



Utrecht University

Corporate sustainability and food security

The impact of Foreign Direct Investments on the livelihoods of smallholder farmers in Ghana

Solidaridad

Corporate sustainability and food security:
The impact of Foreign Direct Investments on the livelihoods of smallholder farmers in Ghana

Master's Thesis

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Date of submission: April 12, 2017

Front page photo: Farmer sitting on a container (used for spraying chemicals) eating boiled yam before continuing to work to finish work before the impending storm. This image captures important themes of this research; food, vulnerability and livelihood assets.

This research was funded by the Follow the Food research programme, funded by The Netherlands Organisation for Scientific Research (NWO).

Abstract

This thesis studies the impact of export oriented foreign agribusinesses on the livelihoods and food security of involved smallholder farmers. This thesis is based on a case study of HPW Fresh & Dry Ltd.; a Swiss company located in Adeiso, fifty kilometers North-West of Accra.

A mixed methods approach was used to collect data. Data was collected through: desk research, structured interviews among one hundred seventeen farmers, five focus groups, direct observations, semi structured interviews with specialists and stakeholders, informal conversations, and a survey among agribusinesses. The data is for a large part analyzed by means of a Cramér's V test for nominal variables.

Findings suggest that HPW scores well on the principles of inclusive business and can be categorized in the stage of 'Defensive CSR'. Although HPW has a dominant role in the studied value chain which can be categorized as 'captive', HPW's involvement in the value chain has had a positive impact on the livelihoods of smallholder farmers supplying to HPW. The positive impact manifests itself, but is not limited to: improving farmers' capabilities, diversifying farmers' sales options, and providing farmers with financial benefits and a sense of security. However, this research also shows that not every group of farmers is impacted in the same way and to the same extent by HPW's presence. The majority of the farmers still lives below the international poverty line.

Policy recommendations resulting from this research, among others, include: 1) explore the possibility of differentiating and adjusting the services provided to the different farmer groups; 2) identify social or environmental priorities for companies to focus on; 3) actively search for partnerships; 4) improve farmers' ability to finance their farm; and 5) stimulate and support (foreign) exporting companies to invest in the agricultural sector with special focus on the fruit sector.

Keywords: Inclusive business, Corporate Social Responsibility, Food security, Smallholder farmers, Foreign Direct Investments, Ghana, Africa

Acknowledgements

Here, I would like to thank the people who have helped me during my research and the writing process.

First of all, I would like to thank my supervisor dr. Guus van Westen for his support and trust during the research and for introducing me to the 'Follow the Food' research which made my research part of something bigger. This was a great experience. I also want to thank Bram van Helvoirt and Ellen Mangnus from Utrecht University for their fast, thorough and constructive feedback which helped me to see the research from different angles.

Furthermore I would like to thank Katie Minderhoud of Solidaridad for her enthusiasm and valuable feedback. Meeting her in Accra was a great motivator. I also want to thank her for her help in disseminating the results of this research. I would also like to thank the people working at Solidaridad's West Africa office for welcoming me at their office and helping me wherever they could.

In addition, I would like to thank Maik Blaser of HPW for giving me the chance to use his company as a case study. His transparency is unique and his willingness to cooperate extraordinary. I would like to thank my other respondents as well; for the willingness to share their knowledge with me and who often made time for me on a very short notice. Without their support this study would not have been possible.

Moreover, I would like to thank Giyas Shaibu and Dinah Badmus for their commitment and their energy in assisting me in this research. Their experience and local knowledge helped me to understand my respondents and made doing research so much easier. And thank you for introducing me to plantain chips; the cravings for plantain chips is a regular reminder of all the beautiful things Ghana has to offer.

Finally, I would like to thank my colleague Klaske de Vries with whom I lived and worked together almost 24/7 during the intense and exciting period of my research in Ghana. I look back on a great cooperation in which we have pushed our limits and were able to rely on one another.

Medase Pa!

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List of Abbreviations

BoP	Base of the Pyramid
CSR	Corporate Social responsibility
DFID	Department of International Development
EU	European Union
FAGE	Federation of Associations of Ghanaian Exporters
FAO	Food and Agriculture Organization of the United Nations
GHC	Ghana Cedi
GIPC	Ghana Investment Promotion Centre
HDDS	Household Dietary Diversity Score
IB	Inclusive Business
MOFA	Ministry of Food and Agriculture
NGO	Non-Governmental Organization
SLA	Sustainable Livelihood Approach
USD	United States Dollar
WCED	World Commission on Environment and Development

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1. Introduction

Food security is a global issue which is an important concern on multiple international policy agendas (United Nations 2015, The World Bank 2016i, USDA 2015, USAID 2016). Local food security is a big issue in developing countries and especially in sub-Saharan Africa where one in four people is undernourished, making food security a daily struggle for millions of people (World Food Program 2016). An increasingly popular way of improving global food security is through agricultural investments in resource rich developing countries (Paglietti & Sabrie 2013). This development is the direct result of the current trend in which businesses are increasingly seen as a driver for sustainable development and are perceived to be of great importance in stimulating development in developing countries. Not only are agricultural investments by foreign companies seen as the solution for global food security, it is assumed that agricultural investments also offers local farmers opportunities and help them develop. Foreign direct investments are ought to lead to the generation of income and employment of local suppliers and by that improve local food security.

Zooming in on Africa, Ghana proves to be an exemplary case of a resource rich developing country with a large agricultural sector and large amount of Foreign Direct Investments (FDIs) in agriculture. Although Ghana cannot be classified as one of the poorest countries of Africa, poverty and hunger remain important issues which are recurring topics on national policy agendas (The World Bank 2015d).

Ghana sees the agricultural sector as an engine for development. This is not surprising given the fact that forty-two percent of Ghana's working population works in agriculture which results in seventy-one percent of the households receiving income from agriculture (The World Bank 2015a, b). Ghana aims to improve the agricultural sector by attracting FDIs. FDIs have noticeably increased in recent years; resulting in a GDP of which 8.4 percent can be attributed to FDIs (The World Bank 2015c). It is argued that the FDIs are partly responsible for the forty-four percent increase in food production since 2007.

The question, however, remains whether an increase in food production in Ghana results in an increased local food security of smallholder farmers. It is not only the question whether investments truly lead to, among others, technology transfers, capacity building and improved market access. The question that must be answered is what these FDIs mean for the livelihoods of local smallholder farmers. Do smallholder farmers benefit from FDIs and how does it impact the smallholder's food security situation?



2.Theoretical framework

2.1. FDI in agriculture and development

Since the second half of the 2000s there has been a strong rise in FDI investments in the agricultural sector in developing countries (Food and Agriculture Organization of the United Nations 2014). This growth in FDI is mainly motivated by: 1) an increase in commodity prices; 2) the realization that the demand for finite resources will continue to grow the coming decades; and 3) high energy prices (Food and Agriculture Organization of the United Nations 2014). Current motivation for FDIs shows not solely to be a quest for cheap labor, as was the case the past decades. Foreign investors are currently particularly seeking to gain access to natural resources (Food and Agriculture Organization of the United Nations 2014).

As a result, the inflow of FDIs in developing countries is continuously growing and governments of developing countries are eager to attract FDIs; especially FDIs in the agricultural sector. Knowing that the majority of the population in developing countries is directly or indirectly involved in the agricultural sector, it becomes clear that FDIs in the agricultural sector have a big impact on the livelihoods of local populations. Whether the enthusiasm of governments in attracting FDIs is rightly so, however, remains to be seen. Whether the impacts of FDIs are positive or negative is subject of debate.

Academics with a pessimistic approach of FDIs argue that FDIs in small open economies have a negative impact on welfare (Chaudhuri & Mukhopadhyay 2014). FDIs can cause tough competition with local industries; displacing local final-good producers (Amendolagine, Boly, Coniglio, Prota & Seric 2013). In addition, it is argued that FDIs can be at the expense of economic stability, income distribution, local employment and even political freedom (Mmieh & Owusu-Frimpong 2004).

In favor of FDIs it is generally argued that FDIs stimulate economic growth. FDIs would supplement domestic savings, generate employment opportunities, transfer modern technologies and knowledge, improve efficiency and enhance the skills of local manpower. In addition, FDIs help to integrate the economies of developing countries in the global economy and diversify the host-countries' economy (Anyanwu & Yameogo 2015).

Whether FDIs benefit the local economy depends on the type of FDI. Each type of FDI has its own characteristics concerning the density, depth and nature of supplying and buying linkages between the foreign investor and local actor (Amendolagine et al. 2013). FDIs searching for resources generally have little linkages to the local labor- and product market. Therefore this type of FDI generally does not contribute to the economic growth of the developing country. FDIs looking for improving their efficiency or new markets, on the other hand, introduce new technologies, know-how and new products (Amendolagine et al. 2013). Also diaspora investors show to have a positive impact on the host country's economy. This shows that the amount of interaction or linkages with local suppliers is key in determining the positive impact of FDIs; more interaction/linkages results in more benefits for the host country's economy. So, in deciding whether FDIs have a positive impact on the host country, it is important to look at the 'backward-' and 'forward linkages'; backward linkages referring to upstream industries and forward linkages to downstream industries (Amendolagine et al. 2013).

The statement which says that the amount of interaction with backward- and forward linkages defines the amount of positive impact a company has, is in line with the rise of the term 'inclusive business' (IB). The concepts of IB and the affiliated concept CSR are discussed in the following paragraphs.

2.2. Corporate sustainability

2.2.1. The development of corporate sustainability

Connecting business practices to sustainable development is a trend which can be traced back to the 1970s. In the 1970s Smith's theory on the 'invisible hand' and Friedman's statement that companies are obligated to make as much profit as possible, were, and still are, very influential (Friedman 1970, Smith 1776, Visser 2014). The 1970s were characterized by neo-liberal measures such as deregulation and privatization. This zeitgeist resulted in companies being particularly focused on the maximization of profit; economic growth was perceived to be the most important aspect in development.

Towards the 1990s the focus of companies started to shift, largely because of The Brundtland Commission. In 1987 the Brundtland Commission, also known as the World Commission on Environment and Development (WCED), defined the concept of 'sustainable development'. The Brundtland Commission defined sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987). Intergenerational equity is key in this definition. Intergenerational equity is not only concerned with wealth redistribution but also with the availability and access to resources. At this time development became something concerned with more dynamics than solely economic growth. The 'triple bottom line' framework developed by Elkington was also of big influence in shifting the focus of companies in the 1990s (Elkington 1997). This triple bottom line is a framework which takes into account social, environmental and financial aspects of doing business. These aspects are also referred to as the 'three P's'; 'People, Planet, Profit'.

The work of the Brundtland Commission and Elkington's framework set the stage for development as a multi-dimensional concept. The current view on sustainable development still perceives a growing, or a healthy, economy as a precondition of development. However, dealing with issues regarding human rights, natural resources, inequality reduction and social welfare is now perceived to be crucial if a country wants to develop sustainably (Thirwall 2014, Lewis 2005).

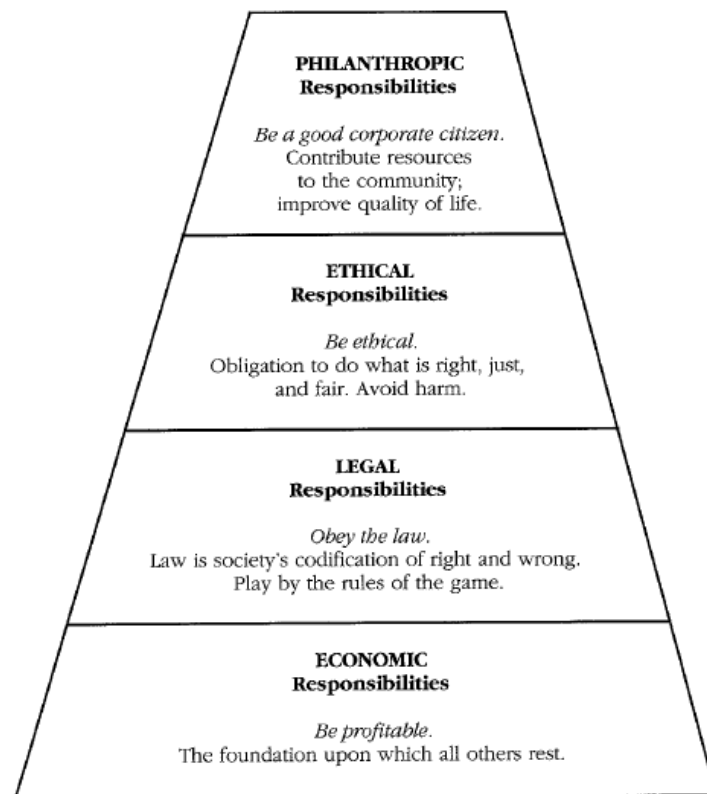
Despite the fact that a definition of sustainable development has been formulated and one agrees that other issues than profit maximization require attention; how to act in order to develop sustainably remains unclear. The Brundtland Commission did not formulate recommendations on market mechanisms, modes of production or lifestyle. People, companies and countries therefore do not have a solid and straightforward framework which they can follow in order to develop sustainably.

As a result companies that want to, for whatever reason, be involved in sustainable development are resorting to so called Corporate Social Responsibility (CSR) or affiliated concepts such as 'corporate citizenship', 'business ethics', 'stakeholder management', 'corporate social performance' and 'inclusive business'. The aforementioned labels are regularly used interchangeably. The concepts have in common that they deal with themes such as value, accountability and balance (Schwartz & Carroll 2008, Visser 2006a). Although these concepts have commonalities, there are big differences between the concepts. The concepts and the corresponding frameworks vary in approach, focus areas and execution. Not only do these concepts differ from one another, explanations of each separate concept differ per country and company. Concepts such as CSR and IB miss a clear and unambiguous definition.

This has for a large part to do with the fact that the concept of CSR has been developed from an Anglo-American perspective. At the time the Brundtland Commission defined sustainable development, well known academics like Archie Carroll, argued that doing business has not solely to do with making profit while conforming to the basic rules of society as Friedman argued. Carroll argued that: 'the total corporate social responsibility of business entails the simultaneous fulfillment of the firm's economic, legal, ethical, and philanthropic responsibilities' (Carroll 1991) Of these four responsibilities, philanthropic responsibility was the most innovative (Friedman 1970). Carroll presents these four

responsibilities in a 'CSR Pyramid' (see figure 1) (Carroll 1991). In this 'CSR pyramid' economic responsibility is the foundation of the pyramid where all the other levels rest on. It is argued that it is a businesses' first responsibility to be profitable. The second most important responsibility is the legal responsibility, since a business is expected to obey the law, followed by ethical and philanthropic responsibilities. The philanthropic responsibility implies 'actively engaging in acts or programs to promote human welfare or goodwill' (Carroll 1991). From this Anglo-American perspective of the 1990s it was argued that being philanthropically is not expected from companies and is therefore not judged or pressured to act philanthropically; 'philanthropy is highly desired and prized but actually less important than the other three categories of social responsibility. In a sense, philanthropy is icing on the cake' (Carroll 1991). This made the philanthropic responsibility more voluntary than to the other responsibilities.

Figure 1. Carroll's CSR pyramid



Now, 25 years later, new research and academic debate give reason to think CSR requires a more contextual approach than Carroll's framework suggests.

2.2.2. Corporate social responsibility in developing countries

Recent studies in developing countries in Africa and Asia give reason to believe companies' CSR policies depend on the cultural context of the origin of the companies and the country in which they are established (Crane & Matten 2004, Dartey-Baah & Amponsah-Tawiah 2011, Burton, Farh & Hegarty 2000, Mohan 2007). Studies show that the drivers of CSR, CSR issues targeted and the modes of CSR that are deployed by companies differ per country and company (Chambers et al. 2003). CSR in developing countries shows to be less formalized and institutionalized. In addition, CSR is particularly practiced by high-profile companies. Furthermore, CSR in developing countries is often associated with charity or philanthropy because companies regularly invest in community services.

Zooming in from developing countries as a whole to the region of sub-Saharan Africa shows even more unique trends in local approaches of CSR. In Africa CSR shows to be often motivated by religious beliefs, charitable traditions and a sense of communalism (Amaeshi et al. 2006). Moreover, the thematic focus of CSR in Africa is oriented on topics such as: working conditions, human rights and health and safety (Kapelus 2007). Topics relating to the environment (climate change and biodiversity), corruption and resource scarcity generally get less attention in African countries (Kapelus 2007). In addition, CSR issues in Africa are usually perceived to be trade-offs or dilemmas and companies in Africa generally tend to report more on their economic contribution to society compared to companies in other regions. This is the case since in Africa the economic contribution of companies is perceived to be the most effective way to make a social impact (Visser 2007, Mohan 2007).

The above shows that a company’s CSR policies and practices are highly dependent on the context in which it operates. Although this makes it hard to do a comparative analysis of CSR, tools have been developed which takes into account local differences while enabling comparative analysis. One academic whose work is influential in the current debate on CSR in developing countries and the contextual dependence of CSR is Wayne Visser. Visser has developed a framework that helps to analyze CSR policies and practices in developing countries. At the base of Visser’s framework is his critical view on Carroll’s pyramid. Visser argues that Carroll’s pyramid may not be the best model for understanding CSR in general, and CSR in Africa in particular (Visser 2006b). Visser sets Carroll’s pyramid aside as a ‘classic American ordering’ (Visser 2006b). While Visser recognizes that in Africa the economic responsibility is still the top priority, he puts philanthropy in second place, followed by legal and ethical responsibilities (Visser 2006b). Visser perceives legal responsibility to be less important than Carroll since companies in Africa are regularly less pressured into good conduct due to a poorly developed legal infrastructure and lack of resources. According to Visser, CSR in Africa is different since African countries are not as developed as European countries and African societies deal with other socio-economic issues than western countries in which CSR is developed. In addition, African societies have become reliant on aid resulting in a strong culture of philanthropy. These dynamics have made philanthropy an expected norm and make that CSR in Africa is often equated with philanthropy.

As a result of the above observations, Visser has developed a framework which recognizes the diversity in which CSR manifests itself in different countries. In this framework the concept ‘glocality’ is key. Glocality is a portmanteau of global and local. Glocality is based on the idea that global and local incentives and pressures are of influence in how CSR manifests itself. It emphasizes the importance of local contexts and global dynamics in understanding CSR. Glocality is used to refer to the combination of local and global drivers of CSR that applies to a specific company. The list of drivers identified by Visser can be found in table 1 and 2. Knowing a company’s glocality helps to understand how CSR is practiced or understood.

Table 1. Local drivers of CSR

Cultural tradition CSR	often draws strongly on deep-rooted indigenous cultural traditions of philanthropy, business ethics and community embeddedness
Political reform CSR	cannot be divorced from the socio-political policy reform process, which often drives business behavior towards integrating social and ethical issues
Socio-economic priorities CSR	is often most directly shaped by the socio-economic environment in which firms operate and the development priorities this creates
Governance gaps CSR	is a way to plug the ‘governance gaps’ left by weak, corrupt or under resourced governments that fail to adequately provide various social services
Crisis response CSR	responses can be catalyzed by economic, social, environmental, health-related or industrial crises

Table 2. Global drivers of CSR

Market access CSR	may be seen as an enabler for companies in one country or region trying to access markets in other parts of the world
International standardisation CSR	codes, guidelines and standards are a key driver for companies wishing to operate as global players
Investment incentives CSR	is given an incentive by the trend of socially responsible investment (SRI), where funds are screened on ethical, social and environmental criteria
Stakeholder activism CSR	is encouraged through the activism of stakeholders or pressure groups, acting to address the perceived failure of the market and government policy
Supply chain integrity CSR	activities among small and medium-sized companies are boosted

In addition to introducing the concept of ‘glocality’, Visser has formulated ages and stages of CSR. The ages and stages of CSR are directly connected to a company’s glocality. Five stages are formulated, ages of: greed, philanthropy, marketing, management and responsibility. These ages reflect the dominant paradigm from which CSR is practiced. Each age corresponds to a stage of CSR. These stages are: defensive-, charitable-, promotional-, strategic- and transformative CSR (Visser 2014). An overview of the ages and stages and the corresponding modus operandi, key enablers and targeted stakeholders is given in table 3. Each stage of CSR reflects a specific company culture. Visser argues that companies move through these stages as they develop or ‘mature’; ultimately reaching the transformative stage, also called CSR 2.0.

The idea of CSR 2.0 is based on a different vision of CSR than ‘CSR 1.0’, the CSR as it is currently generally perceived. In contrast to companies involved in ‘CSR 1.0’, CSR 2.0 is more holistic and is based on the idea that business needs to be creative, scalable, responsive, glocal and circular. In contrast to CSR 1.0, CSR 2.0 includes: 1) Base of the pyramid markets; 2) innovative partnerships; 3) stakeholder involvement; 4) stakeholder panels; 5) real-time reporting; 6) social enterprises; and 7) new business models.

Each stage reflects a specific perspective on CSR which comes with distinct points of attention and areas of improvement. For instance, defensive CSR is characterized by a corporate culture that focuses on economic value. Businesses in the stage of defensive CSR make a ‘business case’ for CSR and use CSR as a risk management tool (Visser 2014). CSR in this stage can remain narrow and reactive. Companies in this stage can improve their CSR practices by making public commitments to long term shareholder value and getting involved in socially responsible investments.

Charitable CSR, on the other hand, is based on the idea of making a contribution to the community and giving back to society. Improvements that can be made by companies in this stage range from giving employees paid volunteer days, employ impact investment techniques, start aligning causes to the company’s core business and invest in social enterprises.

The third stage of CSR, promotional CSR, focuses on CSR to enhance the organization’s brand equity, public reputation or stakeholder relations. Promotional CSR risks of being accused of greenwashing. To counter this accusation and improve its CSR, companies in this stage can commit to reporting on CSR through recognized standards and certification schemes and use social marketing techniques.

In the stage of strategic CSR a company aligns the CSR issues in which it is involved to its core business. This is done through adhering to CSR codes and embedding CSR in internal management systems. Possible improvements companies within this stage can make, are improving supply chain management and strategic issue management, including CSR policy development, goal and target setting and programme implementation.

The last stage, ‘transformative CSR’, identifies root causes of unsustainability and irresponsibility through innovative business models (Visser 2014). In this stage companies do not specifically focus on issues that align with its strategy. Companies in this stage focus on, and understand, society and ecosystems and their interconnectedness. Companies can set bold CSR targets and conduct full life cycle social and environmental impacts assessments in order to improve in this stage.

Table 3. CSR stages according to Visser

Dominant paradigm	Stage of CSR	Modus operandi	Key enabler	Stakeholder target
Greed	Defensive	Ad hoc Interventionist	Investments	Shareholders, government & employees
Philanthropy	Charitable	Charitable programmes	Projects	Communities
Marketing	Promotional	Public relations	Media	General public
Management	Strategic	Management systems	Codes	Stakeholder & NGOs
Responsibility	Transformative	Business models	Products	Regulators and customers

The above framework shows that in many of the stages, perhaps with the exception of the ‘transformative stage’, CSR is something companies do on top of their core business; a side activity. Companies perceive CSR often as something that requires specific budgets and costs additional effort. This results in allotting limited budgets and man power to CSR. Seeing that the trend of private sector involvement in country development persists, new approaches based on the ideas of win-win and shared value start to emerge in order to more successfully incorporate poverty and inequality issues into business practices (Porter & Kramer 2006). The concept which gets the most attention in this approach is the concept of IB. This concept will further be discussed in paragraph 2.2.3.

2.2.3.

Currently, doing IB is seen as the way business should be done in developing countries. IB is generally understood as doing business that benefits the poor through commercially interesting core operations (Donor Committee for Enterprise Development 2014). More specifically ‘IB’ refers to business practices that engage the poor in the entire supply chain or value chain. This is in line with the socio-economic concept of the Base of the Pyramid (BoP). The concept of the Base of the Pyramid makes a case for companies to focus on the poorest, but largest, socio-economic group (Prahalad 2005, Hart 2005, London 2008). The concept argues there is an immense potential in the world’s poorest citizens, for companies but also for people and society at large. According to the idea of BoP removing barriers is crucial in addressing this potential. Although there is often a focus on involving the BoP as clients or consumers, IB particularly focuses on removing barriers in order to integrate the BoP as employees, business owners and producers (Prahalad 2005, Hart 2005, London 2008, Donor Committee for Enterprise Development 2014).

Although the idea of IB is clear, the concept remains broad since a generally accepted method for measuring the inclusivity of IB does not exist. This makes it hard to differentiate regular business from IB. (Donor Committee for Enterprise Development 2014). The general rule of thumb is that the more a business is involved in partnerships with local shareholders or the community, and the value is shared among the partners, the greater is the company's inclusivity (Paglietti & Sabrie 2013). Also key principles for IB have been identified. These principles are: 1) chain wide collaboration; 2) effective market linkages; 3) fair and transparent governance; 4) equitable access to services; and 5) farmer organization performance (Vredeseilanden Country Offices 2015).

In addition, there are some existing frameworks that can be helpful in studying the inclusivity of a business and the local impact of doing business. Helpful frameworks include the above mentioned framework of Wayne Visser concerning CSR, the value chain analysis developed by Porter and the sustainable livelihood framework developed by Chambers and Conway. These frameworks can help create an understanding of the above mentioned key principles, and thus the degree of a company's inclusivity, and a company's local impact.

2.3. Value chain analysis

A value chain analysis helps to understand how FDIs impact local smallholder farmers. Studying a value chain's structure and the governance within the value chain helps to understand what the relations are within the value chain, who adds what value and the benefits of the value chain to the different actors. So in addition to valuable insight in the operations of the value chain, value chain analysis provides insight in the role of smallholder farmers in the value chain and how smallholder farmers benefit. First, however, it is important to know how the concept of value chains has developed.

During the late 1970s the concept of value chains started to emerge. This time period was characterized by an increasing importance of systemic competitiveness and increasing globalization. These dynamics gave rise to the world system theory of Immanuel Wallerstein and the concept of value chains (Wallerstein 1974). Michael Porter was one of the first academics that brought the concept of value chain into use (Porter 1985). In 1985 he developed a tool which made it possible to execute a value chain analysis. The objective of this tool was to evaluate the added value of each activity in the value chain in order to optimize value chain activities and value chain linkages so that competitive advantages arise. The activities and linkages, mentioned by Porter, are two important elements in contemporary value chain analysis. Porter differentiates between primary activities and supporting activities. In addition to Porter's value chain, more concepts have been developed which are, in some aspects, similar to his value chain; concepts such as: filière analysis and global commodity chains (Gerrefi 1994, Raikes et al. 2000).

The filière analysis is an approach with roots in multiple research traditions; in the quantitative-, anthropological- and empirical research tradition (Raikes et al. 2000). Although the concept of filière is based on different schools of thought, filière is used 'to describe the flow of physical inputs and services in the production of a final product' and is thus essentially not different than the value chain as developed by Porter (Kaplinsky and Morris 2001). However, the concept of filière is criticized for not taking into account changes in commodity- and knowledge flows or changes in involved actors, making the filière approach rather static. In addition, the filière approach only studies the domestic value chain, thus does not look beyond national borders (Kaplinsky and Morris 2001).

A more unified approach is the global commodity chain approach inspired by Wallerstein's world system theory and developed by Gereffi. In contrast to the Filière approach, the global value chain approach connects the concept of value chain to the global organization of industries, thus looking beyond borders (Gereffi et al. 2005). In addition, the global commodity chain theory puts emphasis on internal governance structures of supply chains and the role of lead firms in global sourcing and

production networks (Gereffi et al. 2001). The above mentioned key characteristics of the global commodity value chain results in the identification of four dimensions by which value chains can be analyzed:

- 1) The input-output structure. This describes the process of transforming raw materials and other inputs into final products;
- 2) The geographical configuration. This refers to the geographic spread of economic activities in a value chain across national borders;
- 3) The governance structure. This describes the process by which particular actors in the chain exert control over other actors. In addition it refers to how lead firms appropriate or distribute the value that is created along the chain;
- 4) The institutional context. This describes the 'rules of the game' bearing on the organization and operation of chains (Bair 2009, Gereffi et al. 2001).

The first two dimensions are clear and straightforward with regard to what needs to be studied and visualized in order to understand the value chain. The fourth dimension overlaps with the 'processes' of the sustainable livelihood approach discussed in paragraph 2.4. and thus will not be discussed in more detail here. The third dimension, however, requires further elaboration.

The concept of governance, a dimension identified as part of the global commodity chain, is given a more prominent role in the most recent framework regarding value chains. The most recent framework is called the 'global value chain'. Although it is argued that the global commodity chain and the global value chain are more or less interchangeable constructs, the global value chain puts greater emphasis on governance (Bair 2009, Gereffi et al. 2005). The emphasis on governance in value chains is important because the prospects of producers in developing countries are highly dependent on the type of governance exercised.

