of the economy at independence, accounting for 40% of the GDP in 1966. Although the agricultural contribution has significantly declined in recent years, now accounting for only 2% of the GDP, it remains the backbone of the rural economy (Moepeng, 2013). The decline in agriculture's share of GDP could be due to either a decrease in agricultural production or the high revenue generated from diamonds, which were discovered later after independence. However, agriculture employs 30% of the total workforce in Botswana, primarily through smallholders who manage 80% of the cultivable land but produce only 38% of the total crop yield (Zhou et al., 2012). It is worth noting that some studies suggest that only 5% of Botswana's landmass is suitable for cultivation, with just 1% currently being cultivated (Zhou et al., 2012).

Agriculture in Botswana takes place against the backdrop of precarious weather patterns, which are projected to impact regional productivity negatively. Climate change in Southern Africa is expected to increase temperatures with high variability, potentially causing a 50% yield loss, and placing countries, including Botswana, at high risk to food security (Nhemachena et al., 2020).

The arable sector in Botswana is characterised by smallholder farmers engaged in traditional production systems, facing challenges such as limited access to modern technologies and irrigation, which leaves smallholder farmers more vulnerable to recurring droughts and erratic rainfall (Zhou et al., 2012). To build resilience in the sector, the government has several agricultural support programmes, notably the Young Farmers' Fund (YDF), which aims to foster entrepreneurial development by supporting young farmers. YDF provides youths aged 18 to 35 years with up to 100,000 BWP in financial support, comprising a 50% grant and a 50% interest-free loan. The main challenge has always been the environmental conditions.

The agriculture sector has been characterised by a dual focus on pastoral and arable farming, with pastoral farming prevailing due to poor soils unsuitable for arable cultivation (Tladi-Sekgwama, 2019). The government has introduced various programmes to enhance production, such as the Young Farmers' Fund (YDF). However, these initiatives often fall short of achieving their intended goals due to numerous challenges, including unfavourable environmental conditions for agriculture (Kgosikoma, 2015).

In the horticulture sector, there has been steady growth over the years, which has contributed to national food security. The sector is seen as benefiting wealthier farmers while marginalising resource-poor farmers due to its high capital requirements (Moepeng, 2013). Smallholder horticulture farmers face numerous challenges in production and marketing, including high input costs, limited technical knowledge, and competition from imported products. Researchers have recommended that the government improve market access conditions and invest in market infrastructure to strengthen local production, reduce postharvest losses, and ensure smallholder farmers remain profitable (Baliyan & Kgathi, 2009; Malope et al., 2025). Malope et al. (2025) further emphasised that there are many opportunities in the local market, driven by unmet local demand and supportive government policies.

### 4.5.2 Geographic and agro-ecological profile

Located in the southeastern part of Botswana, Kweneng District is characterised by arid to semi-arid climatic conditions. This region experiences high evaporation rates of up to 2,133 mm per year and is highly prone to frost from around mid-May to the end of winter (Weare, 1971), yet it receives about 250 mm of rain annually. The land use in Kweneng District is primarily agricultural, with a predominant focus on pastoral farming, due to the arid conditions that make arable agriculture challenging.

It is worth noting that studies suggest only 5% of Botswana's landmass, including Kweneng District, is suitable for arable farming, with less than 1% being cultivated. (Zhou et al., 2012). This notion is further supported by other researchers, who indicate that most of the land is used for pastoral farming, with only a small portion used for arable agriculture, primarily for staple food grains such as sorghum and maize. (Zhou et al., 2012).

The soils are of poor quality and have low moisture retention capacity, making it difficult for rainfed arable agriculture. (Weare, 1971). The other challenging factor is the unpredictable and irregular rainfall, averaging 400 -600 mm annually, which makes intensive arable farming nearly impossible (Zhou et al., 2012). The rainfall is not only erratic but also highly variable in distribution across the region and throughout the season, causing frequent droughts every two years, which further complicates arable farming in the area. (Zhou et al., 2012).

The primary source of water for agriculture and domestic use in the Kweneng District is primarily boreholes. This over-reliance on underground water makes farming highly susceptible to droughts (Chipomho et al., 2024). Most farmers in the Kweneng District are smallholders. Smallholder farmers in Botswana control 80% of the cultivable land in the country, yet they produce only 38% of the total crop. (Zhou et al., 2012).

Most of these smallholder farmers are subsistence growers of staple food crops who depend entirely on rain for production and their livelihood. However, there are also a few emerging commercial farmers in the district who have adopted advanced farming technologies. (Batisani et al., 2021). These smallholder farmers are more vulnerable to the effects of drought and other climate adversities due to their limited access to modern technologies that can help mitigate such impacts.

Horticulture farmers in Botswana are typically classified according to the size of their farms: small-scale farmers cultivate less than 5 hectares, medium-scale farmers cultivate between 5 and 10 hectares, and large-scale farmers cultivate more than 10 hectares. Most farmers in the Kweneng District engage in olericulture (vegetable production) and pomology (fruit tree cultivation), with a limited but increasing interest in floriculture and post-harvest processing (National Agricultural Research and Development Institute, n.d.).

## 4.6 Implementation institutions and processes

The Impact Accelerator Subsidy (IAS) adopted a multi-institutional framework involving the Ministry of Lands and Agriculture (MoLA) and the National Development Bank (NDB), with local extension areas serving as the primary implementers of the programme. The implementation approach reflects a decentralised system that involves multiple actors at different levels of the application process, with overall coordination vested in MoLA.

### 4.6.1 Ministry of Lands and Agriculture (MoLA)

MoLA is the principal implementing institution responsible for the following:

1. Policy development – programme design and implementation guidelines
2. Coordination of field assessments to determine eligibility and feasibility
3. Cropping plans – guiding farmers on crop choice, suitable technologies, and production timings in line with the agro-ecological zone
4. Oversight of compliance, including reporting, package verification, and impact assessment
5. Mobilising and training farmers with a focus on climate-smart technologies

The Department of Crop Production functions as the technical unit responsible for programme execution, linking with the District Crop Production Offices, which in turn connect with the extension offices in different locations to ensure proximity to farmers and facilitate on-ground monitoring. The application process begins at the local extension office, which oversees field assessments, guides the applicant in choosing the appropriate technology or package and cropping plan, and ensures compliance with the prerequisites.

Two officers from the district join the extension officer for a site visit, during which they complete the site visit form. The form is then sent to the district office for adjudication. Upon approval, the farmer receives a letter of approval. In the 2022 framework, the farmer will then pay half of the costs to the supplier, who issues the farmer a receipt and an acknowledgement letter.

The acknowledgement letter is submitted back to the extension officer, who forwards it to the district office. The district office then sends the application file along with the acknowledgement letter from the supplier to the NDB, which, in turn, pays the supplier the remaining 50%. The supplier will then supply and install the purchased package.

However, under the 2024 framework, once approved, the farmer pays the 50% contribution to the NDB, which then instructs the supplier to proceed with supplying and installing the required package. After satisfactory inspection of the package, the NDB will pay the supplier.

### 4.6.2 Subsidy disbursement by the National Development Bank (NDB)

The NDB is responsible for disbursing the subsidy once the MoLA submits a completed application file for the farmer applicant. The NDB's responsibilities include:

1. Receiving and processing funding applications submitted by Mola.
2. Holding and disbursing funds according to a cost-sharing model, where the government pays 50% and the farmer pays the remaining 50% of the approved package.
3. Managing beneficiary accounts and facilitating secure, transparent fund transfers to suppliers.
4. Verifying that the beneficiary's contribution requirement was met before disbursement.
5. Coordinating with MoLA to ensure that payments are made based on completion certificates and field inspections.

No cash is paid directly to beneficiaries; instead, the NDB pays suppliers directly upon satisfactory compliance with the requirements.

### 4.6.3 Field-level operations

The IAS programme is implemented through a network of District Crop Production officers, based at district offices and extension areas, who act as the primary contacts for farmers and lead on-farm assessments, evaluations, and reporting.

The district offices are responsible for the following:

1. Initial screening of applicants, including validation of land tenure, borehole certificates, water rights, and ensuring the applicant meets all the pre-requisites
2. Conducting field assessments to confirm site suitability and verify the need for the requested packages
3. Conducting monitoring visits during implementation and after funding to assess usage, identify challenges, and offer guidance

4. Completing technical inspection forms, assessment forms, and all reports necessary for NDB to disburse funds

Extension officers also offer advisory support to ensure that applicants are willing to receive guidance in their entrepreneurial journey. They also provide technical advice on the selection of crops and production structures, tailored to environmental conditions and market demand.

### 4.6.4 Supplier regulation

The IAS guidelines outline regulations and eligibility criteria for input suppliers to ensure traceability, quality, and transparency in the subsidy process. The following stipulations regarding suppliers are observed:

1. Suppliers must be registered with the Public Procurement and Regulatory Authority (PPRA) and hold relevant trade licences and tax clearance certificates.
2. Goods must meet Botswana Bureau of Standards (BOBS) specifications.
3. Suppliers must adhere to required delivery timelines, quality standards, and pricing guides for each package.
4. Non-compliance may result in blacklisting, and no applicant may engage in self-dealing with a business they own or control.
5. Suppliers may not be awarded more than two contracts before delivery, and duplicate offers will not be accepted from companies with the same directors.

### 4.6.5 Programme monitoring and reporting

There is an emphasis on reporting, monitoring, and accountability mechanisms. The key reports include:

1. Beneficiaries are required to submit regular monthly production reports in the MoLA-approved format.
2. Goods inspection forms – documenting delivery and quality of the supplied packages.
3. Completion reports – after inspection of the completed installation of the purchased package. These reports trigger payments by NDB.
4. Site inspection reports must be completed by a multi-disciplinary MoLA team to confirm compliance with or meeting the pre-requisites for participation in the IAS programme.
5. The applicant is also required to submit additional prerequisite reports, such as soil and water analysis results.

