Shaping, Adapting, and Reserving the Right to Play: Responding to Uncertainty in the High Quality Cassava Flour value chains in Nigeria

Presentation outline

1. Introduction
2. The HQCF value chain in Nigeria
3. Key sources of uncertainty
4. Stakeholders strategies to respond to uncertainty.
5. Conclusions.

Based on information from secondary sources and grey literature. In particular, project documents by the Cassava: Adding Value for Africa (C:AVA) project (2008 to present), funded by the Bill & Melinda Gates Foundation, and on our experience with this project. Funded by CGIAR

Acknowledgements: We are grateful to the CGIAR research Program on Policies, Institutions and Markets which provided funding for this study. The study formed part of the research program conducted by Flagship 3, Inclusive Value Chains and Efficient Trade, led by Maximo Torero. The views expressed in this article are those of the authors and should not be attributed to the organisations with which they are affiliated.

1. Introduction

- Developing smallholder-inclusive, sustainable agricultural value chains is a priority for many development actors aiming to meet a variety of social, economic, and environmental objectives.
- However, value chain development involves uncertainty -decision-making by diverse actors; requires functioning linkages
- We explored the uncertainties in HQCF value chains in Nigeria, and ways stakeholders have responded

- Cassava is a climate-resilient crop that is widely grown by smallholders.
- Nigeria world's largest cassava producer - over 50 million tonnes of roots in 2014.
- Processed cassava can help meet expanding demand for more & different types of agri-food products in Africa.
- HQCF has multiple food and industrial uses and is an opportunity for smallholder farmers and processors.
- Potential economic benefits include: Import substitution (Nigeria imported 4.4 million tonnes of wheat in 2016/16(USDA-FAS, 2016); average cost of USD 1.39 billion p.a.; employment creation; and income for smallholder cassava growers. Potential health benefits for consumers – gluten free (Falade & Akingbala, 2008).

- Since the 1980s there have been a series of attempts to promote HQCF in Nigeria.
- However, the development of this value chain has not lived up to expectations (Ohimain, 2014).

Introduction (cont.)

- Analysis of HQCF value chains in Nigeria through lens of complex adaptive systems (Orr et al., 2015)
- Focus on 2 components uncertainty and adaptation.
- To explore adaptation, use Courtney *et. al.'s* (1997) conceptualization of business strategy under conditions of uncertainty.
- 3 strategic postures in response to uncertainty, and 3 types of actions can be used to implement that strategy.

3 strategic postures are shaping, adapting, and reserving the right to play.

- **Shapers** aim to drive their industries toward a new structure of their own devising.
- **Adapters** take current industry structure and its future evolution as givens and react to the opportunities the market offers.
- **Reserving the right to play** involves a company being in a privileged position—through superior information, cost structures, or relations —that allows the company to wait until the environment becomes less uncertain before formulating a strategy.

Three types of action are

- **'Big bets**'—large commitments, such as major capital investments, that produce large payoffs in some scenarios and large losses in others. Shaping strategies usually involve big bets
- **'Options'** are designed to secure big payoffs of best-case scenarios, while minimizing losses in worst-case ones; e.g. trials before introduction of new product, entering into limited joint ventures to minimize risk of breaking into new markets Enterprises reserving right to play rely heavily on options.
- **'No-regrets**' moves that will pay off no matter what happens e.g. reducing costs, gathering intelligence, or building skills.