First of all it is important to understand what it is 'governance' refers to. In the global value chain framework, governance refers to non-market coordination of economic activity. Some firms directly or indirectly influence production, logistics and marketing systems in their value chain through governance structures (Gereffi et al. 2001).

The global value chain approach identifies five types of value chain governance; markets, modular value chains, relational value chains, captive value chains and hierarchy (Gereffi et al. 2005).

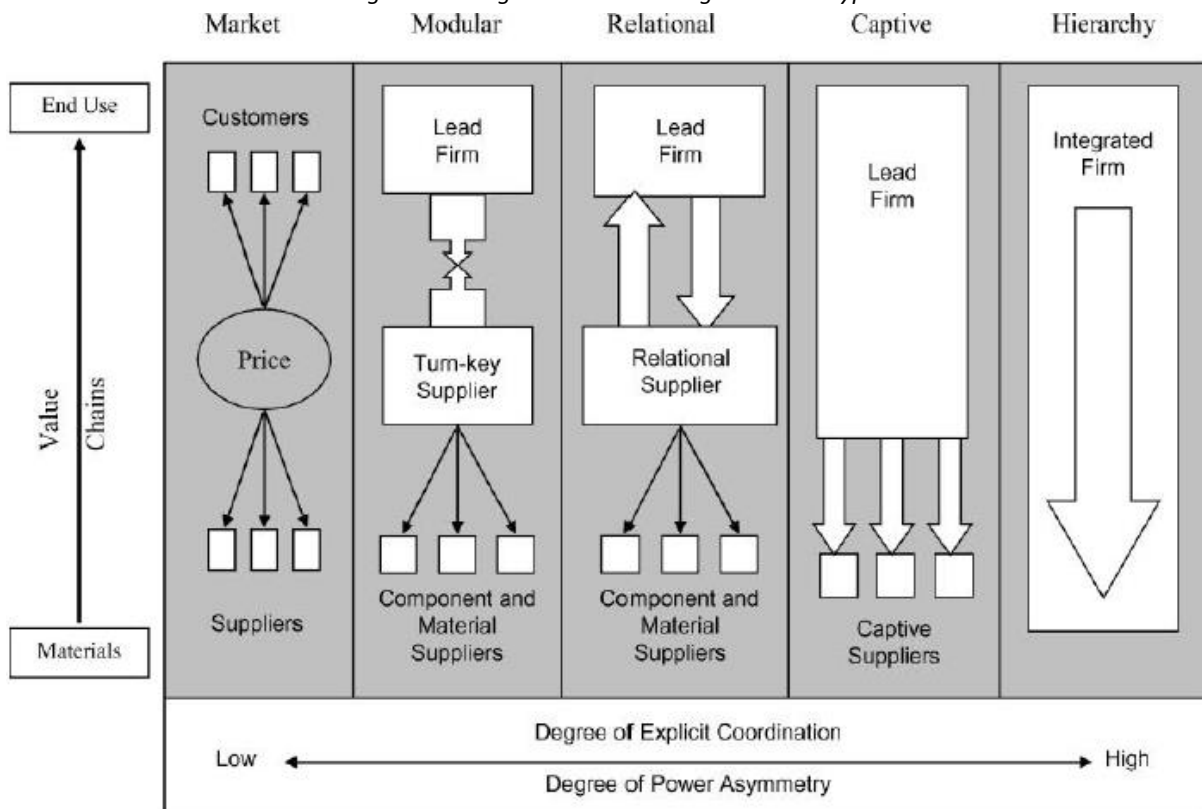
1. *Markets*. Characterized by simple product specification, high ability to codify transactions and high capability of suppliers to make the products in question, buyers respond to specifications and prices set by sellers and little explicit coordination is needed.
2. *Modular value chains*. Characterized by complex codification of transactions, high ability to codify transactions, little explicit coordination, low costs to change partners.
3. *Relational value chains*. Characterized by low ability to codify transactions, high complexity of transactions, high capabilities of suppliers, high levels of explicit coordination, and high switching costs to new partners.
4. *Captive value chains*. Characterized by high complexity in transactions, high ability to codify transactions, low capabilities in the supply-base, high control on the part of the lead firm, and high switching costs for suppliers.
5. *Hierarchy*. Characterized by unmodifiable transactions, complex transactions, absence of competent suppliers, firms manufacturing and developing products themselves. (Gereffi et al. 2005).

Which one of the previous types of governance is applicable depends on the following determinants: complexity of transactions, codifiability of information and capability of suppliers (Gereffi et al. 2005). By assigning the value 'high' or 'low' to these three variables, it becomes possible to identify what governance type characterizes the value chain (see figure 2) (Gereffi et al. 2005). This way it becomes clear what power relations exists in the respective value chain. The five governance types are visualized in figure 3 (Gereffi et al. 2005).

Figure 2. Key determinants of global value chain governance

Governance type	Complexity of transactions	Ability to codify transactions	Capabilities in the supply-base	Degree of explicit coordination and power asymmetry
Market	Low	High	High	Low
Modular	High	High	High	
Relational	High	Low	High	
Captive	High	High	Low	
Hierarchy	High	Low	Low	

Figure 3. Five global value chain governance types



In figure 3 the governance types are positioned along a horizontal axle. This axle indicates the degree of explicit coordination and the degree of power asymmetry. At the far left of the axle governance is characterized by low degrees of coordination and power asymmetry. At the far right of the axle governance is characterized by high degrees of coordination and power asymmetry.

The theory on value chains described above is applicable to a wide variety of sectors. It, however, does not specifically focus on the agricultural sector, but rather on industries. Academic literature regarding value chains of the agricultural sector in developing countries gives some interesting insights. Van Dijk and Trienekens, for example, state that upgrades in the value chain mainly focus on improving horizontal relationships (Van Dijk & Trienekens 2012). Improving horizontal relationships generally means forming producer organizations or cooperatives. However, it is suggested that improving vertical relationships could also be beneficial to farmers; this would differentiate their market outlets and make farmers less dependent on their current customers. When vertical relationships are to be improved, it is crucial for farmers to meet standards as defined by the market. Improvements in the value chain are most often initiated by the lead company in the value chain. The lead company is incentivized to do so by getting access to higher quality products, more efficient production and distribution and increased supply of materials (Trienekens 2011). However, improvements in the value chain show to be only achieved through partnerships (Trienekens 2011). These partnerships include private-private partnerships between actors in the value chain and public-private partnerships between actors in the value chain facilitated by an external party. Actors for change include value chain actors (such as the lead company and cooperatives) and non-value chain actors (such as government, NGOs, banks). Non-value chain actors could support improvements in the value chain by providing technological, organizational, political and educational support (Trienekens 2011). Taking into account the recent developments on CSR and BoP it is expected that non-value chain actors will play a pivotal role in value chain improvements.

2.4. Sustainable livelihood approach

Although the sustainable livelihood approach (SLA) is not so much a theory, but rather a tool to organize and analyze data, it is important to discuss this framework because of exactly this reason. The SLA is the result of a specific development discourse and organizes and shapes thinking on the subject at hand and therefore needs to be discussed here. The SLA is an actor-oriented approach which originates from the French notion of 'genre de vie' (De Haan 2000, De Haan & Zoomers 2003). Genre de vie is a 'system of livelihood strategies of a human group in a specific region, emphasizing the interaction between the society and the natural environment' (De Haan 2000). The SLA is largely based on the work of Chambers and Conway and focusses on households as a unit of analysis (Chambers and Conway 1991). The SLA is based on the following core principles: people centered, holistic, dynamic, building on strengths, macro-micro links and sustainability (Kollmair and Gamper 2002). These core principles make that the SLA helps to get a broader and more comprehensive understanding of the relationships and dynamics between peoples' assets, the stresses and shock one has to deal with and policies, institutions and processes to which one is subjected.

Before continuing to discuss the SLA, it is important to define 'livelihood' (Carswell 1997). In the IDS working papers, livelihood is described as follows:

'A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets, while not undermining the natural resource base' (Scoones 1998).

The complex and diverse dynamics described in this definition are schematically presented in a figure of DFID (see figure 4).

Figure 4. A schematic overview of the Sustainable Livelihood Approach

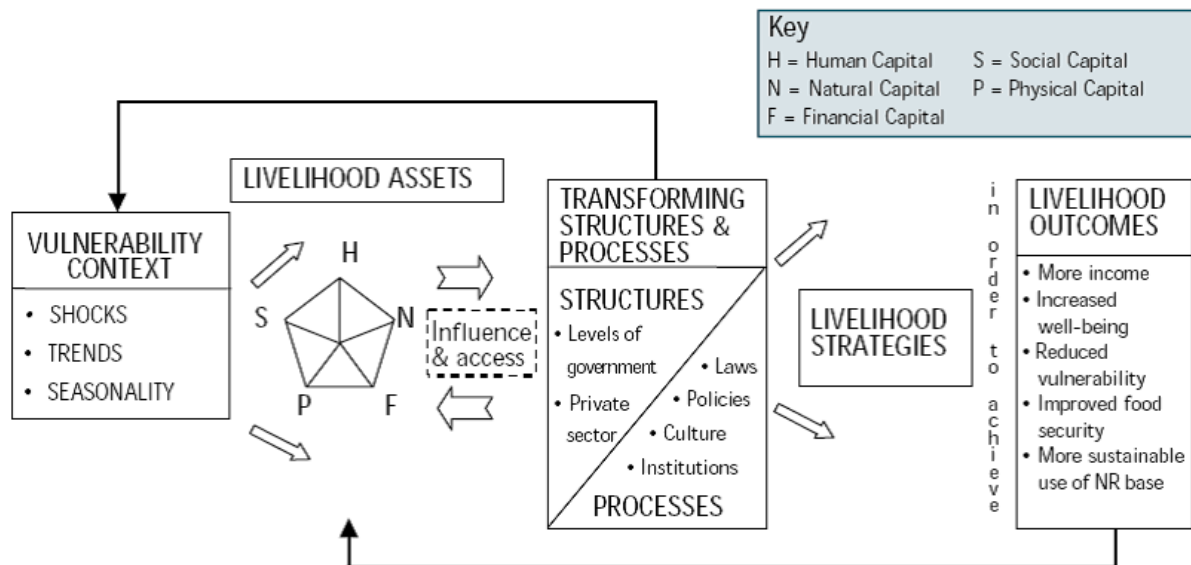


Figure 4 shows that the SLA can be subdivided in five interconnected sections; the vulnerability context, livelihood assets, transforming structures and processes, livelihood strategies and livelihood outcomes (Department for International Development 1999). Each section will be discussed below.

The vulnerability context frames the external environment in which people live and on which they have limited or no control. This external environment includes trends, shocks and seasonality. Examples of shocks are: floods, droughts, civil unrest and death in the family. Illustrations of trends are: population growth, climate change, globalization and technological development. Seasonality can refer to periodic changes in for example: prices, production and health. Trends, shocks and seasonality have an impact on people's livelihoods and the wider availability of assets. The vulnerability context describes the degree to which people are exposed to risks and the capacity of households to prevent, reduce or handle risks (Department for International Development 1999).

Since the SLA is a people centered approach, the SLA seeks to understand people's strength. These strengths are called assets or capitals. The SLA is based on the idea that people need a combination of assets in order to gain positive livelihood outcomes. The types of capital that can be distinguished are: physical-, financial-, human-, natural- and social capital. Each type of capital refers to a different set of resources.

- *Human capital*: health, nutrition, education, knowledge and skills, capacity to work, capacity to adapt.
- *Natural capital*: land and produce, water & aquatic resources, trees and forest products, wildlife, wild foods and fibres, biodiversity, environmental services.
- *Social capital*: networks and connections, relations of trust and mutual support, formal and informal groups, common rules and sanctions, collective representation, mechanisms for participation in decision-making, leadership.
- *Physical capital*: infrastructure (transport, buildings, water supply and sanitation, energy, communications), tools and technology (tools and equipment, seeds, fertilizer, pesticides).
- *Financial capital*: savings, credit/debt, remittances, pensions, wages.

(Department for International Development 1999)

The degree to which the above assets contribute to positive livelihood outcomes is determined by existing structures and processes. Structures are the organizations that set and implement policy, legislation, deliver services, trade and all other functions that affect livelihoods (Department for International Development 1999). Processes are institutions, policies, legislation, culture and power relations that determine how structures interact. These structures and processes determine: 1) access to capital, livelihood strategies and decision making bodies; 2) terms of exchange between the different capitals; and 3) returns on livelihood strategies. So knowledge on structures and processes is important in order to understand how the five capitals are transformed into livelihood strategies and livelihood outcomes.

Livelihood strategies are the combination of activities people undertake to achieve their livelihood goals. Livelihood strategies vary between household and individual. This is the case since people's access to assets and the resulting combination of assets people acquire, influence the livelihood strategies people choose. Livelihood strategies thus depend on, among others: gender, age, social status and income. In addition, livelihood strategies of individuals can be different, or even conflicting, with livelihood strategies of other individuals of the same household or the community since people compete (Scoones 1998, Department for International Development 1999). Thus it is important to socially differentiate the SLA in a research.

The exact combination of activities people undertake to achieve their livelihood goals is also called a 'livelihood portfolio'. This livelihood portfolio can be very balanced, but also highly concentrated on a specific range of activities. The SLA identifies five broad categories of livelihood strategies. These clusters include: intensification, expansion, diversification, generating off farm income and the exit strategy.

The combination of livelihood strategies makes people achieve specific livelihood outcomes. Possible livelihood outcomes include: more income, increased well-being, reduced vulnerability, improved food security and a more sustainable use of the natural resource base. It is possible that in specific cases some livelihood outcomes conflict with other livelihood outcomes. This makes livelihood outcomes complex. They therefore need to be studied with respect for the diversity in which they manifest itself.

As is mentioned above, improving food security can be one of the livelihood outcomes. Although the SLA framework puts an emphasis on the importance of food security by giving it its own category, this framework is not suitable for determining the food security situation of a household. Determining the food security status of a household requires a thorough understanding of the concept of food security and the use of specific instruments. Both are described in more detail in the paragraph 2.5.

2.5. Food security

2.5.1. Evolution of the concept

The concept of food security has changed significantly since the 1970s. In the 1970s food security was considered in terms of global and national food stocks. This is clearly shown by the definition of global food security formulated during the World Food Conference of 1974: 'availability at all times of adequate world supplies of basic food-stuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices' (Food and Agriculture Organization of the United Nations 1974). In the 1980s one realized that national food stocks did not necessarily translate in local food security; food could be available but not accessible for local people (Frankenberger and McCaston 1998). This realization resulted in a more household centered view of food security.

In the late 1980s one started to look at peoples 'entitlements' to food. 'Entitlements' refers to people's resources that can be used to control and secure food security. Thus, one started to look at people's socio-economic situation in order to assess local food security situations. Besides, it was realized that translating the obtained food into satisfactory nutritional levels was crucial; adding the concept of nutritional security to the debate.

The concept of food security was broadened at the start of the 1990s. At that moment the food security paradigm shifted towards a view on food security largely similar to the one we know now. In this view food security needs to be seen in the context of wider livelihood considerations. Food procurement is constantly balanced with other basic and non-material needs (Maxwell & Smith 1992). Thus, food security is the result of people's livelihood systems. The framework resulting from these observations is described in paragraph 2.4.

2.5.2. Defining food security

As a result of the changing food security paradigm, a new definition of food security was formulated during the World Food Summit of 1996. Here food security was defined as follows: 'Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life' (Food and Agriculture Organization of the United Nations 1996). This definition integrates the importance of the nutritional value of food, but also of food safety and the importance of people's cultural and social preferences.

Four main dimensions of food security can be identified from the World Food Summit definition; food availability, access, utilization, and stability. Food availability is determined by the physical availability of a sufficient quantity of appropriate quality food. Food availability is thus determined by food production, stock levels and net trade. Accessibility, on the other hand, is concerned with people having enough and the right type of resources for acquiring a sufficient quantity of appropriate quality food (Food and Agriculture Organization of the United Nations 2008). These resources are also called 'entitlements' which refers to '[...]the set of income and resource bundles (e.g. assets, commodities) over which households can establish control and secure their livelihoods' (Borton and Shoham 1991). In addition, the price and the allocation of food is important for assessing the accessibility. The third pillar, utilization, is concerned with the factors that affect the quantity and quality of food that reaches members of the household (Food and Agriculture Organization of the United Nations 2008). Proper food utilization includes: 1) an adequate diet which is composed of all essential nutrients and delivers sufficient energy; 2) adequate sanitation and health care; and 3) use and access to clean and potable water, food storage and knowledge on nutrition and preparation. Stability, the fourth pillar, refers to the ability to maintain the other pillars over time.

The situation is food insecure if not all the four pillars are fulfilled at the same time. However, two types of food insecurity have been identified: chronic food insecurity and transitory food insecurity

(Food and Agriculture Organization of the United Nations 2008). Chronic food insecurity occurs when people are unable to meet their minimum food requirements for longer periods of time and is often caused by: poverty, lack of assets and insufficient access to financial or productive resources. Transitory food insecurity on the other hand occurs when there is an unexpected drop in the ability to produce or access food. This is generally caused by variations in domestic food production, food prices and household incomes. In addition to chronic- and transitory food insecurity there is also seasonal food insecurity. Seasonal food insecurity is, like chronic food insecurity, predictable. Seasonal food insecurity is based on cyclical patterns and therefore occurs when there is a seasonal fluctuation in either climate, work opportunities or cropping patterns (Food and Agriculture Organization of the United Nations 2008). Seasonal food insecurity, however, also resembles transitory food insecurity because it is recurrent and lasts relatively short. So seasonal food insecurity can be positioned between chronic- and transitory food insecurity.

2.5.3. Measuring Food security

Food security is a multi-sectoral and multidisciplinary concept. This not only makes it hard to define food security, but also makes it hard to measure it. Despite the fact that food security is measured for years already and the diversity of food security measurements and tools has vastly increased, there is not one measurement that stands out because of its accuracy. Not only world's most well-known food security measurement, the measurement of the FAO, is criticized for lack of accuracy, also other international agencies and national governments are criticized for their lack of accuracy in measuring food security (Headey and Ecker 2013). Taking the critical remarks on the lack of accuracy into account, it must be noted that there are ways to improve the accuracy of the indicators.

Headey and Ecker argue that every measurement includes all, or a combination, of the following four indicators: calorie deprivation indicators, monetary poverty indicators, dietary diversity indicators and subjective indicators (Headey and Ecker 2013). These indicators correspond to the four pillars of food security mentioned in paragraph 2.5.2. Calorie deprivation indicators are one of the oldest indicators of food insecurity and are purely based on the calorie intake and is therefore concerned with the availability of food. Monetary poverty indicators link food security to monetary proxy and is based on the assumption that higher income implies higher food security. This indicator is related to access to food. The dietary diversity indicators are more concerned with the nutritional values of consumed food. Subjective indicators, on the other hand, are based on subjective responses to food security and are for example used to gain knowledge on emotive subjects like hunger and anxiety.

An interesting instrument for this research is the Household Dietary Diversity Score (HDDS) since it is a fast, easy and low cost assessment tool (Food and Agriculture Organization of the United Nations 2011). This questionnaire measures the economic access to food and the quality of an individual's diet which are two pillars highly relevant for studying food security in Ghana. This is measured by collecting data on the frequency of food consumption and the consumed food groups. Before administering the survey, it is important to check whether it is an atypical period such as a festive periods since this can have an impact on the consumption pattern. In addition, it is suggested to make use of a twenty-four-hour recall period because it is easier for the respondents and lowers the recall error (Food and Agriculture Organization of the United Nations 2011).

The FAO suggests to make the HDDS context specific. This can be done by including dishes and ingredients often eaten in the studied region. An HDDS that was successfully adapted for the Ghanaian context is the survey developed by Nti. Nti identified commodities that are available in Ghana and categorized these commodities in six food groups (Nti 2008). These six food groups include: 1) starchy roots and plantain; 2) grains and cereals; 3) animal products; 4) beans, nuts and oilseeds; 5) fruits and vegetables; and 6) fats and oils.

2.6. Knowledge gaps

In recent years the concept of corporate sustainability gets increasingly more attention in academic literature and corporate documents. A study of the existing literature, however, shows gaps in the body of knowledge concerning corporate sustainability.

Although concepts like CSR and IB are studied, serious knowledge gaps do exist. Literature study shows that studies of CSR and IB in developing countries is relative uncharted territory. In case research is conducted, this is often focused on a select number of countries and high profile companies. This results in an incomplete and distorted overview of the existing situation.

In addition, although doing IB is an upcoming trend, it remains unclear how commercial-, social- and environmental aspects can be combined in each other's advantage. Empirical literature on value chain integration is not only scarce, but also regularly conducted in commission of businesses (Amendolagine et al. 2013). Partial and potentially biased studies make that it remains unclear whether and how the poorest people benefit from IB. In addition, it causes a lack of clarity for businesses on the potential for business to contribute positively to development. This limits businesses in finding the business case for IB and thus the ability to change its operations (Wach 2012).

It is the aim of this research to help fill the above identified knowledge gaps. How this is done is described in more detail in chapter four.



3. Regional thematic framework

3.1. Ghana at a glance

3.1.1. Climate, vegetation and geography

Ghana is located in West Africa and is bordered by Togo to the east, Burkina Faso to the north and Ivory Coast to the west. Ghana covers an area of 238,533 square kilometers of which the Volta Lake covers 8.482 square kilometers, making it the world's largest artificial lake (Central Intelligence Agency 2016). The country is divided into ten administrative zones, covering hundred seventy districts.

Due to Ghana's direct connection to the ocean and its low altitude, Ghana's climate can be characterized as tropical. Along the southeast coast the climate is warm and comparatively dry, the southwest is hot and humid and the northern climate is hot and dry (Central Intelligence Agency 2016). So the climate becomes dryer from the south to the north (Food and Agriculture Organization of the United Nations 2015). In Ghana, with exception from the north where it occasionally rains in August and September, there are two rainy seasons; from September through November and from April until June. In addition to the rains, the wind also has a big impact on Ghana's climate. A dry desert wind (the Harmattan) blows from January until March. The average temperature in Ghana ranges from twenty-six to twenty-nine degrees Celsius all year round (Ministry of Food and Agriculture 2013). The differences in local climates results in differences in local land use. A map on how local land use is spread over Ghana is given in appendix 1.

3.1.2. Population

The population of Ghana is estimated to be about twenty-seven million (Central Intelligence Agency 2016). In 2015 fifty-four percent of these people lived in urban areas. Accra, the capital, is already home to 2.7 million people (Central Intelligence Agency 2016). The population of Ghana is characterized by its young age structure. Approximately fifty-seven percent of the population is younger than twenty-five. At the same time Ghana has one of the highest proportions of people older than sixty in sub-Saharan Africa with 3.3 percent of the population being older than sixty-five (The World Bank 2016a). This results in a dependency ratio of seventy-three percent which is this high primarily because of the youth (The World Bank 2016g). Despite the high dependency ratio, the desired fertility rate is stable with 3.6 births per woman (The World Bank 2016b). However, people living in rural areas want to have more children than the people living in urban areas (Central Intelligence Agency 2016).

The above mentioned trends are reflected in the HDI ranking of Ghana. Ghana's HDI value changed from 0.42 in 1980 to 0.58 in 2014, showing improving living conditions. This is also reflected in Ghana's poverty trends. Poverty has declined in Ghana. In 2005 eleven percent of the population fell below national poverty lines in comparison with 7.8 percent in 2012 (The World Bank 2016c). However, there is a large difference between the urban and rural population. In 2012 13.1 percent of the rural population fell below the national poverty lines, in contrast to the urban population of which 2.5 percent fell below the national poverty lines (The World Bank 2016 d, e).

3.1.3. Economy

Ghana ranks among the lower middle income countries. Ghana's GDP is 1,369.701 USD per capita. Ghana's GDP grew 3.9 percent in 2015. This is significantly lower than the observed growth in GDP in 2011, 2012, and 2013 which were respectively fourteen percent, 9.2 percent and 7.3 percent; showing a continuing decline (The World Bank 2016f). The sector primarily responsible for Ghana's GDP are services (51.6 percent), industry (27.7 percent) and agriculture (20.7 percent) (Central Intelligence Agency 2016). Despite the fact that agriculture only makes up for one fifth of the country's GDP, in 2013 53.6 percent of the country's labor force worked in agriculture (Food and Agriculture Organization of the United Nations 2015). Therefore, agriculture is seen as the key to economic growth and development (Ministry of Food and Agriculture 2013).

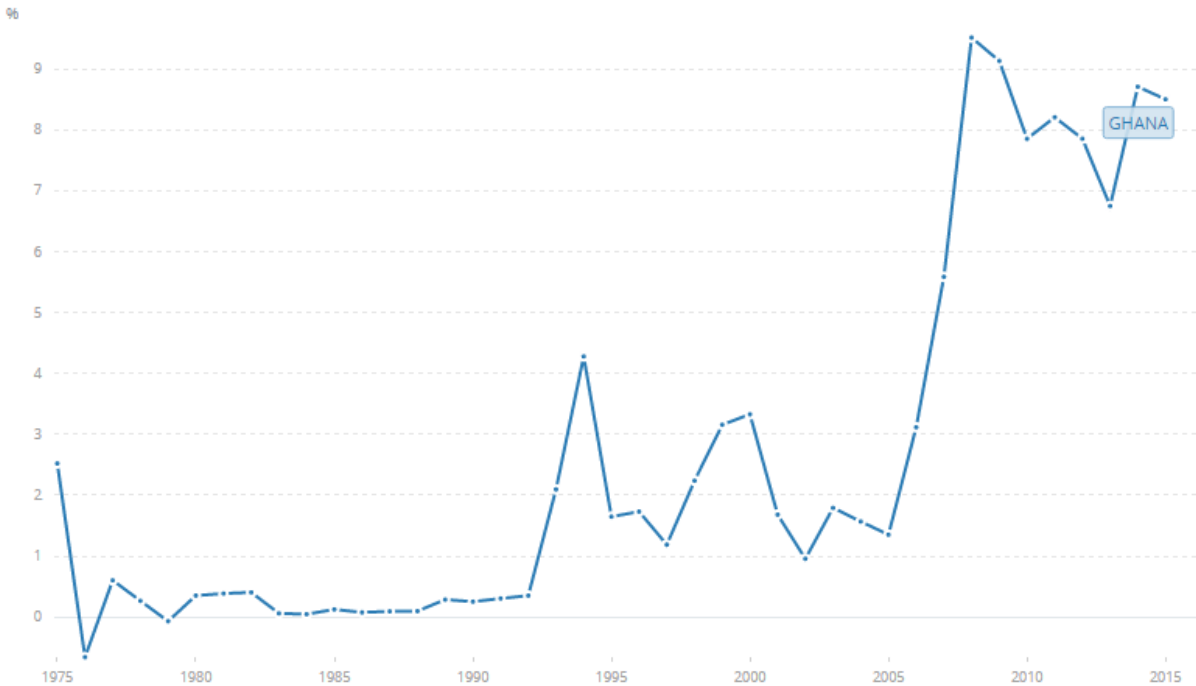
People working in agriculture are generally smallholder farmers. Ninety percent of the farm holdings are smaller than two hectares and the plots are often fragmented (Ministry of Food and Agriculture 2013, The World Bank 2012). These small farms are generally intercropped farms on which minimal inputs, such as improved seeds, chemical fertilizer and irrigation, are used (The World Bank 2012). Besides, production is limited by low soil fertility and limited information and access to markets (Ministry of Food and Agriculture 2013).

Although the size of the agricultural sector in Ghana is substantial, Ghana is a net importer of important agricultural products, such as poultry, rice and wheat (Food and Agriculture Organization of the United Nations 2015).

3.2. FDI trends Ghana

Ghana’s FDI performance has been highly variable the past few decades (see figure 5) (The World Bank 2016h). FDIs in Ghana declined in the 1970s and 1980s (United Nations Conference on Trade and Development 2003). This was caused by economic en political instability (Overseas Development Institute 2016). In the 1990s FDIs increased due to the Economic Recovery Program launched in 1983 which focused on creating incentives for private companies and on export production. The privatization of state owned companies in 1988 and the newly developed development strategy ‘Ghana Vision 2020’ launched in 1994 also had a positive impact. These strategies and policies made that Ghana was considered to be one of Africa’s top investment locations from 1991 until 1995, resulting in an increase of FDIs during this period.