## 4.7 Relevance of the case

The Impact Accelerator Subsidy (IAS) programme exemplifies a policy-relevant case for understanding the dynamics of the state-led drive to commercialise the horticulture sub-sector in Botswana. It reflects a broader policy shift from staple food subsidies, such as the Integrated Support Program for Arable Agriculture Development (ISPAAD), to a more targeted, horticulture-specific development programme aimed at stimulating entrepreneurship. The IAS programme integrates input supply, cropping plans, and co-financing requirements to position farmers as agribusinessmen or women rather than subsistence producers. This policy approach aligns with literature, particularly in Sub-Saharan Africa, where governments face economic pressure and seek to diversify economies through agri-entrepreneurship (FAO, 2020; Jayne et al., 2018).

From the case study research perspective, Yin (2018) emphasises that a case study should provide a bounded and contemporary real-world experience, which is both theoretically and practically significant. The IAS case study research approach seeks to achieve this. The IAS's selective design raises issues that are rarely examined under top-down subsidy programmes, such as access, equity, and institutional trust. The dual approach of co-financing, with an emphasis on commercialisation, offers an opportunity to assess how farmers interpret, engage with, or resist emerging commercialisation narratives in the context of state-led subsidy interventions, such as the IAS programme. Therefore, the IAS case provides a unique and strategic opportunity to explore how state and market logics intersect within the rural development framework through agricultural subsidy measures.

Furthermore, the IAS case is suitable for an exploratory case study because the programme is relatively new and evolving, and there has been limited written material about it. The absence of scholarly evaluation of the programme provides a unique opportunity for grounded qualitative enquiry, particularly into how farmers, successful applicants, unsuccessful applicants, and those who never applied for the subsidy perceive its goals, accessibility, and impact. This offers an opportunity to generate themes that inductively emerge from the field data, based on the lived experiences of farmers rather than policy assumptions.

The study deliberately included all farmers' experiences, encompassing those who successfully benefited, those who attempted to access the subsidy and failed, and those who were outrightly excluded in various ways, to examine the contextual heterogeneity influencing programme participation. Issues such as mistrust, market proximity, land access, and water availability emerged as key determinants of inclusion and exclusion in IAS programme participation. Through this approach, the case study illuminates the institutional and socio-political conditions under which commercialisation interventions succeed or falter.

Lastly, the IAS programme provides a notable example of an intervention that bridges national policy with the everyday actions of farmers, making it a valuable tool for examining how government policies are implemented at the local level. The roles of various actors, such as the Ministry of Lands and Agriculture, agro-dealers, extension officers, and district-level screening committees, offer opportunities to explore how administrative discretion, resource constraints, and institutional capacity influence programme implementation. This aligns well with best practices in qualitative research, which advocate for multiple actors and multi-level perspectives in policy analysis. (Thomas, 2011).

In summary, the IAS programme provides an analytical and contextually rich case through which the determinants of smallholder farmers' engagement with subsidy-driven commercialisation can be explored. IAS's evolving design, selective access, and implementation challenges provide an opportunity to understand the real-world complexities of horticulture development and commercialisation in Botswana.

## 4.8 Conclusion

This chapter has presented a comprehensive overview of the institutional, policy, and geographical contexts in which the IAS horticulture programme operates. Positioning the IAS within a broader agricultural transformation agenda, the programme's shift towards a more targeted and market-oriented intervention to support smallholder horticulture farmers has been established. Programme objectives, eligibility criteria, co-financing model, and key actors involved in the implementation have been outlined. The selection of the case study area, Kweneng District, was justified due to its high farmer density, agroecological diversity, and relevance to the research objectives.

The understanding of the IAS programme as a meso-level intervention has enhanced its relevance in exploring how national policy is perceived and experienced at the local level. The chapter also revealed important contextual issues regarding how factors such as water, land, markets, and institutional support shape farmer participation in the state-led horticulture commercialisation drive.

The emerging empirical patterns highlighted in this chapter, such as the persistent barriers to market access mentioned by all farmer categories, financial and infrastructural constraints affecting participation, and institutional gaps in extension support, will be elaborated upon further in Chapter 5. These issues provide foundational insights into the factors that enable and constrain farmer participation in the IAS programme. Chapter 5 will build on themes introduced in this chapter and investigate how different farmer categories navigate these challenges, as well as how their positionality shapes their engagement with the IAS programme.

# Chapter 5: Findings

## 5.0 Introduction

The research findings chapter presents the empirical evidence on how smallholder horticulture farmers in the Kweneng District of Botswana participate in the Impact Accelerator Subsidy (IAS) programme and the factors that determine their participation. The data is derived from twenty-seven respondents including eight Key-informants: people who have more profound knowledge of the programme design and implementation; Seven Participants being smallholder horticulture farmers who benefited from the programme (participants); Six Intended Participants, being farmers who applied for the subsidy but withdrew on the way; and six Non-participants being those farmers who have not attempted to apply for the subsidy. The 'key informants' are coded as 'KI' followed by numbers 1 to 8 to identify each respondent. For example, key informant number one will be coded as 'KI1'. The participants are coded as 'P' followed by numbers 1 to 7 assigned to each respondent; intended participants are coded as 'IP' followed by numbers 1 to 6, and non-participants are coded as 'NP' followed by numbers 1 to 6.

This chapter addresses research Question 2 (RQ2): What influences farmers' participation in the IAS programme in Botswana? The chapter is further divided into two sections: enablers of participation and constraints on participation. It organises the nine themes identified from the interviews into these two categories, with three themes under enablers of participation and seven themes under constraints.

The themes were identified using Braun and Clarke's six-phase thematic analysis, where themes inductively emerge from the data. However, the extensive literature review has shaped the phrasing of these themes. Saturation was reached on the twenty-second interview, with a total of twenty-seven interviews conducted. Reflexivity was continuously employed as the researcher constantly reminded himself that his experience and expertise should not influence farmers' responses or influence the interpretation of the data.

## 5.1 Enablers of participation

This section describes the factors that facilitated smallholder participation in the IAS programme. These enablers include assets such as land and water, as well as adaptive strategies that farmers employ to overcome both formal and informal barriers. While these enablers did not guarantee participation, they positioned certain farmers more favourably within the constraints of the IAS framework.

### 5.1.1 Land and water access

The primary eligibility criteria for the IAS programme are land ownership or leasing and access to water. This means that all participants either own or lease land and have adequate water supplies to meet the programme's requirements. These factors served as subtle enablers for participation.

Farmers who already own or have access to leased land and sufficient water, with an overall requirement of 2.5 $m^3$ per hour or a borehole yield of 1.3 $m^3$ per hour, particularly those involved in mushroom or hydroponic production, were better positioned to apply for and benefit from the programme. These assets provided a foundation upon which other enablers could be built. In contrast, smallholder farmers who lacked either land or water were automatically excluded, despite their interest or willingness to participate. Therefore, land and water acted as both enablers and constraints for some farmers, depending on their availability or absence.

### 5.1.2 Using alternative funding sources

The IAS programme was launched to support both farmers who are already in production and those starting. The unique environmental and social challenges of Botswana influenced the design of this programme, which aims to enhance production, generate employment, and assist farmers with the costs of production structures and inputs. During the programme's rollout, farmers engaged with the initiative, and a key barrier identified—confirmed by key informants—was the prohibitive 50% upfront contribution required from farmers. Consequently, farmers' participation in the IAS programme largely depended on their ability to pay this 50% co-payment.
Some farmers, both those already producing and new entrants unable to afford the co-financing, either continued to self-finance or sought more affordable alternative funding sources.

One respondent, NP1, reflected with pride and dignity, “I completely self-funded, and I enjoyed it tremendously.” His laughter captured the defiant spirit of someone who refuses to be hindered by the bureaucratic processes involved in funding applications and the burdens that come with the requirements of benefiting from such programmes, such as regular reporting, which he believes could steal his precious time that he could have used for production. His defiance is not against reporting, but rather the frequency at which it is required. He said that in practice, extension officers require weekly updates, although the program's requirement is monthly; both frequencies are seen as too demanding.

On the other hand, youths who could not afford the 50% co-financing of the IAS programme turned to the Youth Development Fund. A key informant, KI1, said, “We saw a lot of youth also taking advantage of the Youth Development Fund (YDF) to venture into horticulture.” For eligible youths, this could serve as a springboard to help them start production and possibly later utilise the IAS to expand.

These quotes capture the spirit of determination and urgency. When government funding support stalls, farmers do not simply abandon the farm; they use personal savings or other government funding options that are more accommodating, especially for resource-poor smallholder horticulture farmers, as in the case of youths who opted for the YDF.

### 5.1.3 Transformative IAS packages

Some respondents benefited from AIS and spoke fondly of its advantages, especially the on-farm production infrastructures. These infrastructures have been a game-changer for many, providing them with the opportunity to address environmental challenges and extend their production seasons. The developments have not only transformed production but also improved perceptions of farming, making it more fashionable and appealing to urban dwellers. Key informants and some farmers have strongly echoed these sentiments.

KI1 said, “They will be producing tomatoes during the winter season and cabbages in the summer,” referring to farmers who benefited from the tunnels. KI1 said this with a sense of fulfilment and recognition of the impact of the IAS programme on production and fostering production resilience, breaking away from Botswana’s traditional production calendar.

This production, game-changing infrastructure came with many other benefits, which transformed the perception of farming from a poor man’s vocation to a fashionable activity among urban residents. KI1 remarked, “There are lights everywhere since the introduction of solar panels; the farm is fashionable,” referring to the increased use of solar panels on farms for pumping water from boreholes and lighting the farms, making it more comfortable for urban dwellers to enjoy the farm. The solar lights are also said to have increased night-time security and symbolise modern agribusiness identity, thanks to the IAS subsidy.

The use of solar panels and the acquisition of larger reservoirs have also made irrigation more manageable, helping farmers mitigate the detrimental effects of harsh environmental conditions in arid Botswana. One respondent, P5, said, “We now water as needed; the big reservoir helped us.” This statement highlights the significant improvement in water storage, enabling farmers to expand production while meeting the frequent water requirements of crops, thereby competing with the harsh, high temperatures that prevail for most of the year in Botswana.

Below, Figure 6 shows capsicum production under shade net, and Figure 7 shows solar panels for borehole pumping and a large reservoir, all purchased under the IAS subsidy.

