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Cereal-Legume Value Chain Analysis: A Case of Smallholder Production in Selected Areas of Malawi

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Abstract: This article analyses the cereal-legume value chain in Malawi through a comprehensive VC Map, a SWOT exercise and a policy analysis. VC participation entails a number of challenges for smallholders. Limited access to land, technology and inputs, inadequate knowledge of market functioning, insufficient access to credit and extension services, combined with more general problems of poor infrastructures, often prevent smallholder farmers from accessing profitable market opportunities. The effectiveness of national policies (e.g., public extension service support, inputs subsidy system) oriented to increase smallholders' market access is often constrained by inadequate financial capacity, an inefficient public extension services system and limited involvement of privates in the extension services scheme. VC interventions should distinguish between VC-ready farmers, namely those provided with the minimum conditions of external and internal factors, and non-value-chain-ready farmers. Market-based interventions (e.g., enhancing VC coordination) are needed for enhancing market access of value-chain-ready farmers. Conversely, while non-market-based interventions (e.g., investments in basic infrastructure, increasing extension services, credit and inputs access) prove necessary to build the minimum asset thresholds for non-value-chain-ready farmers' participation in the market. A smallholder-friendly VC development relies on the role played by VC actors and the need to harmonise and improve existing policies to remove inadequacies, conflicts and overlaps in the various institutions charged with implementation.

Keywords: cereal-legume value chain; value chain analysis; SWOT analysis; policy analysis; value chain readiness; Malawi

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1. Introduction

FAO [1] defines the food value chain (VC) as 'the full range of farms and firms and their successive coordinated value-adding activities that produce particular raw agricultural materials and transform them into particular food products that are sold to final consumers and disposed of after use, in a manner that is profitable throughout, has broad-based benefits for society and does not permanently deplete natural resources'. This definition stresses the importance of some relevant elements such as the crucial role played by vertical coordination and the concept of a sustainable distribution of value added along the chain [2,3]. Many development interventions now use a VC approach as an entry point to engage smallholders, individually or collectively, in local and high value export markets [4]. Despite more than two decades of market liberalisation in Africa and considerable efforts made by government and non-governmental practitioners to transform the

smallholder agricultural sector from subsistence to commercial production, production remains fragmented and subsistence oriented, and unable to meet changing market demands [5–8]. Many VC initiatives fail to capture the heterogeneous nature of rural poverty, which includes diversified asset endowments, income flows, social embeddedness, and response capacity to shocks [9]. In their seminal article, Stoian et al. [10] have questioned the frequent underlying assumptions of VC interventions in developing countries. The authors associate external factors (basic infrastructures and services, common pool resources and social stability) and internal factors (asset endowments, interests and power) to the concept of 'value chain readiness', defined as the ability of households to meet the minimum conditions for participating in the VC. Smallholders' initial asset endowment (natural, human, social, physical and financial assets) is one of the most critical factors in determining market access while market-based interventions are needed for enhancing market access of 'value-chain-ready farmers' [10–14]. Therefore, VC interventions and policies need to distinguish between VC-ready farmers, namely those provided with the minimum conditions of external and internal factors, and non-value-chain-ready farmers.

Malawi is a small landlocked country of 15 million people, most of whom rely on agriculture for their food and livelihood [15]. Smallholder farmers farm on average less than 2 ha of land, and approximately half of all calories consumed by rural households come from their own food production [16]. Maize is the dominant staple crop in the country, covering over 60 percent of area planted and 70 percent of calories consumed [17]. High reliance on maize as a primary staple crop and low crop diversity leads to a primarily carbohydrate-based diet for most smallholder farming families, seasonal food insecurity and pervasive undernutrition [18]. Smallholder farmers in Malawi struggle with limited landholdings, diverse, complex agroecosystems, low access to agricultural inputs, high labour requirements and limited public extension support for smallholder agriculture [19–21]. Agro-ecological approaches to improve food security and nutrition for smallholder farmers include crop diversification and legume intercrops to improve food production, with evidence of positive impacts on livelihoods, nutrition, food security and ecosystem health [22,23]. Legume diversification in Malawi has been found to build up soil quality, reduce fertiliser application, increase soil cover, maintain higher yields, and reduce yield variability [22].

This work focuses on the cereal-legume value chain in Malawi. We present the results of a value chain analysis and policy analysis of a case-study in Dedza District located in the Central region close to the capital city, Lilongwe. The purposes of the paper are multiple. Through a value chain analysis, our goals are to: (i) Map the key cereal-legume VC pathways selected for Dedza district in Malawi, showing the relevant actors, the enabling environment (infrastructure, policies, institutions and marketing mechanisms) and the service providers (business and extension services); (ii) identify, through SWOT analysis, strengths, weaknesses, opportunities and threats that different VC actors face. Based on a policy analysis, our objectives are to: (i) identify the implementation and effectiveness levels of policy instruments in the selected value chains; (ii) factors limiting the adequate implementation and effectiveness of policy instruments; (iii) changes needed to existing policy instruments to overcome their implementation and effectiveness limits; (iv) the role which other VC actors might play to ensure synergies among public and private sectors for promoting value chain development; (v) policy strategies for promoting smallholders' value chain readiness, calibrated for 'non-value-chain-ready smallholders' and 'value-chain-ready smallholders'; (vi) policy harmonisation to promote the development of smallholder-friendly value chains.

The paper is organised as follows: Section 2 describes the methodology and source of information, Section 3 reports the results of VC analysis and policy analysis, while Section 4 concludes.

2. Materials and Methods

2.1. Value Chain Analysis

2.1.1. Value Chain Map

VC analysis implies understanding interactions between many stakeholders: primary actors who undertake input supply (e.g., seeds, fertilisers), on-farm production, post-harvest (storage, processing), marketing (wholesale, retail, export) and consumption; and the secondary actors, who perform support service roles for primary functions such as transportation, brokerage and service processing. In many cases, input and output flows of product comprise more than one channel and these channels can also supply more than one final market, implying a more articulated VC. All types of farmers, including both smallholders and commercial farmers may be involved, although the participation of smallholders is often very limited due to various barriers [23]. A comprehensive mapping exercise should be conducted to describe interacting and competing channels, the variety of final markets into which these connect, the enabling environment (infrastructures and policies, institutions and processes that shape the market environment) and service (business and extension) providers [24,25].

The enabling environment therefore consists of the critical factors and trends affecting the VC environment and operating conditions, and it is generated by structures (e.g., national and local authorities, research agencies) and institutions (policies, regulations and practices) that are beyond the direct control of economic actors in the VC. For instance, although EU policies have a much smaller impact on world market than in the past, they still have some effect on world prices and thus potentially on food security of developing countries. The last component of the map concerns the different services (e.g., market information, financial services and quality assurance) that support, or could potentially support and add value, the VCs' overall efficiency [24].

In this paper, a comprehensive VC mapping exercise has been conducted for cereal-legumes VC in Dezda district in Malawi. It provides the details about VC actors and their interactions, enabling environmental factors and service providers for each separate chain and case study. In Figure 1, different actors will be indicated using different colours, and a list of products and prices at different levels of the chain is also reported for full reference.

2.1.2. SWOT Analysis

A SWOT (strengths, weaknesses, opportunities and threats) analysis is the general, qualitative starting point for any competitiveness strategy or other analysis for decision-making purposes [26]. It is a way to provide a general characterisation of the current state of the VC and to perform an initial analysis of the potential opportunities and risks. It is used here at the level of the entire chain considering all the phases from outputs' production to processing and trade including the aspects related to the availability of inputs for outputs' production and processing. The SWOT analysis exercise allows a complex situation to be addressed and identifies the most important factors affecting the functioning of the selected VCs.