Figure 5. Foreign direct investment, net inflows (% of GDP)



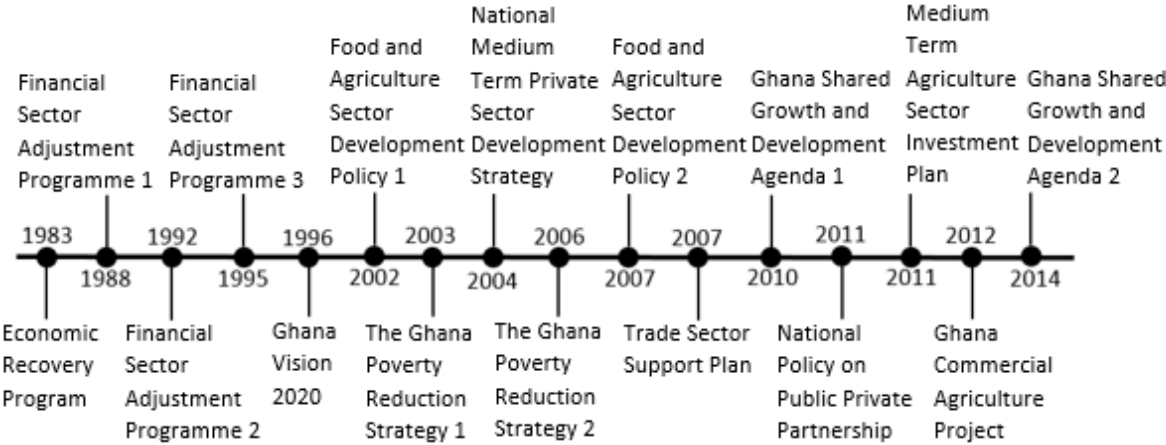
After 1994 the amount of FDI declined. The decline of FDI was caused by multiple aspects: 1) fall in prices of major export products; 2) electricity crisis due to draughts; and 3) the rise of oil prices (United Nations Conference on Trade and Development 2003). Although the Ghanaian government managed to reassure foreign investors with its strong pro-business attitude, which led to an increase of FDIs in 2000, the worldwide decline in FDI in 2001 had an impact on Ghana resulting in a decrease of FDIs.

As of 2005 the amount of FDIs in Ghana increased substantially; resulting in a GDP of which 8.5 percent can be attributed to FDIs (The World Bank 2015c). This is extraordinary given the fact that other countries known for its foreign investments, or neighboring countries, do not come close to this number (Ethiopia 3.5 percent, Kenya 2.3 percent, Togo 1.3 percent, Ivory Coast 1.4 percent, Nigeria 0.6 percent). In 2014 the total amount of FDI was 3.2 billion USD (U.S. Department of State 2015). Figure 5 shows that FDI in Ghana have been slightly fluctuating in recent years. This can be attributed to the slowdown in economic growth which causes some investors to postpone their investments in order to see how Ghana’s economy recovers. Nonetheless, The World Bank’s ‘Doing Business Survey’ ranked Ghana seventieth out of one hundred eighty-nine countries (U.S. Department of State 2015).

The high amount of FDIs is the result of decades of national policies and strategies aiming for increased FDI (see figure 6) (Overseas Development Institute 2016, Ministry of Food and Agriculture 2010). The most recent policy document, the ‘Ghana Shared Growth and Development Agenda’ aims to modernize the Ghanaian economy by 2020 through industrialization based on modernized agriculture and sustainable exploitation of natural resources. As a result, the government’s strategic plans are focused on the development of infrastructure, agriculture related research and the expansion of the agricultural sector. This development agenda follows a market-driven logic and assigns a large role for the private sector (Food and Agriculture Organization of the United Nations 2015).

FDIs in 2016 in Ghana were made by companies from different European countries: Denmark, the United Kingdom and The Netherlands (which are former slave and colonial masters), Belgium, France and Italy (Ghana Investment Promotion Centre 2016a, b, c). By far the most FDIs were made in Greater Accra.

Figure 6. Private sector development policies and strategies



3.3. Characteristics of Ghana’s agribusiness

Although smallholders play a big role in Ghana’s agriculture, the private sector is involved in the investment, production and processing of cash crops, fruits and vegetables. Cash crops in which the private sector is involved are: cocoa, oil palm, coconut, coffee, cotton, kola, rubber, cashew and shea. Of these cash crops, cocoa is the most popular cash crop. Cocoa production is a successful sector in which the government is highly involved through service provision and standard setting (Overseas Development Institute 2016).

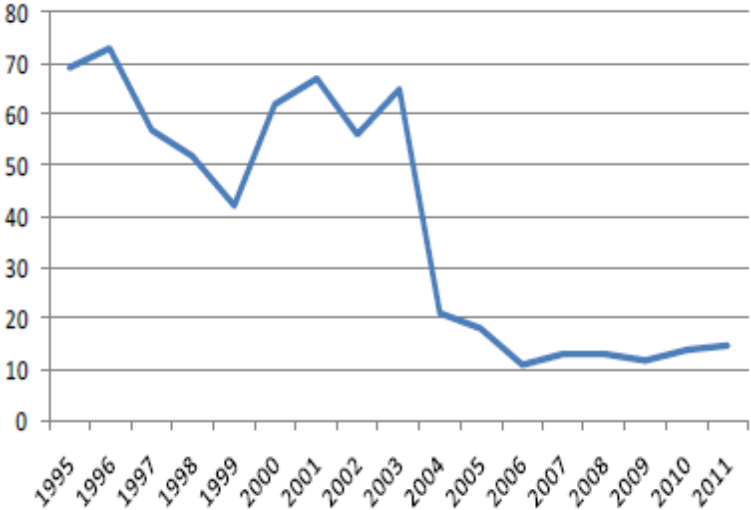
In contrast to cash crops which are particularly produced for export, fruits and vegetables are, in addition to foreign markets also produced for local markets. Crops produced in this sector are: pineapple, citrus, banana, pawpaw, mango, tomato, pepper, okro (also known as okra), eggplant, onion and Asian vegetables (Ministry of Food and Agriculture 2013). In fact, the quantity of vegetables exported to neighboring countries has decreased the past few years. This is mainly caused by 1) a high

demand on the local market 2) poor road conditions 3) lengthy border checks 4) lack of demand for Asian vegetables and 5) relative expansive air freight costs to neighboring countries (Ghanaveg 2014). In addition, exports of vegetables to Europe has also decreased in recent years due to new EU regulation regarding phytosanitary. Consequently, the EU bans five groups of vegetables from Ghana (Ghanaveg 2014). These impacts make that local vegetable production is mainly focused on the Ghanaian market.

Fruit products, on the other hand, are not banned by the EU and are therefore, in addition to local and regional markets, exported to the European market. Fruits produced in Ghana are among others; pineapple, papaya (also known as ‘pawpaw’) and mango.

Pineapple production is concentrated in the direct surroundings of Nsawam, Bawjiase and Swedru; in the Eastern- and Central region (Food and Agriculture Organization of the United Nations 2013a). Sea-freight pineapple exporters of Ghana (SPEG) there are currently twenty-three companies producing and exporting pineapples from Ghana (Sea-freight pineapple exporters of Ghana 2015). This is a significant lower amount of active companies than before 2004 when the exported amount of pineapples was at its peak (see figure 7) (Food and Agriculture Organization of the United Nations 2013). The decline in export volumes can be explained by a shift in market demand in Europe. The European pineapple demand changed from the Smooth Cayenne variety to the MD2 variety. The MD2 variety, and the knowledge to produce it, was not available in Ghana at that time. This resulted in strong competition from Costa Rica, who did produce the MD2 variety, leading to a decline in demand for pineapples from Ghana. Currently Ghanaian producers made the shift to the MD2 variety. The MD2 variety is currently the most popular pineapple variety due to its shape, longer shelf life and the fact that is not affected by browning. Other varieties produced in Ghana are: Smooth Cayenne, Sugarloaf and Queen Victoria (Food and Agriculture Organization of the United Nations 2013a).

Figure 7. Amount of pineapples exported



Because Ghanaian pineapple producers are not producing efficiently compared to other pineapple producing countries, operating not more than fifty-five percent of their production capacity, the export value is sub-optimal. In 2013 it was estimated that the value of fresh pineapple exports was about twenty million USD, which is lower than the twenty-three million USD of 2004. Another difference with 2004 is that the value of fresh cut fruit has increased significantly from five million USD in 2004 to seventeen million USD in 2013 (Food and Agriculture Organization of the United Nations 2013a).

The increased value of fresh cut fruit shows that processed fruit has potential. The processed fruit sector is characterized by the fact that it sources its fruits from small scale farmers in contrast to fresh pineapple producers which are generally large commercial farms. In 2012 ninety percent of the pineapples in Ghana was produced by large commercial farms. Companies involved in exporting processed fruit are Pinora, Blue Skies and HPW.

Mango production is the fastest growing fruit sector in Ghana. Commercial mango production is concentrated in two areas; in northern Ghana around Tamale and in southern Ghana spread over Greater Accra, the Eastern region and the Volta region (Food and Agriculture Organization of the United Nations 2009). Production in the Southern area is mainly focused on supplying Accra and foreign markets. Large international operating companies involved in mango production are Bomarts, Integrated Tamale Fruit Company, Blue Skies and HPW.

There are two harvest seasons in the southern area. The main season is from mid-May until July and the minor season is in December and January. Compared to northern Ghana, mango production in the south of Ghana is complicated by higher humidity, pests and diseases (Food and Agriculture Organization of the United Nations 2009).

3.4. Current status of corporate sustainability

CSR in Ghana is generally approached from a Corporate Social Investment and philanthropic perspective. CSR activities are generally focused on the focus areas: safety, health, community development, sport and education. Only recently environmental protection also became a focus area.

The main rationale for local businesses to be involved in CSR is for the socio-economic development of stakeholders through education and health activities. These activities are generally ad hoc and based on a philanthropic approach. The main rationale for multinational businesses to be involved in CSR, on the other hand, is for marketing purposes. Multinational companies in Ghana have a more strategic approach of CSR and are more moral and ethical in their approach of CSR compared to local companies. (Visser & Tolhurst 2010). Besides, multi-national companies align their CSR activities more with their core business (Gesellschaft für Internationale Zusammenarbeit 2013).

The wide variety of CSR approaches can partially be explained by the fact that there is only limited legislation in Ghana to regulate CSR of companies. Legislation concerning CSR is only in place for the energy and water sectors, the telecommunication sector and the mining sector (Gesellschaft für Internationale Zusammenarbeit 2013). The mining sector is not only obligated by law to act responsibly, extractive industries are also pressured by consumers and the media to act socially responsible (U.S. Department of State 2015). Pressure from consumers and the media to act socially responsible is currently mainly focused on the extractive industries. Other sectors, such as the agricultural sector, are barely pushed by consumers or the media to act socially responsible.

However, there are signs that CSR gets increasingly more attention in Ghana. The University of Ghana Business School, for example, has recently started a course in CSR. Another initiative which shows that CSR gets increasingly more attention is the 'Ghana Club 100' list, compiled by the Ghana Investment Promotion Center (GIPC). This is a list of companies doing business in Ghana that can be characterized as top performing companies. One of the ranking criteria is the company's involvement in social responsibility and philanthropy (U.S. Department of State 2015).

3.5. Food security status

On the Global Food Security Index of 2015, Ghana is ranked seventy-five out of one hundred and nine countries with a score of 46.1 (The Economist Intelligence Unit 2015) South Africa and Botswana are the only countries from sub-Saharan Africa ranked higher. Although this ranking shows that Ghana is doing well on the topic of food security compared to other countries in sub-Saharan Africa, Ghana is still ranked alarmingly low. In Ghana about 1.2 million people have limited access to sufficient and nutritious food and can therefore be defined as food insecure. In addition to the 1.2 million people already being food insecure, another two million people are vulnerable to become food insecure (World Food Programme 2009, Food and Agriculture Organization of the United Nations 2013b). This vulnerability is caused by shocks such as droughts and floods.

However, not every region in Ghana or group of people is equally likely to be exposed to food insecurity. As table 4 shows, people in the Upper East Rural-, Upper West Rural- and Northern regions are the most vulnerable (World Food Programme 2009). In addition, people living in rural areas are more often food insecure than people in urban areas. Groups identified to be especially food insecure and vulnerable are food crop farmers, cash crop farmers, agro-pastoralists, food processors and unskilled laborers. Fifty-five percent of the people who are food insecure, belong to one of these five groups. The most striking characteristic these groups have in common is their involvement in the agricultural sector (World Food Programme 2009).

Food crop farmers that are food insecure generally have an income below the national poverty threshold of GHc 1.47 per capita per day. The majority cultivates less than two hectares of land and they are all almost entirely reliant on rainwater for cultivation (World Food Programme 2009). The majority of the cash crop farmers who are food insecure complement their income with food crop farming, which is their second most important source of income (World Food Programme 2009).

Table 4. Food insecurity per region

Regions	Food Insecure		Vulnerable to food insecurity	
	No. of people	% pop	No. of people	% pop
Western Rural	12,000	1	93,000	6
Central Rural	39,000	3	56,000	5
Greater Accra Rural	7,000	1	14,000	3
Volta Rural	44,000	3	88,000	7
Eastern Rural	58,000	4	116,000	8
Ashanti Rural	162,000	7	218,000	10
Brong Ahafo Rural	47,000	3	152,000	11
Northern Rural	152,000	10	275,000	17
Upper East Rural	126,000	15	163,000	20
Upper West Rural	175,000	34	69,000	13
Urban (Accra)	69,000	2	158,000	4
Urban (Other)	297,000	4	572,000	8
Total	1,200,000	5	1,007,000	9

3.6. Challenges

Although Ghana has managed to significantly lower the poverty rate, increase the GDP and is having a growing agricultural sector, there are some challenges that require attention.

An important dynamic which requires attention is the growing urbanization. This is cause for concern given the fact that currently eighty percent of domestic food production is produced by smallholder farmers in rural areas. Young smallholder farmers increasingly more often decide to stop farming and live in urban areas. Not only does this result in less farmers in rural areas, the smallholder farmers left behind are generally older. Therefore Ghana is confronted with an aging farming population. This directly results in a lower productivity. A lower productivity is a cause for concern since the growth in the agricultural sector can mainly be attributed to expansion instead of increasing productivity. This causes problems for the long term since expansion in previously uncultivated areas will no longer be possible. Decreasing productivity and limited expansion opportunities are alarming because currently 3.2 million Ghanaians are either food insecure or vulnerable to food insecurity.

Another matter that requires attention is the commercialization of the agricultural sector. Currently the agricultural sector is characterized by: 1) low availability and knowledge of improved inputs; 2) limited agronomic skills and practices; 3) poor food safety for both the domestic and export market; 4) poor postharvest management; and 5) weak linkages between producers and buyers (Netherlands-African Business Council 2014). This not only results in the failure to seize opportunities on the export market and missing out on the money that can be earned through trade, it also has an impact on local food security.

4. Methodology



4.1. Research objective and research question

The earlier described knowledge gaps result in the formulation of the following research objective

Objective: Assess the impacts of Foreign Direct Investments on the livelihoods and food security situation of smallholder farmers in Ghana in order to provide policy recommendations to relevant stakeholders. Ultimately this research should lead to enhancing the local food security of smallholder farmers in Ghana

This objective results in the following research question and sub-questions.

Research question: ‘How do agricultural foreign direct investments in export-oriented crops contribute to the livelihoods and food security situation of smallholder farmers producing fruit crops in the Southern part of Ghana?’.

This research question is supported by four sub-questions here below. The rationale of each research sub-questions is explained below the question.

1. What is the lead firm’s business model and how does the company approach the topic of food security?
2. How does the lead firm contribute to optimizing the value chain integration for smallholder farmers?
3. How did foreign direct investments in agriculture change the livelihoods of smallholder farmers producing fruit in Southern Ghana?
4. What recommendations can be given on the fruit value chain for optimizing the livelihoods and food security situation of smallholder farmers in Southern Ghana?

1. What is the lead firm’s business model and how do they approach the topic of food security?

The first step in this research is to study the characteristics of the business selected for the case study. This question helps to create insight in the type of business model which is used and helps acquire knowledge on the perspective of the business on food security. By answering this question it becomes possible to scale the business’ business model on a continuum of corporate sustainability.

2. How does the lead firm contribute to optimizing the value chain integration for smallholder farmers?

This second research question helps to create insight in whether, and how, the vision of the business is translated into action. This question helps to learn what changes smallholder farmers experienced related to access to markets, inputs and knowledge after they have been included in the value chain. It is important to look at who is included and who is excluded from these value chain assets.

3. How did foreign direct investments in agriculture change the livelihoods of smallholder farmers producing fruit in Southern Ghana?

This research question is an extension of the previous research question and helps to explain what the impact of inclusion in the value chain and the access to value chain assets is on the livelihoods of the smallholder farmers.

Special attention will go to livelihood assets related to income, employment, market access, trade, well-being and food security.

4. What recommendations can be given on the fruit value chain for optimizing the livelihoods and food security situation of smallholder farmers in Southern Ghana?

This research question results in useful and compelling recommendations for agribusiness investors and policymakers. This way the results of this thesis do not only contribute to the academic debate but also gives clear input to direct stakeholders in order to help them develop sustainably and increase food security for smallholders.

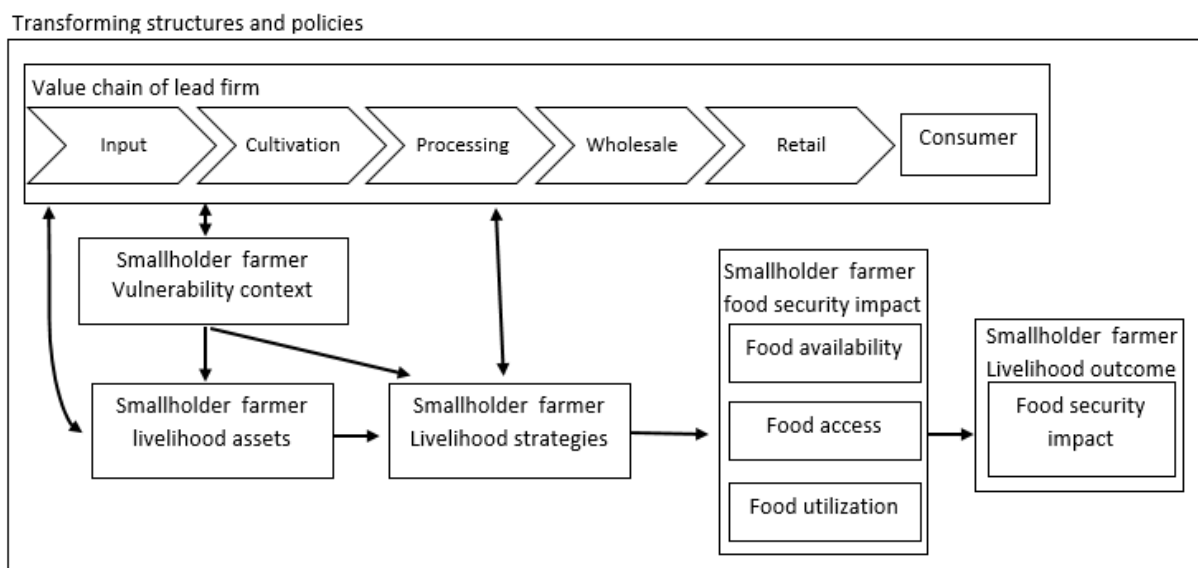
4.2. Conceptual model

A conceptual model has been constructed based on the theoretical framework and the research objective. This conceptual model visualizes three components of which theory shows that they are interconnected (Chambers and Conway 1991, Food and Agriculture Organization of the United Nations 2011, Porter 1985). These three components are: 1) a value chain; 2) smallholder farmer livelihoods; and 3) smallholder farmer food security.

The conceptual model illustrates that the actors within a value chain are subjected to transforming structures and policies. This conceptual model also shows that there is a two-directional relation between the lead firm and smallholder farmers within a value chain. It is recognized that not only does the lead firm in the value chain have an impact on farmers, farmers and their actions also have an impact on the practices of the lead firm. Although this conceptual model visualizes smallholder farmers outside the value chain, it must be stressed that this is only portrait this way because of visual clarity. It is recognized that smallholder farmers are a central part of the value chain.

This model shows that the linkages between the lead firm in the value chain and smallholder farmers have an impact on the vulnerability context, livelihood assets and livelihood strategies of the farmers. Ultimately these linkages have an impact on the food security status of the smallholder farmer. Therefore these linkages are subject of study.

Figure 8. Conceptual model



4.3. Research strategy

This research is conducted with cooperation of HPW fresh & dry Ltd. HPW has been selected for this research based on the type of agricultural products HPW processes, the size of the company and the fact HPW showed to be involved in corporate sustainability.

The fieldwork period of this research took two months; from the start of September until the end of October 2017. Before and during this fieldwork period six different methods were used in order to collect data. These methods are described in the following paragraphs.

4.3.1. Desk research

Extensive desk research has been carried out before and during the fieldwork period. At the beginning of the research a thorough literature review on the topics of food security, livelihood strategies, IB and value chains resulted in an analytical framework that was used to guide data collection. Further desk research has been executed during the research in order to gain knowledge on Ghana's regional background. Desk research included analyzing policy reports and publications on the local market.

4.3.2. Direct observations and informal conversations

Data has been collected through direct observations. During farm visits observations related to cultural practices, livelihood strategies and livelihood assets were made. These observations have been documented in the researcher's notebook.

4.3.3. Semi structured interviews with stakeholders and specialists

In order to get an overview of the challenges and opportunities in the fruit value chain, semi-structured interviews have been held with key actors in the fruit value chain and specialists in the fields of agribusiness, foreign investments and IB. 12 key actors and specialists have been interviewed. The names and professional background of the interviewees are listed in table 5. The interviewees were questioned in relation to their expertise. Therefore no interview was the same. The questions that guided the interviews can be found in appendix 4 to 8.

Table 5. List of interviewees

Interviewee	Professional background
Joep van den Broek Sheila Assibey-Yeboah	GhanaVeg; program leader and deputy program leader. GhanaVeg Business Platform brings together key service providers, producers, processors, traders and wholesale/retailers in the vegetable sector in Ghana.
Fleur Hoog Antink	GNBCC; managing director. This organization represents the business interests of both Ghanaian and Dutch companies.
Eric Agyare	Solidaridad; specialized in business development services, value chains development and Inclusive Business.
Diana Patience	Agribusiness entrepreneur previously working as consultant for The World Bank. Specialized in agribusiness development and youth in agribusiness.
Maik Blaser	HPW; managing director.
Eunice Dadzie	HPW; research officer.
George Annor	HPW; field agronomist. Field officer concerned with pineapple farmers.
Abraham Fada	HPW; employee. Field officer concerned with mango farmers.
Daniel Anani	2k farms; owner.
Merjim Groen	Dutch fruit producer producing for foreign companies like HPW and Lush.
Geert Demeyere	Works at AgroFair which is an importer and distributor of Fairtrade and organic tropical fruit. Formerly active in Ghana. Currently doing business in Costa Rica.

During some of the interviews, interviewees were asked to rank four cards in order of importance. Four types of responsibilities were written the cards: economic-, ethical-, legal- and philanthropic responsibilities. These responsibilities are based on the responsibilities identified by Carroll and criticized by Visser (Visser 2006b). The operationalization of the responsibilities on the cards can be found in table 6. It was the aim of this exercise to get the respondents talking on the topic of CSR in a non-threatening and non-judgmental way; giving the respondents the opportunity to elaborate on topics they feel comfortable with and giving the interviewer the opportunity to ask follow-up questions. This helped to get a better understanding of the rationale and considerations regarding CSR. Since the categories on the cards are broad and analytical it was not the objective to categorize the interviewees CSR vision based on these cards.

Table 6. Operationalization of corporate responsibilities

Responsibilities	Operationalization
Economic responsibility	Be profitable
Ethical responsibility	Obligation to do what is right just and fair. Avoid harm.
Philanthropic responsibility	Improve quality of life
Legal responsibility	Play by the rules of the game. Obey the law.

4.3.4. Focus groups

Focus groups have been held in order to gain more knowledge on the challenges and opportunities farmers experience after they were included in the fruit value chain. Hearing about farmers’ experiences and their perception on existing challenges and opportunities gives insight in what issues are experienced to be most urgent and provides possible solutions from people who have to deal with the issues at first hand. In addition, the focus groups were also organized to gain more knowledge on the food security status; including access, availability, nutrition and the vulnerability context. By organizing these focus groups it was possible to collect qualitative data which helped to explain correlations observed in the surveys.

The focus groups were split thematically; one focus group focusing on topics directly related to the challenges and opportunities of farming, and one focus group focusing on the topic of food security. Generally this resulted in the first focus group being held with solely men since their main occupation was farming, and the second group with solely women since they showed to be the most knowledgeable on food related topics.

In total five focus groups have been organized. Two focus groups, one related to farming and one related to food security, have been organized for both pineapple and mango farmers. One focus group, covering both topics, has been organized for the coconut farmers. This was possible since this group mainly consisted of women who were knowledgeable on both topics.

The first focus group was held with pineapple farmers. Data collected during this focus group functioned as input for constructing the survey. The farm related focus groups were organized by employees from the company that functioned as a case study. In two of three occasions these employees were present during the focus group and were actively involved in the group discussions. It could be possible that the presence of HPW employees could have made farmers cautious with the information they shared. However, the influence of the presence of HPW employees was limited by talking with the farmers one on one after the focus group.

The focus group with the topic food security was organized by the researchers. The spouses of the farmers who were interviewed for the survey were asked to participate in the focus group. The approached spouses all participated without hesitation.

Figure 9. Farming related focus groups



Figure 10. Food security related focus group



4.3.5. Structured interviews with farmers

After integrating input from the focus group held with pineapple farmers, a household survey has been conducted among farmers producing pineapple, mango, coconut and papaya for HPW. The household survey was conducted with the head of the household and took between forty-five and sixty minutes.

The household survey is based on the sustainable livelihood analysis as developed by Chambers and Conway, the value chain analysis developed by Porter and the food security framework developed the FAO (Chambers and Conway 1991, Food and Agriculture Organization of the United Nations 2011, Porter 1985). This resulted in a wide variety of questions covering topics like livelihood assets, livelihood strategies, production capacity, market prices, value chain assets, health and food intake. The survey can be found in appendix 9.

The survey was most often conducted by one of the two research assistants involved in this research. The use of research assistants made it possible to question the respondents in the local language, Twi. This improved the response rate and the specificity of the responses. In order to safeguard the quality of the survey and limit the researcher bias as much as possible, the research assistants were briefed on how the questions needed to be asked and how the answers needed to be processed. In case the respondent spoke sufficient English, the interview was conducted by one of the two researchers (see figure 11).

The farmers were selected from a list provided by HPW. This list consisted of three hundred and twenty-three names and contact details. Some names referred to a farm owner, some to farm employees and some to farmer association chairman. The list was divided into four categories; pineapple, mango, coconut and papaya farmers. For each category the list was cleared of inactive farmers, farmers without phone number and farmers where the location was not stated. This resulted in the identification of eighty-six pineapple-, one hundred and nine mango-, nine coconut- and fourteen papaya farmers. Because of logistical considerations the farmers are grouped based on their location, resulting in the research area described in paragraph 4.4. This resulted in a sampling frame consisting of fifty-one pineapple-, thirty-seven mango-, nine coconut and fourteen papaya farmers. These people were contacted and the majority of these people was willing to participate in the study. In addition to this stratified sample, snowball sampling took place; respondents introducing the researchers to other farmers producing for HPW. On the whole forty-five pineapple-, forty-three mango-, seventeen coconut and twelve papaya farmers have been interviewed counting up to a total of one hundred and seventeen farmers.

Figure 11. Structured interview with farmer



4.3.6. Agribusiness survey

A digital survey has been conducted among agribusinesses in order to collect comparable data on corporate sustainability in the agribusiness sector in Ghana. It was expected that this data would make it possible to partly compare the case of HPW with other businesses operating in Ghana and identify the overall position of agribusinesses in relation to corporate sustainability and food security. The questions of this survey were largely based on the questions of the assessment of CSR 2.0 developed by Visser (Visser 2014).

The survey was sent by E-mail to ninety-five companies involved in the agricultural sector in Ghana. This list of companies was composed by selecting all the agricultural businesses mentioned in the 2016 Exporters Directory of the Federation of Associations of Ghanaian Exporters (FAGE). Of the ninety-five companies that were approached, three companies have participated in the survey. A relative low participation rate was to be expected, since the participation rate is often low with online surveys (Bernard 2011). A participation rate this low, however, was unforeseen. As a result of the low participation rate, the collected data is not representative for the agricultural sector and therefore does not help in contextualizing HPW's results. The data provided by the three companies will therefore not be used in this research.

An overview of the methods used for answering each of the research questions can be found in table 7.