**Figure 6: Production structures – Capsicum crops under shade net purchased under IAS**

**Figure 7: Solar panels for the borehole pump and reservoir purchased under IAS**

## 5.2 Constraints of participation

This section discusses the themes that prevent farmers from participating in the IAS programme. These constraints include a range of institutional, systemic, and market-related challenges, as well as environmental conditions that make it difficult for certain smallholder farmers to meet the programme's eligibility criteria. In many cases, these barriers operate cumulatively, increasing the vulnerability of resource-poor farmers and reinforcing structural exclusion.

### 5.2.1 Social and association dynamics

Amidst the resilience of farmers and their self-funding or use of alternative financing, along with the significant benefits derived from developing on-farm production infrastructure, issues of farm labour and the collaborative efforts of farmers shape the real impact of the IAS packages.

Many respondents mention the shortage of farm labour as a significant barrier to increased production, mainly since horticulture farms in Botswana operate manually and use very little, if any, machinery in production, except for tillage in some instances. The labour issue is attributed to local disinterest in farming labour. "Batswana generally do not take farm jobs; we rely on Zimbabweans; they are hard workers," said respondent-P1. Contrary to the programme's objectives, the locals do not seem interested in farm jobs, leading farmers to resort to foreign labour, particularly those from Zimbabwe. However, P1 continued to highlight that foreigners are not reliable due to the high staff turnover, with some workers leaving after only one month without notice. Another respondent, NP1, underscored that "…Zimbabweans have skill and are hard workers," adding that part of the reason farmers prefer foreigners is because of their production skills. NP1 further remarked that "foreign labour is cheap, and with unprofitable business, like horticulture, it is the only feasible alternative."

NP1 further revealed that locals compare farm labour to government social schemes, where they receive higher pay for less work. “There is no farm labour locally; they prefer Ipelegeng. They can be paid for doing nothing,” attributing the unavailability of locals to do farm work to laziness and having better options. The government relief work scheme, Ipelegeng, is believed to have disincentivised local agricultural labour.

Farmers and key informants alike expressed disappointment regarding the youth’s reluctance to engage in farming. Interestingly, respondents P1, IP2, and KI2 stated the same thing verbatim: “The youths are not interested in farm work,” sharing a concern for the future of farming and a lack of succession planning. This scenario highlights a generational shift that threatens the labour base necessary to operate the IAS-supported infrastructure.

However, another respondent, KI1, echoed frustration that “Farmers rarely organise; there is too much individualism, and they compete against each other.” The respondent highlighted that this solitary mindset robs farmers of the benefits of cooperation in collective purchasing, labour sharing and group marketing. These contextual issues illustrate how social challenges, such as labour availability on farms and farmer cooperation, shape how IAS investments translate into on-farm realities.

The respondents’ real-life experiences with self-funding, the use of alternative funding, and labour complexities reveal an interplay of complex factors that shape farmers’ participation in the IAS programme; some respond with a sense of pride, others with frustration, and yet more with aspirations and hope for the growth of their businesses and the sector. These lived experiences of the respondents determine how the farmers engage with the IAS programme.

### 5.2.2 Financial barriers and co-financing

The IAS's matching grant approach emerged as the primary barrier identified by all respondent categories. This is particularly true because the farmer must contribute their share before the government pays the other 50% and before the farmer can receive the intended package. This implies that the farmer must pay from their savings or loans, rather than from the income generated by the new infrastructure or improvements. Across all respondents, there was a pronounced sense of financial strain and frustration when faced with this co-financing requirement.

The IP2's frustration comment aptly captures the magnitude of this issue: "To raise 50% is not a joke. Imagine 50% of 500k?" This suggests that the high cost of the infrastructure, coupled with the low profitability of the business, leaves farmers with no capital for such an investment. This sentiment is shared by KI6, who remarked that, "Many farmers fail to benefit, and others take less than what they need, because these packages are expensive," highlighting that farmers settle for sub-optimal packages due to the high co-financing threshold. Another respondent agreed with this in their comment that, "I needed to equip the borehole, buy a reservoir and shade net. But I did not have enough money for that; I only equipped the borehole," illustrating how co-financing shortfalls curtail infrastructure gains, leaving him with an incomplete irrigation project.

Other respondents echoed similar frustrations: "Raising 50% of 400k is not easy. Where will you get such money?" (P2). Even farmers who are trying to be rational, find the high co-financing requirement problematic, "We agree that we cannot be given everything for free. But we cannot be expected to pay 50% for two tunnels as a lump sum," capturing the difficulty of raising much money to pay the co-financing as a lump sum rather than having a payment plan that spread over time to make it easy for the farmers. P5 reinforced this sentiment with hope and pragmatism, "If the 50% could be paid in instalments, it would be better. We can pay from sales, and we can improve our farms."

The notion of not being given things for free seems to be shared by many farmers; however, with more friendly payment options, “We do not expect to be given things for free. However, a 50% advance payment does not make sense. I mean, farming infrastructure is expensive; we do not need help with cheap things. At least if we were paying in instalments,” (P6). Although the high co-financing threshold is problematic, it is further exacerbated by the requirement that the payment be made in advance and as a lump sum.

Although the initial financing issues are identified as a barrier by many respondents, recurring operating costs, especially the replacement of low-quality products, the misalignment of the subsidy programme with the perceived needs of farmers, and other external factors, such as an unfavourable environment, also contribute to the investment burden.

Another respondent reflected on how his self-financed drip irrigation system could not last for more than a year, adding to his fear of getting a loan to meet co-financing requirement, he said, “I bought a drip from China, and 12 months later I had to replace it. Where am I going to get the 40 thousand pula?” (NP2). Environmental issues also add salt to the wound: “Our soils are poor, you need lots of fertiliser, and it is not cheap. You must spray every week during production. These account for large production costs,” recounted P5.

Sometimes, financial institutions set out to help farmers get loans for co-financing, but they fail them and leave them in despair. “NDB could not give me the required amount, and I lost the opportunity” (IP5), referring to the loan application he made to the National Development Bank to purchase the farm he was renting, as the owners allowed him to buy it. He had planned to buy the farm with the loan and use his savings to cover the co-financing for farm development. The IP5’s reflection further revealed a deeper sectoral misalignment, “This programme failed to understand our sector. We are not creditworthy. And it is a pity the government do not recognise horticulture as a business. The government cannot give us a loan,” alluding to the fact that NDB is a parastatal and the government controls its policy.

However, it is difficult for farmers to get loans. One key informant (KI3) recounted this with sadness, saying, “You need another carrier to raise funds for farming,” because once you are a full-time farmer, financial institutions view you as high risk and do not want to lend you money. This is reflected in some respondents’ frustrations: “They say horticulture is a high-risk business, and we cannot give them money.” (P4).

The policy misalignment is evident in many ways. One key informant (KI2) commented that “Maybe the government is avoiding the risk of hitting the blanks,” referring to farmers' calls for the subsidy to include borehole drilling. The risk of dry boreholes is real, and the government might have intentionally excluded it from the subsidy, so that farmers bear the risk alone. Another unintended consequence of the rigid packages is that one is forced to realign their needs with the predefined packages: “You are forced to buy seeds even if your problem is power” (KI3).

Other respondents advocated for a tailored assessment model rather than predefined packages, “Come and asses the farm, then fund based on what the farmer needs, not predefined packages,” (KI4). P6 articulated frustration due to the difficulty of securing a loan, the exclusion of full-time farmers by not tailoring the subsidy so that they can afford it, and the scepticism on the political will to help farmers, “To raise 50% is hard. If you are not working, it is unlikely that you will be able to get a loan. They made this programme for themselves, and it is not for farmers. If a full-time farmer cannot be funded, then we are doomed.”

These verbatim quotes from the farmers reveal a multi-layered financial barrier. The high co-financing threshold, the requirement to contribute a lump sum without any flexible payment plan, and the recurring costs of equipment replacement put IAS out of reach for many smallholder farmers, especially those who are full-time farmers and have no other income. Farmers called for policy adjustments to include co-financing instalment plans, sector-specific credit products and tailored funding assessment. Without these reforms, the IAS’s transformative potential will remain elusive for the majority of the smallholder farmers in Botswana.

### 5.2.3 Infrastructure and environmental constraints

The respondents reveal that even when financial constraints can be addressed, the environment in which they operate, as well as the shortage of necessary infrastructure, can undermine participation in the IAS programme.

Harsh weather conditions proved to be the primary concern for open-field production. IP4, with a voice of resignation and everyday reality that conventional fields face, revealed that “even green pepper and tomatoes do not grow well in this heat,” her Setswana comment conveying the weight of this daily struggle. The high temperature does not favour even the summer crops.

However, KI1 commented with measured optimism that IAS packages such as tunnels and shade nets help mitigate this harsh weather reality. “They will be producing tomatoes during the winter season and cabbages in the summer.” However, even with a protected environment, farmers must battle the proliferation of pests and diseases that thrive in high temperatures. “High temperatures are conducive for the rapid breeding of pests, and flooding leads to many fungal diseases. Farmers are failing to cope with the costs of pest control.” Moreover, KI1 reiterated that the burden of pests and disease is even worse on new farmers: “New farmers face lots of pests and disease pressure.” Farmers’ experience with this erratic weather condition is real, “We had a prolonged heat wave, we have many losses,” (P1), referring to losses due to high temperatures and high pest infestation.

Smallholder farmers have developed some improvised mechanisms to deal with extreme temperature, especially the harsh winter to grow summer crops, “So we buy some tarpaulin to try and reduce the impact of weather on the crops that are grown off-season, like in winter, when we have pepper and tomatoes,” (P1). This pragmatic workaround with black plastics draped over rows to prevent crops from frost shows how smallholder farmers improvised to extend the growing period.

Shortage of water also emerged as another key constraint. IP4 lamented in Setswana, “Our challenge is water. If we are not helped to drill boreholes, it is useless”. This painful shortage of water hampers production, and farmers lament that borehole drilling is excluded from the subsidised packages. Water quality requirements also complicate the water issues. Botswana, being a semi-arid country, has water that is generally saline. However, the IAS requirement is that water must meet the standards set by the Botswana Bureau of Standards (BOBS) for irrigation water to qualify for an IAS subsidy. “Water must meet BOBS standards; some fail because their water is too salty” (NP5).