2.2. Policy Analysis

Based on policy guidance notes developed by FAO [27] and on the notion of 'value-chain readiness' [12], we used an approach in which different steps have been conducted to develop some policy recommendations for identifying the needed changes to existing policies to improve smallholders' access to market in the selected VC in Malawi.

Using the results of the VC analysis, smallholders' access to market and factors limiting smallholders' access to market and value chain participation such as asset endowments and enabling conditions were identified. The first step of policy analysis involved identifying the main policies and related instruments and objectives that govern the target VC in Malawi in supporting smallholders' access to market. For each identified policy, the policy programme (e.g., National Extension and Advisory Services Policy), the policy measure (e.g., implement quality agricultural extension services) and the policy objectives

(e.g., improved access to extension services and promoting the adoption of agricultural innovations) were included.

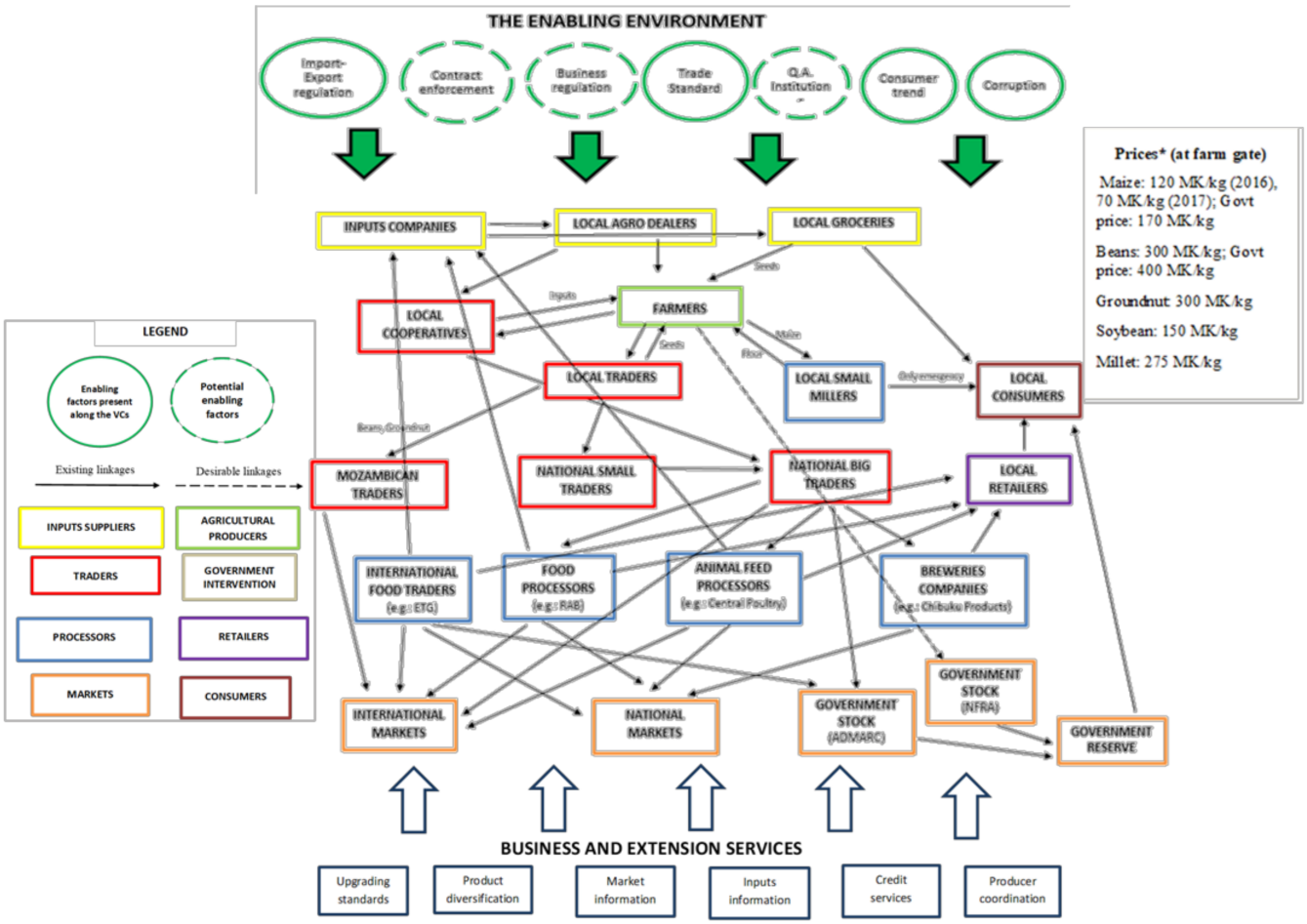

Figure 1. Maize-legume VC map in Dedza district in Malawi. * Prices refer to the average prices in the district and were communicated by the VC actors during the meetings.

The second step involved identifying to what extent such policies support smallholders' access to market and value chain inclusion, to what extent these policy measures are implemented and barriers (e.g., infrastructure, bureaucracy, limited public budget, etc.) which cause the inadequate implementation of the policy instruments at local level. In this step, suggested changes needed to existing policies and how these changes might be achieved were also reported.

The last step, policy strategies for promoting smallholders' value chain readiness, for 'non-value-chain-ready smallholders' and 'value-chain-ready smallholders'; (i) identifying the role which might be played by other VC actors to ensure synergies among public and private sectors for promoting value chain development; and (ii) diagnosing policy harmonisation opportunities to promote the development of smallholder-friendly value chains.

2.3. Source of Information

Primary and secondary data were used exploiting the positive effects of combining investigative techniques [28,29]. Specifically, the VC analysis and policy analysis were based on information gathered from: (i) extensive review of the relevant literature. A comprehensive literature review conducted both at national and international level provides the analytical framework and the baseline; (ii) collection of primary qualitative and quantitative data. Primary data were collected through survey focusing on smallholders

in Dedza District in Malawi, focus group discussion (FGDs), multi-actor platforms (MAP) meetings and key-informant interviews conducted in sites areas.

The survey was conducted with 340 households using the reference year 2017. A representative random sample of households was generated based on census lists. A multistage sampling procedure was used to identify the group of survey respondents. At first, clusters representing lower administrative units (e.g., districts or villages) were selected. Afterwards, single households within each cluster were randomly selected for interviews. Face-to-face interviews were conducted in 2018 using a structured, pretested questionnaire and information was collected on these aspects: households' socio-economic attributes; resources and equipment available; technology adopted, quantities of inputs used, and outputs produced; nature of markets and services accessed. Additional qualitative information was obtained through interviews, focus group discussions and MAP meetings in which stakeholders (e.g., farmers, traders, policy makers) were guided by specific questions.

In the FGDs, the discussions were conducted in 2019 with the support of a structured questionnaire to obtain in-depth information about the VC. The participants were asked to provide information to: (i) Map the VC of the site area with the actors, the links between them, and the prices at the different levels of the chain; (ii) identify and rank strengths, weaknesses, opportunities and threats of the VC in order of importance. The FGD questionnaire also consisted of specific questions addressing the different VC actors to collect additional information about suppliers and buyers, prices and markets, contracts and other purchasing arrangements.