Table 7. Overview of the methods used per research question

Research sub question	Level of analysis	Methods	Type of framework/analysis
1	<ul style="list-style-type: none"> Regional 	<ul style="list-style-type: none"> Desk research Semi-structured interviews with key-informants 	
2	<ul style="list-style-type: none"> Individual households Community Regional 	<ul style="list-style-type: none"> Household survey Direct observations Semi-structured interviews with key-informants Focus groups 	<ul style="list-style-type: none"> Value chain analysis
3	<ul style="list-style-type: none"> Individual households Community Regional 	<ul style="list-style-type: none"> Household survey Direct observations Focus groups 	<ul style="list-style-type: none"> Sustainable livelihood framework Household Dietary Diversity Score
4	<ul style="list-style-type: none"> Individual households Community Regional 	<ul style="list-style-type: none"> Semi-structured interviews with key-informants Focus groups Household survey 	<ul style="list-style-type: none"> SWOT analysis

4.4. Research Area

The farmers who supply HPW are generally located in the southern part of Ghana; covering the Western-, Eastern- and Central region. Therefore this study focuses on these three regions. Due to logistical considerations farmers included in the research sample are centered around three cities; Axim in the Western Region, Nsawam in the Central region and Somanya in the Eastern region (see figure 12).

Figure 12. Research area



4.5. Operationalization

The structured interviews with smallholder farmers are a major source of data. Table 8 gives an overview of the operationalization of the different indicators which were identified in the theoretical- and conceptual framework.

Table 8. Operationalization

Indicator	Variable
Household characteristics	<ul style="list-style-type: none"> • Gender household head • Main occupation household head • Main occupation spouse • Age of household head • Size of household
Financial assets	<ul style="list-style-type: none"> • Monthly income • Last year's harvest in kilogram • Source of income • Type of money lender • Amount of savings • Amount of money lent • Place where saved money is kept • Purpose of loan

Physical assets	<ul style="list-style-type: none"> • Access to machines and tools • Access to paved roads • Access to affordable transport • Use of seeds • Use of fertilizers • Use of herbicides • Use of pesticides • Use of planting materials • Amount of money spend on used inputs • Experienced impact of water shortage
Natural assets	<ul style="list-style-type: none"> • Plot size • Type of ownership of a plot • Adequate water supply • Land acquisition • Proximity of water supply
Social assets	<ul style="list-style-type: none"> • Main occupation spouse • Membership of farmer cooperative • Experienced benefits of membership of farmer cooperative
Human assets	<ul style="list-style-type: none"> • Level of education of household head • Source of knowledge for improving farming skills • Experienced impact of health problems • Availability of labor • Experienced impact of a shortage of manpower
Smallholder farmer benefits of value chain integration	<ul style="list-style-type: none"> • Services provided by HPW • Improved skills after involvement with HPW • Topics on which farmers want to improve knowledge • Experienced impact from government policies
Livelihood strategies	<ul style="list-style-type: none"> • Main livelihood strategy the coming years to improve living conditions
Livelihood outcomes	<ul style="list-style-type: none"> • Improvements in the ability to support family financially • Improvements in productivity (kg per acre) • Improvements in profit • Improvements in total amount of food a household eats daily • Improvements in the diversity of food products a household eats • Reduced exposure to risk

4.6. Dissemination of research outputs

To ensure the outputs of this research enhances the local food security of smallholder farmers in Ghana, the research outputs will be disseminated to HPW, policymakers, NGOs and researchers involved in agricultural export, IB and corporate sustainability.

Dissemination includes the following activities:

- Giving written feedback to HPW with special focus on the policy recommendations;
- Giving written feedback to the smallholder farmers who have expressed their interest in the research outputs;
- Publication in a policy- and development oriented journal (e.g. Development Policy & Practice);
- An electronic article aiming to improve awareness and understanding of agribusiness investors on their local food security impacts, published by Solidaridad.

4.7. Limitations and risks of the research

A number of challenges and limitations were experienced during this research. One of the most obvious and at the same time the most challenging difficulties was the language barrier. Although English is the official language, not all respondents were able to speak English. Some only spoke the local language. Some people in the Eastern region spoke Ewe, Akan languages were spoken in the Western region and Twi was spoken in the Central region. Two research assistants were hired as a solution for this difficulty. The research assistant were able to communicate with all the respondents by speaking a mixture of Pidgin English and Twi.

The use of two assistants, however, also has an impact on the research since this way an extra layer of interpretation is added to the collected data. Although the research assistants were thoroughly briefed on the questionnaire, moments were scheduled for the assistants to discuss ambiguities or inaccuracies in the questionnaire and the assistants sat in on each other's interviews in order to observe differences in each other's way of working, it cannot be ruled out that the assistants have influenced the data. In addition, it is very important to be aware of the bias of the assistants. The most obvious characteristics that could have influenced the data is that one of the assistants was a relatively unexperienced male researchers and the other a highly experienced female researcher.

Another limitation is the low participation rate in the digital survey. The low participation rate influenced the validity of one aspect of the research; the comparative analysis between HPW and other businesses involved in agribusiness and export.

Another major, but unexpected, limitation was the fact that farmers were regularly unable to recall exact amounts regarding last year's productivity, sold quantities or money earned. This limitation was dealt with by asking for approximate amounts, trying to triangulate given quantities and asking for receipts provided by HPW.

Other limitations had to do with logistical difficulties. Some farmers were difficult or impossible to come into contact with due to incorrect phone numbers. In addition, visiting the farmers at their farm was time consuming and in some cases challenging due to bad roads. However, having a four wheel drive with a driver limited the impact of these difficulties to a minimum and made it possible to meet the research schedule.

4.8. Ethical considerations

Since this study includes interactions with a human sample and includes a number of methods to collect data, several ethical aspects have been taken into consideration. Important ethical considerations include: informed consent, reimbursement and confidentiality.

Informed consent has been sought from all participants to the study. Survey participants have been asked to sign a consent form.

Research participants did not receive monetary reimbursement for their participation. Survey participants were given a small gift to thank them for their participation. Focus group participants were thanked by buying the participants drinks and snacks.

Data collected during this research is managed confidentially. This is facilitated by assigning each respondent a number. These numbers are linked to the respondents' name which makes this research not fully anonymous. Survey numbers are linked to the corresponding names in order to avoid duplication and be able to further explore possible outliers. The list of names is kept by the researcher and will not be shared with the company of the case study or third parties. In some cases respondents have indicated that they don't mind giving up his/her anonymity. This is considered as long as it is appropriate to the aims of the study and it is not expected that the respondent is exposed to any risk.

5. Results



The results of this research are subdivided in six sections. These sections aim to logically move through the livelihood and value chain frameworks.

First, an overview is given of the business model of the business selected for the case study. This includes describing HPW's key characteristics, describing the company's CSR vision, activities and drivers and categorizing HPW's CSR policies in a stage of CSR.

The second section explores the household characteristics of the households included in the sample. In addition, the livelihood assets are analyzed in order to assess the capacity of farmer household to cope with the vulnerability context which is further discussed in the third section.

The fourth section gives an overview of the value chain in which farmers operate. This section explores what characterizes the trading relationships between the farmers and HPW. In this section there will be elaborated on what the market linkages are, what the status is of chain collaboration, how the chain is governed and whether farmers have access to services. This section is followed by an investigation of the livelihood strategies of farmers in order to see how the value chain has an impact on the combination of activities that farmers undertake to achieve their livelihood goals.

Lastly, the livelihood outcomes of the farmers are presented in order to see whether they have more income, reduced their vulnerability and improved their food security situation after starting to supply to HPW. The food security assessment presented here is executed by a colleague researcher involved in the study; Klaske de Vries. The results presented in this section help to identify the farmer household's needs and priorities which are of great importance in formulating the recommendations presented in chapter seven.

5.1. HPW's business model

5.1.1. Company portrait

HPW is a company that sells fresh and dried fruits to retailers in Europe. HPW was established by Hans Peter Werder in 1997 in Switzerland (HPW 2016a). The amount of fruit HPW exported from Ghana to Europe increased since the company started doing business, resulting in reaching its peak volume by the end of 2008. In 2008 half of the fresh pineapples exported from Ghana were handled or bought by HPW. The credit crunch in 2008 lowered the demand for fresh cut pineapples from Ghana drastically, forcing HPW to develop a new business strategy and new products. Therefore HPW started to complement its fresh fruit exports in 2011 with dried fruits resulting in the establishment of a fruit cutting and drying facility in Ghana under the flag of HPW fresh & dry Ltd. HPW AG and Maik Blaser (Managing Director) are the shareholders of this company. This research focuses on HPW fresh & dry Ltd.

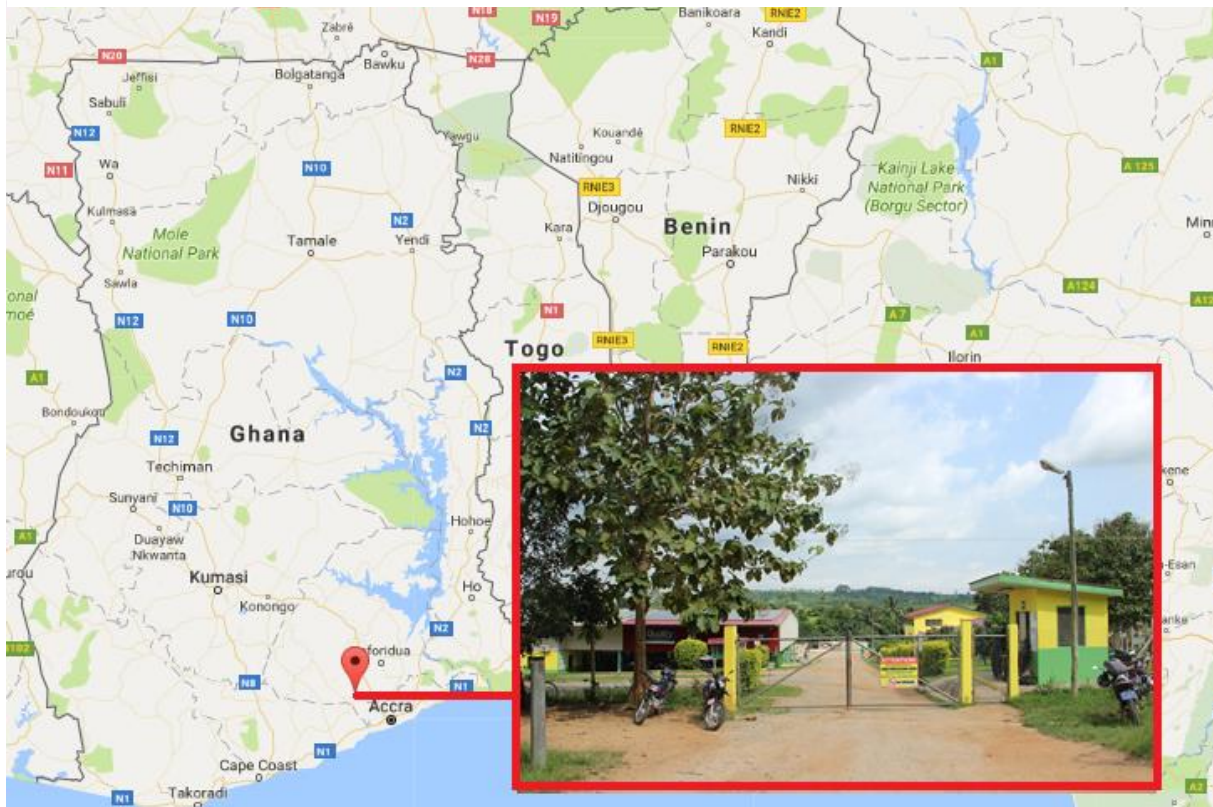
HPW fresh & dry Ltd. (from now on referred to as HPW) operates a cutting and drying facility located in Adeiso; fifty kilometer North-West of Accra (see figure thirteen). €6,000,000 has been invested in this facility. HPW started drying and exporting dried fruits in 2011, producing three hundred ton of dried fruit and employing two hundred seventy people. In 2011 the fruits that were dried were mangos and pineapples, followed by coconut in 2013 and papaya in 2015. By 2016 the dried fruit production and export has increased significantly compared to 2011. In 2015 the yearly turnover grew to €6,000,000 and exports grew up to twelve hundred ton of dried fruits in 2016 (Maik Blaser, personal communication, 26th of November 2016). Seven hundred and sixty people were directly employed by HPW to process these increasingly large amounts of fruits. It is to be expected that the number of employees and amount of exported fruits will increase, since the demand for raw products yearly increases with thirty percent. The current production capacity of the two cutting and drying facilities of HPW is fifteen hundred ton, leaving some room for growing production (Maik Blaser, personal communication, 26th of November 2016).

In order to compete with other businesses, HPW processes the fruits into various products, including: coconut oil, mango rolls, fruit bars and dried fruits without added sugar (coconut, mango, papaya, pineapple). In addition, HPW is exploring the possibility of processing chili for chili sauce.

Currently HPW sells to UK retailers, but also to Coop Switzerland and Dole Europe. HPW only sells less than one percent of its products to local retailers. The main reason being their product is too expensive for local retailers due to supplementary taxes.

A visual impression of HPW's fruit processing factory is given in appendix 2.

Figure 13. Location of HPW on map



5.1.2. CSR vision and focus

HPW states in its CSR policy that it wants to have a positive impact '[...] on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere who may also be considered as stakeholders' (HPW 2016b). In addition, HPW states it wants to meet the social needs in Ghana and improve people's working and living conditions (HPW 2016c).

HPW is convinced that being profitable is the company's first priority (Maik Blaser, personal communication, 26th of November 2016). However, HPW recognizes that acting socially responsible benefits the company. Perceived advantages concern economic benefits, connecting employees to the company and community participation (HPW 2016b).

HPW's CSR vision, described in a CSR policy document, shows to put special focus on the environment, employees and society (HPW 2016b). Activities that were envisioned to be executed regarding the environment covered the following themes: investing in renewable energy, minimizing the environmental footprint, avoid pollution and encourage good agricultural practices. With regard to the employees, HPW envisioned to focus on the areas of: knowledge development, health and safety, advocacy, discrimination and social relations. Focus areas that are described for the society are: knowledge development, health and safety and infrastructural development (HPW 2016b). In addition, HPW says it also want to improve the local food security situation. According to HPW, local food security can be improved by supporting local agriculture and creating jobs. According to HPW, people are food secure when '(...) food for a living is available and affordable for people' (Maik Blaser, personal communication, 26th of November 2016).

5.1.3. CSR activities

Paragraph 5.1.2. has shown that HPW has a vision on CSR. It, however, remains the question whether this vision is translated into reality. Therefore this paragraph provides an overview of the general CSR activities in which HPW is involved. More specific smallholder farmer related CSR activities are presented in paragraph 5.2. and 5.4. The CSR activities described in this paragraph are activities which are considered CSR activities by HPW. The activities described are mentioned by HPW itself in interviews and policy documents or are observed during field visits.

Table 11, 12 and 13 give an overview of the activities from the CSR policy that are executed in reality. In addition to the activities mentioned in this table, HPW is also involved in CSR activities which were not earlier specified in their CSR policy. These activities are all in favor of society. The activities are:

- Support of local football team
- Small infrastructure projects (building two bore holes, two toilet facilities and a material store for a school)
- Support of staff sports events
- Support schemes for small holder farmers

Looking at what activities are executed in reality, it becomes clear that HPW particularly focuses on the environment, followed by employees and society.

One of the activities that was envisioned, but not fully executed is 'sourcing from farmers that are GLOBAL-GAP certified' (HPW 2016b). GLOBALG.A.P. is a farm certification scheme which is used worldwide. GLOBALG.A.P requires member companies to work according to set standards for the following aspects: food safety, traceability, quality assurance, workers' occupational health & safety, site management, soil management, fertilizer application management, integrated pest management, plant protection products management and water management (GLOBALG.A.P 2016). In response to the discrepancy between vision and reality, HPW answered 'No, most suppliers are not Global Gap certified. So far this has not been requested by customers.' (Maik Blaser, personal communication, 26th of November 2016).

HPW is also Fair Trade certified. This, among others, entails that HPW pays its producers a fair price. Minimum prices are set by Fair Trade International. HPW bases its prices on the guidelines for fruit for drying. Prices that are paid for each crop can be found in table 9. These prices are in line with Fair Trade International's guidelines (Fairtrade International 2016).

Table 9. Price table per crop

Crop	Minimum price	Fairtrade premium	Transport Costs	Total
Pineapple for drying	20.5 US cents / kg	3.0 US cents / kg	2.0 US cents / kg	25.5 US cents / kg
Mango for drying	14 US cents / kg	3 US cents / kg	-	17 US cents / kg
Papaya for drying	Commercial price	15% of commercial price	-	17 US cents / kg
Cococnut for drying	31.5 US cents / kg	4.5 US cent / kg	4.0 US cents / kg	40.0 US cents / kg

HPW is also BRC Food certified. This certificate covers the food processing operation, focusing on: hygiene, food safety and quality systems (BRC Global Standards 2016a). There are only six other companies in Ghana with a BRC food certificate. Blue Skies is, in addition to HPW, the only BRC Food certified company in agribusiness (BRC Global Standards 2016b).

A visual impression of some of HPW's CSR activities is given in appendix 3.

Table 10. CSR activities HPW - Environment

CSR activities aimed for in CSR policy document (vision) - Environment	CSR activities executed in reality
plant native plants	✓
use healthy weed and pest control	✓
direct all bio-degradable waste into fermenters for the generation of bio-gas	✓
the company shall have solar panels to store and generate energy from the sun	✓
shall encourage the use of bio-degradable items such as soap, paper, cups, glass, plastic	✓
not engage in indiscriminate felling of trees that will lead to de-forestation	✓
not engage in bush burning	✓
embark upon yearly tree planting exercises	✓
not channel waste into land or water bodies to cause contamination	✓
separate waste into organic, paper, and cardboard, metals and plastic	✓
treat organic waste in the bio gas plant and the methane produced used as energy supply	✓
sell metals to local scrap dealers for recycling	✓
waste water will be treated in bio gas plant and the residual water will be cleaned in sand/cane filter beds to be used for irrigation	✓
explore all possible ways of energy conversation; for example, by keeping electricity consumption to a minimum through the use of energy efficient equipment, machines and appliances	✓
the greater part of our raw materials comes from agriculture. Our sourcing programme encourages good agricultural practices by sourcing from farmers that are GLOBAL-GAP certified	X
reduce greenhouse gas emissions	✓

✓ Means that that activity is executed in reality

X Means that that activity is not executed in reality, despite planning to

Table 11. CSR vision HPW - Employees

CSR activities aimed for in CSR policy document (vision) - Employees	CSR activities executed in reality
Invest in capacity building activities such as trainings and re-trainings, organizational learning and other employee development activities	✓
promote a safe and friendly working environment by daily supplying all protective equipment needed	✓
provide open channels of communication where employees' opinions can be heard and addressed	✓
encourage work-life balance through providing facilities and policies such as flexible working hours, gymnastics, maternity/paternity/compassionate/study leave, etc.	✓
support employees to celebrate/observe their special occasions such birthdays, weddings, naming, funerals etc.	✓
establish free guidance and counseling sessions on work and other personal related issues	✓
discourage substance abuse through periodic talks and sensitization on the dangers on drug and substance abuse	X
encourage fitness and healthy lifestyles via annual medical examinations, talks and trainings on disease prevention (including HIV/AIDS)	✓
provision of vocational/recreational activity centers	X
provision of a crèche facilities for employees children	X
provide educational scholarships for brilliant but needy employees children	✓
encourage the setting up of workers committee to serve as a mouthpiece for the workers whereby their opinions, suggestions and needs can be heard and addressed by Management	✓
never engage in acts of discrimination against employees or potential employees based on religion, gender, political affiliation, ethnicity etc.	✓

✓ Means that that activity is executed in reality

X Means that that activity is not executed in reality, despite planning to

Table 12. CSR activities HPW - Society

CSR activities aimed for in CSR policy document (vision) - Society	CSR activities executed in reality
embark upon bi-annual clean-up exercises at selected areas within the community	X
make bi-annual donations to less privileged schools, hospitals around the community	✓
contribute to / support the construction of social amenities such as roads, schools, social center etc.	✓
fund raising activities in support of selected projects or cause for community development	✓
hold regular health awareness walks and talks	X (only talks for employees)
partner with the local health center to organize free health screening	X
partner with the Ghana Aids Commission to organize annual HIV/AIDS Awareness/Education, Free Guidance/Counseling and Testing for the locality	X
discourage the practice of social vices via regular education on the dangers of theft, armed robbery, bribery and the like	X
discourage substance abuse through periodic talks and sensitization on the dangers on drug and substance abuse	X
partner with the local FM Station as the medium through which the organization will communicate to the community.	X
provide educational scholarships for brilliant but needy youth in the community	X (only company staff)
support the registration of members of the community into the National Health Insurance Scheme	X

✓ Means that that activity is executed in reality

X Means that that activity is not executed in reality, despite planning to

5.1.4. Drivers of CSR

This paragraph examines what drivers are relevant to HPW. By studying the drivers, a better understanding is created in what motivates HPW to formulate the earlier mentioned vision, focus and CSR activities. This understanding helps to understand which incentives and pressures are most applicable to the local context and therefore contributes to formulating useful and compelling policy recommendations. In addition, understanding what drives HPW helps to scale HPW on a continuum of corporate sustainability and improves the possibilities of future comparison with other researches.

Based on interviews and a questionnaire, HPW shows to be driven by a wide range of local- and global drivers (see table 13). A selection of drivers on which HPW has elaborated, is further discussed below.

HPW appears to be particularly driven by the drivers ‘Governance gaps CSR’ and ‘Cultural tradition CSR’. HPW is of the opinion that local institutions fail to adequately provide various social services (Maik Blaser, personal communication, 26th of November 2016). HPW does not necessarily perceives the Ghanaian government to be weak. However, the government shows to have insufficient resources to provide various social services. This, in combination with HPW’s cultural values and business ethics, motivates HPW to act socially responsible.

Albeit to a lesser extent, HPW also says to be motivated by ‘Socio-economic priorities CSR’, ‘Market access CSR’, ‘International standardization CSR’, ‘Investment incentives CSR’ and ‘Supply chain integrity CSR’.

HPW is motivated by ‘International standardization CSR’ since HPW competes with other multinationals. By joining international standardization processes HPW is not left behind and is able to compete with other multinationals for the customer’s approval. Pressure from the clients and customers seems to be a key motivator in acting socially responsible.

HPW says not to be driven by ‘Political reform CSR’, ‘Crisis response CSR’ and ‘Stakeholder activism CSR’. HPW says not to be motivated by political reforms since it does not experience pressure from the government to act socially responsible beyond the law. Although the government wants to create a positive business climate and HPW benefits from policies which are the result of political reforms, such as tax exemption, HPW does not experience increased local competition or pressure from the government as a consequence of these policy reforms. To the contrary, when HPW started doing business in Ghana multiple companies involved in agribusiness were active in the region. Now, these companies have left (Maik Blaser, personal communication, 5th of November 2016).

HPW does not only experience no pressure from the government to act socially responsible, HPW also says not to feel pressure from stakeholders or activists to act socially responsible. So HPW is not motivated by stakeholder activism.

Table 13. Overview of CSR drivers relevant to HPW

	Driven by	Not driven by
Cultural tradition CSR	X	
Political reform CSR		X
Socio-economic priorities CSR	X	
Governance gaps CSR	X	
Crisis response CSR		X
Market access CSR	X	
International standardization CSR	X	
Investment incentives CSR	X	
Stakeholder activism CSR		X
Supply chain integrity CSR	X	

5.1.5. HPW's stage of CSR

Knowing HPW's vision on CSR, its activities and the underlying motivations it becomes possible to categorize HPW's CSR policy in a stage of CSR as developed by Visser (2014).

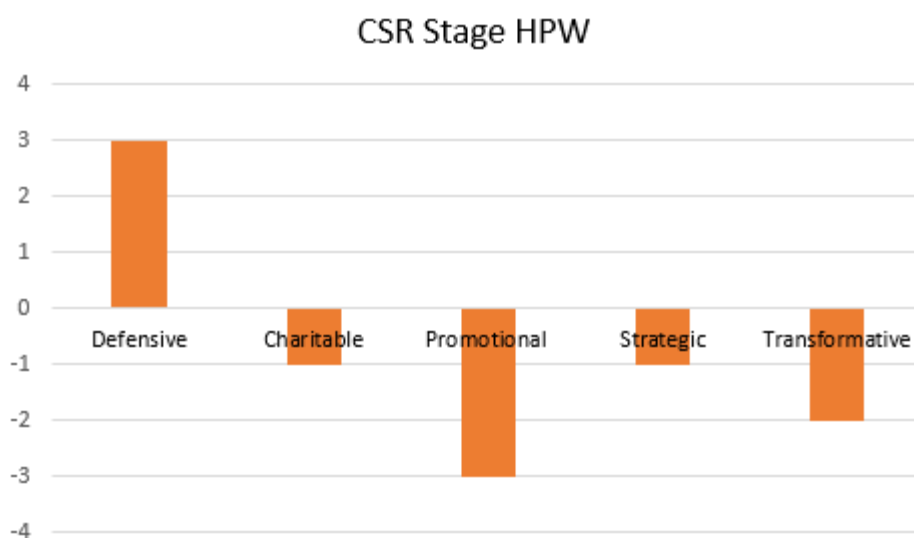
Although a strict categorization of HPW in a single category seems to be too simplistic, HPW shows to have the most overlap with the stage 'Defensive CSR'. This is the case since HPW agrees significantly more often and to a larger extend with the statements regarding 'Defensive CSR' than it does with statements regarding the other stages. A quantification of HPW's answers can be found in figure 14.

HPW says to 'agree completely' with the statements claiming: 1) CSR should be entirely voluntary as an alternative to greater government regulation; 2) the organization's growth, profitability and/or shareholder returns are the key measure of success; and 3) the staff performance appraisals are linked to the economic performance of their unit or of the organization. In addition, HPW makes a business case for CSR by stating that CSR activities will benefit the company financially, which is typical for a company in this stage (Visser 2014: 69).

Nonetheless, HPW also shows signs of 'Charitable CSR' and 'Strategic CSR'. With regard to 'Charitable CSR'; HPW says to highly value making a contribution to the community and giving back to society. In addition, HPW supports the local football team and is involved in small infrastructural projects. This shows HPW's CSR activities are not solely focused on HPW's core business, which is typical for 'Charitable CSR'. Concerning 'Strategic CSR'; HPW agrees 'to a large extend' with the statement that it is certified against international recognized CSR standards like ISO 14001, OHSAS 18001 and SA 8000.

Despite the fact that HPW shows signs in line with 'Charitable CSR' and 'Strategic CSR', these signs are contradicted by other statements and observations. For example, HPW's CSR is not thoroughly embedded through internal management systems (policies, objectives, targets, procedures, reviews & reports), HPW is not fully able to demonstrate quantified continuous improvement on social, environmental and ethical performance, and charitable giving is not institutionalized. Therefore it can be concluded that HPW has the most similarities with the stage of 'Defensive CSR'.

Figure 14. Quantification of HPW's answers



5.2. Smallholder farmer livelihoods

The previous paragraph has introduced HPW and elaborated on HPW's corporate sustainability policy in general. Before continuing to discuss HPW's corporate sustainability concerning smallholder farmers and HPW's degree of inclusiveness in chapter 5.4 and 5.6, it is valuable to take a look at the other important actors in this value chain; the smallholder farmers. Getting in the characteristics of the farmers and discuss the assets farmers possess helps to understand what the impact is of HPW on the smallholder farmers, what the farmers' vulnerabilities are and what is needed for integrating the smallholder farmers in the value chain. In addition, knowing more about the farmers' livelihoods helps to understand the effectiveness and expedience of HPW's current responsible business policies. This paragraph therefore aims to provide an overview of the livelihoods of smallholder farmers who supply to an export oriented foreign company. This overview is provided by identifying key characteristics of households and analyzing the household assets and vulnerabilities. Data presented in this paragraph is differentiated based on the type of crop mainly produced by the smallholder farmer in case significant differences show to exist. In addition to quantitative data, collected by conducting a survey among one hundred seventeen smallholder farmers, qualitative data collected through focus groups, informal conversations and semi-structured interviews will be used to explain detected correlations or associations. The collected quantitative data is mainly analyzed by executing Chi-square tests. The measures of effect size used are Cramer's V or Phi. Both are measures of association between two nominal variables. Phi is used for two times two contingency tables and Cramer's V for larger tables.

5.2.1. Household characteristics

Before studying HPW's impact on smallholder farmers' livelihood assets, -strategies and outcomes it is important to get a better understanding of the household characteristics of the sample since this is the unit of analysis and possibly informative in understanding how decisions are made and strategies are chosen.