A shortage of reliable transportation or high costs due to poor roads and a lack of established roads in the farming area increase production costs. “Farmers face transport challenges; moving seeds and or produce to sell is a challenge,” remarked KI5. This cost is incurred due to poor roads, high fuel costs, and even the actual availability of transportation.

In summary, these lived experiences of the farmers and observations of key informants paint a picture of rural infrastructure gaps and environmental challenges that persist, including heatwaves, floods, pests and diseases pressure, and water scarcity and saline aquifers, which limit farmers’ ability to realise the full benefit of the IAS packages. Addressing these issues may ease the burden on farmers and facilitate their realisation of a return on their investments.

Below are photos of rape and silver beet (Fordhoek giant) crops growing under the hot sun in an open field, as well as the farm road, illustrating the difficulty of travel (Figures 8 and 9, respectively).

**Figure 8: Crops under open field in hot weather (top picture-rape, bottom picture-silver beet)**

**Figure 9: A farm road that farmers use to deliver vegetables to the market**

### 5.2.4 Institutional support and extension delivery barriers

Another issue of concern is the extension support, with farmers describing a dire situation where extension services are almost invisible, leaving them to depend on peer support. IP5, a seasoned farmer, remarked that, “They are scholars; they know theories. We want what works on the farm.” Alluding to what he terms inexperienced extension officers who are not trained to support commercial farmers, but rather subsistent farmers. He also lamented the lack of response from the extension agents, “You will be asking for help on the farm. They will not come; they will not call.” Another experienced farmer, KI4, recalled that “There used to be extension officers; now we do not see them.” Lamenting that extension officers are no longer visible on the ground. He further highlighted that they miss essential teaching and concepts in the sector, such as the ‘Good Agriculture Practice’; “We do not know what GAP is?” The government has attempted to address the shortage of extension officers by engaging young agricultural graduates as interns; however, they are only there for a short time, leaving farmers stranded. This was said by NP2, “The government tries with interns, but they are there for a short time. We remain without any help.”

There is also a perceived gap in experience between farmers and extension agents. “We lack a common understanding of the issues; extension officers oversimplify the market.” Extension officers often advise farmers that there is a shortage of supply, and the market is readily available, without understanding the market dynamics that exclude local farmers from the market. The experience gap is exacerbated by the failure of horticulture specialists to interact with farmers, as expressed by NP5, “Especially the horticulture specialists, you cannot see them at all.” Farmers even report false visits that never materialise. “They were to meet farmers last Wednesday. On Tuesday, they sent messages that they had an emergency. We are used to it. I know we will never hear from them again.” The farmer said this, referring to a failed meeting where farmers were to meet with extension officers, and the extension officers cancelled the meeting at the last minute, saying that this was a norm.

Farmers emphasised their need for technical support, as farming challenges are dynamic and require some technical expertise; they cited challenges such as new pest infestations. “There are technical issues that we need extension support. At times, we encounter new pests and are unsure of how to address them” (P3).

This had led to farmers being disappointed and blaming the extension officers, “The extension staff are not doing enough” (P4). These farmers' experiences portray agricultural extension as a name only, rather than in practice, leaving them to navigate challenges without any technical guidance.

### 5.2.5 Programme design, policy uncertainty, and mistrust

Beyond the institutional gaps and extension delivery issues lie subtle issues of programme design barriers, policy uncertainty and deep mistrust of rapidly changing government policies.

The farmers believe that the IAS subsidy does not reach all areas, particularly those in remote regions. One key informants and farmer leader from the rural area said, “When you are in remote area like us, you feel alone, it’s like the government forgets about you,” (KI5), expressing his disappointment that no one in his area have benefitted from the IAS and that himself being the farmer leader does not know much about the IAS programme.

There is also a sense of political mistrust, as farmers feel the programme is aimed at benefiting some politicians rather than the farmers. NP5 spoke with scepticism and mistrust, stating, “Leaders enact programmes that benefit them, not farmers. The politician will push for the implementation of a farm fencing subsidy. After fencing their ranches, the subsidy is terminated” (NP5). This respondent further charged, “With this mentality, we can never go anywhere because they do not want us to develop,” referring to policies that politicians create for their gain rather than for the benefit of farmers. He believes that if their political interest is to develop farmers, it will be easy to do so as policies will be farmer-friendly; “If they want us to succeed, they do so. Not to block is with these selfish policies.”

Farmers believe that farming is more than a business; it is a partnership with the government to feed the nation. Therefore, this objective can never be achieved without the government's direct support through policies that facilitate farming. NP3, remarked with a firm tone of emphasis, “Agriculture never thrives without government support.”

These reflections reveal a breach of trust; farmers are sceptical whether the government genuinely want to help them or if they have ulterior motives.

### 5.2.6 Market dynamics and price taking

At the core of the issues, farmers lament market exclusion by retailers in favour of imports and unfair pricing that forces them to run at a loss. The respondents' observations and experiences centre on awareness of production costs, retailer-driven gatekeeping, and a deep-rooted systemic supply distortion that creates a false narrative about the quality of local produce and the unavailability of supply.

As farmers constantly complain of low market prices, one key informant, an experienced fresh produce marketer, argued that farmers' complaints are based on fluctuating retail prices, not on the actual costs of production. This leads farmers to have unrealistic expectations, which in turn leads to disappointment. KI7 recounted that "They do not do costing, they just think what it might cost and add a margin." He further stated that "They go to the shops, look at shelf prices, and set theirs from there, without checking their costs." KI7 shared a story about how he wanted to buy beetroot from a farmer; in fact, he wanted to buy all the farmer's produce. The farmer refused, suggesting the price is too low. The farmer, however, did not have a reliable market for his produce and had to take small amounts of produce to the open market daily to sell. "Look at the cost of sales, he is using petrol daily and harvesting daily, instead of selling bulk." He claims the farmer wanted him to buy at retail price, yet he is going to sell to retailers. These comments reveal unresolved tension between farmers and middlemen, underscoring how inadequate production costing leaves farmers vulnerable to margin squeezes and without bargaining power.

Farmers' complaints do not end with middlemen; they also complain about retailers whose pricing undercuts the returns farmers receive. IP1 expressed a sense of unfair play: "The market is there, it is only that it is manipulated to kick us out of the game," suggesting that low pricing by retailers is intentional, designed to collapse local farmers' businesses, allowing retailers to purchase their preferred imports.

One key informant described the immediate consequences of not complying with retailers' demands: "Shops are knocking them, if you do not sell at their price, they go to the next farmer." KI3 shared a similar sentiment: "You might produce a crop, only to be exposed to unfair competition when the crop is ready," referring to competition with cheap imports. The search for a fair price is not only time-consuming but also costly for the farmer. "You still have to run from shop to shop. Retailers often practice unfair pricing." These comments suggest that farmers' bargaining power is limited, and the threat of traders manipulating prices arises because they are aware that farmers are desperate to sell and have fewer options.

In addition to market manipulation tactics, farmers complain about factors that continually destabilise the market. NP4 described a sequence of such events that destabilise the market. "Rain destroyed many farms, making the government's lifting of the import ban without consulting us justifiable." She further pointed out market bullying by retailers, saying, "You know that before delivery, they want samples. And if you dare bring something of low quality, they send you back," countering the retailers' claim that the poor-quality products on the shelves come from local farmers. However, they never accept anything substandard from farmers. The farmer claims that such poor-quality produce on shelves comes from retailers who also act as buyers and producers. "We know the poor quality is from their farms. They want to destroy our business," (NP4). These remarks highlight the importance of policies, quality gatekeeping, and perceived conspiracies in distorting the market.

Under these market distortions, you may not even break even with well-priced produce. "With the current prices in the supermarkets, you cannot break even," remarked P2. Moreover, he further highlighted the logistical challenges facing smallholder farmers, since there is nowhere to sell the produce in bulk. "You cannot sell one hectare of produce at the back of your bakkie; we need an organised market." Revealing the stark difference between farm gate price and retail price, P2 said, "I sold tomatoes to a supermarket at P12/kg, and they sold it P27/kg," showing that the farmer does not even get half the retail price. Faced with this disparity, he said with a helpless voice, "If you do not sell at their price, where will you take your produce?"

The government's import policy, which aims to protect local producers, is not effective as retailers manipulate the system to their advantage. “The ministry posts information on how produce will be available and when. They then predict when the import restriction for that commodity will take effect. Retailers then stockpile in advance. They will be selling from their warehouses as our produce spoils on farms. It is not fair. Something must be done,” (NP1). The respondent (NP1) further narrated the story of how he lost a considerable amount of produce that could have boosted her profitability. “I once produced a hectare of tomato crop. I only managed to sell half the produce at a giveaway price. I had tons of spoiling on the farm. Without a market, it is risky.” Responded-P6 shared a similar frustration that it is difficult to sell, especially when you have lots of produce. “You cannot sell a ton of produce in a day; where? There is nowhere to sell if you are a commercial entity. That is why 15 years later, I am still small-scale.”

Overall, farmers’ sentiments are that government import regulation restrictions are ineffective and manipulated by retailers to the detriment of local farmers. Retailers' price keeping forces farmers to operate at a loss, while middlemen blame farmers for predatory pricing without proper production costing.

### 5.2.7 Market manipulation

There are distinct voices that do not view the market challenges as a mere price war between farmers and retailers, but rather as a deliberate and calculated sabotage strategy orchestrated by an evil plan to collapse local production in favour of imports.

Farmers feel that these manipulations are part of a bigger sabotage plan to undermine local production. “It is only that it is manipulated to kick us out of the game,” remarked NP1. The same sentiment is echoed by P1, who notes that this is a conspiracy against local producers. This market manipulation extends beyond retailers; it is also practised by input suppliers, who hike prices whenever the government is involved, forcing farmers to pay almost the same prices they used to pay before the subsidy was introduced. This behaviour erodes the benefits of the subsidy. “When they see GPO (government purchasing order), they know the government is involved, and they skyrocket prices,” (KI7).