During MAP meetings, conducted in 2020, participants were guided by specific questions in order to discuss and validate the selected agricultural policies to identify: (i) The implementation and effectiveness levels of policy instruments in the value chain; (ii) factors limiting the adequate implementation and effectiveness of policy instruments in the value chain; (iii) changes needed to existing policy instruments to overcome their implementation and effectiveness limits; (iv) policy strategies for promoting smallholders' value chain readiness; (v) the role which VC actors might play; (vi) the need to harmonise existing policies to promote the development of smallholder-friendly value chains.

3. Results

3.1. VC MAP and Characteristics of the VC Actors

The maize-legume value chain map in Dezda district of Malawi. The maize-legume VC map involves many actors that are interlinked along the entire chain from the pre-production phase (i.e., resources used as inputs to on-farm production process) to the post-production phase (i.e., post-harvest- processing-marketing-consumption).

Farmers as producers are only a first segment of the chain that includes several other actors and institutions such as traders, processors, consumers and different markets operating at national and international levels and the government institutions. The main characteristics and VC links are described below following the product flows. Farmers' characteristics are illustrated in Section 3.3.1 'Value Chain Readiness'.

Inputs suppliers

Results of FGDs and interviews indicate that in general trading companies (e.g., ETG) target large commercial farmers through their agents, while agro-dealers target both smallholders and commercial farmers. This is partially explained by the fact that agro-dealers stock an insufficient amount and variety of inputs to satisfy the large commercial farmers' demand.

Three categories of input providers operate in the area: Companies that produce their own marketed inputs; companies exclusively focused on inputs trade; and mixed producer-trader companies. Exagris constitutes an example of the first model. This national company is specialised in seed production, export and agro-processing. The core of its business is certified seeds production through an out-grower scheme. Farmers are contracted by the company and receive inputs to produce dry paprika, groundnuts and maize seeds.

The second business model is represented by ETC-Export Trading Company. Inputs are supplied by national and multinational companies. ETC commercialises these stocks in the farming areas through the company's agents and agro-dealers. A third model relates to companies (e.g., Peacock) which trade their own-brand products together with different categories of inputs purchased on the market. Peacock sells seeds and inputs and provides technical assistance to farmers. Production is based on out-grower programmes involving large farmers (>10 ha). Seeds produced are treated with chemicals and energiser to improve their germination, then packaged and distributed.

Agro-dealers

Agro-dealers sell seeds (maize, groundnuts, soya beans and vegetables), fertilisers, pesticides and herbicides to farmers and cooperatives. Agro-dealers work in collaboration with extension agents. Extension agents provide technical assistance to farmers and help to define inputs required, which are supplied by agro-dealers together with technical advice about their use. Farmers, who access to seeds, select varieties on the basis of drought tolerance capacity, early maturity period, high yield and high-income potential. Factors such as taste, storability, availability and cost also influence farmers' selection and use of seeds. Commercialised seed varieties are certified by the Malawi Bureau of Standards. Agro-dealers receive training about the marketed products from the companies for which they act. To become an authorised agro-dealer, a business license is required. Sales arrangements with farmers and cooperatives include cash, credit (rare), discounts for bulk purchases and preferred customers. Organisational arrangements with buyers are mainly informal (85%). Selling prices are based on other vendors' prices, buyers' demand, costs, location, year, and in some cases on intermediation of the Farmers Organisation. A subsidy system (FISP—Farm input subsidy programme) is in place to increase access to high quality seeds and fertilisers. The programme targets smallholder farmers who own land and are legitimate residents of their villages. Beneficiary selection, which is carried out by village heads and members of village development committees, is supposed to give priority to 'vulnerable' groups, reaching 35% of farmers. Illegal behaviours like dilution of chemicals and labels alteration by agro-dealers are reported by farmers.

Traders

Traders can be classified into three categories: local traders; national (small and big) traders; and international traders. Local traders buy raw materials from local smallholder farmers. The Lobi trading centre has about 25–30 grain buyers who sell their product to Mozambican traders and national traders. The volume of grain bought depends on harvesting time. National (small and big) traders buy products from local traders and sell them to both international traders and processors. Export Trading Company (ETC) trades different crops (e.g., maize, groundnut and soybean) as well as seeds and fertilisers. Maize stock is stored in warehouses in Lilongwe to be directed to national and international markets. ETC also processes soya beans into different products (soya pieces, soya milk and cooking oil). International traders include three main competitors (e.g., ETG, RAB and Farmers' World). They mainly buy grains from big traders. These companies are part of the Grain Traders and Processors Association (GTPA). ETG provides inputs to farmers and trades different crops for domestic and international markets. They provide seeds from other companies (e.g., Seedco, Pannar, etc.), while fertilisers are of their own production. They sell inputs directly to farmers and through agro-dealers. They have 18 warehouses and 6 processing plants, 2 of them dedicated to food processing. Maize is collected from smallholder farmers and other vendors. They have an internal quality system based on floor and ceiling prices, and work in collaboration with the NGO Total Land Care (TLC), which supports product quality enhancement, trading and knowledge sharing at farm level. On the other hand, ETG–agro, a sister company, provides mechanised services to companies, farmer groups and commercial farmers. The company has its own logistics and hires further services. ETG also supply government maize stocks (around 3,000,000 t/year).

Cooperatives

Seven cooperatives operate in the area. They have an average size of 50–100 members while the biggest has 250 members. Cooperatives buy grain from their members, who are provided with storage facilities, and sell it to big traders from Lilongwe and Blantyre. A related programme, 'Seed Loan Program', is implemented in the area. The Program includes crops to enhance self-reliance on food (e.g., common beans) as well as cash crops (e.g., groundnuts and soy). It consists of the following steps: selected seeds from the previous harvests are given to farmers. The following year they are returned, selected, graded and given to new members as a loan for further multiplication. Cooperative members are also encouraged to use improved seeds to reach market standards.

Processors

Raw materials are processed by different industries (e.g., food, animal feed and beer companies). RAB Processors Limited specialises in agro-processing. They are the leading players in food fortification technology in Malawi and collaborate with the government and international organisations in malnutrition alleviation programmes. Central Poultry is Malawi's largest animal processor. The company markets fresh and frozen chicken as well as commercial eggs. They have their own animal feed mill in which they process a diverse range of feeds. Chibuku Products Limited's line of business includes the manufacturing of malt beverages such as beer and liquors.

Millers can be classified into two different categories: small and big millers. Small millers are mainly local, and process traditional maize varieties produced by farmers for self-consumption. In the project area, there are 9 small millers. Big millers are not generally located in production areas. In some cases, big millers correspond to international traders (e.g., Bakhressa).

Enabling environment factors

Import-export regulation is particularly enforced on maize, which represents the most important national staple crop. Moreover, climatic conditions in Malawi are extremely unstable: the country is experiencing frequent droughts and national disasters. To combat internal food shortages, a ban on maize export is usually applied in years where exceptionally unfavourable climatic conditions have an impact on the domestic food supply. Government price control on maize is maintained to protect farmers from price fluctuations in the market. Nevertheless, good harvest years and subsequent high maize supply might lead to lower prices in the local markets.

Standards for trading vary according to the destination market. Traders operating in the international markets report a lack of homogeneity affecting the maize export potential. Consequently, most of them have put in place a price list based on grain quality categories. Quality control measures are sometimes adopted by smallholder farmers. In some cases, farmers very carefully select out their higher quality cereal and legumes for long-term storage to provide their food security and for seed for the next season. However, smallholders often show low capacity to access to inputs and technology, and therefore to produce high quality crops.

The Ministry of Agriculture, through Extension Services at the Extension Planning Area (EPA) is gradually trying to disseminate information on the available quality assurance to farmers.