Looking at the gender of the people approached for this study, one sees that hundred and ten men and seven women were included in this study. The sample of pineapple and mango farmers did not include any female farmers. The sample of mango farmers, however, included three female farmers (seven percent of the mango farmers' sample) and the coconut sample included four female farmers (23.5 percent of the coconut farmers' sample). Although seven women in this sample are farmers and supplying HPW, these women are generally not head of the household. Six out of seven women said their husband is head of the household. In addition, all men said they were the head of the household resulting in one hundred sixteen of the one hundred seventeen households of the sample having male household heads. Due to the low number of female household heads it is not possible to look for associations based on this characteristic. Analysis does show that in 24.2 percent of the cases the spouse of the household head is also a farmers. However, in the majority of the cases (61.6 percent) the head of the household identifies the spouse as business owner. Being a business owner regularly showed to refer to trading commodities. In 83.8 percent of the cases the head of the household identified him or herself as being a farmer. There is no association between identifying as a farmer or not and the type of crop that is produced.

The head of the household in this sample ranges from twenty-three years to seventy-eight years. On average the head of the household was forty-eight years old. However, the average age of farmers differentiated per crop varies; pineapple farmers are on average 44.8 years old, mango farmers fifty-three years old, coconut farmers 46.6 years old and papaya farmers forty-five years old. A remarkable outlier are the relatively old mango farmers (fifty-three years). A possible explanation for the relative high age of the mango farmers could have to do with characteristics of the type of crop. Mango trees start to bear fruits after four to five years (HPW employee, personal communication, 7th of November 2016). Therefore the initial investment is relative expensive since the investment only starts to pay off after multiple years. The amount of capital needed for starting producing mangos thus requires

savings or other capital. This is supported by the observation that a relative large number of mango farmers are retired white collar workers, well paid government officials or people who share the costs of the farm with family. Needing starting capital could push the average age up. Another observation is that the average age in general is high. This is in line with the observed trend in Ghana in which young smallholder farmers increasingly more often decide to stop farming and live in urban areas. An aging farming population generally results in a lower productivity.

Looking at the household size the sample shows to be very diverse. Households in the sample range from one to thirteen household members. On average a household has 5.7 members. However, the average size of a household differs significantly per crop; pineapple and mango farmers have a household size of six, coconut farmers a household size of 4.9 and papaya farmers of 4.3. It is difficult to find the underlying reason for this difference. Nonetheless, the household size is important in understanding the pressures experienced by households related to income and thus strategies.

5.2.2. Livelihood assets

In this paragraph the set of livelihood assets identified in the Sustainable Livelihood Approach are used to study the smallholder farmers' livelihoods. Each livelihood capital is analyzed. However, it is recognized that a more thorough in depth study of each capital, than is conducted for this research, could be informative. There is especially room left to study the smallholders' human- and social capital. Due to time and resource limitations it was not possible to study the impact of HPW's business operations on the full range of complex social dynamics present in the smallholder farmers' household and communities.

5.2.2.1. Natural capital

The natural capitals that are important to take into account are plots size, the type of ownership of a plot and access to resources such as water.

With regard to the plot size, analysis shows that the average plot size differs per crop, which was to be expected. After correcting the data for large outliers, analysis showed that pineapple farmers on average have 4.16 acres of land for pineapple production, mango farmers 9.33 acres, papaya 19.82 acres and coconut 12.12 acres.^{1,2} On average 67.7 percent of the farmers said the plots were inherited and 30.8 percent of the farmers bought the land themselves.³ Although there are slight differences between crops, there does not seem to be an association between type of crop and how farmers acquired the land. The above percentages are remarkable because when the farmers were asked again on the type of ownership of their main plot in a later question in the questionnaire, 51.8 percent of the farmers answered the plot is on their family name, forty-three percent of the farmers said to rent the land and 5.3 percent answered 'other'.

This seems remarkable since the first data set shows that 67.7 percent of the farmers have land that is inherited, while the second data set seems to contradict this by showing 51.8 percent of the plots are on their family name. In addition, the first data set shows that 30.8 percent of the people bought land themselves, while the second data set shows forty-three percent of the farmers rent the land. The seemingly contradictory results are caused by a flaw of the researcher. First of all, the answer options of the two questions were different and therefore did not fully overlap (see appendix 9,

¹ One acre is 0.404686 hectares or 4,046.86 square meters. To help visualize the size of one acre; one acre is sixty percent of a soccer pitch.

² Hampel's M was chosen because this estimator completely reject gross outliers while not completely ignoring moderately large outliers. This way it was tried to get a clear picture of the typical smallholder farmer who generally have relative small plots of land.

³ An important remark is that for this variable there was a total of fifty-two missing values which is remarkably high and cannot be explained.

question twenty-three and twenty-four). Secondly, the answer option within each question were not mutual exclusive; it is possible that farmers pay rent to family for land that is inherited. A more thorough analysis of the data shows that the people who answered at the first question that they bought the land, answered at the second question that that the land is on their family name. However, the people who answered at the second question that they rent the land, answered for the first question that they either inherited or bought the land.

When one looks at the access and proximity of water, 44.3 percent of the farmers say to have access to adequate water supply and 55.7 percent of the farmers say they do not have adequate access to water supply. Analysis shows that there is a moderately strong association (0.267) between whether a farmer has adequate access to water supply and the type of crop the farmer produces. Looking at specific crops this association mainly shows to exist for coconut (-0.197) and papaya farmers (0.190) albeit a weak level of association. This association can be interpreted as follows: if you are a coconut farmer you are likely to have access to adequate water supply and if you are a papaya farmer you are likely not to have access to adequate water supply. There are multiple possible explanations for this association. One explanation has to do with the characteristics of the crops. Papaya trees require lots of water and are most productive and best to handle when they are young. This makes that papaya trees do not have roots as deep as coconut trees and are therefore dependent on watering. The productivity of coconut trees on the other hand is less age related than papaya trees and therefore gets the chance to grow deeper roots and become less dependent on watering. So the threshold of what is an adequate water supply differs per crop. Another explanation could have to do with the region and local precipitation. The region in which the coconut farms are located is characterized as rainforest and the location of the papaya farmers as coastal savanna (Antwi-Agyei et al. 2012). The coconut trees are thus located in a more humid region than the papaya trees; explaining why coconut farmers generally experience adequate access to water supply while papaya farmers don not (Encyclopaedia Britannica 2017).

Asking each farmer how far the farm was located from the nearest stream or irrigation resulted in the following average distances; pineapple farms three hundred and twenty-three meter, mango farms one hundred and forty-three meter, papaya farms one hundred and forty-four meter and coconut farms two hundred seventeen meter.⁴

5.2.2.2. Physical Capital

The physical capitals that are important to take into account are access to machines and tools, infrastructure related to transport and availability of seeds, fertilizers, herbicides and pesticides.

Data collected during this research shows that 70.7 percent of the farmers use fertilizers, 80.2 percent of the farmers use pesticides, thirty-one percent of the farmers use herbicides and seventy-five percent of the farmers use fungicides. However, there are differences in the number of farmers of the different crops using each type of input. The percentage of farmers using a specific type of input is shown in more detail in table 15. In table 14 you can see the average amount of money a farmer spends on each input. The data presented in those tables show that coconut farmers do not use herbicides. The tables also show that pineapple farmers on average spend the most money and coconut farmers the least on these types of inputs compared to other farmer groups.

⁴ These average distances are calculated by using Hampel's M.

Table 14. Average costs of inputs per crop per farmer in GHC

Crop	Costs of Fertilizer	Costs of Pesticides	Costs of Fungicides	Costs of Herbicides	Total
Pineapple	4,380.45	731.73	448.-	1,481.81	7,042.00
Mango	1,118.60	914.09	1,037.31	925.78	3,995.80
Coconut	150.-	50.-	10.-	-	210.-
Papaya	1,771.-	451.11	426.66	2,225.20	4,873.97
Total	2,982.06	778.14	721.62	1,286.17	5,768.00

Table 15. Percentage of farmers using specific type of input

	% of pineapple farmers using	% of mango farmers using	% of coconut farmers using	% of papaya farmers using	% of all farmers using
Fertilizer	100	58.1	6.2	91.7	70.7
Fungicides	77.8	95.3	6.2	83.3	75
Pesticides	91.1	95.3	6.2	83.3	80.2
Herbicides	26.7	41.9	0	50	31

Only 32.8 percent of the farmers said to use planting material. There is a strong association between planting material and the type of crop (0.580). The association between planting material and producing coconuts is 0.226, the association between planting material and pineapple is -0.537 and the association between planting material and mango 0.422. These associations mean that pineapple farmers are likely to use planting material, while coconut and mango farmers are likely not to use planting material. This is also represented in the data on how many farmers use planting material; 64.4 percent of pineapple farmers, 6.2 percent of coconut farmers and seven percent of mango farmers. Farmers were then asked whether they experienced a shortage of raw material (such as seeds or seedlings) which had a negative impact on their livelihood. Seventy percent of the farmers answered that they had never or rarely experienced a shortage of raw material. Analysis shows that pineapple farmers experienced more often a shortage of raw materials than the farmers producing other crops. Coconut farmers experienced the least shortages of raw material. These observations are in line with the above results on planting material usage. Conversations with farmers support these findings. Especially pineapple farmers have to deal with a shortage of raw material. Seedlings of pineapple varieties such as Smooth Cayenne, and MD2 are hard to get (Pineapple farmer Adeiso, personal communication, 6th of November 2016). However, with the Sugar Loaf variety it is possible to use the suckers, slips or crowns of pineapples of the last harvest. It takes longer for these pineapples to grow, but farmers prefer to grow something that takes a while than to grow nothing at all. In addition, growing pineapples by using parts of the last harvest limits the costs of buying new raw material. The fact that coconut farmers experience the least shortages of raw material is understandable. Coconut trees can get sixty tot eighty years old, reducing the need for seedlings.

Looking at the tools and machines available, data shows that on average 59.8 percent of the farmers say to have access to affordable machines and 92.3 percent have access to affordable tools. For both variables there is no statistical association between a specific crop and access to tools or machines. The lack of machines came up during the focus groups. One person identified the struggles of not having machineries as follows:

‘We don’t have that, tractors or other accessories. We have to hire a tractor from a place far away. We have to book it for one month but then they don’t have it, because some people book the tractor in advance. So we have lights but no tractors. So we also cannot use a plow, we have to do everything with our hands. So if you don’t have a tractor, how can you plant the materials? You need to hire a worker from outside’. (Respondent two Adeiso, personal communication, 21st of October 2016).

The last aspect of physical capital to look at is infrastructure. Fifty-nine percent of the farmers say to have access to paved roads and 59.8 percent of the farmers have access to affordable transport. Again, for both variables there is no statistical association between a specific crop and access to affordable transport or paved roads. Especially coconut farmers seem to be vulnerable to lack of paved roads. The coconut harvest coincides with the rain period, causing vehicles to get stuck.

5.2.2.3. Financial capital

The financial capitals that are important to take into account are revenues from farming, additional types of income such as loans, remittances or income from off farm activities and the access and ability to save money. These financial capitals are important to take into account since financial capital can be converted into other types of capital and can be used to directly achieve a livelihood outcome; for example, buying food in order to maintain or achieve food security. In addition, the type of financial capitals farmers possess says something about whether farmers are independent or have to rely on others and whether there are liabilities attached to their financial capital.

With regard to the income of the farmers; the collected data shows that pineapple farmers have a monthly income of three hundred and seven USD, mango farmers earn 374.10 USD, papaya farmers earn 806.10 USD a month and coconut farmers earn 207.90 USD.⁵ This results in respectively the following daily incomes: 10.26 USD, 12.47 USD, 26.87 USD and 6.93 USD.

Dividing the average daily incomes of each farmer group by the average household size, one comes to the conclusion that pineapple farmers on average have to live from 1.71 USD a day, mango farmers of 2.07 USD, papaya farmers of 6.24 USD and coconut farmers of 1.41 USD a day. A more thorough and specific analysis of the data shows that twenty-five out of forty-four pineapple farmers, twenty-four out of forty-three mango farmers, one out of twelve papaya farmers and eleven out of seventeen coconut farmers live below the international poverty line.⁶ A clear outlier is the income of papaya farmers. Not only do papaya farmers on average earn more per day, the number of papaya farmers living below the international poverty line is also low compared to other farmer groups. Since the data has already been corrected for outliers, this result cannot be attributed to statistical flaws. The difference in household size partly explains the difference in daily incomes. Papaya farmers on average have the smallest household size compared to the other groups; an average difference of 1.7 person. This makes that the money that is earned, has to support less people resulting in a higher average amount of money that can be spend per person. However, the question remains why papaya farmers have higher incomes than the other farmer groups.

⁵ These numbers are corrected for outliers using Hampel’s M.

⁶ The poverty line is the minimum level of income deemed adequate to make a living. The international poverty line was updated in 2015 by the World Bank to 1.90 USD a day.

The quantity of sold papayas most likely explains the difference in income. There are differences between the different farmer groups concerning the amount of fruits harvested and sold. Based on amounts of last year's harvest that was sold; papaya farmers on average sold 82,240 kilograms.⁷ This is a lot more than the average amount pineapple farmers (29,651), mango farmers (14,995) and coconut farmers (37,031) sold last year.⁸ So the quantity of sold papayas most likely explains the difference in income.

The above amounts include income from selling the farmer's main crop, but also income from sources such as trading and off farm activities. Looking at those sources of income fifty-nine percent of the farmers state they earn an income from selling other crops than their main crop, 35.9 percent of the farmers said to earn an income through trading commodities and 36.8 percent to earn an income through off farm activities. Sources of income which are less common are loans (13.7 percent), animal farming (5.1 percent), remittances (4.3 percent) and income from retirement (2.6 percent). Analysis shows there is no association between the type of crop produced and the additional types of income. Looking at associations between different sources of income; the only additional sources of income that are associated are 'selling other crops than main crop' and 'off farm activities'. These two sources are negatively associated (-0.337). This means that people who have an additional income from selling other crops than their main crop generally do not have an income from off farm activities and vice versa.

There are big differences in the average amount of loans between the different farmer groups. Pineapple farmers on average have loans of 1,979.54 USD and mango farmers have loans of 699.41 USD. Papaya farmers lend 1,805.71 USD and coconut farmers three hundred ninety-five USD. Although there is a large difference between the average amount of money lend between the different farmer groups, the data does not allow for a statistical analysis for association between type of crop and amount of money lend.⁹ A possible explanation for the difference in loans could be the difference in capital intensity of the different crops. First of all, the lifecycle of papaya trees and pineapple plants is shorter than the lifecycle of coconut trees and mango trees. Papaya trees and pineapple plants thus require more frequent renewal and thus investment. Another reason could be the amount of inputs such as fertilizer that is required. As table 15 shows, pineapple farmers and papaya farmers more often use inputs such as fertilizer than mango farmers and coconut farmers. On average pineapple farmers spend 4,380 GHC and papaya farmers 1,771 GHC on fertilizers. This is less than what mango farmers (1,118 GHC) and coconut farmers (hundred fifty GHC) on average spend on fertilizer. So not only do more pineapple and papaya farmers use more inputs such as fertilizer, they also use more fertilizer than the other farmer groups; possibly explaining needing larger loans.

Asking farmers where they spend the money from loans on, 88.5 percent of the farmers state they spend it on farming related activities. Spending borrowed money on school fees, the household or vehicles is negligible. This is in line with the results of asking farmers where they spend their money on. 47 percent of the farmers put spending money on the farm on first place, prioritized over spending their money on food, leisure, house or education. However, spending money on the farm is shortly followed by spending money on education. 36.8 percent of the farmers prioritize the education of their children on first place and 32.5 percent put it on second place.

⁷ This variable is corrected for outliers.

⁸ It must be noted that these number are largely based on farmers guessing last year's sales. Therefore it is possible that these numbers differ from reality due to problems with recollection.

⁹ Analysis shows the assumption of normality is violated because of the differences in group size. The required non-parametric test cannot be executed due to insufficient cases.

The farmers who say that they have income through loans (13.7 percent) generally get their loans from rural development banks (32.1 percent) and commercial banks (14.3 percent). The number of people getting loans from a cooperative, micro finance agencies and NGOs is negligible. A remarkable finding is that 21.4 percent of the people say they get loans from HPW. This is remarkable since HPW says not to give loans to farmers. More data on the services of HPW is described in paragraph 5.4.3. Analysis shows there is no association between farmers producing a specific type of crop and whether they have a loan.

The number of people having loans (13.7 percent) is striking given the fact that during almost every conversation, interview and focus group a shortage of financial means came up as one of the major issues. During conversation with farmers, obtaining some sort of loan is by many farmers presented as a possible solution to their problem. Farmers suggested that HPW could provide loans. This suggestion and the underlying rationale is best described by one of the respondents:

‘Apart from HPW we don’t trust anyone. We have a bank that gives loans to farmers. If the money comes, they give it to a business man. They tell you there is no money. If you give them a letter that you are given ten million dollars they say no. You should challenge them. Ask them where it is. Then they just answer that the manager is not there’.
(Respondent six Adeiso, personal communication, 21st of October 2016).

91.5 percent of the people say they are able to save money. People who save money do this almost without exception at the bank. Saving money at home or through other institutions is not happening. The amount of money farmers save greatly vary per type of crop that is produced. Papaya farmers on average have 1,574.46 USD on their savings account and pineapple farmers on average save 699.62 USD. Mango farmers save 137.48 USD and with 219.92 USD coconut farmers have the smallest amount of savings.¹⁰ Although there is a large difference between the average amount of savings between the different farmer groups, the data does not allow for a statistical analysis for association between type of crop and amount of money saved.¹¹

5.2.2.4. Human capital

The human capitals that are important to take into account are a farmer’s knowledge and skills, education, health and the labor available to the farmers.

Looking at the education farmers have received it becomes clear that eighty-one percent of the farmer’s did not continue their education after secondary school; 13.8 percent does not have and education at all. 18.1 percent of the farmers has gone to technical college or university. The data does not allow for a statistical analysis for association between type of crop and the education of the farmer.¹² In addition to the education of the household heads, it is interesting to look at the education of the children of the farmer households since this tells something about the valuation of education and the capacity of children to contribute. This data shows that practically all children go to school.

¹⁰ Data collected from pineapple-, mango-, and papaya farmers showed large outliers. Therefore the average amount of savings of these farmers presented here are the result of a Hampel’s M analysis, while the average savings of coconut farmers are calculated through a five percent trimmed mean.

¹¹ Analysis shows the assumption of normality is violated because of the differences in group size. The required non-parametric test cannot be executed due to insufficient cases.

¹² Analysis shows the assumption of a minimal expected count of five and at least twenty percent above three is violated.

Although 30.3 percent of the farmers say they got their knowledge for farming mainly from school, this is not the only source of knowledge. The amount of formal education a farmer has had is not the sole indicator for knowledge and skills, as one farmer said: 'When you put all practices and trainings etc. together, you would get something. From learning only at school you don't get results'. (Respondent six Somanya, personal communication, 7th of November 2016). When farmers were asked where they obtained their knowledge for improving farming skills, 30.3 percent of the farmers said to gain knowledge from books, 13.5 percent said the mainly get it from relatives and 23.6 percent answered that they got their knowledge for farming mainly from HPW. NGOs, the Ghanaian government and farmer cooperatives are not mentioned as main source of knowledge. Analysis shows there is no significant association between the type of crop produced and the main source of knowledge.

In general farmers do not perceive health problems to have a frequent negative impact on their livelihoods. A total of 94.8 percent of the farmers answered either 'never', 'rarely' or 'sometimes'. Analysis showed there is no association between the type of crop produced and the extent to which health problems are experienced to have a negative impact.

With regard to the labor available to the farmer, the majority of the farmers receive support in their farming activities not from relatives but from non-relatives. 82.1 percent of the farmers said to get help with farming activities from non-relatives, while only 13.7 percent of the farmer said to get help from relatives and non-relatives. 4.3 percent of the farmers only receive support from family. Looking at the data one could see that in a majority of the cases farmers receive enough support in their farming activities. 72.4 percent of the farmers say they 'never' or 'rarely' experience a shortage of manpower which has a negative impact on their livelihood. A minority of farmers says that a shortage of man power sometimes (15.5 percent), most of the time (six percent), or always (six percent) has a negative impact on their livelihood. The extent to which this is experienced, however, differs per type of main crop that is produced.¹³ Compared to the other farmer groups, mango farmers experience the least often a negative impact on their livelihood due to a shortage of manpower, followed by papaya farmers and pineapple farmers. Coconut farmers generally experience more often some kind of negative impact from a shortage of manpower, albeit in less extremes than pineapple farmers.

5.2.2.5. Social capital

For studying a farmer's social capital it is important to take into account the social networks and support available to the farmer.

Probably the most direct type of support a farmer can get from its social network, is support from his spouse. Spouses, in the case of this research generally women, support farmers with a range of activities. They take care of the house and the family. In addition to the support provided by spouses related to the house and the family, spouses also directly or indirectly contribute financially. 92.9 percent of the farmers who have answered this questions said that the occupation of their spouse was either farmer (24.2 percent), employed (7.1 percent) or business owner (61.6 percent). The fact that spouses are also farmers, does not mean they work on the same piece of land. Talking with farmers and spouses made clear that in some cases spouses work their crops on a separate piece of land. The occupation of spouses shows no association with the type of crop mainly produced within the household.

¹³ For this analysis a Kruskal Wallis test has been executed since a non-parametric test was needed that could compare multiple samples of different sample size.

Another source of support, not specifically and uniquely for the purpose of additional man power, is a farmer cooperative. 70.9 percent of the respondents said to be member of a farmer cooperative.¹⁴ No statistical association showed to exist between being a member of a cooperative and the type of crop a farmer produces. The farmers who are member of cooperative valued different products and services of a cooperative. The products and services that stand out because they are valued most frequently are 'exchanging knowledge' (91.7 percent) and 'advocacy' (76.2 percent). These services are followed by 'purchasing in bulk' (34.1 percent) and 'labor support' (29.8 percent). Certification (23.8 percent), financial support (20.2 percent) and sharing machineries/equipment (20.2 percent) are identified least often as advantages of a cooperative. The data does not allow for a statistical analysis for association between type of crop and the different advantages of being member of a cooperative.¹⁵ The fact that a great number of farmers (91.7 percent) say that an advantage of a cooperative is 'knowledge exchange' is striking. This is remarkable because when farmers were asked what their most important source of knowledge and skills was, the number of people who answered 'cooperative' was negligible. So although farmers do not perceive the cooperative to be the main source of knowledge, almost all farmers are of the opinion that cooperatives facilitate knowledge exchange.

¹⁴ The percentage of farmers who are member of a cooperative is possibly not representative for the whole population since a snowballing method has been used to come into contact with farmers. Cooperative members possibly redirected the researcher more often to fellow cooperative members than to farmers who are not a member of a cooperative.

¹⁵ Analysis shows the assumption of a minimal expected count of five and at least twenty percent above three is violated.

5.3. Vulnerability context

This paragraph elaborates on the vulnerability context of the smallholder farmers producing fruit for HPW. Knowledge of the vulnerability context is crucial in understanding how FDIs impact local livelihoods. The vulnerability context helps to explain how farmers' vulnerability affects, constrains or diminishes their livelihood options. Although farmers can do little to affect the vulnerability context itself, FDIs and their corporate sustainability policies could play an important role in building farmers' resilience to the vulnerability context. Farmers' livelihoods could be made more or less vulnerable by company policies. The vulnerability context is the combination of shocks, trends and seasonality that affects people's livelihood assets and strategies but which are largely beyond people's control. This chapter discusses trends and events of each vulnerability category which is relevant to the smallholder farmers included in the study.

5.3.1. Shocks

5.3.1.1. Infectious pests and diseases in crops

A shock which particularly mango and coconut farmers have to face is related to pests and diseases in crops. Pests and diseases can easily spread and not only damage the harvest of a single farmer, but the harvest of farmers of a larger region for years. Pest and disease related shocks are hard to prevent by individual farmers and can easily put farmers out of business, severely affecting the farmers' livelihoods.

The farmers included in the study are currently confronted with multiple diseases and pests. Mango farmers are currently losing a part of their harvest due to the 'mango anthracnose disease', also called bacterial black spot (BBS) disease. This is a fungal disease. Symptoms of the disease are black spots on the leaves and fruits; resulting in fruit rotting. In addition, fruits can fall of the tree prematurely. The disease is spread passively by splashing rain or irrigation water. Infections and postharvest development of the disease is favored by wet, humid and warm weather conditions. If farmers want to protect their crops against this disease, they need to use fungicides (Nelson 2008).

Mango farmers also experience pests such as mealy bugs and fruit flies. The mealy bug not only damages the fruits it also lowers mango production by covering the leaves and thus interrupting with the process of photosynthesis. Fruit flies lay eggs in the mango fruits and by that spoil the harvest. Both pests can be controlled with chemicals (Peña et al. 2002).

Coconut farmers have to deal with the 'lethal yellowing disease' also called 'Cape St. Paul Wilt Disease' (see figure 15). The lethal yellowing disease is named after the yellowing of the foliage. The disease was first observed in Ghana in 1932 and is spreading ever since. The disease is spread by insects. Coconut trees die three to five months after the first appearance of symptoms. There is currently no treatment method or technique to stop the disease from spreading. What makes this disease a shock is the fact that the disease spreads in an unpredictable manner; spreading at varying speeds and causing different degrees of damage (Ollivier et al. 2015, Dollet et al. 2009). A farmer explained the impact of the disease as follows:

'[Coconut disease] it is really affecting the farm. We feel threatened by it. Many of the farmers feel that they lose their harvest due to that. Government says they found a variety that is resistant. But they are afraid that this will not work out well and they might lose the whole farm. Many farmers are now diverting in cocoa and rubber' (Respondent four Aiyinase, personal communication, 14th of November 2016).

Figure 15. Coconut trees infected with the lethal yellowing disease



5.3.2. Trends

5.3.2.1. Climate change

Climate change is characterized as a trend since the effects of climate change are long term and more or less predictable. However, climate change will manifest itself in shocks and seasonality.

Climate change in Ghana is expected to manifest itself in an increase in extreme weather events. It is expected that there will be reduced and increasingly erratic rainfall resulting in droughts and floods and higher dependency on irrigation (CGIAR 2016). Although climate change is a process that takes decades, farmers already state to observe changes in weather patterns. According to farmers the weather becomes less predictable; wet and dry seasons are said not to occur according to their normal pattern. Not only do changes in climate have an impact on whether crops get the right amount of water on the moment they need it, climate change also has an impact on the spreading of diseases and pests. As is stated above, the bacterial black spot disease spreads passively by splashing rain and is favored by wet and hot weather; conditions which are expected to become more common due to climate change.

A mango farmer explained the vulnerability he experiences due to the climate as follows:

‘Until now, we knew that in the period June-July-September we will have hot weather. This time it has changed. It can rain from May to June up to September. Or it can be very hot. We are very confused. The weather is unpredictable. Means we use both experiences and theories, otherwise we lose. We were expecting hot weather but the weather was cool and a lot of drought. So we did not know whether to harvest or not’ (Respondent four Akorley, personal communication, 9th of November 2016).

5.3.2.2. Declining soil fertility

A worrisome trend is the decline in soil fertility of farmer’s fields. A decline in soil fertility is not a risk for all farmers; particularly farmers who cultivate crops through monoculture experience land degradation. The practice of clearing trees and other soil cover to make space for crops also has a negative impact on soil fertility.

A possible solution to decreasing soil fertility is planting crops such as pineapple alongside fruit trees such as mango or banana. Some farmers already do this (see figure 16). However, the case remains that declining soil fertility continues to be a risk to farmers who do not have knowledge on soil fertility,

do not rotate their crops or continue to mono crop (see figure 17). This is an ongoing risk, as one farmer explains: 'We don't have knowledge about the soil; on how to improve it. We are lacking the means to have the analysis done' (Respondent three Akorley, personal communication, 9th of November 2016).

Figure 16. Example of combining different crops; banana and pineapple



Figure 17. Example of mono cropping mango



5.3.2.3. Competing global markets and fluctuating market demand

The farmers are vulnerable to changes in global demand for their product and increased global competition.

As can be read in chapter three the pineapple export was at its peak in 2004 and has been declining for a long period. Competition from Costa Rica is the main reason for this decline (Maik Blaser, personal communication, 18th of October 2016). As a direct consequence, pineapple processing and trading companies relocated. Earlier there were more pineapple processing and trading companies located in Ghana than is the case now, resulting in less options for farmers to sell their produce (Maik Blaser, personal communication, 18th of October 2016)

Market dynamics are also a risk for coconut farmers. Coconut farmers are for a large part dependent on selling their produce to Nigerian traders since local demand for coconut is relatively low. This makes coconut farmers vulnerable, as is explained by one of the farmers: '[talking about the prices they get for selling coconuts to Nigerian traders] the prices are really low. They determine the prices for which they want to buy it. So the nuts won't go bad, but they buy for a really small amount of money. There is only a small profit'. This respondent also said: 'Nigerians are the major buyers. They send it to Accra. For the Nigerians, processing is difficult. They buy in bulk so that they can determine the price. We don't have an option'. (Respondent four Aiyinase, personal communication, 14th of November 2016).