These manipulation comments from farmers reveal the mistrust that colours the farmers' view of the market and, to a larger extent, the government that fails to protect them.

## 5.3 Summary of key findings

This chapter has examined the factors that influence smallholder farmers' participation in the IAS programme, as outlined in Research Question 2. Two key themes emerged as enabling factors: the use of alternative funding sources and the perceived benefits of the IAS-supported infrastructure. These conditions demonstrate how some smallholder farmers were able to engage with and benefit from the IAS programme despite existing challenges. The contextual challenges faced by the IAS programme are consistent for all farmers across categories. In contrast, seven themes reveal significant barriers to participation, including a lack of farmer coordination, labour shortages, the high cost of co-financing equipment, harsh weather conditions, limited institutional support, mistrust of programme design and political motives, and distorted market systems, which emerged as the most felt need for all categories of farmers and was often expressed with much frustration. These challenges frequently intersect, increasing the difficulties faced by smallholder horticulture farmers in Botswana.

# Chapter 6: Discussion of the findings

## 6.0 Introduction

The discussion chapter engages with the research findings of this study, which are presented in Chapter 5, by interpreting them in light of the empirical frameworks established in the literature review in Chapter 2 and the case study context in Chapter 3. The discussion is tailored to focus on the overarching aim of this study: to understand smallholder farmers' participation in Botswana's Horticulture Impact Accelerator Subsidy (IAS) programme, with a particular interest in the nature and determinants of such engagement with the programme.

The two critical questions guiding this study are:

1. How are smallholder farmers participating in the IAS programme in Botswana?
2. What are the determinants of smallholder farmers' participation in the IAS programme?

To address research question one, the study draws evidence from both key informants and smallholder horticulture farmers' interviews to examine the different ways in which farmers engage with the IAS programme. Three distinct categories of farmers were identified, reflecting their engagement with the IAS programme: 'Participants,' 'Intended Participants,' and 'Non-Participants,' indicating their level of participation or lack thereof. These categories arose from the first part of the research, which involved key informants implementing the programme. The categories were inductively developed from the data provided by the key informants and were subsequently supported by findings from farmers' interviews. They not only reflect farmers' engagement with the programme but also their perceptions, intentions, and the contextual realities that influence their engagement.

The second part of this discussion chapter examines the determinants of smallholder participation in the IAS programme. The section is divided into two major thematic areas: enablers of participation and constraints to participation. These divisions allow for nuanced insights into the complex factors that influence programme participation, such as institutional design, farmer agency, programme implementation, and broader structural conditions. Drawing on empirical frameworks from the literature and data, key themes are explored, including market access, mistrust in government, co-financing, access to information and extension services, and the role of rural infrastructure in shaping how farmers engage with the programme.

In summary, the discussion chapter aims to provide a rich contextual interpretation of the key findings, reflecting both practical and theoretical insights into the factors that influence inclusivity in agricultural development programmes. The discussion not only advances the complexity of smallholder farmers' participation in government initiatives but also highlights the heterogeneity of smallholder farmers' experiences, thus challenging current debates on the inclusivity, effectiveness, and sustainability of agricultural development programmes, particularly subsidies, in the Sub-Saharan Africa region.

## 6.1 Categories of farmer engagement with the IAS programme

The most important finding of this study is the identification of three distinct participatory pathways through which smallholder horticulture farmers engage with the IAS programme in Botswana. These categories are Participants, Intended Participants, and Non-Participants. They reflect the heterogeneous experiences shaped by factors such as the environment in which farmers operate, including socio-economic factors, access to extension services and information, institutional capacity, and farmers' perceptions of the programme's alignment with their felt needs and its feasibility. These categories align with existing literature on farmer participation in agricultural development programmes, such as input subsidies, which highlight different experiences of farmers with policy interventions due to the influence of the broader environment in which they operate, some factors being more explicit, while others are more subtle (Chirwa & Dorward, 2013; Jayne & Rashid, 2016).

Participants' categories include farmers who successfully accessed and utilised the IAS packages, often leveraging them to increase production and profitability. For the category of farmers, IAS acted as a catalyst to enhance production capacity by adopting renewable energy technologies, such as utilising solar energy to pump irrigation water from boreholes and improving irrigation effectiveness. “There are lights everywhere since the introduction of solar panels; the farm is fashionable,” remarked one key informant (KI1), highlighting that renewable energy did not only improve production but has also fostered a shift towards modernised and improved climate-smart agriculture, which is in agreement with the findings of Bharati et al. (2024) and De (2018) who emphasised the importance of infrastructure in reducing production risks and enabling diversification. Participants demonstrated entrepreneurial spirit and were able to raise the required co-financing contribution, making them able to meet the programme's eligibility criterion.

‘Intended Participants’ represent a middle category with farmers who initially applied for IAS packages but later abandoned the process along the way due to different circumstances. These circumstances could be personal, financial, institutional or procedural. The bureaucratic delays associated with the application process, as well as the failure to meet the 50% co-financing requirement, discouraged these farmers from participating, leading them to abandon the process halfway. The co-financing issue has come up as the single strongest barrier to participation. “Raising 50% of 400,000 Pula is not easy. Where will you get that money?” This highlights an important issue with the programme design: the upfront payment of the 50% co-financing was frequently identified by respondents and the literature as a significant barrier (Bardhi, 2016; Wang et al., 2019). Ellis (2000) agrees with these findings in his argument that rural livelihood constraints are multi-dimensional and may include financial, institutional, and social factors, and can also be shaped by access to information and negotiation power within the policy space.

By contrast, ‘Non-participants’ are smallholder horticultural farmers in Botswana who have not applied for any of the IAS ' packages. Their participatory category of disengagement is influenced by several factors, including perceptual and structural barriers such as scepticism about the programme, perceived government bias, lack of information, and their inability to meet the programme criteria, such as upfront payment of the 50% co-financing. Some think the programme is designed to benefit politicians and well-to-do farmers, rather than the typical farmer who needs assistance. While others would not even apply because of past rejections from funding institutions, citing reasons for a lack of collateral. These findings are consistent with evidence from the literature, which suggests that high co-financing, unclear guidelines, and poor information dissemination often act as barriers to smallholder engagement with government agricultural development programmes (Wang et al., 2019).

These three participatory categories —Participants, Intended Participants, and Non-Participants —show that smallholder experiences are not the same, even if they are in the exact location, such as Kweneng District. There is heterogeneity in farmers' experiences with engagement with IAS. The findings underscore the importance of context-sensitive policy design, which eschews a one-size-fits-all approach.

The policy should consider the varied financial capabilities of smallholder farmers, the effectiveness of information dissemination, and the institutional realities that farmers face. For a more inclusive and context-sensitive approach, access barriers must be addressed to ensure that the IAS programme achieves its intended results.

## 6.2 Determinants of smallholder horticulture farmers’ participation in the IAS programme

This section draws on Chapter 4, the findings chapter, to explore the nine themes inductively identified from the data, illustrating how smallholder horticulture farmers engage with the IAS programme. The section is organised into two main thematic areas: enablers of participation, which includes two themes, and constraints of participation, comprising seven themes.

The first part focuses on enablers of participation, examining factors that motivated meaningful farmer involvement in the programme.

Eligibility for the IAS depended on having access to water and land, particularly owning a productive borehole and having secure land tenure. These requirements acted as both facilitators and limitations, depending on whether the farmer possessed them or not.

### 6.2.1 Enablers of participation

Smallholder horticulture farmers who owned land and had access to reliable boreholes were able to participate in the IAS programme and benefit from it.

#### 6.2.1.1 Transformational IAS packages

The comprehensive nature of the IAS packages, such as tunnels, drip irrigation systems, reservoirs, and borehole solar equipment, has been identified by respondents as an incentive for participation. Farmers who invested in these packages were able to mitigate adverse climatic conditions and extend the production season, allowing them to grow winter crops during the summer and summer crops during the winter. One 'participant' (P2) said, "We can now water as needed; the big reservoir helped us," underscoring the value of production infrastructure in not only improving production but also building resilience. Such findings are consistent with the available literature, which suggests that well-targeted subsidy programmes can improve access to production infrastructure and promote commercialisation (Boamah et al., 2019; Food and Agriculture Organisation (FAO), 2021).

Furthermore, the inclusion of solar borehole equipment has decreased the reliance on diesel and grid electricity, not only lowering production costs but also aligning the policy with climate-smart agriculture objectives. Participants viewed these packages not just as simple inputs but as structural improvements that brought significant transformation to the farm, enhancing production and the quality of life in rural areas.

This aligns with broader arguments in the literature that subsidies, which do not solely focus on consumables such as seeds and fertilisers, but invest in production assets, offer long-term benefits (Dorward & Chirwa, 2011; FAO, 2021).

#### 6.2.1.2 Alternative funding

Although IAS is the focus of this study, several respondents, especially programme implementers, alluded to the adaptive approach taken by youth farmers who are unable to meet the 50% requirement and instead leverage the Youth Development Fund, as key informant (KI3) remarked, “We saw several youths also taking advantage of the Youth Development Fund.” This comment suggests that while IAS may be exclusive in its design, Botswana's broader support ecosystem provides alternative financing models that some farmers, mainly youth, can successfully utilise.

The availability of alternative funding indicates institutional pluralism, which allows smallholder horticulture farmers to strategically and successfully navigate the funding landscape. This scenario supports the pleas by Ramos-Sandoval and Bustamante Diaz (2024) and Pauw (2022) for greater integration and the avoidance of institutional duplication among government institutions. A more harmonised approach could improve funding availability, monitoring and progressive support for smallholder farmers to semi-commercial farmers.

#### 6.2.1.3 Institutional design

Despite widespread criticism of the IAS design and implementation, some respondents acknowledged that certain aspects of the programme enhanced transparency and accountability. Notably, the decentralised project appraisal, monitoring, and evaluation are carried out by district officers and local extension officers. This is commendable as it reinforces transparency and limits elite capture by ensuring the application appraisal passes through multiple stages, from the local extension officer to a team of officers conducting site visits, to the district appraisal team. Finally, disbursement is handled by the National Development Bank (NDB). This decentralised multi-actor process promotes transparency and reduces favouritism. These features resemble an innovative subsidy approach, where fairness and performance-linked disbursement are encouraged to ensure equitable access. (Pauw, 2022).