Local consumption is mainly based on local-grown crops. Staple food crops (e.g., maize) form part of the traditional and cultural staple food systems. Cash crops (e.g., coffee, macadamia nuts and tea) are mostly destined for export.

Business and extension services

In the area, product differentiation, processing and marketing on the part of smallholder farmers, is almost non-existent. Sold products are mostly unprocessed harvest. On the other hand, big international companies are able to differentiate their production, adding value to fetch higher prices and to better compete in local, national and international markets.

Market and inputs information generally depends on the level of farming practices and on the level of community engagement of producers. Market-related information is provided by different organisations and institutions. The National Smallholder Farmers' Association of Malawi (NASFAM Commercial) supports farming as a business. Its services include trading support, product development and commercialisation, marketing strategies, wholesale and retail sales, financing programmes and input supply. Extension services provide information about both markets and inputs. There are also many agriculturally oriented NGOs in the area that provide technical assistance and training to groups of people they work with. However, farmers' participation in group activities like clubs at village or area level is variable, leading to a heterogeneous farmers' awareness and risk perception about market potentials.

Sources for credit and financial services at area level include Opportunity Bank, Finca, MADEF, Seed Loans (provided by cooperatives) and Village Saving Loans. However, a main issue related to credit services is ease of access to credit and whether farmers can provide collaterals or not. Through Village Saving Loans, members can contribute with a monthly fee to make savings contributions to the pool and borrow from it. This system is becoming particularly popular, allowing farmers to take out loans and not necessarily only for agricultural activities.

The main coordinating bodies of producers in the area are cooperatives and farmers' unions. Cooperatives' members contribute with a joining fee and buy shares at a fixed rate. Farmers Union of Malawi is an umbrella organisation of farmers and farmers' associations which advocates for the implementation of conducive policies for farmers. Its activities are related to institutional development, advocacy and agribusiness and market development.

3.2. SWOT Analysis

Table 1 reports the strengths, weaknesses, opportunities and threats that the cereal-legume VC in Dedza district in Malawi faces. The most relevant weaknesses in the inputs sector concern poor coverage of extension services and an inadequate fertiliser subsidy system which only targets the most vulnerable farmers without providing technical assistance. However, there are also noteworthy strengths (e.g., active local and international input suppliers and high-quality traditional seeds supply guaranteed by cooperatives through Seed Loan Program) and opportunities (e.g., increasing use of suitable varieties to meet market demand and availability of high-quality seeds adapted to climate change and local conditions) of the inputs sector. Smallholders have to face low and unstable prices, inadequate and poor storage facilities and insufficient capital to buy inputs and arrange product storage. The threats represented by unstable and adverse weather conditions, prices instability and the prevalence of monocropping might be addressed with greater government awareness. Actions to be taken should consider the importance of maize-legumes systems, improve crop rotations with legumes to respond to climate resilience and market demand and improving farmers' capacity building through Leading Farmers and Village demonstration plot approaches. The main weaknesses in the processing sector concern local millers that often face a lack of storage facilities, unstable supply of electricity and heterogeneous and unstable raw material supply, while the marketing phase has to cope with frequent changes in trade regulations, and, especially small traders, heterogeneous grain supply, insufficient market price information, low capital and high loan interest rates and high storage waste (about 20% of production). To understand how the different VC dynamics might improve smallholders' involvement in VC, we have included a further key factor, namely governance. Results of FGDs and interviews indicate that smallholders operate in a difficult business environment in which they interact with a wide number of potential buyers (depending on the crop considered). Business relations are generally initiated based on family's experience or smallholders might be reached directly by traders/middlemen, opening a long-lasting relationship in which maintaining trust through being fair in negotiation and following on agreement is considered a key ingredient to success. Although in the area cooperative system is developed and some national and

international relevant traders operate for different cereals and legumes, various weaknesses limit the smallholders' involvement in the VC. For instance, factors such as unstable prices, extreme climatic conditions and heterogeneity of production constrain the possibility of supply chain agreements involving smallholders. Moreover, in more remote areas only a few traders with transportation facilities are able to reach smallholders and scarce presence of big millers limits the creation of added value in the maize VC.

Table 1. SWOT analysis–cereal-legume VC in Dedza district (Malawi).

	Inputs	Output Production	Output Processing	Output Marketing and Trade/Export	Governance
Strengths	• Active local and international input suppliers • High quality traditional seeds supply guaranteed by cooperatives through Seed Loan Program • Existing quality control and inspection system on commercialised seeds	• High quality grain • Existing coordination between technical assistance providers	• Developed and differentiated sector (e.g., beer, animal feed, nutritional and fortified food products, etc.) • Availability of local milling station for local maize varieties processing	• Established export channels	• Cooperatives' system is developed in the areas • National and international traders operate in the areas for different cereals and legumes
Weaknesses	• Poor coverage of extension services • Inadequate fertiliser subsidy system which only targets the most vulnerable farmers without providing technical assistance • Informal seed sector lacks quality control (selling 'fake seeds' and uncertified seed) • Slow release process for new seed varieties	• Low and unstable prices • Lack of governmental monitoring on the real implementation of the maize floor price • Weak local infrastructure constrains access to local markets • Insufficient and poor storage facilities • Lack of formal organisational arrangements with traders • NFRA fails to purchase grain from local farmers • Insufficient capital to buy inputs and arrange product storage • Lack of policies conducive for agricultural innovations adoption	• Lack storage facilities (for local millers) • Unstable supply of electricity (for local millers) • Heterogeneity and unstable raw material supply	• Heterogeneous grain supply affecting competitiveness • Frequent changes in the trade regulation (e.g., export ban for maize) • Insufficient market price information (for small traders) • Low capital and high loan interest rate (for small traders) • Small traders are not able to gain access to ADMARC purchases • High storage waste (about 20% of production)	• Several factors (unstable prices, climatic conditions, heterogeneity of production) limit the possibility of supply chain agreements involving smallholders. • only a few traders with transportation facilities are able to reach more remote areas • Scarce presence of big millers in the production areas limits the creation of added value in the maize VC
Opportunities	• Enlarging the use of suitable varieties to meet market demand • Increasing availability of high quality seeds adapted to climate change and local conditions	• High awareness by government on the importance of maize-legumes systems • Scope to improve crop rotations with legumes to respond to climate resilience and market demand • Improving farmers' capacity building through Leading Farmers and Village demonstration plot approaches		• Expanding export toward Mozambique (for local and national traders)	• Including smallholder system in the VC managed by national and international traders through intermediation of the cooperatives which operate in the area
Threats	• Potential dependence on few dominant input suppliers	• Unstable weather conditions • Prices instability • Prevalence of monocropping	• Unstable national and international price • Unstable national supply	• Unstable national and international price • Unstable national supply • Unsafe road infrastructures and high frequency of thefts • Illegal markets • Frequent changes in trade regulation (e.g., export ban for maize)	• Climatic conditions extremely unstable (the country is experiencing frequent droughts and national disasters)

3.3. Policy Analysis

3.3.1. Value Chain Readiness

Figures 2 and 3 report, respectively, smallholders' access to market and factors limiting smallholders' access to market and value chain participation, such as asset endowments and enabling conditions. It is important to clearly define the concepts of value chain participation and value chain readiness which seem to overlap. In the present study, the former

simply refers to market access for produce commercialisation while the latter encompasses the reasons behind VC participation or non-participation. Therefore, value chain readiness is interpreted as the ability of households to meet the minimum conditions for participating in the VC. More specifically, farmers should reach minimum pre-conditions for a set of external and internal factors: external factors include access to basic infrastructures and services, common pool resources and social stability, while internal factors focus on asset endowments, interests and power. The use of the concept value chain readiness allows to define if a farmer is accessing the market, as well as the combination of pre-conditions which are the basis for it.