Although the demand for mango is rising and increasingly large quantities are currently sold by farmers, also mango farmers will be impacted by competition. There is an increasing amount of competition with neighboring country Burkina Faso. It is to be expected that mango farmers from Burkina Faso will be able to compete with Ghanaian mango farmers within two years (Maik Blaser, personal communication, 5th of November 2016). The price of mango in Burkina Faso is forty percent lower than mango prices in Ghana (Maik Blaser, personal communication, 5th of November 2016). Despite the costs of importing these mangos from Burkina Faso, it will be cheaper for companies in

Ghana to buy from farmers in Burkina Faso. This will, without a doubt, have an impact on market prices and the demand for mangos grown in Ghana.

Next to competition from global markets, farmers are also be vulnerable to changing consumption patterns and the corresponding changes in demand. This shift in consumption patterns was experienced by pineapple farmers when the market demand shifted from one variety (Smooth Cayenne) to another (MD2). This can also happen for crops such as coconut, mango and papaya.

Another shift in consumption patterns seems to have has set in; a shift towards consuming more healthy products. This, for example, results in a demand for products which are grown with less use of chemicals. Using less chemicals could be disadvantageous for a farmer's productivity and thus making farmers more vulnerable.

5.3.3. Seasonality

5.3.3.1. Work and income

The farmers are vulnerable to season related changes in production- and market capacity.

Table 16 shows that some crops are ready to be harvested in specific months, while others can be harvested whole year round. This results in a peak period in which specific crops are harvested. At the same time there are peaks in demand for a specific crop. For pineapple this is for example the month of November (Maik Blaser, personal communication, 5th of November 2016). The peaks in production and peaks in market capacity do not always overlap. As a consequence farmers are sometimes unable to sell their produce to HPW, and HPW is sometimes unable to put enough people to work to meet the capacity. As a result some crops are given priority in processing. HPW explains this as follows:

'In the past, the schedule has mainly followed the mango seasons. Mango is the product with the highest demands and margins for us. It is therefore the product that has enabled us to sustain and grow the company. Therefore, we typically use the full production capacity for mango production during the mango season (Jan, Feb and May, Jun, Jul). The rest of the year we focus on pineapple and coconut processing. One main issue has always been the lack of reliable forecast data when it comes to pineapple production. It is therefore difficult to plan the work force for the production in tune with the production. It is also not possible to recruit staff for very short time of raw materials available (e.g. excess volumes of pineapple in Nov/Dec).' (Maik Blaser, personal communication, 26th of November 2016).

The discrepancy between production- and market capacity can be detrimental to the farmers. Farmers who were hoping to sell their produce to HPW, are left with ripe fruit which than needs to be sold at the local market for a lower price than they would have gotten from HPW or in the worst case scenario the fruit gets spoiled resulting in post-harvest losses. Order irregularity is an often heard complaint.

There are also other seasonal impacts on work and income. Heavy rainfall during the wet periods can complicate farming as is explained by the farmers as follows:

'By middle of May, to July, there is the expansion of rainfall. These times, there is the peak of the rainy season. Really heavy rainfall. The farms are flooded. We cannot go to the farm then. By April we do all we need to do. So that we are finished by middle of May' (Respondent four Aiyinase, personal communication, 14th of November 2016).

At the same time, the absence of rain can also have a big impact since irrigation is often not available. This is explained by one of the farmers as follows:

‘We live by the rain. There is no rain now. The cycle of production is delayed. So by November some fruits are just the same. When the rain stops, everything comes to zero because fruits are not mature. If we would have irrigation, we could continue’ (Respondent six Akorley, personal communication, 9th of November 2016).

The fact that harvesting crops shows to be highly dependent on the season also makes that illnesses within the household can have a serious impact on the ability to sell crops; complicating receiving income which can have long term effects.

5.3.3.2. Food security

The farmer households are for a large part dependent on income from selling crops. Since crop production largely depends on rainfall, farmers experience season related vulnerabilities especially concerning food security.

Table 16 shows the seasonal calendar of each crop; depicting the harvesting period, the wet season and the period in which farmers said to experience food to be least available. This table shows that farmers experience food to be least available from roughly December until March. This period coincides with the period in which there is less rainfall. This shows that the availability of food is directly related to the season. This is to be expected since all the food eaten by the farmers is produced locally. This directly results in fluctuating food prices. Food prices are low in the in - or directly after - the wet season when food is widely available, while food prices rise in the dry period when food is least available. Due to limited options to store food for a longer period of time, there is no mechanism to counteract seasonal fluctuations in food availability and prices. This forces farmers to buy relatively expensive food in the period the least amount of money is earned; spending a portion of the farmer households’ tight budget on food instead of being able to invest money in the farm.

Table 16. Seasonal calendar per crop

Crop/Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pineapple	H	H	H	H	H	H	H	H	H	H	HP	HP
Weather						R	R	R	R			
Lean Period	F	F	F	F								
Mango	H	H			H	H	H					H
Weather				R	R	R			R	R		
Lean Period	F	F									F	F
Coconut	H	H	HP	HP	HP	H	H	H	H	H	H	H
Weather			R	R	R	R	R			R	R	
Lean Period	F	F	F									F
Papaya	H	H	H	H	H	H	H	H	H	H	H	H
Weather						R	R	R	R			
Lean Period	F	F	F									

Legend:

H: Harvesting

HP: Harvest peak

R: Period of rainfall

F: Food deficit

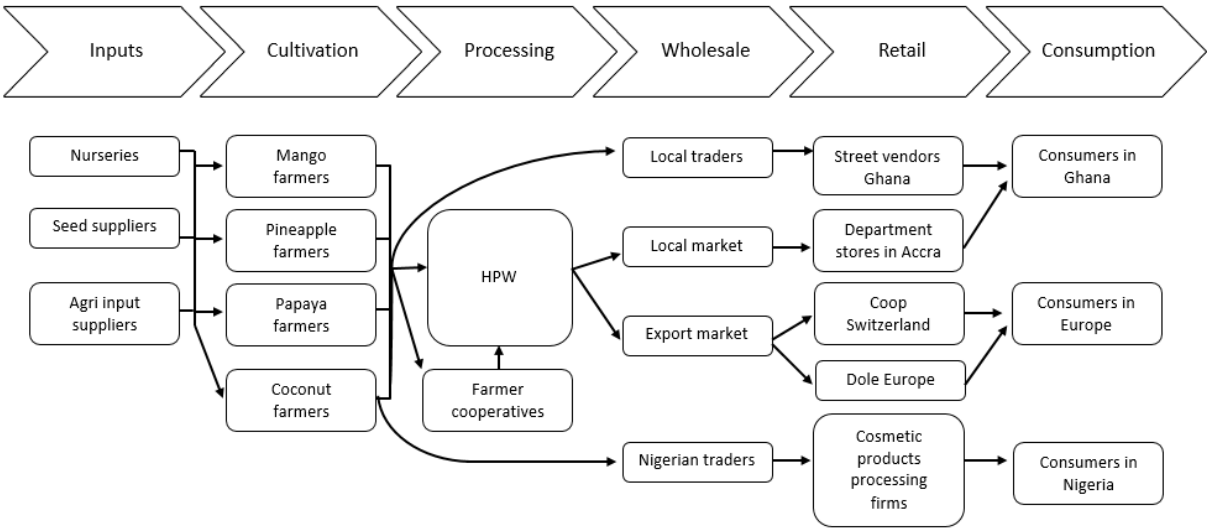
5.4. Value chain

Before continuing to look at the impact of HPW on the livelihood strategies and livelihood outcomes of the farmers (paragraph 5.5 and 5.6), it is useful to get a better understanding of the value chain in which these farmers function. It is important to understand what characterizes the trading relationships; what are the market linkages, what the status is of chain collaboration, how the chain is governed and whether farmers have access to services.

5.4.1. Market linkages

Although some aspects of the value chain have already been mentioned earlier when discussing the farmer livelihoods, a complete overview of the value chain was not given until now. An overview of the smallholder value chain is given in figure 18 (an enlarged version is given in appendix 12). This figure shows the actors involved in the value chain and how these actors are interlinked. In addition, the figure shows in which stage the actors are situated.

Figure 18. Schematic overview of smallholder farmer value chain



Looking at the figure of the value chain, you can see that farmers get their inputs from local agro input suppliers. These are generally stores in the village close by. These stores sell anything ranging from personal protection equipment (gloves, boots) to chemical inputs as can be seen in figure 19. However, these stores do not sell seedlings. Seedlings are sold by nurseries or seed suppliers. Especially pineapple and coconut farmers show to be highly dependent on seed suppliers and nurseries. Currently there is a shortage of seedlings of pineapple varieties which aren't sugarloaf. In addition there is a shortage of seedlings of disease resistant coconut varieties. Farmers are unable to get the seedlings they require anywhere else. These shortages result in lower productivity, less outlet options of their produce and a higher risk of losing yield.

Looking at the next set of linkages, one can see that there are four different ways farmers are connected to the stages of processing and wholesale. A part of the farmers is organized in a cooperative and this cooperative supplies HPW. However, there are also individual farmers supplying to HPW. During this study it did not become clear whether there are selection criteria or procedures that guide which farmer or cooperative enters a trading partnership with HPW. In case it is more rewarding or necessary, some smallholder farmers decide not to sell their produce to HPW but to local traders for the Ghanaian market. In addition to selling through cooperatives to HPW or to local traders, coconut farmers also sell their produce to Nigerian traders for the Nigerian market.

Figure 19. Local store selling agricultural inputs



Different considerations may play a role in choosing to whom to sell. When selling their produce to HPW, they know in advance what price they get for their produce. In addition, when HPW buys produce from a farmer it can buy a farmer's whole harvest resulting in farmers receiving a large sum of money at once. This is what farmers prefer and makes selling to HPW more interesting for farmers than selling to local traders. Local traders only buy small quantities at a time and thus farmers receive small sums of money spread over a longer period of time. However, selling produce in smaller quantities, instead of in one bulk as is the case with HPW, lowers the risk to which farmers are exposed. This is the case because if the local market is unable to buy the farmer's produce one or two times, the farmers only loses one or two small amounts of money. If HPW shows to be unable to buy the farmer's produce, the farmer potentially loses its whole harvest. In addition, some farmers are convinced the profit margins are larger when they sell to the local market. Besides, a part of the farmers believe they have to pay the transportation costs themselves when supplying HPW, in contrast to local traders who pick up the produce seemingly without any costs.

HPW says to be aware of the potential risks farmers are exposed to when dealing solely with HPW. Therefore HPW urges farmers to also find other market outlets. HPW is aware that this is exceptional and potentially risky to say as a processing company. However HPW feels forced to say this since they are not always capable of buying all the produce they communicated in their prognosis.

The above considerations show that buyers for a large part decide to do business which HPW because of the financial benefits and the sense of security supplying to HPW gives them. The farmers do not show signs of more intrinsic motivations to do business with HPW. Therefore this relationship can be characterized as more driven by dependency than by loyalty. In addition, the linkages between farmers and HPW seem to be stable. HPW works with a limited number of cooperatives and a rather fixed group of individual farmers.

Once HPW has bought the produce of the farmers, the produce is being processed; the raw material is cut, dried and packaged (see figure 20, 21, 22, 23, 25). The next stage of the value chain shows that HPW sells its processed products on the local market to department stores. HPW sells less than one percent of their production to the local market. HPW also sells its products on the export market to companies active on the European market, specifically Switzerland. Here HPW's dried produce is sold at stores such as Coop. Examples of how to produce is sold in stores in Europe are presented in figure 24 (Coop 2017).

Figure 20. Pineapple delivery at HPW's processing plant



Figure 21. Pineapples cut by hand along an assembly line



Figure 23. Cut dried fruit just out of the drying area



Figure 22. Dried fruit packed in bags



Figure 25. Packed dried fruit ready to be transported



Figure 24. HPW products sold at Coop



The product specification clearly states that the country of origin of the raw material is Ghana. Therefore consumers can know where their product comes from. In addition, some of the packages show the Fairtrade label. Value is added in every step of the value chain presented and described

above. Table 18 presents the value added in the value chain in which HPW is involved and the products are exported. Table 17 shows the value that is added in the value chain when the products are sold on the local market. It is important to note that the prices can differ over time, per product and actor involved. Nonetheless, these tables try to give an overview of the approximate amounts of money received by the actors in each stage. The amounts mentioned in the tables are confirmed by either HPW, farmers, market vendors or the website from the retailer (Coop 2017).

Looking at these tables it becomes clear that it is more profitable for farmers to sell their produce to HPW than to sell produce to local traders for the local market. Even when the transportation costs are deducted from the amount of money farmers receive from HPW, farmers are still better off selling to HPW than to local traders. The trading relationship therefore can be regarded as profitable for the farmers.

Table 17. Value added to smallholder farmer products for local market

Stage/ Actor		Smallholder farmer	Local market	Consumer market Ghana
Price/kg (USD)	Pineapples	0.15-0.04 (depending on season)	0.43	-
Price/kg (USD)	Mango	0.42-0.17 (depending on season)	1.08	-
Price/kg (USD)	Coconut	0.15-0.11(depending on season)	0.43	-
Price/kg (USD)	Papaya	0.11	-	-
Costs		<ul style="list-style-type: none"> • Labor • Land • Water • Chemical inputs • Other inputs 	<ul style="list-style-type: none"> • Labor • Transportation 	

Table 18. Value added to smallholder farmer products for export

Stage/ Actor		Smallholder farmer	HPW*	Wholesale	Retail Coop**	European consumer
Price/kg (USD)	Pineapples	0.255	0.6375	-	39.12 34.67	-
Price/kg (USD)	Mango	0.17	0.425	-	21.79	-
Price/kg (USD)	Coconut	0.40	1	-	45.84 (40% coconut, mixed with raisins, cashew nuts and pomegranate seeds)	-
Price/kg (USD)	Papaya	0.17	0.425	-	-	-
Costs		<ul style="list-style-type: none"> • Labor • Land • Water • Chemical inputs • Other inputs • Transportation 	<ul style="list-style-type: none"> • Labor • Raw material • Energy • Input • Overhead • Transportation 	<ul style="list-style-type: none"> • Labor • Storage • Marketing • Transportation 	<ul style="list-style-type: none"> • Labor • Shop rent • Marketing • Transportation • VAT 	

*HPW does not communicate its sales prices. However, their price is build up as follows: forty percent raw material costs, twenty-five percent labor costs, seven percent energy costs, five percent input costs, fifteen percent overhead costs, eight percent net margin. These percentages are used to calculate the numbers presented in figure twenty-seven.

** It is important to keep in mind that these amounts of money are for a kilogram of dried product. When a fresh products is dried, it loses between sixty and ninety percent of its weight. Hundred kilograms of fresh mango, for example, is equal to seventeen kilograms of dried mango.

5.4.2. Governance; rule setting and sanctions

Economic activities are coordinated in the above presented value chain by means of rule setting and sanctions.

The main method of rule setting is done through supply agreements (see appendix 10) or procurement contracts of which an anonymized example can be found in appendix 11. The supply agreements or procurement contracts state the price, quality specifications, payment terms, terms of delivery, definition of force majeure, order forecast, supply schedule and a description of what to do in case of dispute. These contracts are based on the Fairtrade standards for contracts and show to be in line with the set standards with one exception; the language (Fairtrade International 2011a). The contracts used by HPW are written in English. The Fairtrade standards state that companies 'must write the contract in a language that the registered producers understand' (Fairtrade International 2011a). Although some farmers showed to be able to speak basic English, it must be noted that the English proficiency of the majority of the farmers seemed to be insufficient for understanding the contract in question. In addition, HPW states that in many cases they do not make use of signed contracts, but just apply the standard conditions (Maik Blaser, personal communication, 1st of February 2017).

Despite the fact that the contract describes the standards and expectations, farmers often said to feel wronged. Farmers said to experience disadvantages of the contract.

The first aspect farmers said to feel unhappy about is the price setting. According to some of the farmers the prices paid for their produce by HPW is too low. Looking at the prices presented in table 17 and 18 this claim shows to be unjustified compared to other market options. However, although HPW's prices are acceptable compared to other, this does not automatically makes them sufficient to provide a livelihood. Recently HPW increased the price they pay for one kilogram of pineapple with one eurocent. This decision was informed by a large number of people giving feedback that the prices that were paid were too low. HPW was convinced of the necessity to raise the price and the decision to do so was supported by recent improvements on the pineapple market. Negotiation of prices take place twice a year for each crop. Negotiations take place between farmer representatives and HPW's management. In addition, HPW says to evaluate the cost structures with the help of questionnaires.

Another aspect of the contract where farmers showed to be confused about or unhappy with is the arrangement of transport costs. It is written in the contract that the transport costs are covered by the buyer. HPW pays pineapple and papaya farmers transport costs on top of the normal price and the Fairtrade premium. In return the farmers have to transport their own produce to HPW. Despite the fact that this is written in the contract, a large portion of the farmers is unaware these costs are covered in the pricing. These farmers are convinced that they themselves pay for transportation. They feel wronged because when selling to local traders, local traders pay for transportation. In the case of mango farmers, HPW does not pay an additional sum of money to the farmers, but picks up the produce at the farms. Some mango farmers think this is a good arrangement, as one farmer said: 'Now they have it included in the prices. So we don't have headache on how to bring it to HPW. It is easy. They also bring crates to the farms' (Respondent six Somanya, personal communication, 7th of November 2016).

The third aspects which farmers felt unhappy about is the rejection of produce. If produce does not meet the quality standards of HPW, the produce will be disposed of and the farmer will not receive payment. Farmers are responsible for quality control before transporting their produce to HPW. The quality standards are written in the procurement contracts. However, since HPW said not to always works with signed contracts, communication of the quality standards is fully dependent of oral communication of the field officers. Although no data was collected regarding knowledge of quality

standards, it could be the case that oral communication of field officers is insufficient for farmers to understand the quality standards. The following note made by the research assistant after an interview supports this line of thought:

‘He said the rejected fruits are not returned to the farmers so they neither know the amount rejected nor the exact reason for their rejection. As a result, it's become a vicious cycle they encounter every season and they have no way of remedying the situation because they don't know the exact cause or reason for the rejection’ (Respondent C New Somanya, personal communication, 7th of November 2016).

The last aspect of the contract which is mentioned most often during focus groups and informal conversations concerns the order forecast and supply schedule. It is written in the contract that HPW provides an order forecast six to twelve months prior to buying the crops. Subsequently, one to four weeks prior to buying the crops, HPW makes the order final. Nevertheless, farmers state that HPW regularly delays scheduling dates for harvesting and transporting produce resulting in post-harvest losses, lower quality fruits and fruits decreased in weight. The experience of farmers is described in the following note made by the research assistant after an interview:

‘He also said that HPW doesn't stick to the agreed dates for purchasing their goods. Even after they have agreed to buy the fruits at a particular date, they change it at will, and the farmer is left with no option but to find a different buyer, and HPW would not compensate them for any loss incurred’ (Respondent B Adeiso, personal communication, 6th of November 2016).

An observation made during fieldwork which was constantly reaffirmed, is the observation that farmers do not weigh their produce before selling it to HPW. Farmers regularly showed to have difficulties recollecting or estimating the approximate amount of harvest sold to HPW. Farmers said not to be able to weigh their produce themselves. Therefore the farmers are fully dependent on the weightings of HPW. As a consequence, farmers occasionally feel wronged. However, it also happens that farmers are positively surprised. One farmers said he thought he supplied HPW with 7,000 kilograms of mango. After weighing by HPW the actual amount showed to be 8,000 kilograms (Respondent A Somanya, personal communication, 7th of November 2016). Another farmers said to trust HPW because one of his tribe members is working at HPW. The farmer said that this employee, who is also member of the same tribe, would not allow HPW to disadvantage him because they are from the same tribe. However, the case remains that some farmers feel they are being deceived.

In addition to the rules and sanctions written in the above procurement contracts, some farmers have to comply with additional rules as part of their GLOBALG.A.P. certification. However, most of HPW's suppliers are not GLOBALG.A.P. certified. According to HPW this is the case since it has not been requested by customers. In addition, acquiring a GLOBALG.A.P. certificate is expensive. One of the larger suppliers of HPW said to pay around 3,000 USD a year for his GLOBALG.A.P. certificate (Respondent D, personal communication, 16th of November 2016).

5.4.3. Access to services

HPW provides services to the farmers as part of the collaboration between the farmers and HPW.

HPW says to provide a variety of services regarding credit, market information, technical assistance and input support. Technical assistance includes giving training on a variety of topics. HPW has given training in order to improve technological skills and production- and resource management skills. Group management training is planned but not yet executed. In addition, HPW provides support for demonstration farms and supplies farmers with posters and training materials. Trainings are held twice

a year for regular farmers and six times a year for farmers with demonstration farms. All trainings are open to all farmers regardless whether they supply to HPW.

Looking at the collected data shows that farmers make the most use of services regarding technical assistance (56.4 percent) and market information (46.2 percent), followed by making use of credit (29.1 percent) and farming equipment (13.7 percent). 3.4 percent of the farmers says to make use of additional services from HPW than the ones mentioned. Analysis shows there is an association between the type of crop and making use of credit and getting technical assistance. The association between mango farmers and the use of credit is -0.254. The association between technical assistance and papaya farmers is 0.214 and the association with mango farmers is -0.205. These are all moderate associations. The other crops and services do not show significant associations or the data does not allow for a statistical analysis for association. The outputs suggest that mango farmers make more use of technical assistance provided by HPW than farmers of other crops, while papaya farmers make less use of technical assistance compared to farmers producing other crops. In addition the output suggests that mango farmers make more use of credit services provided by HPW than farmers who produce other crops.

The above data shows that the service most often used by farmers in general is technical assistance; 56.4 percent of the farmers makes use of this service. This result is supported by other data. Asking farmers what their most important source of knowledge for improving their farming skills was, 60,6 percent of the farmers put training from HPW on second or third place. This shows that getting technical assistance in the form of training is very much appreciated by the farmers.

Since HPW shows to provide a wide range of services, it is interesting to look at the extent to which farmers think their capabilities have improved after starting to supply to HPW. Data shows that the most farmers are of the opinion that their basic production and resource management skills (77.3 percent) and basic market skills (68.2 percent) have improved. Half of the farmers think their technological skills have improved after starting to supply to HPW, while 34.1 percent thinks their access to financial services have improved and 29.5 percent of the farmers thinks their group management skills have improved.. Analysis shows that there is an association between the type of crop and whether farmers think their technological skills have improved. The association between technological skills and mango farmers is -0.378 and the association between technological skills and pineapple farmers is 0.370. The other crops and improvement in capabilities do not show significant associations or the data does not allow for a statistical analysis for association. The output suggests that less pineapple farmers are of the opinion their technological skills have improved after supplying to HPW compared to farmers producing other crops. This is in contrast with mango farmers who show to be more often of the opinion that their technological skills have improved after starting to supply to HPW than farmers who produce other crops.

Knowing the services farmers make use of and whether these services are experienced to contribute to the farmers skill set, it is interesting to know what skills farmers would like to improve. Data shows that the most farmers would like to improve their technological skills (71.8 percent) and knowledge of production and resource management (70.9 percent). In addition, more than half of the farmers would like to improve their knowledge on basic market skills (53.85) followed by knowledge on access to financial services (40.2 percent) and group management skills (10.3 percent). Analysis shows that there is a significant association between the type of crop and whether farmers want to improve their knowledge on basic market skills or knowledge on access to financial services. Analysis showed a significant association between access to financial services and mango farmers (0.263) and papaya farmers (-0.256). This output means that less mango farmers want to improve their knowledge on access to financial services compared to farmers producing other crops, while papaya farmers more often want to improve their knowledge on access to financial services compared to farmers producing other crops. Analysis also showed a significant association between wanting to improve basic market

skills and mango farmers (0.183), coconut farmers (-0.236) and papaya farmers (-0.256). This output means that less mango farmers want to improve their knowledge on basic skills compared to farmers producing other crops, while papaya and coconut farmers more often want to improve their knowledge on basic market skills compared to farmers producing other crops.

The above three sets of data output show some notable results. The first is concerned with the technical and market skills. Not only do farmers make more use of these services compared to other services, farmers also most often said to experience improvements in these skills. Nonetheless, these are also the skills farmers identify as wanting to improve further. This not only shows that farmers think technological- and market skills are most important but also that HPW really is of added value to the farmers.

A second observation is that a relatively low number of farmers says to have improved their group management's skills. This is in line with an earlier remark stating that group management training is planned but not yet executed. However, it is noteworthy that only a small portion of the farmers seems to value improving their group management skills. The collected data does not explain what the underlying rationale is of HPW to provide group management training, but based on these outputs HPW could better focus on other services than improving farmers' group management skills.

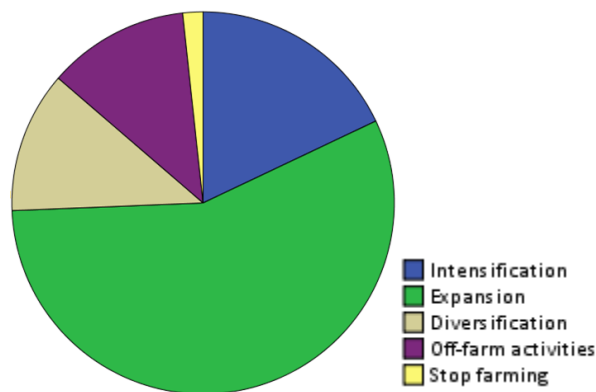
In addition to the services already provided by HPW, farmers have indicated that there is demand for additional services provided by HPW. The services in question can all be categorized as credit services. Services of which farmers expressed the need is getting payments in advance, getting loans from HPW or HPW vouching for the farmers at the bank. In addition, a procurement contract with an HPW logo and signature would be appreciated. All these services aim at either facilitating getting financial means to invest in farming from existing formal institutions such as the bank or directly from HPW.

The farmers show to be highly dependent on the services provided by HPW. One of the respondent expressed this dependency as follows: 'Government is out. Zero. For the government provides no subsidies, no fertilizers etc.' (Respondent six Somanya, personal communication, 7th of November 2016). Because the government shows not to be supportive towards the farmers, the farmers place their hopes in HPW: 'We don't have a good institution. But we have the investor, the cooperation with HPW' (Respondent two Adeiso, personal communication, 21st of October 2016). Data analysis shows that a large majority, 71.8 percent of the farmers, never experience a negative impact from government policies on their livelihoods. Only 7.7 percent of the farmers say they 'always' or 'most of the time' experience a negative impact from government policies. No statistical association shows to exist between how government policies are experienced and the type of crop farmers produce. Although a large majority of the farmers state they have never experienced a negative impact of government policies on their livelihoods, it must be said that this does not mean farmers experience a positive impact from government policies. It could also mean that farmers do not experience any impact at all. Conversations with farmers lead to believe that this is the case. Therefore farmers are highly reliant on the services provided by HPW.

5.5. Livelihood strategies

The previous chapters have discussed the livelihood assets farmers possess, the vulnerabilities farmers are subjected to and the dynamics of the value chain in which the farmers operate. All these aspects have an impact on the combination of activities that farmers undertake to achieve their livelihood goals, also called livelihood strategies. Possible livelihood strategies are intensification, expansion, diversification, generating off farm income and the exit strategy. The frequency in which the different livelihood strategies are chosen by the farmers vary, as can be seen in figure 28. This figure shows that the majority of the farmers wants to expand their farm. However, intensification-, diversification- and off-farm activity strategies also show to be well represented in the data. Yet, the livelihood strategy which is chosen in some cases also depends on the crop which is produced.

Figure 26. Livelihood strategies of smallholder farmers supplying to HPW



56.4 percent of the farmers said that they want to expand their farm in the coming few years. Statistical analysis shows that particularly pineapple farmers want to expand their farm. Analysis shows a weak association of -0.199. In contrast to pineapple farmers, coconut farmers show to be least interested in expansion compared to farmers who produce other crops. Analysis shows a moderate association of 0.224. Only 29.4 percent of the coconut farmers want to expand, compared to an average of sixty-one percent of the farmers who do not grow coconuts.

17.9 percent of the farmers said that they want to intensify their farming practices the coming few years. Analysis shows that particularly coconut farmers are interested in intensification. Analysis shows a weak association of -0.186. 35.3 percent of the coconut farmers wants to intensify in contrast to an average of fifteen percent of the farmers who do not produce coconut. Pineapple farmers, on the other hand, show not to be focusing on intensification. Analysis shows a moderate association of 0.232. 6.7 percent of the pineapple farmers wants to intensify in contrast to an average of twenty-five percent of the farmers who do not grow pineapples.