Including technical officers in the evaluation process and requiring a farm visit before approval helps prevent misrepresentation and abuse. Although implementing these measures faces challenges such as staff shortages and transportation issues, which frustrate farmers, their presence indicates that the IAS has the potential for equitable access if these challenges are adequately addressed. Therefore, the success of the IAS depends on both its implementation strategy and its content.

## 6.3 Constraints of participation in the IAS programme

Although the IAS programme has demonstrated potential to stimulate growth within the horticulture subsector and promote commercialisation, its impact remains uneven and is limited by various context-specific barriers. This discussion focuses on themes that reveal the constraints undermining smallholder farmers' participation in the programme. These limitations reflect the programme's internal structural design and broader external issues affecting smallholder farmers in Botswana.

### 6.3.1 Financial barriers and co-financing requirements

Most respondents have highlighted the 50% upfront co-financing requirement, which is therefore the most significant barrier to smallholder farmers' participation in the IAS programme. This co-financing requirement was designed as a cost-sharing measure to promote farmer ownership of the purchased packages and to encourage their profitable use. However, the interview results indicate that the co-financing requirement is a significant barrier, excluding resource-poor farmers, including youths and first-time farmers, as they cannot raise enough money to meet the 50% co-financing requirement. Across all respondent categories, it became clear that the 50% co-financing threshold is steep for many farmers, given that many are not creditworthy and few funding options are available to them. The upfront, one-off payment of the 50% requirement makes it even more difficult for farmers to raise the lump sum.

As one intended participant (IP1) said, "Raising 50% of 400,000 Pula is not easy. Where will you get that money?" and this sentiment was shared among several other respondents who perceived the programme as meant for the farmers who are well established and can raise the required amount, or the working class who are creditworthy, thus sidelining resource-poor farmers, especially the full-time smallholder farmers who have no other source of income. The participants who managed to pay the required 50% were frustrated by the delays in disbursing the subsidy. This delay created uncertainty and mistrust in the programme's implementation reliability. One key informant (KI4) recounted the farmers' frustration, "Some farmers have long paid their 50% contribution 5 months ago, but have not been funded." Such administrative delays expose farmers to cash flow vulnerabilities, especially since some have taken loans, others have used their working capital or all their savings, or have liquidated some of their assets to meet the co-financing threshold.

These findings are consistent with the broader views in the literature, especially the critiques of the co-financing subsidy models. Some argue that while co-financing models are intended to improve programme targeting and commitment, they can widen the gap between the resource-poor farmers and those who are well-off, especially if not adapted to contextual local financial realities (Wang et al., 2019).

Bharati et al. (2024) similarly warn against high co-financing thresholds, which they view as creating an exclusionary effect, sidelining smallholder farmers who are not creditworthy. These exclusionary effects were evident in this study, where farmers with land and water, who were committed to full-time farming, were excluded because they could not meet the 50% upfront payment requirement of the subsidy programme.

Furthermore, the co-financing requirement, although aimed at farmers with the capacity to expand, assumes that farmers can meet the co-financing threshold. The programme did not consider volatile input prices; for example, one farmer reported having to pay more than 50% because by the time the subsidy was disbursed, prices had increased, and she had to cover the difference. The high cost of living in rural areas was not taken into account, especially since farm income is irregular and imports often distort local markets. The programme risked excluding farmers who could otherwise thrive if the co-financing requirements were more flexible, allowing farmers to acquire inputs, produce, and settle payments.

Striking a balance between risk sharing and accessibility is crucial, as reflected in the literature review. Chirwa and Dorward (2013) discussed how the AISP programme in Malawi and Zambia employed a differentiated contributions model to accommodate resource-poor smallholder farmers, without compromising the programme's integrity. However, the IAS's one-size-fits-all approach, where all farmers contribute the same amount, without considering their financial capabilities, has created a participation gap between capital-constrained farmers and those who are financially stable. All participants are either working or retired professionals, hence financially capable of meeting the co-financing threshold.

Although the financial model of the IAS programme is based on sound economic principles, it lacks contextual sensitivity as to whether smallholder horticulture farmers can meet the co-financing threshold. This assumption that smallholder horticulture farmers are financially capable of meeting the required 50% co-financing overlooked the diverse economic realities of smallholder farmers in Botswana.

The findings of this study suggest that future iterations of IAS revisions should consider the varied financial situations of smallholder horticulture farmers in Botswana and include a differentiated co-financing model. This could link farmers to horticulture-specific financing that allows them to pay from farm proceeds after utilising the subsidy, and include in-kind co-financing contributions where farmers' development will be valued. Farmers should also be able to select a package that suits their needs and aligns with the value of their prior investments.

### 6.3.2 Infrastructure and environment constraints

The IAS programme required farmers to demonstrate access to water, typically through a borehole capable of producing 2.5m³ per hour. This disqualified many farmers, highlighting how ecological barriers were linked to programme eligibility.

Despite Kweneng being situated on the semi-arid, hard veld of Botswana, also known as the eastern margin, and reportedly receiving somewhat better rainfall than the southern parts of the country, the environmental conditions in this district, such as drilling dry or nearly dry boreholes, water scarcity, and ecological fragility pose significant barriers to smallholder farmers' participation in the IAS programme. This is best illustrated by the experiences and realities encountered by farmers on their farming journey. One farmer stated, "I drilled six boreholes and found no water," recounting how she drilled four dry boreholes, then encountered water in the next two; however, one borehole became blocked with mud, leaving her reliant on a single borehole that does not supply enough water and constrains her production. This highlights the challenging hydrological conditions typical of semi-arid zones, such as the Kweneng District.

Such experiences are common among farmers; many have drilled dry boreholes or found that their boreholes yield less than the 2.5 cubic meters required by the IAS programme, despite incurring high drilling costs, as drillers are paid regardless of whether water is found. Due to these hydrological challenges, drillers do not conduct water surveys, forcing farmers to pay both the water surveying and drilling companies, with no guarantee of water, only probabilities.

Consequently, drilling a borehole becomes a costly and risky venture. Although farmers, especially non-participants, identify borehole drilling as their greatest need, it is not included in the IAS packages. Farmers perceive that the government aims to avoid the risks associated with dry boreholes by passing these risks onto the farmers.

Although the IAS packages include infrastructure such as reservoirs, solar borehole equipping, and irrigation, especially drip irrigation, these are as effective as the water sources that feed them. In hydrologically challenging zones where the borehole water yield is dry or low, or where the water table is deep and unreliable, such infrastructure cannot help farmers scale up production, and they are trapped in a cycle of underperformance despite initially meeting the IAS programme requirements. In several interviews, farmers expressed frustration due to the mismatch between the programme and their actual needs, given the water scarcity challenges they face. They suggested that, in addition to the packages provided by the programme, hydrological mapping, water surveying, and borehole drilling are the most pertinent needs. Addressing these could enhance the impact of the IAS intervention and make its objectives more achievable.

This misalignment highlights a critical oversight in the IAS programme design, where infrastructure development without ecological readiness appears insufficient. Therefore, the future iteration of the programme would benefit from incorporating as many factors affecting farmers as possible, including hydrological surveys and basic ecological screening, into extension services that are not only targeted at the programme but also offered as a regular service to farmers.

### 6.3.3 Extension and institutional support gaps

Farmers across all categories have raised concerns about the poor quality of extension services, noting limited visibility, unresponsiveness, and the limited reach of horticulture extension officers, suggesting that the programme did not incorporate extension capacitation into its design. Farmers have expressed a lack of extension support, especially when they need it most, such as when unknown pests and diseases attack them.

The lack of timely support during the application, implementation, and post-implementation phases left many farmers to rely on trial and error with new technologies, which may lead to farmers taking a long time to realise the benefits of their investments.

The lack of visibility of extension agents is a shared concern among respondents, as a non-participant bluntly said, “They stay in their offices; they do not know what is happening on the ground.” This quote reflects a widely shared concern about the disconnect between extension officers and on-farm realities, especially in remote areas with limited infrastructure. This concern may have led to the perception that extension officers lack adequate skills to assist farmers.

These concerns are not unique to the IAS implementation but are consistent with critiques of Botswana agricultural extension services in the literature. Literature on extension systems in Sub-Saharan Africa, including Botswana, suggests that extension area in the region suffers from understaffing, inadequate training, and poor logistical support (Salman, 2015; Tham-Agyekum et al., 2024). In decentralised systems where the extension support is at the district or subdistrict level, and where there are no incentives for proactive outreach, the gap between extension and farmers on the ground seems to widen.

Moreover, unlike traditional subsidies that focus on seeds and fertiliser, the technical nature of the IAS packages requires technical guidance. Technologies such as solar pump systems, drip irrigation, tunnels, and off-season production demand close farmer mentoring to ensure a return on investments. Farmers, however, have reported being abandoned after acquiring the technology, with no follow-up visits or technical guidance on how to use it. This undermines the benefits of the IAS-promoted technologies, leading to underutilisation, misuse, or even damage to the acquired technology.

The implications of this extension gap are significant. Without adequate extension support, the benefits of the IAS packages are undermined, particularly for farmers who are new to horticulture or have no prior experience with production technologies. Chirwa and Dorward (2013) argued that to achieve a return on investment (ROI), agricultural subsidies should not only focus on input supplies but also strengthen knowledge transfer, institutional feedback, and farmer support to ensure equitable uptake and the benefits of the programme.

Farmers' suggestions for addressing these gaps include the need for extension officers in every extension area to ensure proper support and monitoring, as well as to offer on-farm training on the use of new technologies. This approach will bridge the perceived gap between farmers and extension services, build trust in government interventions, and enhance the implementation of the IAS programme. Overall, the findings suggest that the success of IAS depends on capacitating the extension officers, ensuring they are visible, and providing regular monitoring and training to farmers. This will help ensure that IAS packages do not remain underperforming and underutilised.