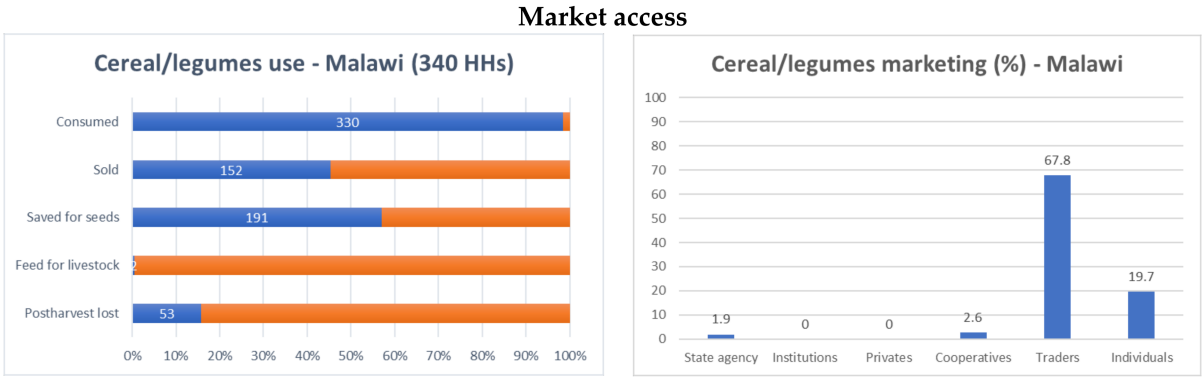

Figure 2. Value chain readiness in Malawi.

Figure 3. Asset endowments in Malawi. * The standard errors are presented in brackets.

Based on the results of the household (HH) survey, in the study sites 98.3% of households cultivate cereal and legumes, which are consumed by almost the entire interviewed sample (99.9%) but sold by 67.8% of households. Maize is the most popular crop in the area (cultivated by 98.16% of households), while soya, groundnuts and beans are the most popular legumes (cultivated by 49.8% and 30.4% and 30.0% of households respectively). The most traded cereal/legumes are maize and soya, sold by 42.1% and 76.3% of producers, respectively. Cereal/legumes are mainly sold to traders (57.7% and 34.9%, respectively). However, differences arise across the different crops (e.g., maize is also sold to the State agency, although by only 6% of producers). Overall, the results show two important findings. First, traders and individuals (who are not formally perceived as traders) are the most important marketing channels for households who sell cereals and legumes. Second, in the maize market, to address the problem of low farm gate prices, the government has established systems of floor prices subsidies. However, these measures have been somewhat helpful, but the subsidies are not reaching far, and the farmers tend to sell their maize below the floor price to private traders, because they cannot afford to wait for the ADMARC to turn up in their village.

Descriptive statistics show a higher access to input subsidies for VC participants compared to non-participants. MAP members pointed out that the subsidy system in place is not increasing farmers' productivity. Besides the difficult access to subsidies, smallholders lack sufficient training to make the best use of improved seeds, pesticides and fertilisers. On average, VC non-participants are relatively closer to a paved road in comparison to VC participants. However, VC participants are better endowed with transportation assets, which might assist them in accessing distant services and providers. As expected, VC participants show a higher proximity to the market in comparison to non-participants.

Natural capital was considered by MAP members to be a key factor to successfully access the cereal/legumes VC. In particular, the average small land size was considered a critical element to compete in the market with the existing larger companies. Accordingly, descriptive statistics show an average cultivated land size of 0.92 ha and 0.77 ha for VC participants and non-participants, respectively in the study sites. MAP members also highlighted that most farmers in the study sites still rely on maize monocropping, which contributes to soil nutrient depletion and loss of food production potential. In response to extensive degradation of the resource base, cooperatives and extension officers are promoting an increased use of fertilisers and soil management practices. This highlights the important synergy between natural and human capital. While almost half of VC participants reported using fertilisers (48%), the percentage drops to 41% for non-participants.

In the study site, VC participants show a generally better endowment of physical assets than VC non-participants, with the exception of communication assets. MAP members revealed that in the study sites cooperatives are now engaged in value addition in collaboration with public extension officers, with a strong commitment to applying for available grants to enhance smallholders' mechanisation.

VC participants in the area show a better human capital endowment, with the only exception being a lower education level of the head of household in comparison to non-participants. Nearly 40% of VC participants had accessed extension and advisory services. This might partially explain the increased use of soil management practices and the higher number of weather adaptation strategies adopted in comparison to non-participants. MAP members highlighted the crucial role played by human capital in the area. It bears the potential to generate a positive feedback loop with different assets. An example of this would be the building of human capital through training smallholders in integrated pest management that helps reduce costs and compensates for the low access to pesticides and allows reinvesting of the resulting financial capital in, for example, agricultural tools (physical capital).

Only 19% of VC non-participants come from households in which at least one member has membership of a farmers' association. Descriptive statistics show that smallholders in the area experience more difficulties with upstream actors (input providers) than

downstream actors (buyers). In particular, only 9% of VC participants declared to have experienced payment problems with buyers. However, MAP members highlighted that smallholders operate in a difficult business environment in which they interact with a wide number of potential buyers (depending on the crop considered).

Business relations are generally initiated based on the family's experience, or smallholders might be contacted directly by traders/middlemen, opening a long-lasting relationship in which maintaining trust through being fair in negotiations and adhering to agreements is considered a key ingredient to success. However, cheating behaviours are reportedly common, including for example, underestimation of product quality or lack of information sharing about prices. In this regard, MAP members stated that although the government sets minimum farm gate prices for maize, sometimes private buyers and even some government agencies do not adhere to such prices. In addition, MAP members observed that most vendors or private stakeholders only appear at harvest time. This makes pre-buying arrangements practically impossible, increasing uncertainty for smallholders. In relation to the previous point, all MAP members agreed on the strategic intermediation role played by cooperatives in the area. Only 30% of VC participants and 19% of non-participants are currently members of groups and/or cooperatives. Cooperative membership is generally promoted by government/support actors' programmes, as well as family/neighbours' experience. Cooperatives in the area maintain contacts with different buyers with whom, before the real market day, they bid the price and negotiate transportation, quantity and quality required and aggregation of produce.

VC participants display a slightly higher access to credit in comparison to non-participants (30% and 26% respectively). MAP members highlighted that the available village savings and loans programmes are not effective in increasing credit access in the area.

The results of the descriptive statistics confirm how the VC participation is strictly related to VC readiness. In fact, farmers who reach minimum pre-conditions in terms of social, natural, financial and human capitals and sustainable agricultural management practices (sometimes to counterbalance the low use of agricultural inputs) have a greater capacity for participating in the VC.

3.3.2. Policies in Supporting Smallholders' Access to Market

Table 2 reports the main policies and related instruments and objectives that govern the cereal-legume VC in Malawi. The first three columns show, respectively, the policy programme, the policy measure, and the policy objectives in supporting smallholders' access to market. The last three columns identify to what extent such policies support smallholders' access to market and value chain inclusion, to what extent these policy measures are implemented, and barriers (e.g., infrastructure, bureaucracy, limited public budget, etc.), which cause the inadequate implementation of the policy instruments at local level. In this step, we report suggested policy changes needed to existing policies and how these changes might be achieved.

Table 2. The potential of the selected policy instruments in supporting smallholders' access to market in Dezda (Malawi).