Twelve percent of the farmers said that they want to do more off-farm activities the coming few years. This percentage reflects the intention of all farmer groups with the exception of pineapple farmers. Analysis shows a moderate association of 0.237 between this strategy and pineapple farmers. Only 2.2 percent of the pineapple farmers want to do more off-farm activities in contrast to 18.1 percent of the farmers who do not grow pineapples.

Twelve percent of the farmers said that they want to diversify their farm in the coming few years and only 1.7 percent of the farmers said that they are going to stop farming. Statistical analysis did not show associations between these two livelihood strategies and specific farmer groups.

5.6. Livelihood outcomes

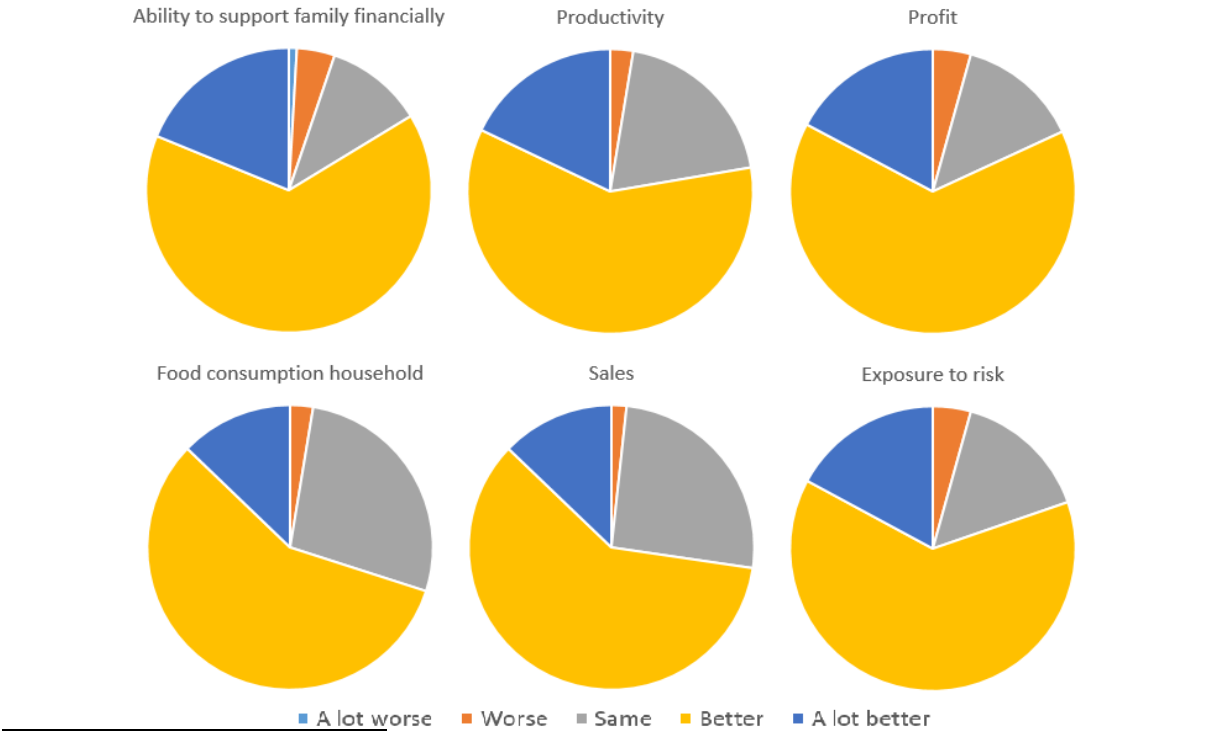
5.6.1. Livelihood outcomes in general

Now it is clear what the livelihood assets farmers possess, the vulnerabilities farmers are subjected to, the dynamics of the value chain in which the farmers operate and the livelihood strategies resulting from all the foregoing are, it is important to look at what all this means for the livelihoods of the farmers. What are the farmers’ livelihood outcomes; do they have more income, reduce their vulnerability and improve their food security situation? And if they have, did their collaboration with HPW contribute to these livelihood outcomes?

Studying the answers provided by the farmers regarding their livelihood outcomes shows promising results. All farmers were asked whether they have experienced improvements in different aspects of their life since they started supplying to HPW. Analysis shows the majority of the farmers either answered ‘better’ or ‘a lot better’ for each of these aspects. A visual overview of the results can be seen in figure 29.

The data does not allow for a statistical analysis for association between the different farmer groups and the different livelihood outcomes.¹⁶ Nonetheless it can be said that, based on this data, farmer’s livelihood outcomes have improved after starting to supply to HPW. However, it must be noted that caution is required in assigning the responsibility of these improvements to HPW. Indeed there is a reason to believe HPW is responsible for the improvements in the livelihood outcomes, since there is a plausible mechanism of cause and effect, the observation is in line with facts and theories and similar causes en effects have been shown in similar research. However, this research did not test whether there were differences between farmers who were supplying to HPW and farmers who did not and there could be other likely explanations. Therefore caution is required in assigning responsibility for improvements in livelihood outcomes solely to HPW.

Figure 27. Visual overview of farmer's livelihood outcomes



¹⁶ Testing for a degree of association is not possible since the assumption of a minimal expected count of five and at least twenty percent above three is violated. This is the case since the sample size is too small for a Likert scale with five response categories.

5.6.2. Assessment of food security

The food security assessment presented here is executed by a colleague researcher involved in this study; Klaske de Vries. Her results are shared here because they complement the findings of this research; resulting in more complete and balanced conclusions and recommendations.

Her study shows that issues regarding food availability and accessibility depend on the type of crop that is produced. Mango farmers experience food to be available between June and July, while pineapple, papaya and coconut farmers experience food to be available between August and September. Food accessibility shows to be relatively good for all four farmer groups; street vendors and markets are reachable within thirty minutes or less.

Food scarcity is experienced during the dry season starting in December and lasts up to June, depending on the crop that is produced. Food prices increase during this dry period which makes that farmer households eat smaller quantities and less diverse. Farmers grow their own food crops in response to the high food prices. These crops generally include maize, plantain or cassava.

Food consumption patterns showed that the local diet mainly consists of energetic dishes full of carbohydrates such as Fufu, Banku or rice. These dishes combine a (fermented) dough or rice with soup or stew. The soup or stew is generally includes small amounts of vegetables and/or fish. These dishes make the farmers feel full and energized so that they feel strong and capable of performing physical labor.

With regard to the nutritional value of the food eaten by the farmer households, it can be said that the variety of different foods that was eaten is low. An average of eleven different food items was consumed, out of the forty-five different food items available. The farmer households consumed foods from three to six different food groups. The average amount of different food groups was 5.3 out of six. This is a high score. All respondents ate at least from the food group 'fruits and vegetables'. Analysis shows that three different consumer groups can be identified. Group one consists of farmers who ate foods from three different food groups. This group generally eats two meals or snacks a day. Group two consists of farmers who consumed food from five different food groups; adding 'starchy roots and plantain' and 'fats and oils' to their daily diet. Groups three consumed food from all three food groups.

Based on this food security assessment, two policy recommendations have been formulated. Policy recommendations aiming to improve the farmers' food security include: 1) providing farmers with solar-powered refrigerators to enable farmers to store food for a longer period of time; and 2) develop a partnership between MOFA and HPW in order to educate farmers on the benefits of eating varied and nutritious food.

6. Conclusion and discussion



This research aimed to find an answer to the following main research question: 'How do agricultural foreign direct investments in export-oriented crops contribute to the livelihoods and food security situation of smallholder farmers producing fruit crops in the Southern part of Ghana? '. This research question is supported by sub-questions which are answered here below.

What is the lead firm's business model and how does the company approach the topic of food security?

HPW is the lead firm in the studied value chain. HPW is a processing company which is mainly supplied by smallholder farmers. HPW's corporate sustainability vision is directly influenced by ideas of the triple bottom line and particularly focuses on the environment, followed by employees and lastly society. This study shows that there is a substantial discrepancy between the sustainable activities envisioned by HPW and the activities in which HPW partakes in reality. Especially activities regarding society show not to be executed in reality. HPW's corporate sustainability practices regarding farmers is mainly reflected by its Fairtrade certificate and the corresponding arrangements. Besides these certificates, HPW does not include farmers in its vision on corporate sustainability. HPW's corporate sustainability practices show to be mainly driven by the drivers 'Governance gaps CSR' and 'Cultural tradition CSR'. In addition, HPW's ideas and practices regarding corporate sustainability can be categorized in the stage of 'Defensive CSR'. With regard to the topic of food security, HPW says it wants to improve the local food security situation by creating jobs and supporting local agriculture

What is mainly interesting of the above conclusions is HPW's approach of corporate sustainability. Although HPW is a Swiss company with a Swiss management, its vision and activities regarding corporate sustainability cannot be typified as typically 'western'. HPW's corporate sustainability practices show to be more in line with corporate sustainability as it is practiced in Africa, by companies with local roots. HPW, for example, does not mention shared value or win-win scenarios which are mentioned by typical western companies (Porter & Kramer 2006). In addition, although HPW does not speak of making trade-offs or dilemma's, HPW chooses to be involved in environmental activities over being involved in activities targeting society. The prioritization of 'Planet' over 'Society' clearly shows a trade of is being made which is typical for companies for African companies. However, the prioritization of 'Planet' over 'People' is not typical for African companies. Corporate sustainability by African companies generally focuses on 'People' instead of on 'Planet'

Perhaps the above observations are not best explained by the cultural roots of the company. Maybe the above observations have more to do with the company's knowledge of corporate sustainability. Several observations point in this direction. The first being that HPW's corporate sustainability policy documents include activities which are related to HPW's core business and activities which are not related to HPW's core business; proving inconsistency. In addition, HPW's corporate sustainability policy documents were outdated and only partially executed. Besides, the fact that HPW describes its CSR policies in a separate CSR document suggests CSR is not fully integrated in HPW's core activities. Emphasizing the absence of any valorization from the researcher, this suggests that HPW's corporate sustainability is not based on strategic considerations or a clear vision on what doing business sustainably entails. This is in line with the conclusion that HPW's CSR can be categorized in an early stage of CSR ('Defensive CSR') leaving room for further development.

Sadly, due to an extremely low response rate of the survey among agribusinesses, it is not possible to make generalizations on this topic and say something about the agricultural sector at large or FDIs in general. Nonetheless, it can be said that FDIs are not inherently more advanced with regard to corporate sustainability than local companies. The earlier observations also suggest that a company's CSR profile is not so much defined by the country of origin, but rather by the country in which it operates. This is in line with Visser's ideas on 'glocality' and the corresponding drivers. Therefore, these observations show that it is important to approach a company as a unique case and give recommendations accordingly.

How does the lead firm contribute to optimizing the value chain integration for smallholder farmers?

This study shows that HPW and its suppliers are part of a value chain which can be identified as a 'captive value chain'. This means that HPW has a dominant role in the studied value chain. This becomes clear from the small amount of competition HPW is confronted with and the ability to set rules with little counterweight. It can also be identified as a captive value chain because of the limited ability of farmers to change to whom they supply and the low capabilities of the supply base.

This study also shows that HPW scores well on the principles of IB; HPW proves to be open to partnerships, actively involves and educates farmers with regard to farming and processing related processes, demonstrates to value and execute a fair and transparent type of governance and HPW provides equitable access to services. In addition, HPW shows to offer a fair price to its suppliers.

The above conclusions, that HPW and its suppliers are part of a captive value chain while at the same time scoring well on the principles of inclusivity, are interesting because they seem to contradict. Being in a captive value chain results in asymmetric power relations; subjecting the farmers to the will of the lead company. This could easily have a negative impact on the prospects of the producers. IB, on the other hand, is much more based on ideas of equity and partnership; substantially different than what a captive value chain seems to accomplish. One could wonder whether it is possible for a captive value chain and IB to go hand in hand.

I would like to argue that in this particular case it goes hand in hand because of one major reason; HPW demonstrates to possess ethical leadership and sensitivity to local struggles. HPW shows to be transparent, open to improvements, actively seeking knowledge and information exchange with its suppliers, stimulating farmers to diversify their selling opportunities and thinks of the long term. Even though HPW's corporate sustainability practices can be categorized as 'Defensive CSR' based on Visser's framework, there seems to be enough reasons to speak of a strong sense of ethical leadership.

The above can mean two things. It could mean that Visser's framework does not fully overlap with the concept of IB. It could also mean that a company can be involved in IB independent from the CSR stage in which a company is categorized. It is probably a bit of both.

Although the 'transformative CSR' stage talks of 'innovative business models' and 'the interconnectedness of nature and society' which resembles current thinking on IB which talks of 'removing barriers', 'engaging the poor', 'valuing partnerships' and 'shared value', Visser's framework does not fit one on one with the framework of IB. This can partly be explained by the fact that the concept of IB misses a clear and unambiguous definition resulting in a broad concept for which a generally accepted measurement method does not exist

The fact that HPW is involved in IB while also being categorized in the Defensive CSR stage could also be explained by the fact that HPW is a relatively small company with a managing director who lives in Ghana permanently, having only a few shareholders and is not a stock company. These characteristics make that HPW does not lose sight of the human factor and can make longer term plans which are not solely oriented on fast monetary gains. This line of reasoning implies that the combination of 'defensive CSR' and being involved in IB is less likely for companies with more shareholder, short term plans and a more distant relationship with local stakeholders. In other words; companies with very different corporate governance mechanisms than HPW are less likely to combine defensive CSR and IB.

How did foreign direct investments in agriculture change the livelihoods of smallholder farmers producing fruit in Southern Ghana?

The involvement of HPW in the studied value chain has had a positive impact on the livelihoods of smallholder farmers supplying to HPW. HPW provides technical assistance and market information which improves farmer's capabilities. In addition, HPW's involvement in the value chain makes that farmers have a choice to either sell their produce on the local market or to an exporting company. Without the presence of HPW, the majority of the farmers would be dependent solely on the local market. Furthermore, selling to HPW is more profitable than selling produce on the local market. Thus HPW's involvement in the chain did not only diversify the farmer's options, but also provides farmers with financial benefits and a sense of security. The majority of the farmers is of the opinion that their livelihoods, in all its aspects, have improved after starting to supply to HPW. As is explained earlier; caution is required in assigning the responsibility of observed improvements solely to HPW. Although there is reason to believe HPW is responsible for the improvements in the livelihood outcomes, this study was not able to determine a causal relationship.

Although it can be concluded that HPW has had a large impact on the farmers' livelihoods, it must be recognized that not every group of farmers is impacted in the same way to the same extent by HPW's presence. This is the case since different farmer groups possess different assets but more importantly experience differences in what assets are missing, to mention a few: 1) papaya farmers possess a less adequate water supply compared to other farmers groups; 2) pineapple farmers experience more often a shortage of raw materials than other farmer groups; and 3) pineapple and coconut farmers more often experience a shortage of manpower than other farmer groups.

Perhaps the most noteworthy result is that there is a strong difference in the amount of money the different farmer groups earn. The majority of the different farmer groups live below the international poverty line with exception of papaya farmers. The amount of money papaya farmers earn and the number of papaya farmers living below the international poverty line is low compared to other farmer groups. Despite the fact that the different farmer groups get paid in line with the Fairtrade standards, not every farmers group experiences the same degree of economic benefits in supplying to HPW. This study suggests this is particularly caused by differences in the quantity of produce sold to HPW.

The differences in livelihood assets between the different farmer groups leads to differences in future livelihood strategies. Observed differences include: 1) pineapple farmers want to expand their farms more often than other farmer groups; and 2) coconut farmers wants to intensify more often than other farmer groups.

Based on these conclusions it can be said that farmers who plan to expand or intensify their farm are most likely to improve their livelihoods. However, this is only the case if HPW is able to buy all farmer's produce. The feasibility of this is doubtful since HPW currently already experiences periods of excess supply of particularly coconuts and pineapples. Therefore farmers are best helped if more companies like HPW would buy their produce.

7. Policy recommendations



Based on the results and conclusions of this report, recommendations can be proposed specifically for HPW and more generally for policymakers, NGOs and researchers involved in agricultural export, IB and corporate sustainability. The recommendations here below are complemented with a SWOT analysis presented in table 19.

Recommendations for HPW can be split in two categories; communication and service differentiation. During this research several communication related issues were raised. These issues ranged from farmers stating they were not aware of product specifications and farmers who did not know what HPW does with rejected fruits, to farmers who do not understand that transport costs are included in the price paid by HPW and farmers who state to be surprised by sudden and unexpected changes in the supply schedule. Although HPW showed to be able to provide the researcher satisfying answers for all these issues, the farmers seem to experience gaps in the information they possess.

Various actions could be implemented in order to reduce the information gaps experienced by the farmers. The first action is to translate formal communication, such as contracts and supply schedules, into the farmers' local language in order to provide farmers with information which is accessible. In addition, providing farmers with accessible formal communication is in line with Fairtrade standards and therefore should be adhered to. Another action could be ensuring that contracts are actually signed after matters have been agreed upon. Since current communication shows to be insufficient in some cases, it could be interesting to try out more innovative ways of communication. A possible method could be sending the farmers a text on their mobile phone in order to remind them on prospective supply dates, key figures on what they have supplied to HPW and product specifications.

Other issues which were raised during this research are related to the different needs of different farmer groups. The study showed that each group of farmers (based on the crop they produce) has different needs. Papaya farmers, for example, more often want to improve their knowledge on access to financial services compared to other farmer groups, while papaya and coconut farmers more often want to improve their knowledge on basic market skills compared to other farmer groups. At the same time there are different needs with regard to planting material, loans and transportation. Based on this study it is recommended that HPW explores the possibility of differentiating and adjusting the services provided to the different farmer groups. This possibly results in new actions such as finding partnerships to improve the availability of specific planting material, exploring the possibilities of new finance schemes to provide certain farmer groups with the necessary funds and engaging in a policy dialogue with different levels of government in order to bring the fruit sector under the attention of government officials and explain the necessity of governmental support in this sector in addition to the cocoa sector.

In addition to the above recommendations, the researcher would like to bring a possibly unforeseen effect of product diversification by HPW under the attention. As is mentioned earlier, HPW's strategy is to diversify the products it makes from the supplied raw materials. Originally HPW processed raw materials into dried fruits. Nowadays HPW has started to process chilies for chili sauce and has started to explore the possibility of processing raw materials into fruit bars and oil. According to the Fairtrade standards different prices are calculated for raw material that is processed into dried products than raw material that is processed into fresh fruit products. Therefore, if HPW decides to start processing fruits for new products on a larger scale, HPW should be aware of the fact that it is possible that HPW has to pay farmers a higher price for their produce. The increase in price paid for raw materials could benefit the farmers. However, HPW has to take this price increase into account in developing new products and constructing their revenue model (Fairtrade International 2011b, c)

In addition to specific recommendations for HPW, there are also recommendations for policymakers, NGOs and researchers involved in agricultural export, IB and corporate sustainability.

First, this research shows that corporate sustainability, or IB for that matter, by exporting companies in Ghana is voluntary and not enforced by local institutions. This observation is based on two findings. The first finding is that HPW is barely driven by local stakeholder activism. Perhaps this can partly be explained by the importance Ghanaians attach to not being troublemakers. During this research the researcher was told over and over again that Ghanaians prefer to inconvenience themselves instead of others and value a good atmosphere. The second finding, which supports the claim that corporate sustainability by exporting companies in Ghana is voluntary and not enforced by local institutions, is the fact that HPW does not feel driven by political reform. This is understandable given the fact that government policies or initiatives that put responsible business on the policy agenda or focus on enforcing doing responsible business seem to be lacking.

The fact that corporate sustainability in Ghana is of voluntary nature and is not enforced or stimulated by local institutions influences the way corporate sustainability is executed. It results in an incoherent set of corporate sustainability policies to which companies do not necessarily have to commit. In addition it gives companies the freedom to choose to what extent they specify and quantify their sustainable goals. Besides, it puts the responsibility of what issues need to be prioritized with the companies who do not necessarily have the necessary knowledge or vision.

The above impacts are undesirable. Therefore policy makers are recommended to identify priorities for companies to focus on. NGOs are recommended to actively approach agricultural companies since these companies show to be open to partnerships. NGOs could help companies in the agricultural sector with knowledge, tools and a relevant professional network in order to help them structure and execute their corporate sustainability policies.

Another recommendation is concerned with the large number of farmers living below the international poverty line. Farmers have indicated that they are willing to expand or intensify their farming business but that they are limited by having little access to financial means. Therefore it is recommended to improve farmers' ability to finance their farm; either by stimulating banks to provide loans, microcredits or establishing savings groups. Related to this is the recommendation to stimulate and support (foreign) exporting companies to invest in the agricultural sector with special focus on the fruit sector. This not only helps farmers to sell their current produce, it also gives farmers a market for increased future production and helps farmers to become less dependent on the few fruit exporting companies located in Ghana.

Table 19. SWOT analysis

		Favorable	Unfavorable
Internal (HPW)	Strengths	<ul style="list-style-type: none"> • HPW's level of transparency and cooperative attitude is promising for implementing suggested improvements • HPW's products are Fairtrade certified • A portion of HPW's suppliers is GLOBALG.A.P. certified • There is a local and international team who combine skills and knowledge • External partners are involved in informing policy • Price certainty for the farmers 	<ul style="list-style-type: none"> • (Sudden) changes in procurement make farmers vulnerable • The absence of signed contracts violates Fairtrade agreements and is not constructive for farmers to get a loan at the bank • The only possibility for farmers to quantify produce is at HPW • Vision on corporate sustainability is insufficiently specified and quantified; clear goals are missing • HPW can be categorized in an early stage of CSR • Clear strategy informing corporate sustainability is missing
	Opportunities	<ul style="list-style-type: none"> • More partnerships with NGOs and other businesses • Raised awareness of inclusive business and its potential • Quality and productivity improvements through technical assistance 	Threats
External			

8. Suggestions for further research



In order to increase the understanding of IB and the impact of foreign direct investments on livelihoods and food security of smallholder farmers, further research is required.

Due to resource constraints this research was limited to a single company case study. In addition, only a limited number of farmers for each farmer group has been included in the study; limiting the amount of analyses that could be executed. It is suggested that future research uses a larger sample size and focuses on testing whether there are differences between farmers supplying to a foreign exporting company and farmers not supplying to a foreign exporting company. This would make it possible to do a comparative analysis and determine whether there is a clear causal relationship between FDI's, IB and livelihood security.

It is also recommended for future research to further develop the use of a value chain analysis in combination with a livelihood analysis. This combination is rarely used while this research proves that combining the strengths of these two types of analyses (respectively: centered on market system, emphasizing opportunities, focusing on revenue/income combined with centered on household, emphasizing constraints, focusing on assets) provides a more comprehensive understanding of the relationships and dynamics between farmers and businesses.

It would be interesting for future research to further explore the relation between the stage of CSR and IB. To what extent do these concepts overlap and what are major differences? I would like to suggest to further explore the importance of ethical leadership by studying corporate governance mechanisms in future studies of corporate sustainability and IB. Corporate governance mechanisms include among others: characteristics of the board of directors, managerial incentives, legal and regulatory systems. Governance mechanisms could be of influence in aligning the interests of the management with those of local stakeholders. Studying corporate governance mechanisms could perhaps explain how companies such as HPW are able to combine an early stage of CSR and IB.

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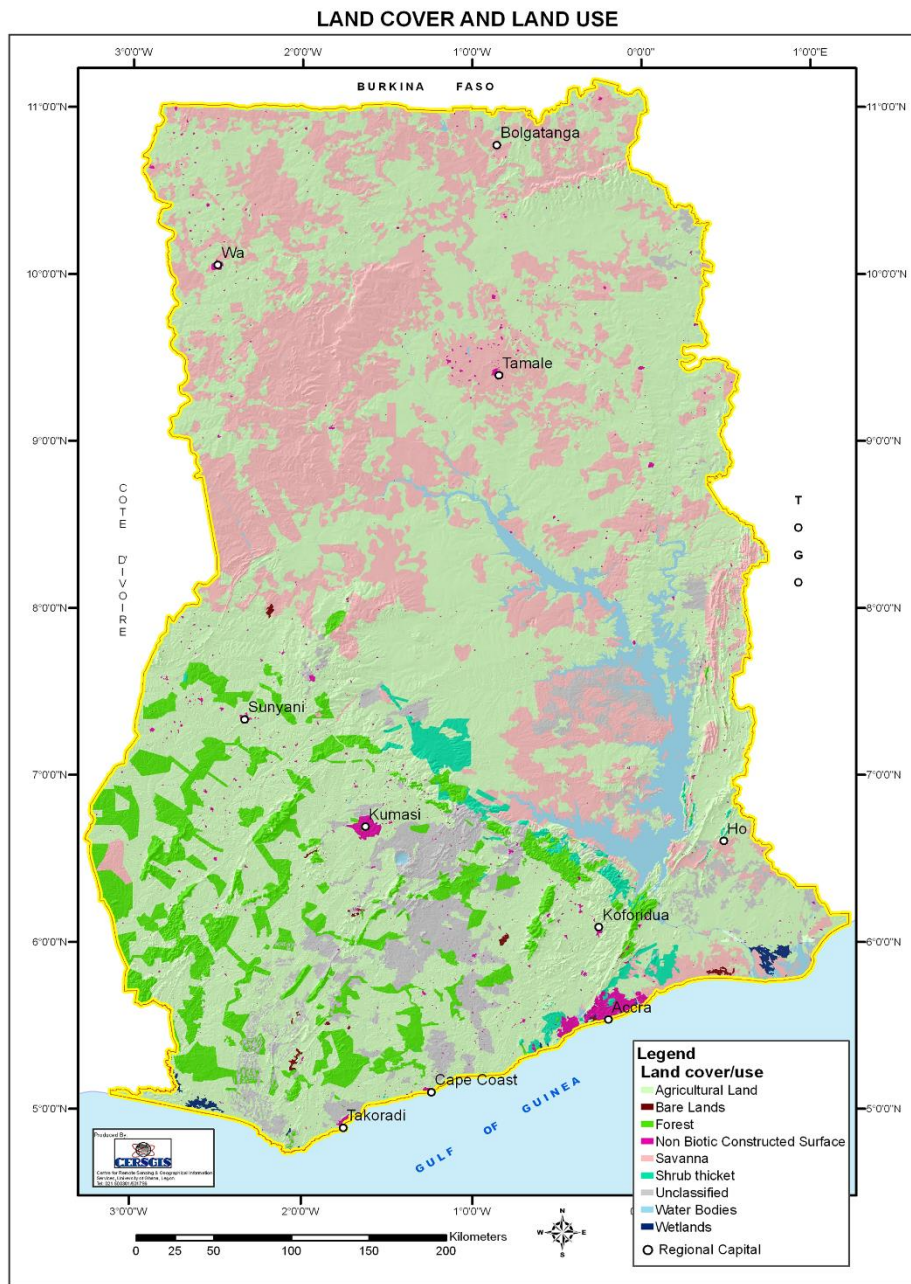
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Appendices

Appendix 1: Land cover and land use



Cersgis (2014) Home, 29-12-2016, http://cersgis.org/remote_sensing.html.

Appendix 2: A visual impression of HPW's fruit processing factory



Cutting fruit at the assembly line. All fruit is cut by hand



An overview of the area where fresh fruit is cut in pieces



This is where chilies are processed. The chilies are used for making chili sauce



This is where coconuts are stored before they are processed



Dried coconut pieces are packaged in plastic bags

Appendix 3: A visual impression of HPW's CSR activities



Organic waste from coconut processing is used to heat the fruit drying facilities



Organic waste from pineapples and such is used to produce bio-gas



This poster can be found at the factory grounds.



A poster communicating sanitation and protection measures before entering the area where fresh fruit is cut

Appendix 4: Interview guide 1 - HPW

Name of interviewer: Ine ter Berg

Name of interviewee: Eunice Dadzie - Research officer and George Annor - Field agronomist

Place of interview: Adeiso – HPW office

Date of interview: 3-11-2016

Contracts and agreements

- HPW has shown me the FLO contract. Does HPW use the FLO contract for all farmers (cooperatives, individuals)?
- HPW works with dynamic volume planning. What does HPW mean by that and how does HPW think this affects the farmer?
- What agreements are made by HPW and farmers on the schedule of fruit deliveries?
- How does HPW communicate transport costs?
- What is HPW's experience concerning the transport costs; are there complaints?
- Why does HPW choose to work with individual farmers?
- What quality standards are set for the farmers?
- Does HPW differentiate between cooperatives and individuals in its policies?
- How high is the percentage of rejected fruit?
- Do you provide feedback to the farmer if fruit is rejected?
- What do you do with rejected fruits?
- How does HPW prevent fruit rejection?
- How realistic is it for farmers to comply to the standards set by HPW?
- Does HPW provide contracts in Twi as well?