### 6.3.4 Programme design and policy uncertainty

The IAS programme's design and delivery seem to be hindered by frequent changes in the implementation guidelines, ambiguity, and poor communication. Although not explicitly mentioned by respondents, confusion was observed when several respondents confused the two different guidelines in their narratives. This confusion could potentially deter participation. It was noted that all farmer categories, including participants, intended participants, and non-participants, demonstrated a lack of thorough understanding of the eligibility criteria, application procedures, and turnaround times.

One farmer leader, a key informant (KI3), remarked that, “Many people are not aware of the government programmes,” pointing to an information gap due to having only one extension officer in their area. Although many farmers were aware of the programme, they struggled to explain its requirements and procedures, often confusing the requirements of the Horticulture Enterprise Support Programme (HESP) with those of the 2022 and 2024 IAS guidelines. The invisibility of programme announcements, the lack of kgotla meetings (extension meetings that farmers are accustomed to), and the frequent policy changes left many farmers with some knowledge of each policy but not enough to foster confidence and participation.

Several respondents described prerequisites that were unclear, such as the requirement for water rights. Some thought it referred to permission to use water bodies, such as rivers or dams. In contrast, others believed it meant they needed water rights to draw water from their boreholes, which are issued by water authorities.
Such ambiguities undermined confidence in the programme's reliability and created the perception that the prerequisites are complicated and costly, making it challenging to meet the requirements even before applying.

These observations made during the interviews are consistent with some findings in the literature, where ambiguous policy signals can cause confusion and erode trust in agricultural development programmes, especially in remote areas where extension services are limited and access to clarification is limited (Karata, 2024). Others argued that predictability, transparency, and timely delivery contribute to policy credibility and are crucial for improving uptake (Chirwa & Dorward, 2013). When farmers perceive that policy is too technical and difficult to understand, and that guidelines are fluid, participation becomes a gamble rather than a strategic investment.

These uncertainties were exacerbated by variabilities across districts, as expressed by key informants in farmers' association leadership, since their interviews were not limited to Kweneng District. While farmers in Kweneng District reported a streamlined process, key informants from farmer organisations in other districts complained about having insufficient information to facilitate their participation. They observed bias in implementation across districts, such as funding 10,000-litre plastic tanks instead of conventional reservoirs. Key informant (KI2) said, “I know people who applied with the same requirements, but one was funded and another was not. We do not know how they choose.” As a leader in farmer organisations, KI2 reflected on how one farmer was funded for plastic tanks, and another was rejected in a different district. Such instances discourage participation, as farmers feel there is a bias in programme implementation.

Overall, these observations highlight a significant gap in IAS programme design and field-level implementation. Future iterations might benefit from greater policy stability, improved outreach strategies, and clearer communication channels, including farmer-friendly radio broadcasts, extension kgotla meetings, and social media platforms such as WhatsApp and Facebook groups, which have become popular among farmers.

### 6.3.5 Market dynamics and price manipulation

Second to the 50% co-financing threshold barrier, market and price manipulations, which were mentioned by almost all respondents, are significant issues. Market dynamics and price manipulation appear to be significant deterrents to participation in the IAS programme, as farmers question the return on investment. While the IAS programme aims to facilitate the commercialisation of horticulture in Botswana, farmers across all categories reported challenges in selling their produce at fair prices, especially in the absence of formal supply contracts and structured market channels that characterised the horticulture sector in Botswana.

Participants expressed deep frustration with what they term predatory pricing by retailers. One participant (P4) remarked, “They do not buy our produce; it’s a donation,” expressing strong dissatisfaction with the low prices offered by retailers and the farmers' inability to participate in pricing or negotiations. She described the situation as a 'take it or leave it’ kind of arrangement. Farmers perceive that these prices are well below the breakeven point, making it impossible for them to scale up or even continue production.
This situation has created reluctance to expand, even among farmers who benefited from improved production technology in the IAS programme.

Several respondents, including farmers and key informants, noted the seasonality of production and supply, along with the lack of coordinated market structures, which occasionally lead to gluts and further push prices down. Without cold storage facilities or formal supply agreements, perishables were sold at giveaway prices or left to rot on farms. As participant (P6) said, “You have no choice but to give them,” referring to a situation where, on delivery, prices dropped below the initially agreed prices, and the farmer was asked to keep her produce if she did not supply at the current price. Facing a dilemma about what to do with a harvested ton of tomatoes, she had no choice but to deliver at a price far below what was initially agreed upon. This power imbalance between retailers and smallholder farmers illustrates Botswana's situation, where retailers have monopolised the market and smallholder farmers feel sabotaged.

The literature echoes the same concerns, highlighting how the failure to integrate smallholder farmers into organised and transparent markets often undermines the benefits of the subsidy programmes (Walls et al., 2023). Without price stabilisation mechanisms such as floor pricing, buyer contracts, and coordinated market platforms, farmers are exposed to unfair market competition. They may be hesitant to invest in costly advanced production structures.

The IAS design and focus overlooked these downstream challenges. As one farmer (NP1) put it, “They oversimplify the market,” referring to the notion from the extensionist that there is a market simply because of the perceived shortfall in local production to meet the national demand. Although the IAS helps farmers with the necessary production tools, they are left to navigate unfair markets and face powerful retailers who want to push prices as low as possible without taking into account production costs. This unbalanced approach, which promotes production without creating a fair market system, weakens the overall impact of the IAS programme, as farmers face the dilemma of investing in production structures for which they are uncertain about the returns on investment. Chirwa and Dorward (2013) argued that for the subsidy programme to be effective, it must operate across the entire value chain, from pre-production to production and marketing, to ensure economic viability.

The farmer proposed a few reforms to mitigate these challenges, including enforcing buyer contracts, establishing collective marketing cooperatives, and providing public support for horticulture market infrastructure, such as cold storage and aggregation centres. These proposals align with broader literature recommendations for inclusive market institutions to complement subsidy programmes.

In summary, farmers echo the same sentiments that limited market access and price manipulations not only affect farmers' profitability but also undermine the IAS's aim of increasing production, creating employment, boosting rural income, and ensuring the long-term sustainability of the sector. It is therefore suggested that there is a need for government interventions in market governance so that the programme’s infrastructure transformation may lead to real income and livelihood improvements for farmers and those involved across the entire value chain.

### 6.3.6 Social and organisational factors

The social and organisational factors also influence farmers' ability to make decisions and participate in agricultural development programmes such as the IAS programme. Some of the recurring themes across all categories are farmers' failure to work together, characterised by limited group organisation, weak collective action, and a lack of intergenerational interest in primary horticulture production.

One key informant remarked that “Farmers rarely organise. There is too much individualism, and they compete against each other.” This remark reflects a broader situation in which farmers operate in isolation, unable to pool their resources, share knowledge, or collectively bargain for input prices or fair market access. This individualism and lack of farmer participation in farmer associations hinder all efforts of collective advocacy and bargaining.

Some respondents believe that the lack of youth or intergenerational involvement in horticulture is due to the perception that it is unprofitable and labour-intensive. Some elderly farmers, most of whom are over 50 years old, expressed concern about the future of horticultural production, as their children and young people in general show little interest in horticulture.
This generational disconnect threatens the future of horticulture's primary production and the sustainability of the sector, including agricultural subsidies like IAS, which aim to expand and build resilience over time.

Farmers often complained of labour shortages, citing local reluctance to take up horticulture farm work and the unreliability of foreign labour. This shortage is severe, with farmers reporting that expatriates often work for only one month before leaving without notice, frequently leaving the farm unattended. Most farmers work full-time and do farming on weekends, or are retired professionals who live in the city and visit the farms only a few times a month. With unreliable and limited access to hired labour—due to the absence of cooperatives to coordinate shared labour schemes—smallholder farmers often fail to fully utilise the technology gained through the IAS programme. This may reduce the benefits of the technologies provided by the subsidy and hinder scale-up efforts, as farms may operate at a fraction of their capacity.

The role of social capital and group organisation in facilitating equitable access and participation in rural development programmes should be examined. When trust, norms of reciprocity, and local institutions are weak—as observed among the horticultural farmers of Kweneng District—subsidy programmes may increase the gap between the wealthy and the poor, leading to greater inequalities instead of reducing them.

Therefore, strengthening community social farming groups such as farmer associations, cooperatives, or regular meeting programmes like the IAS may not realise their full potential. Enhancing farmer grouping and incentivising youth engagement in primary horticulture production should be viewed as an integral part of the subsidy programme and complementary to the technical and financial objectives of agricultural development programmes such as the IAS.

## 6.4 Conclusion

This chapter has examined the engagement of smallholder horticulture farmers with the IAS programme in Botswana's Kweneng District. It explored distinct participatory pathways, including various ways in which farmers engaged with the programme, such as participating, withdrawing or abandoning applications before completion, and outright abstinence from participation. The analysis is divided into two major sections: how farmers engage with the IAS programme and the factors that determine their engagement. Themes inductively derived from field data and relevant literature revealed that IAS has significant potential to transform the horticulture landscape in Botswana. However, respondents' perceptions indicate that its design and implementation yielded uneven results due to systemic, institutional, social, and environmental barriers.

The analysis of the field data revealed that transformative IAS infrastructural support, adaptive funding strategies, and decentralised implementation mechanisms served as enablers of smallholder farmer participation in the IAS programme. This was particularly true where conditions were favourable, such as when an extension officer was present in the area and ecological conditions permitted. However, these benefits were undermined by the high co-financing threshold, invisible extension services, ecological unpreparedness, market exclusion, and farmers' failure to collaborate for advocacy and bargaining. These challenges appear to have limited smallholder farmers' access to the subsidy and its impact, especially for vulnerable and unconnected farmers.

This study reiterates the proposition that inclusive and equitable subsidy programmes require more than just input distribution; instead, the subsidy programme should be embedded in a broader support system that integrates the horticulture value chain from pre-production to markets and recognises the heterogeneity of smallholder farmers. Critical issues such as reliable technical support, financial viability, market access, and farmer organisation should be addressed in a coordinated manner. The results also show that the success of the IAS programmes depends not only on resource delivery but also on consistent policy guidelines, credibility, and clarity to enhance uptake.