Policy Programme	Policy Measure	Policy Objectives	Implementation Level and Effectiveness	Limiting factors	Suggested Policy Changes
National Agriculture Policy	Strengthen farmer organisations through improving the development, branding, quality and marketing of their products, establishing labour standards, and building skills in price negotiation	• Performance and outreach of farmer organisations strengthened at all levels	• Implementation level for these measures is considered medium/low. Data from the household survey indicate that only 23% of respondents have access to groups and cooperatives. • MAP members recognised the high effectiveness potential of this instrument.	• Insufficient availability of financial resources • Low availability of extension officers to create synergies • Inefficient supervision and distribution of the available officers • Low employment rate which does not match with the actual demands • Lack of laws and regulations that can be used to enforce this instrument • The private sector is not perceived as an extension provider	• Increasing farmer organisations' capacity to support loan access for members by means of partnerships with big companies • Implementing the subsidies programmes through farmer organisations • Increasing capacity building of farmer organisations' leaders • Promoting a stronger partnership between researchers, extension officers and farmer organisations to enhance innovations and soil management/water conservation practices uptake • Increasing available resources to enhance the portfolio of farmer organisations' activities (this includes specific actions to engage with potential members) • Increasing the available coordination mechanisms to support organisations' linkages with other relevant VC actors; • The Ministry of Trade should facilitate the certification of other organisations to train groups on cooperatives on their behalf.
National Agriculture Policy	Establish an appropriate stakeholder and policymaker representation and coordination body to develop value chains	• Promote competitiveness of agriculture marketing value chains	• Implementation level for these measures is considered medium. Despite the negative effect of decentralisation, which disregarded the local structure of the agricultural sector, new coordination mechanisms (such as DAES) are emerging. • MAP members considered the potential effectiveness of this policy instrument high.	• Lack of financial resources • Lack of consideration for the local structure of the agricultural sector • Poor empowerment of District Council • High intermediation level in commercial transactions • Many companies send intermediaries from outside the study area during harvest season, but they do not have a mandate to negotiate with other local actors.	• Mechanisms that encompass all the players in the agricultural chain starting from providers to buyers (private as well as public, e.g., ADMARC) should be developed; • District Councils need to be empowered to be able to discipline VC actors' inappropriate behaviours; • Buyers should be engaged along the productive season to understand the challenges farmers face and make their contribution to finding viable solutions; • All relevant stakeholders within the agriculture sector should be involved when setting up a floor price.

Table 2. *Cont.*

Policy Programme	Policy Measure	Policy Objectives	Implementation Level and Effectiveness	Limiting factors	Suggested Policy Changes
National Agricultural Investment Plan	Delivery of relevant, evidence-based extension advice in a demand-driven and participatory way	• Improved access to extension services • Promote the adoption of agricultural innovations	• Implementation level for this measure is considered low due to the insufficient number of extension officers in the area. Data from the household survey indicate that only 30% of respondents have had access to extension services. • The effectiveness of this policy instrument was considered high.	• Limited financial resources • Limited number of available extension officers • Many smallholders live in remote areas difficult to access • NGO and support actors depend on extension officers for delivery • The poor coordination existing between actors make unclear the available offer of extension services to farmers. This strongly constrains a demand driven extension approach	• Increasing financial resources at the lower levels where more work needs to be done; • Increasing coordination among extension providers to clearly communicate the available services to farmers; • Increasing the number of extension officers; • A stronger partnership with research actors and cooperatives is required for developing effective solutions to be easily implemented by smallholders; • Extension should also focus on women and youth engagement in agricultural activities; • Facilitating the uptake of water and soil conservation practices, as well as other relevant innovations; • Promoting diversification (particularly by discouraging maize monocropping)
National Agriculture Policy and National Agriculture Investment Plan	Improve efficiency and broaden business base of commercial activities of ADMARC	• Enable ADMARC, to play a facilitating role in the development of smallholder agriculture in Malawi • Enhanced efficiency and inclusiveness of agricultural markets and trade	• Map considered the implementation level for this measure particularly low. • This measure was considered potentially highly effective by the majority of MAP members.	• The current market structures are not well structured to facilitate profitable marketing of produce by farmers. For example, major markets such as Agricultural Development cooperation (ADMARC) do not have functional depots accessible to farmers • Delays in buying during harvest season due to the slow flow of financial resources lead farmers to sell their produce to other vendors below the floor price.	• ADMARC should be engaged in coordination mechanisms involving all VC actors; • ADMARC should be ready to buy farmers' produce at the beginning of the harvest season;
National Agriculture Policy	Promote the use of contract farming, out-grower schemes and other appropriate value chain coordinating mechanisms for smallholder commercialisation	• Promote competitiveness of agriculture marketing value chains	• The implementation level for this instrument was considered low. • The measure is considered potentially highly effective by MAP members.	• Contract farming policies/ regulations are commonly violated by companies • Contracts with farmers are not respected • Poor understanding of contracts' terms by farmers.	• Clear guidelines are needed on how to formulate equitable contracts • Farmers should be supported in understanding contracts' legal terms • Farmers should be supported in enforcing contracts when they are violated

Table 2. *Cont.*

Policy Programme	Policy Measure	Policy Objectives	Implementation Level and Effectiveness	Limiting factors	Suggested Policy Changes
National Agriculture Policy	Improve the procurement efficiencies of farm inputs to ensure timely delivery	• Enhance the use of farm inputs: • Enhance agricultural productivity and resilience to climate change	• The implementation level for this instrument was considered low. Data from the household survey indicate that only 16% of respondents have had access to subsidies, and only 23% use pesticides. The percentage of respondents using fertilisers raises instead to 43%. • The measure is considered potentially highly effective by MAP members.	• Difficult access to input subsidies • Input subsidies provision is affected by the slow formulation of the national budget of the country impeding the access to inputs before the planting season • In some cases, farmers receive and re-sell coupons to subsidise the price of fertiliser • Lack of sanction mechanisms against coupon resale • Lack of sanction mechanism against agro-dealers selling low quality inputs • Agro-dealers provide a limited range of agricultural inputs	• Farmer organisation should be involved by FISP to play an intermediation role in subsidies' provision • The National Budget of the country should be known early by farmers accessing the inputs before the planting season • A monitoring system should be put in place to facilitate farmers in accessing subsidies and prevent the resale of coupons

The results of the policy analysis show that the policies are oriented towards strengthening farmer organisations, improving the extension services system, promoting the use of contract farming and increasing access to agricultural inputs. However, MAP members have evidenced a limited access in rural areas to seed and fertiliser subsidies, an inadequate access to extension services, low participation in farmers' groups and cooperatives and contracts with farmers that are not respected. Inadequate financial resources allocated to policy, limited number of available extension officers, poor VC coordination between actors and inaccessibility of appropriate storage facilities are some of the most relevant barriers to policies implementation. Policy changes should be oriented to: (i) Improve the coordination among extension providers to clearly communicate the available services to farmers; (ii) increase the number of extension officers; (iii) support farmers in understanding legal terms of contracts and in enforcing contracts when they are violated; (iv) monitoring systems should be put in place to facilitate farmers in accessing subsidies and prevent the resale of coupons. The implementation of such changes would improve the market access conditions of both farmers who access the market and those who do not yet have the conditions to access it. In the next subsections, attempts to identify specific strategies (policies and role which might play VC actors) to improve smallholders' VC readiness (both for VC ready farmers and for VC non-ready farmers) in the selected area of Malawi are identified.