Products and services

- What is HPW's position on providing financial credit to farmers and vouch for farmers at a bank?
- What is HPW's position on farmer uncertainties and how does HPW deal with farmer uncertainties?
- Which farmers are given inputs by HPW?
- How many inputs does HPW provide?
- Are farmers allowed to buy inputs on the local market?

Assessments

- HPW says it executes farm assessments. What do these assessments include?
- How does HPW assess whether the right fertilizers and insecticides are used?
- Who executes these assessments?

Appendix 5: Interview guide 2 - HPW

Name of interviewer: Ine ter Berg

Name of interviewee: Maik Blaser – Managing director

Place of interview: E-mail

Date of interview: 26-11-2016

Company details

- What is the amount of capital invested in this company? (shareholders, subsidies)
- Is Hans Peter Werder the only owner, or are there more shareholders? (who?)
- In what years did HPW start processing mango, papaya and coconut?
- What was the profit and turnover of HPW last year?

Value chain

- Will HPW's efforts to diversify the type of products it sells lead to more demand for raw products, or will it stay the same?
- How does HPW schedule crop processing? (What is the yearly schedule and to what extent does HPW take into account the peak periods of the different crops?)
- Does HPW currently sell products on the local market? (If yes, what products, for what prices and to what outlets?)
- What are the prices of the different products HPW sells on foreign markets? (including all types of dried fruit and fruit bars)
- What price does HPW pay to papaya farmers for their produce (in kilogram)
- What services does HPW provide farmers with? Please tick the correct box or add additional services. [multiple answers possible]

Credit	<input type="checkbox"/>
Equipment	<input type="checkbox"/>
Market information	<input type="checkbox"/>
Technical assistance	<input type="checkbox"/>
Other:	<input type="checkbox"/>
Other:	<input type="checkbox"/>

- Does HPW provide farmers with training on the following topics? Please tick the correct box or add additional topics. [multiple answers possible]

Group management skills	<input type="checkbox"/>
Access to financial services	<input type="checkbox"/>
Basic market skills	<input type="checkbox"/>
Technological skills	<input type="checkbox"/>
Production and resource management skills	<input type="checkbox"/>

- What are the terms and conditions of the sourcing schemes? (If these are written in a separate document, please send us the document in the attachment)
- What are the terms and conditions of the payment schemes? (If these are written in a separate document, please send us the document in the attachment)

Food security

- What do you, as managing director, consider food secure?
- What are according to you, as managing director, the main challenges to overcome local food security issues in Ghana?
- Do you see a responsibility for HPW to improve local food security? (if yes, how?)

Corporate sustainability

- There are a lot of activities mentioned in HPW’s CSR policy (health education, scholarships etc.) Are all these activities still active/relevant? (what activities are still active?)
- What is the focus of your CSR activities? Please tick the correct box [multiple answers possible]

Education	
Health care	
Safety	
Environmental protection	
Other:	

- On who do you focus your CSR activities? Please tick the correct box [multiple answers possible]

Direct employees	
Suppliers	
Community	
Other:	

- Are all farmers HPW works with Global Gap certified?

Theory states that companies have four type of responsibilities. To know:

Philanthropic responsibility (improve quality of life)

Legal responsibility (play by the rules of the game)

Economic responsibility (be profitable)

Ethical responsibility (obligation to do what is right, just and fair. Avoid harm.

- In your opinion as managing director, what is the most important responsibility of HPW. Please order the responsibilities on a scale of 1 to 4; 1 being the most important and 4 being the least important.

Philanthropic responsibility	Legal responsibility	Economic responsibility	Ethical responsibility

- Please explain the choice you have made at the previous question
- The following question focuses on different aspects of CSR. Please answer for every statement to what extend you agree with the statement.

	Agree completely	Agree to a large extent	neither agree nor disagree	Disagree to a large extent	Disagree completely
CSR should be entirely voluntary, as an alternative to greater government regulation					
Your organization's growth, profitability and/or return to shareholders is the key measure of success					
Staff performance appraisals are linked to the economic performance of their unit or of the organization					
Your organization is oriented towards short term (quarterly) financial results, rather than long term societal goals					
Your organization's culture is about tactical cost cutting, rather than strategic value creation					
Your organization looks to the generous spirit of its owner/CEO/chairman to take a lead on charity					
Your organization's culture is built on the idea of making a contribution to the community and giving back to society					
Employees are given paid volunteer days (in which they can be directly involved in charitable projects)					
Charitable giving is institutionalized within the organization, e.g. through a foundation or Chairman's fund					
CSR activities managed by staff that are primarily responsible for charitable donations or community projects					
Your organization manages to obtain media coverage for its CSR activities					
Your organization's public relations, corporate affairs or marketing departments are responsible for CSR efforts					
CSR is seen as a means to enhance the organization's brand equity, public reputation or stakeholder relation					
Your CEO talks publicly or to the media about the organization's CSR performance					
CSR issues that your organization supports are aligned to its core business					
CSR is embedded through internal management systems (policies, objectives, targets, procedures, reviews & reports)					
Your organization can demonstrate quantified continuous improvement on					

social, environmental & ethical performance					
Your organization's CSR performance is audited by independent third parties (e.g. auditors, consultants, certifiers)					
Your organization is certified against internationally recognized CSR standards like ISO 14001, OHSAS 18001 and SA 8000					
Your organization believes it is falling short of the goals of sustainability and responsibility					
It is your organization's mission to solve a particular environmental, social or ethical challenge					
Your industry or sector has minimal social, environmental or ethical costs and/or risks					
Your organization's CSR performance is recognized as a key differentiator in the markets that it operates in					
Your organization has undergone radical strategic changes over the past 12 months as a result of social, environmental or ethical issues					
CSR helps me to get access to markets in other parts of the world					
The company works with CSR codes, guidelines and standards to achieve global consistency among its subsidiaries and operations in developing countries					
CSR helps the company to get funds it would otherwise not receive					
Stakeholders and activists pressure the company to act socially responsible					
Requirements imposed by other companies in the supply chain stimulate me to do socially responsible business					
The company is socially responsible because of our cultural tradition values philanthropy, business ethics and community embeddedness					
Political policy reforms forces the company to act socially responsible					
The company acts socially responsible since the socio-economic environment of the company and the local development priorities requires it					
The company acts socially responsible since local institutions fail to adequately provide various social services					
The company acts socially responsible since the company has to deal with (economic, social, environmental, health-related or industrial) crises					

Appendix 6: Interview guide 3 – Focus group farmers

Name of interviewer: Ine ter Berg

Place of interview: Adeiso (pineapple farmers), Somanya (mango farmers), Aiyinase (coconut farmers)

Date of interview: 21-10-2016 (pineapple farmers), 7-11-2016 (mango farmers), 14-11-2016 (coconut farmers)

[Give an introduction to the study, explain the interviewee's rights and obtain consent]

- I would like to start this focus group by giving each one of you the opportunity to introduce yourself. Please state your name, age and size of farm (in acres).
- How is farming going these days? / Is this a good year or a bad year and why?
 - Any problems related to seasonality, price rates, diseases, market access etc.?
 - What would be possible solutions for these problems?
 - What products and services would you need to become more successful?
- What is the most difficult time of the year and why?
 - How do you manage during these months?
 - How can the negative impacts be limited and by whom?
- What has changed in the last few years?
 - Is one of the big changes related to HPW? If so, how?
- How are relationships with outside institutions these days? (local government, banks, HPW etc.)
 - What do you think about the role and effort of the local government for agricultural production?
- Compared to the other pineapple farmers, who is getting better of? What happened?
- Are you food insecure? If so, how come and in what way? (availability, accessibility, nutrition)

[Give general summary]

- Is there anything else I should know about?

[Thank participants]

Appendix 7: Interview guide 4 – Focus group food security

Name of interviewer: Klaske de Vries

Place of interview: Pokrom (pineapple producing households), Akorley (mango producing households), Aiyinase (coconut producing households)

Date of interview: 4-11-2016 (pineapple producing households), 9-11-2016 (mango producing households), 14-11-2016 (coconut producing households)

[Give an introduction to the study, explain the interviewee's rights and obtain consent]

- What is your role in the household?
 - How often do you help out on the farm?
 - Do you also have jobs to generate income?
- What kind of problems do you encounter for you and your household?
 - Did these increase or decrease in the past 10 years?
- What is the most difficult time of the year to provide your household with their needs?
 - How do you manage during this period?
 - What do you eat during the difficult period?
 - What do you eat when food is available?
- What are the most important needs for you and your family?
 - What products/services do you need for this to limit such issues?
- If you're looking at your households' financial means, are you better off now or 10 years ago?
- If you're looking at the food conditions available for your household, is it better now or 10 years ago? (availability, access, variety in food products)
- Who in your household is the most fit/healthy? Why?
- What kind of food products/dishes do you consider healthy?
 - Do you cook the meals, or do you buy them?
 - Do you eat from shared bowls?
 - Who decides on what to eat?
- Is healthy food important for you? Are you able to eat healthy on a regular basis?
- If you would receive (more) money, where would you spend it on?
- Except money, what do you need / can use to improve your food situation?

[Give general summary]

- Is there anything else I should know about?

[Thank participants]

Appendix 8: Interview guide 5 - AgroFair

Name of interviewer: Klaske de Vries

Name of interviewee: Geert Demeyere – employee AgroFair

Place of interview: Skype

Date of interview: 12-10-2016

- Could you tell me something more about yourself and AgroFair?
- What kind of relation and arrangements did AgroFair have with farmers?
- What are the differences regarding pineapple production, processing en export between Ghana and Costa Rica?
- What were the characteristics of the farmers you worked with and the pineapples they produced?
- To what extent were AgroFair's business activities informed by the local food security situation?
- Were the food security issues in the region AgroFair was doing business?
- What were the prices you paid farmers for their produce?
- According to you; what actions can be taken in order to improve the local food security situation?
- According to you; what kind of role do companies play in tackling food security issues?

Appendix 9: Questionnaire farmer households

Province:	Research assistant name:
District:	Date:
Village:	GPS reference:
Interviewer name:	Interviewee:

Consent

This survey is undertaken to gather information about farmer households who are selling (part of) their production to HPW. The findings of this survey will be used for writing a Masters' thesis at Utrecht University, the Netherlands. The survey will take approximately 60 minutes and your answers will be handled with complete confidentiality. Participation is voluntarily and you may stop participating at any time.

Please read the following statements, and if you agree to them, please sign below.

- I confirm that I consent to be interviewed for the research of Klaske de Vries and Ine ter Berg, master students from Utrecht University, the Netherlands;
- I agree that the information I will provide will be used by them to write their masters' thesis;
- I understand that this report will be published at Utrecht University, the Netherlands and shared with HPW. In addition, it may be shared with other institutions or organizations that are interested in the findings of the report;
- I confirm that I have read and understood the above information, and that I am signing this willingly

Signature

1) Household composition

	Name	Relationship (to head of household)	Gender	Age	Highest attained education	Main occupation
		** Head of household 2. Spouse/partner 3. Son/Daughter 4. Brother/Sister 5. Father/ mother/parent-in-law 6. Other relative 7. Employee 8. Other non-relative	M/F	Years	1. None 2. Primary (1-5) 3. Lower Secondary (6-8) 4. Secondary (9-10 /SLC) 5. Higher Secondary (11-12) 6. Technical college 7. University 8. Other (specify)	1. Farmer 2. Wage laborer 3. Business owner 4. Housewife 5. Student 6. Retired 7. Unemployed 8. Other (specify)
1						
2						
3						
4						
5						
6						
7						
8						

2) Crop production last year

	Crop 1	Crop 2	Crop 3	Crop 4	Crop 5	Crop 6
Crop name*						
Harvested (KG)						
% for own use						
Sold (KG)						
Post-harvest losses (KG)						
Price (Cedi/KG)						
Net Income						
Selling location **						
Income change last three years ***						

* Rank; crop 1 is most important, crop 6 is least important

**1) HPW, 2) Local market, 3) Other:

*** 1) Increased, 2) Stayed the same, 3) Decreased

Vulnerability context

3) Did the following aspects have a negative impact on your livelihood the past three years?

	Always	Most of the time	Sometimes	Rarely	Never
Shortage of water					
Small volume of market outlet					
Low sales prices					
Health problems					
Crop diseases					
Shortage of raw material					
Shortage of manpower					
Government policies					

Social Capital

4) Who helps you with farming activities, planting and harvesting?

Relatives (specify):

Non-relatives

5) Are you member of a cooperation?

Yes (specify):

No

6) How do you benefit from this cooperative? [Multiple answers possible]

Knowledge exchange

Financial support

- Purchasing in bulk
- Advocacy
- Sharing machineries/equipment
- Labor support
- No benefit
- Other:

Financial Capital

7) What is the total monthly income of your household [Cedi's]?

8) What are your households' sources of income? [Rank in importance - 1 = most important; 5 = least important] + [mention amount in Cedi's]
 E.g. selling main crop, selling other crops (specify), off-farm activities (specify), loans, remittances.

	Source	Amount [in Cedi's]
1		
2		
3		
4		
5		

9) [IN CASE LOANS ARE MENTIONED IN QUESTION 8]

Who is the money lender?

- Micro-finance agency
 - Rural development bank
 - Trader
 - Cooperative
 - Neighbor
 - Other:
- _____
-

10) [IN CASE LOANS ARE MENTIONED IN QUESTION 8]

Where do you use the loan for? Mention the three most important purposes + amount in Cedi's

Purpose	Estimated amount in Cedi's

11) Does your household have any savings?

- Yes
- No

12) [IN CASE 'YES' IS ANSWERED TO QUESTION 10]

Where do you have savings?

- Bank
 - Trader
 - At home
 - Other:
-

13) [IN CASE 'YES' IS ANSWERED TO QUESTION 10]

How much are your savings in total?

14) Do you use inputs for farming?

- Yes
- No

15) [IN CASE 'YES' IS ANSWERED TO QUESTION 14]

Please fill out the following table:

Type of inputs*	Supplier of inputs**	Costs of input {per year}

*1) Planting materials, 2) Fertilizers, 3) Pesticides, 4) Fungicides, 5) Farming equipment

**1) HPW, 2) Local store, 3) Other (specify)

16) Where do you spend the most money on? [Rank in importance – 1 = most important; 6 = least important]

Education of children	
House	
Farm	
Food	
Leisure	
Other (specify):	

Physical capital

17) Do you have access to the following assets to support your farming practices? [Tick the right box]

	Yes	No
Affordable transport		
Paved road		
Affordable machines		
Affordable tools		
Adequate water supply		
Affordable energy		
Access to information		

Human capital

18) What is your households' religious background?

- Animist
- Christian
- Muslim
- Not-religious

19) Where do you obtain knowledge for improving farming skills? [Rank in importance – 1 = most important; 6 = least important]

Friends/relatives	
School	
Books/internet	
HPW	
Cooperative	
Other (specify):	

20) [IF HPW IS RANKED 1 OR 2 AT QUESTION 19]

On what matters have your farming skills been improved after involvement with HPW?

- Group management skills
- Access to financial services
- Basic market skills
- Technological skills
- Production and resource management skills

21) On what topics would you like to increase your knowledge? [Multiple answers possible]

- Group management skills
- Access to financial services
- Basic market skills
- Technological skills
- Production and resource management

22) What services provided by HPW do you make use of? [Multiple answers possible]

- Credit
 - Equipment
 - Market information
 - Selling of your products
 - Technical assistance
 - Other (specify):
-

Natural capital

23) Please fill out the table below:

Plot [Crop Name]	Plot size [Acres]	How far is this plot from irrigation or stream? [Meters]	Ownership*	Income from land rented out [Cedi's]	Expenditures on rented land [Cedi's]

* Ownership 1) title on family name, 2) cash fixed rent, 3) community land, 4) unclaimed land, 5) Government owned, 6) other (specify)

24) [IN CASE ONE OF THE PLOTS IS OWNED BY THE FAMILY]

How did you acquire the land?

- Inherited
 - Bought
 - Claimed
 - Other (specify):
-

Livelihood strategies

25) What is your main strategy the coming years to improve your living conditions?

- Intensification
- Expansion
- Diversification
- Off-farm activities
- Stop farming

Livelihood outcomes

26) Please fill out the following table:

	A lot worse since involvement with HPW	Worse since involvement with HPW	Same since involvement with HPW	Better since involvement with HPW	A lot better since involvement with HPW
Ability to support your family financially					
Productivity (kg per acre)					
The profit you make					
Total amount of food your household eats daily					
Diversity of food products your household eats					
Exposure to risk					

Food availability

27) Please fill out the following table.

In what month(s) of the year is food best and least available for your household?

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Best												
Least												

Food access

28) Where does your household obtain food for daily meals?

Food group	Market	Own land	Common pool resources	Other (specify)
Starchy roots and plantain				
Grains and cereals				
Animal products				
Beans, nuts, oilseeds				
Fruits and vegetables				
Fats and oils				

29) How many minutes do you travel to obtain your food products from the following locations?

Market	
Forest, river, lake	
(street) Vendor	
Other (specify):	

30) Who decides on what amount of money is spend on food?

- Household head
 - Spouse
 - Other (specify):
-

Food utilization

31) Does your household use soap to wash themselves?

- Yes
- No

**32) Has anyone in your household experienced any of the following diseases in the past 12 months?
If yes, indicate how many times this has occurred per person.**

[Numbers 1-6 relate to the household composition as answered in question 1]

	1	2	3	4	5	6
Diarrhea						
Cholera						

33) Where do you collect water for the following purpose?

	Washing food	Cooking food	Bathing/washing	Drinking purposes
Stream				
Lake				
Community well				
Household well				
Tap				
Other (specify):				

34) Where did you learn about health and cooking practices?

- Relatives
 - Friends
 - Neighbors
 - NGO
 - At school
 - Other (specify):
-

35) Now I'd like to ask you to describe everything that you ate or drank yesterday during the day or night, whether you ate it at home or anywhere else. Please include all foods and drinks, any snacks or small meals, as well as any main meals. Remember to include all foods you may have eaten while preparing meals or preparing food for others. Please also include food you ate even if it was eaten elsewhere, away from your home. Let's start with the food or drink consumed yesterday.

	Dish	Ingredients	[Food group*]	[Food category**]
Morning				
Later in the morning				
Mid-day				
Afternoon				
Evening				
Later in the evening				

* Food groups:

- 1) Starchy roots and plantain
Products: *cassava, plantain, yam, cocoyam, sweet potato.*
Dishes: **fufu** (a pounded mash of cooked cassava with plantain or cocoyam), **ampesi** (boiled root, tuber or plantain); **kokonte** (cooked meal of dried cassava flour); **gari** (roasted fermented maize meal); **agbelima** (a fermented dough)
- 2) Grains and cereals
Products: *maize, rice, wheat.*
Dishes: **kenkey** (cooked balls of fermented maize dough); **banku** (cooked meal of fermented maize and cassava dough); **porridge**; **boiled rice served with stew**; **waakye** (rice and beans boiled together); **omutuo** (rice balls); **rice water**; **bread**
- 3) Animal products
Products: *fish, meat, eggs, milk, poultry, snails*
Dishes: **in soups and stews**; **in hot pepper sauce** as an accompaniment to the major staples
- 4) Beans, nuts and oilseeds
Products: *cowpeas, groundnuts, melon seeds; soybeans;*
Dishes: **in stews/soups**; **as waakye**; **in the roasted form as a snack**; **aghushie**; **bambari**; **neri**;
- 5) Fruits and vegetables
Products: *oranges, mangoes, pineapples, pawpaw, watermelon, and banana * pepper, onion, tomato. garden eggs, green leafy vegetables*
Dishes: **in soups and stews** or **as a hot pepper sauce accompaniment** to kenkey, banku or kokante; **okro** (in some stews and soups);
- 6) Fats and oils
Products: *palm oil and palm fruits, refined cooking oil; margarine; shea butter; coconut oil*
Dishes: **in soups/stews**; **as accompaniment** to cooked beans and gari;

**Food categories:

- A) Condiments and seasoning – chilies; spices; herbs; fish powder; tomato paste; flavor cubes or seeds;
- B) Other beverages and foods – tea or coffee; broth; alcohol; pickles, olives, similar

Miscellaneous

36) Do you have any questions or additions regarding this survey?

Closing

[FIRST, CHECK WHETHER YOU HAVE NOT SKIPPED ANY QUESTIONS]
 [SECOND, ARE ALL THE NOTES YOU MADE CLEAR?]

Appendix 10: Supply agreement between HPW and its supplier

SCHEDULE

QUALITY STANDARDS

1. The Goods as supplied to the Buyer by the Seller:
 - a. must be sound, healthy and matured without any major external and internal damage.
 - b. must have a minimum brix of 14°
 - c. must weigh at least 1'200 grams
 - d. must not be translucent
 - e. must not have discolored flesh
2. The Seller shall maintain and implement good agricultural practices, and shall allow the Buyer to inspect its production record upon request by the Buyer
3. The Seller shall maintain global GAP certification
4. The Seller shall use only agrochemicals which are approved for the European market from time to time
5. The Seller shall observe maximum residue levels set by the European Union from time to time
6. The Seller shall not employ child labor

Supply Plan in kg

	week	GRS						
Q1	1	25,000	Q2	14	25,000	Q3	27	
	2	25,000		15	25,000		28	
	3	10,000		16	25,000		29	
	4			17	25,000		30	
	5			18	25,000		31	25,000
	6			19	25,000		32	25,000
	7			20	25,000		33	25,000
	8			21	25,000		34	25,000
	9			22	25,000		35	25,000
	10			23			36	25,000
	11			24			37	25,000
	12	25,000		25			38	25,000
	13	25,000		26			39	25,000

C4		40	25,000
		41	25,000
		42	25,000
		43	25,000
		44	25,000
		45	25,000
		46	25,000
		47	25,000
		48	25,000
		49	25,000
		50	25,000
		51	
		52	
		810,000	

Signed by Solomon Wiafe for Golden Riverside Ltd]

In the presence of:]

Signature of witness

Name of witness

Address of witness

.....

.....

Signed by Maik Blaser for HPW fresh & dry Ltd]

In the presence of:]

Signature of witness

Name of witness

Address of witness

Appendix 11: HPW Fairtrade procurement contract

Fairtrade Procurement Contract

Headline	Content	Annex								
between producer and marketer On Date of commence Duration Product description	[name cooperative] (Supplier) , FLO ID 4487 HPW Fresh Dry Ltd., PO Box AO 53, Adeiso, Ghana (Buyer), FLO ID 26757 Fairtrade products, compliant with FLO Standards July 1, 2015 12 months Fairtrade pineapples for drying in Ghana									
Relationship	Producer welcomes members of HPW organisation (HPW Fresh & Dry Ltd. and HPW AG) on its farms and agrees to meet whenever it is needed with the HPW Ghana team.									
Quality Specification	As per our raw material specifications: <ul style="list-style-type: none"> - Smooth Cayenne, MD2 or Sugar Loaf - Minimum average Brix of 13° - No translucence - No white flesh - Unsprayed 	1								
Pricing	Paid price is set periodically between the parties and will always meet the set Fairtrade Minimum Price. Market price is applicable if it is higher than the Fairtrade Minimum price. <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"><i>Pineapples for drying in Ghana EXW</i></td> <td style="text-align: right;"><i>20.5 US cents / kg</i></td> </tr> <tr> <td><i>Fairtrade Premium</i></td> <td style="text-align: right;"><i>3.0 US cents / kg</i></td> </tr> <tr> <td><i>Transport costs</i></td> <td style="text-align: right;"><i>2.0 US cents / kg</i></td> </tr> <tr> <td>Total price per kg delivered</td> <td style="text-align: right;">25.5 US cents / kg</td> </tr> </table> Payment is made in Ghana Cedis (GHS). The applicable conversion rate is the Daily Interbank FX Rate published by Bank of Ghana (http://www.bog.gov.gh/) at the day of payment.	<i>Pineapples for drying in Ghana EXW</i>	<i>20.5 US cents / kg</i>	<i>Fairtrade Premium</i>	<i>3.0 US cents / kg</i>	<i>Transport costs</i>	<i>2.0 US cents / kg</i>	Total price per kg delivered	25.5 US cents / kg	2
<i>Pineapples for drying in Ghana EXW</i>	<i>20.5 US cents / kg</i>									
<i>Fairtrade Premium</i>	<i>3.0 US cents / kg</i>									
<i>Transport costs</i>	<i>2.0 US cents / kg</i>									
Total price per kg delivered	25.5 US cents / kg									
Payment Conditions for fruits for drying	Payment conditions are: Full payment will be by cheque upon delivery but due to administrative tasks payment may not be effected on the day of delivery but within 7 days after delivery.									

Terms of delivery	Pineapples are delivered to the factory by the supplier. Transport costs are covered by the buyer (see pricing).	
--------------------------	--	--

Volumes & sourcing plans	Both parties agree on its dynamic volume planning from short to long term during their meetings and agree on a weekly dialogue. It is based on availability (production forecast) and order forecasts.	
Order system	<p><u>Long-term</u> Production Forecast (6 – 12 months) and Order Forecast</p> <p><u>Short term</u> provisional and (1 – 4 weeks) final order</p>	2
Liabilities / quality control	<ol style="list-style-type: none"> 1. Producer provides fruits within specification and as documented in final order 2. Rejects during processing which are due to internal defects of the fruits will be disposed off. Rejected fruits will not be paid. 	
Force majeure	<p>The producer shall have the right to cancel or delay delivery or to reduce the amount delivered if it is prevented, hindered or delayed producing or harvesting or delivering by normal means of harvesting or delivery the goods of the description covered by this Contract through any circumstances beyond its control including but not limited to strikes, lock-outs, accidents, war, fire unavailability of power, breakdown of plant or machinery or storage or total crop failure due to any circumstances beyond its control.</p> <p>HPW cannot be held liable for any circumstances beyond its control including but not limited to strikes, lock-outs, accidents, war, fire, storm, capsizing of vessel.</p>	
Conflicts and Arbitration	<p>Any conflict arising out of or in connection with this contract, including any question regarding its existence, validity or termination shall be referred to and finally resolved::</p> <ul style="list-style-type: none"> - In a first step by asking the responsible fair trade liaison officer to act as a third party - In a second by arbitration under international arbitration. These Rules are deemed to be incorporated by reference into this clause. The legal place of arbitration shall be Ghana. 	

Place & Date	[name cooperative]
Signature	
Print Name	
Position Held	
Place & Date	HPW Fresh and Dry ltd, Adeiso, Ghana
Signature	
Print Name	Maik Blaser
4	
Position Held	Manager

Annexes:

- 1) Product specifications
- 2) Order forecast
- 3) Provisional & final order updated regularly at weekly meetings

S107 Specification Table for Pineapple for Processing

Criteria	Standard	Defect	Green (No Mark)	Amber (Mark)	Red (Mark And Action)
colour	C0 & C1	under colour, over colour	< 5%	5-10%	> 10%
Maturity	brix > 14°	lower	>14°	13.7°-14°	<13.7°
Natural ripe	translucence 0.6	higher or lower	0.6 to 0.8	+ - 0.1	< 0.4 or > 1.0
fruit external	few damages	insect holes	1 per fruit, not more than 5 mm	2 per fruit, not more than 5 mm	more than 2 or bigger than 5 mm
		mal formations	< 5%	5-10%	> 10%
		flakeing and cracking	< 5%	5-10%	> 10%
		bottle neck	N/A	N/A	N/A
		mealy bugs	< 5%	5-10%	> 10%
		gummosis	removable not extending into flesh		extending into flesh
		sun burn	< 5%	5-10%	> 10%
fruit internal	no spots and stains	yellow spots	< 5%	5-10%	> 10%
		brown spots	< 5%	5-10%	> 10%
		bruises	< 5%	5-10%	> 10%
		translucent core	< 5%	5-10%	> 10%
crown	none	none	none	None	none
weight	>1.2kg	Below 1.2kg	< 5% underweight	5-10% underweight	> 10% underweight

If no damage has been found and all criteria are within the range of the green colour, no action has to be taken and supplies have to be accepted. If damage has been noticed or if a criteria checked falls under the yellow colour, the damage has to be marked down on the QC check and defects will be rejected. If damage or criteria falls within the range of the red colour then the whole consignment will be rejected. It is responsibility of the farmer/supplier to ensure that his/her produce meets the specification before making a delivery

Supply Program

Month	FT volume	Comment
Jan	Nil	Ad hoc supplies possible based on production capacity
Feb	Nil	Ad hoc supplies possible based on production capacity
Mar	40 t	
Apr	40 t	
May	20 t	Additional ad hoc supplies possible based on production capacity
Jun	Nil	
Jul	Nil	
Aug	20 t	Additional ad hoc supplies possible based on production capacity
Sep	40 t	
Oct	40 t	
Nov	40 t	
Dec	40 t	

Conventional supplies according to availability

Appendix 12: Schematic overview of smallholder farmer value chain