Finally, the chapter highlights the importance of context-specific programme design that considers the lived realities of farmers, builds public trust in government initiatives, and fosters a participatory approach that supports farmer agency. A holistic approach addressing these challenges may lead to a meaningful and sustainable impact in Botswana's horticulture subsector, ensuring that the subsidy does not exacerbate existing inequalities but rather reduces them.

# Chapter 7: Conclusion

## 7.0 Introduction

This research examined the determinants of smallholder farmers' participation in the Impact Accelerator Subsidy (IAS) programme in Botswana, a 50:50 matching grant horticulture support scheme. The study is positioned within a broader discourse on agricultural commercialisation and rural development in Sub-Saharan Africa. It investigated how structural, institutional, and individual factors influence the involvement of smallholder farmers in horticultural subsidy initiatives. The analysis focused on three categories of farmers: participants, intended participants, and non-participants, thereby highlighting the diversity of smallholder farmer experiences and providing nuanced insights into the factors that enable or hinder farmer participation.

## 7.1 Key findings

The findings of this study indicated that participation in the IAS programme is not a binary outcome, but a process shaped by intertwined factors. While some farmers successfully accessed the programme and reported improved infrastructure and production, others were excluded or withdrew due to financial, institutional and informational barriers.

Three distinct categories of farmer participation emerged from the data:

1. Participants: This category benefited from infrastructure such as solar boreholes, drip irrigation systems, and production structures, enabling enhanced agricultural production.
2. Intended participants: These farmers encountered delays, high co-financing thresholds, and unmet expectations, which led to disengagement.
3. Non-participants: This category includes farmers who were deterred mainly by programme design exclusion, lack of adequate information, mistrust, and poor market conditions.

The main constraints included a rigid co-financing model, weak extension support, environmental unpredictability, especially water scarcity, market manipulation, and lack of farmer organisation. On the other hand, enablers included the transformative potential of the IAS packages, decentralised programme appraisal, and the use of alternative funding sources, such as self-financing and the Youth Development Grant.

## 7.2 Contribution to knowledge

This study contributes to the existing literature on agricultural subsidy programmes in Sub-Saharan Africa by shifting the focus from staple food crop subsidies to horticulture-specific subsidies. It uniquely incorporates perspectives from non-participants and disgruntled applicants, voices often absent in policy evaluations. Additionally, by applying inductive thematic analysis, the study reveals how institutional design and farmers' lived realities frequently diverge, leading to implementation gaps.

The study further emphasises that smallholder farmers' participation is context-specific and influenced by historical, socio-political, and agro-ecological factors. It challenges the assumption of uniform farmer needs, highlighting the importance of designing responsive, inclusive, and adaptive subsidy programmes that cater to diverse smallholder contexts.

## 7.3 Policy implications

This study highlighted several policy implications that emerged as relevant from the interviews. First, there is an urgent need to formalise horticulture markets. Farmers reported facing unpredictable prices, manipulative practices from retailers, and limited bargaining power. Addressing these challenges requires investment in decentralised aggregation centres, transparent pricing systems, and structured farmer-buyer contracts. Without interventions that restore fairness and stability in the horticulture markets, even farmers who received subsidies may struggle to sustain production or realise returns on investment.

Secondly, there is a need to revise the IAS co-financing model. While cost-sharing can enhance ownership, a rigid 50% threshold excludes many resource-poor farmers who are committed to the initiative. To reduce exclusion and broaden participation, there is a need for a tied and flexible co-financing model, where farmers can pay in instalments or access horticulture-specific credit schemes secured against future production.
Third, there is a need to strengthen and localise horticulture extension services. Improving the technical capacity, visibility, and outreach of extension officers is essential. The respondents emphasised the need for consistent and relevant extension services, which are local, rather than a top-down approach that ignores the heterogeneity of the environment in which farmers operate.

The fourth policy implication concerns improving communication and programme transparency. Farmers expressed confusion over policy updates and reported inconsistent messages. A communication strategy that utilises familiar methods, such as kgotla meetings, radio broadcasts, on-farm demonstrations, and WhatsApp groups, may increase awareness and build trust.

The fifth policy implication is the need to support and incentivise farmer organisations. Strong and functional farmer associations or cooperatives can coordinate production, facilitate collective marketing and the sharing of resources, and enhance the bargaining power of farmers. The study recommends providing structured support to associations, cooperatives, and commodity groups, ensuring they have adequate capacity in governance, management, and resources.

Lastly, the study recommends bridging the gap between institutional narratives and farmers' realities. Institutional actors often view challenges as implementation delays and oversimplify market issues, whereas farmers perceive them as genuine barriers to accessing the much-needed assistance. Programme design should include inclusive monitoring, grievance redress mechanisms, and farmer feedback loops to enhance legitimacy, responsiveness, and participation.

Top-down programme designs, even if well-intentioned, can exclude farmers who need help, especially if they do not align with local realities. For the subsidy programme to be inclusive, it may need to expand across Botswana and beyond. Move beyond technocratic fixes and adopt context-sensitive designs with sustained institutional support. Treating farmers as partners, rather than just beneficiaries, is essential for building a resilient and equitable horticulture sector.

## 7.4 Reflection on the scope of the study

This research was conducted in the Kweneng District and relied on qualitative data, which limits its generalisation to other regions. The study employed purposive sampling, providing rich and in-depth insights; however, it may not be representative of all smallholder horticulture farmers in Botswana. The over-reliance on self-reported experiences may introduce recall and social desirability bias.

## 7.5 Recommendations for future studies

Future studies should consider comparative analyses across districts to explore regional disparities in the implementation and delivery of IAS. Studies focusing on impact can provide more insight into technology adoption, the long-term effects of the subsidy, and the sustainability of horticulture primary production enterprises. Additionally, quantitative assessments could help identify measurable outcomes such as income, yields, and employment creation. Finally, studies that examine the influences of gender, youth, and land tenure on participation would aid in developing more inclusive and equitable subsidy programmes.

# 8. References


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# Appendix 1: INFORMATION SHEET

**Research Title:**

Determinants of Smallholder Farmer Participation in Botswana's Horticultural Impact Accelerator Subsidy (IAS) Programme

**Researcher Introduction:**

My name is Otlaadisa Jacob Ramothudi, and I am conducting this study as part of my Master of Agribusiness (MAgribus) degree at Massey University, Palmerston North, New Zealand.

**Project Overview:**

This research aims to explore determinants of smallholder horticulture farmers' participation in the Impact Accelerator Subsidy (IAS) Programme in Botswana. The IAS programme, initiated to support farmers by subsidising the costs of essential horticulture inputs, aims to enhance productivity and contribute to national food security. Your participation will provide valuable insights into the determinants of participation and help inform future policy and programme enhancements. This study invites participation from key informants and farmers engaged with or aware of the IAS programme.

**Identification, Recruitment, and Invitation:**

You are invited to take part in this study because you are either someone knowledgeable about the IAS programme, or a horticulture (fruit and or vegetable) farmer who has participated or not participated in the IAS programme.

I will seek to interview you at a time and place that is suitable for you. The interview will take 30 minutes to 1 hour. With your permission, the interview will be audio recorded. The researcher will transcribe the audio recording. The identities of the interviewees will be kept confidential, and their comments will remain anonymous. The interview will be conducted either face-to-face, via telephone, or video call.

The interviewees will be referred to as farmers or key informants in the thesis to maintain their anonymity and privacy.

For any questions regarding this study, please contact:

**Primary Researcher:**
Otlaadisa Jacob Ramothudi
Email: [redacted]
Phone: +26[redacted] (BW) or +64[redacted] (NZ)

**Massey University Supervisors:**

- **Dr Janet Reid,** T.P: +6469517812 / Email: J.I.Reid@massey.ac.nz
- **Dr Thiagarajah Ramilan**, T.P: +6469519266 / Email: T.Ramilan@massey.ac.nz

School of Agriculture and Environment, College of Sciences, Massey University, New Zealand.

**LOW RISK NOTIFICATIONS**

This project has been evaluated through peer review and deemed to be of low risk. Consequently, it has not been reviewed by one of the university's human ethics committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), don't hesitate to get in touch with Professor Craig Johnson, Director of Research Ethics, at telephone +646 356 9099 x 85271 or email humanethics@massey.ac.nz. Ethics Notification Number: 4000029939

# Appendix 2: PARTICIPANT CONSENT FORM

**Research Topic:**

**Determinants of Smallholder Farmer Participation in Botswana's Horticultural Impact Accelerator Subsidy (IAS) Programme**

**Declaration of Informed Consent:**

I have read or had read to me the information sheet in my preferred language and understood it. The study's details have been clearly explained, and any questions I had have been addressed to my satisfaction. I am aware that I may seek further clarification at any time. I understand that participation in this study is entirely voluntary, and I am free to withdraw from the study at any stage without any consequences.

**Consent Declarations:**

1. I agree/disagree to have the interview sound recorded (optional).
2. I understand that the recordings and/or notes will be securely stored and will not be accessed by anyone other than the researcher.
3. I acknowledge that all data collected will be kept confidential and used solely for academic research as described in the Information Sheet.
4. I agree to participate in this study under the conditions set out in the Information Sheet.

**Participant's Declaration:**

I,

_____

_____, hereby agree to participate in this research study under the conditions outlined above and in the Information Sheet.

Signature: _____

Date: _____

# Appendix 3: PARTICIPANT CONSENT FORM – PHOTOS AND VIDEO CLIPS

**Research Topic:**

**Determinants of Smallholder Farmer Participation in Botswana's Horticultural Impact Accelerator Subsidy (IAS) Programme**

**Intent**

The researcher seeks to enhance the study and presentation of the findings of this paper by taking photographs of your farm, including crops, and all equipment and structures acquired or not acquired under the IAS programme. The researcher will use the photographs that include people and video clips during the thesis presentation only. In contrast, farm photographs without people or any farm-identifying information, such as names or locations, may be included and printed in the thesis.

**Consent Declarations:** (Cancel the statements that do not apply to you)

1. I agree/do not agree to photographs and or video clips being taken on my farm
2. I agree/do not agree to be included in the photographs or video clips

**Participant's Declaration:**

I,

_____

_____, hereby agree to participate in this research study under the conditions outlined above and in the Information Sheet.

Signature: _____

Date: _____