3.3.3. Policy Strategies for Promoting Smallholders' Value Chain Readiness

Almost one-third of cereal/legumes producers in the area do not access the market. These households generally show worst productive and marketing conditions than households accessing the markets. They are characterised by a lower land size, a lower access to extension and advisory services and a lower access to subsidies, probably connected with the lower use of pesticides and fertilisers in comparison to VC participants. Moreover, statistics show a lower participation in farmer groups and a greater distance from the market for this category. The various components of the VC analysis (e.g., VC map, SWOT analysis and the description of the sample) and policy analysis (instruments and limiting factors) suggest adopting a strategy that improves the various aspects of the value chain readiness of these smallholders. Integrated strategies should be promoted to support smallholders in building, in particular, sufficient levels of natural, human and physical capitals and overcoming constraints derived from a poor conducive enabling environment. For instance, a monitoring system should be put in place to facilitate farmers in accessing subsidies and ADMARC should be ready to buy farmers' produce at the beginning of the harvest season. MAP members suggested that the government should enforce the available land policy to redistribute land to vulnerable households.

MAP members also highlighted the importance of smallholders engaging with cooperatives and farmers' organisations. The multiple functions played by cooperatives in the area range, for instance, from training on capacity building and production to promoting mechanisation. Strengthening the role and resources of cooperatives might increase their capacity to engage with more vulnerable farmers, which might strongly benefit from horizontal coordination for building the minimum level of assets required to access the market.

MAP members highlighted that innovation uptake, value addition and the provision of storage and processing facilities should be prioritised for VC participants. However, this should not be done at the farm level, but by establishing farmers' groups which will be linked to cooperatives for sourcing raw materials.

Farmers accessing the market are strongly constrained by the difficult business environment in which they operate. As highlighted in the previous section, an increased horizontal coordination might mitigate the constraints faced by farmers when interacting with buyers. Even if farmers' organisations have the potential to facilitate access to loans and input subsidies, to provide extension services and storage and processing facilities, as well as to link smallholders with the market, their presence and their coordination with

other stakeholders needs to be increased. MAP members highlighted the need to put in place mechanisms encompassing all the players in the agricultural chain starting from input providers and ending with buyers to establish common goals and resolve conflicts. This might benefit cooperative members as well as farmers selling their produce individually.

To this extent, MAP members illustrated the experience of the District Agriculture Extension Services (DAES), recently established at District level. This is considered a good example of bringing small-scale producers together with market actors and service providers, under the coordination of District extension officers. Despite requiring greater recognition and empowerment by the government, it has proved to be a positive and functioning exchange mechanism to be disseminated and replicated.

3.3.4. The Role of VC Actors

MAP members have evidenced the need for a more conducive policy environment in which the role played by other VC actors (e.g., cooperatives, traders, agro-dealers, researchers) might be relevant to promote a smallholder-friendly value chain development. The private sector could contribute to develop a smallholder friendly VC by providing more training on quality standards, processing and facilitating smallholders' access to market information. However, MAP members highlighted the existence of several constraints for the private sector in liaising with farmers (e.g., the small amount of production provided by farmers, the lack of opportunities for meeting farmers and developing a constructive dialogue and the lack of a transparent legal system).

Interviewed stakeholders agreed that agro-dealers should improve the stock of quality products required by farmers, agro-dealers should put more effort into online communication, which would allow farmers to access updated information on the available products.

Cooperatives are recognised by MAP members as key players for mitigating smallholders' constraints in accessing the cereal/legumes VCs both for VC ready farmers and non-ready farmers. In fact, cooperatives should increase role in: (i) Facilitating smallholders' access to input subsidies; (ii) promoting mechanisation and the uptake of innovations; (iii) providing training on capacity building, use of farm inputs, soil management and water conservation practices, grading the produce and valued addition; (iv) linking smallholders with more reliable buyers; and (v) facilitating access to loans.

Enhancing VC participation requires improvements in quantity and quality of production, as well an increased bargaining power. For these farmers, government should promote engagement with farmers' groups and cooperatives which have shown capacity to provide essential support for intermediation and quantity/quality by access to extension, market information and mechanisation.

Donors and NGOs should improve their coordination with other relevant actors in the study sites and support the government in facilitating the emergence of coordination mechanisms and allocate funds and design programmes/interventions based on capacity building, raising awareness, and enhancing access to markets.

Researchers should concentrate their efforts on developing easy to implement practices and techniques to be used for value addition. Moreover, efforts are needed to support more efficient seed multiplication in the area.

3.3.5. Policy Harmonisation

MAP members agreed on the importance of policy harmonisation. The existence of policy contradictions implies the need to harmonise and improve existing policies to promote the development of smallholder-friendly value chains through: (i) A review of current legal frameworks to remove inadequacies, conflicts and overlaps in the various institutions charged with implementation of the various policies; (ii) increasing budget allocation accompanied with adequate accountability mechanisms to ensure judicious use of the funds targeting policy instruments; (iii) the provision of adequate and qualified staff to implement the policies; and (iv) creating awareness and establishing mechanisms for the sensitisation of communities on existing policies to ensure adherence.

4. Conclusions

VC participation entails a number of challenges for smallholders. Limited access to land, technology and inputs, inadequate knowledge of the market functioning, insufficient access to credit and extension services, combined with more general problems of poor infrastructures, often prevent smallholder farmers from accessing profitable market opportunities.

To increase smallholders' market access, national policies are oriented towards increasing efficient use of inputs through public extension service support and subsidy systems, enhancing market infrastructure and storage facilities, and promoting the cooperative system to engage smallholders in profitable agricultural markets. However, inadequate financial capacity, an inefficient public extension services system, limited involvement of the private sector in extension services provision, poorly developed managerial practices that cooperatives often adopt, poor market coordination and development and limited engagement of investors in market infrastructure are the most relevant factors limiting the effectiveness of policy supporting value chain inclusion.

Value chain interventions and policies need to distinguish between value-chain-ready farmers, namely those provided with the minimum conditions of external and internal factors, and non-value-chain-ready farmers. Smallholders' heterogeneity requires differentiated interventions tailored to value-chain-ready and non-value-chain-ready household conditions. Specifically, market-based interventions are needed for enhancing market access of value-chain-ready farmers. Coordination along the value chain could be enhanced through the development of local markets recognising the role of the private sector (e.g., cooperatives, traders), and interventions to link smallholder production with value-added food markets including a market information collection and dissemination system through a pluralistic and integrated approach in which marketing and value chain aspects are integrated, a public-private partnership insurance scheme to cushion livestock and crop farmers from risks, including disasters and effects of climate change, and a facilitative regulatory environment on the marketing of processing products and ensuring food safety standards. Conversely, non-market-based interventions prove necessary to build the minimum asset thresholds for non-value-chain-ready farmers' participation in the market. Integrated strategies to support smallholders in creating, in particular, sufficient levels of physical (e.g., inputs access), human (e.g., extension services access) and financial (e.g., credit access) assets as well as investments in basic infrastructure and services should be promoted to overcome the constraints of a poor conducive enabling environment.

VC analysis has evidenced the need for a more conducive policy environment which recognises the relevance of the role played by other VC actors (e.g., cooperatives, traders, agro-dealers, researchers) in promoting smallholder-friendly value chain development. The experience of DAES recently established at District level, which is serving as a coordination mechanism linking actors along the VC, goes in this direction. It included value addition programs, involving extensionists, cooperatives and big companies.

Finally, the existence of policy contradictions implies the need to harmonise and improve existing policies to promote the development of smallholder-friendly value chains through: (i) A review of current legal frameworks to remove inadequacies, conflicts and overlaps between the various institutions charged with implementation of the various policies; (ii) increasing the budget allocation accompanied with adequate accountability mechanisms to ensure judicious use of the funds targeting policy instruments; (iii) the provision of adequate and qualified staff to implement the policies; and (iv) creating awareness and establishing mechanisms for the sensitisation of communities on existing policies to ensure adherence.

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References

1. FAO (Food and Agriculture Organization of the United Nations). *Developing Sustainable Food VCs—Guiding Principles*; FAO: Rome, Italy, 2014.
2. Cacchiarelli, L.; Sorrentino, A. Market power in food supply chain: Evidence from Italian pasta chain. *Br. Food J.* **2018**, *120*, 2129–2141. [CrossRef]
3. Sorrentino, A.; Russo, C.; Cacchiarelli, L. Market power and bargaining power in the EU food supply chain: The role of Producer Organizations. *New Medit.* **2018**, *17*, 21–31. [CrossRef]
4. Chagomoka, T.; Afari-Sefa, V.; Pitoro, R. Value chain analysis of traditional vegetables from Malawi and Mozambique. *Int. Food Agribus. Manag. Rev.* **2014**, *17*, 59–86.
5. Nagothu, U.S. (Ed.) *Agricultural Development and Sustainable Intensification: Technology and Policy Challenges in the Face of Climate Change*; Routledge: Abingdon, UK, 2018.
6. Tesfai, M.; Branca, G.; Cacchiarelli, L.; Perelli, C.; Nagothu, U.S. Transition towards bio-based economy in small-scale agriculture in Sub-Saharan Africa through sustainable intensification. In *The Bioeconomy Approach*; Routledge: Abingdon, UK, 2020; pp. 83–106.
7. Branca, G.; Arslan, A.; Paolantonio, A.; Grewer, U.; Cattaneo, A.; Cavatassi, R.; Vetter, S. Assessing the economic and mitigation benefits of climate-smart agriculture and its implications for political economy: A case study in Southern Africa. *J. Clean. Prod.* **2021**, *285*, 125161. [CrossRef]
8. Webber, M. *Using VC Approaches in Agribusiness and Agriculture in Sub-Saharan Africa: A Methodological Guide. Report Prepared for the World Bank by J.E. Austin Associates, Inc.* 2007. Available online: http://www.technoserve.org/files/downloads/vcguidenov12-2007.pdf (accessed on 22 May 2019).
9. Fowler, B.; Brand, M. *Pathways out of Poverty: Applying Key Principles of the Value Chain Approach to Reach the Very Poor*; USAID, Microreport: Washington, DC, USA, 2011; Volume 173.
10. Stoian, D.; Donovan, J.; Fisk, J.; Muldoon, M. Value chain development for rural poverty reduction: A reality check and a warning. *Enterp. Dev. Microfinanc.* **2012**, *23*, 54–69. [CrossRef]
11. Devaux, A.; Torero, M.; Donovan, J.; Horton, D. Agricultural innovation and inclusive value-chain development: A review. *J. Agribus. Dev. Emerg. Econ.* **2018**, *8*, 99–123. [CrossRef]
12. Donovan, J.; Stoian, D. *5 Capitals: A Tool for Assessing the Poverty Impacts of Value Chain Development*; Technical Series 55; Rural Enterprise Development Collection 7; CATIE: Turrialba, Costa Rica, 2012.
13. Donovan, J.; Poole, N. Asset building in response to value chain development: Lessons from taro producers in Nicaragua. *Int. J. Agric. Sustain.* **2013**, *11*, 23–37. [CrossRef]
14. World Bank. World Development Indicator: Structure of Output. 2014. Available online: http://wdi.worldbank.org/table/4.2 (accessed on 25 May 2019).
15. Dorward, A.; Chirwa, E. The Malawi Agricultural Input Subsidy Programme: 2005-6 to 2008-9. *Int. J. Agric. Sustain.* **2011**, *9*, 232–247. [CrossRef]
16. Ellis, F.; Manda, E. Seasonal Food Crises and Policy Responses: A Narrative Account of Three Food Security Crises in Malawi. *World Dev.* **2012**, *40*, 1407–1417. [CrossRef]
17. NSO. *Integrated Household Survey 2010–11: Household Socio Economic Characteristics Report*; National Statistical Office: Zomba, Malawi, 2012.
18. Haug, R.; Nchimbi-Msolla, S.; Murage, A.; Moeletsi, M.; Magalasi, M.; Mutimura, M.; Westengen, O.T. From Policy Promises to Result through Innovation in African Agriculture? *World* **2021**, *2*, 253–266. [CrossRef]
19. Mango, N.; Mapemba, L.; Tchale, H.; Makate, C.; Dunjana, N.; Lundy, M. Maize value chain analysis: A case of smallholder maize production and marketing in selected areas of Malawi and Mozambique. *Cogent Bus. Manag.* **2018**, *5*, 1503220. [CrossRef]
20. Branca, G.; Perelli, C. Clearing the air: Common drivers of climate-smart smallholder food production in Eastern and Southern Africa. *J. Clean. Prod.* **2020**, *270*, 121900. [CrossRef]

21. Snapp, S.S.; Blackie, M.J.; Gilbert, R.A.; Bezner Kerr, R.; Kanyama-Phiri, G.Y. Biodiversity can support a greener revolution in Africa. *Proc. Natl. Acad. Sci. USA* **2011**, *107*, 20840–20845. [CrossRef] [PubMed]
22. Mhango, J.; Dick, J. Analysis of fertilizer subsidy programs and ecosystem services in Malawi. *Renew. Agric. Food Syst.* **2011**, *26*, 200–207. [CrossRef]
23. Branca, G.; Cacchiarelli, L.; Maltsoglou, I.; Rincon, L.; Sorrentino, A.; Valle, S. Profits versus jobs: Evaluating alternative biofuel value-chains in Tanzania. *Land Use Policy* **2016**, *57*, 229–240. [CrossRef]
24. Hellin, J.; Meijer, M. *Guidelines for Value Chain Analysis*; Food and Agriculture Organization of the United Nations (FAO): Rome, Italy, 2006. Available online: https://www.fao.org/3/bq787e/bq787e.pdf (accessed on 3 June 2019).
25. Neven, D. *Three Steps in VC Analysis*; microNote; United States Agency for International Development: Washington, DC, USA, 2009. Available online: http://www.microlinks.org/sites/microlinks/files/resource/files/mn_53_three_steps_in_vc_analysis.pdf (accessed on 25 May 2019).
26. Webber, C.M.; Labaste, P. *Building Competitiveness in Africa's Agriculture: A Guide to VC Concepts and Applications*; World Bank Publications: Washington, DC, USA, 2009.
27. FAO (Food and Agriculture Organization of the United Nations). Strengthening Sector Policies for Better Food Security and Nutrition Results. 2017. Available online: http://www.fao.org/3/a-i7910e.pdf (accessed on 3 June 2019).
28. Eisenhardt, K.M. Building theories from case study research. In *The Qualitative Researchers' Companion*; Huberman, A.M., Miles, M.B., Eds.; Sage Publications: Thousand Oaks, CA, USA, 2002; pp. 5–36.
29. Fiore, M.; Stašys, R.; Pellegrini, G. Agri-Food Supply Chain Optimization through the Swot Analysis. *Manag. Theory Stud. Rural. Bus. Infrastruct. Dev.* **2018**, *40*, 28–36. [CrossRef]
30. NIBIO and BecA-ILRI Hub. National Ethics Council (NEC)–Requirement No. 1. Report to the EC. In *Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and Enhanced Food and Nutrition Security in Africa*; European Commission: Brussels, Belgium, 2018.