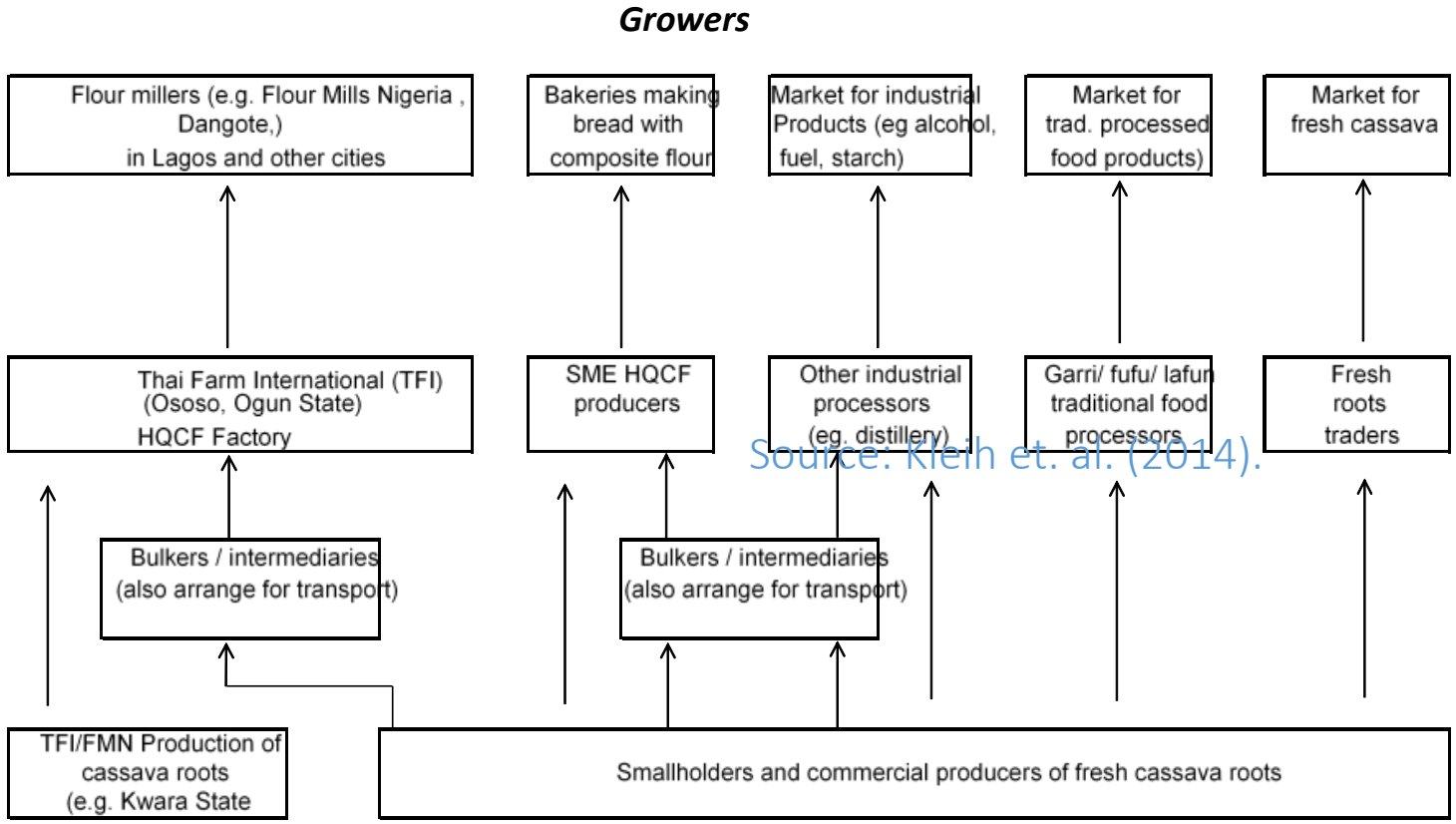
The specific study objectives are to:

(1) analyse important sources of uncertainty influencing HQCF value chains

(2) explore stakeholders' strategies to respond to uncertainty and

(3) Highlight the implications of different adaptation strategies for social and environmental outcomes.

2. HQCF Value Chains in Nigeria



Source: Kleih et. al. (2014).

Figure 1. HQCF and other cassava value chains in South West Nigeria
Source: Kleih et. al. (2014).

3. Sources of Uncertainty

- Frequent changes in the policy environment;
- Market for HQCF related to HQCF as a substitute for wheat flour
- Availability and quality of HQCF
- Availability of cassava and price fluctuations
- Domestic fuel availability and costs.

The policy environment

- Government policy has created 2 major sources of uncertainty affecting the value chain for HQCF:

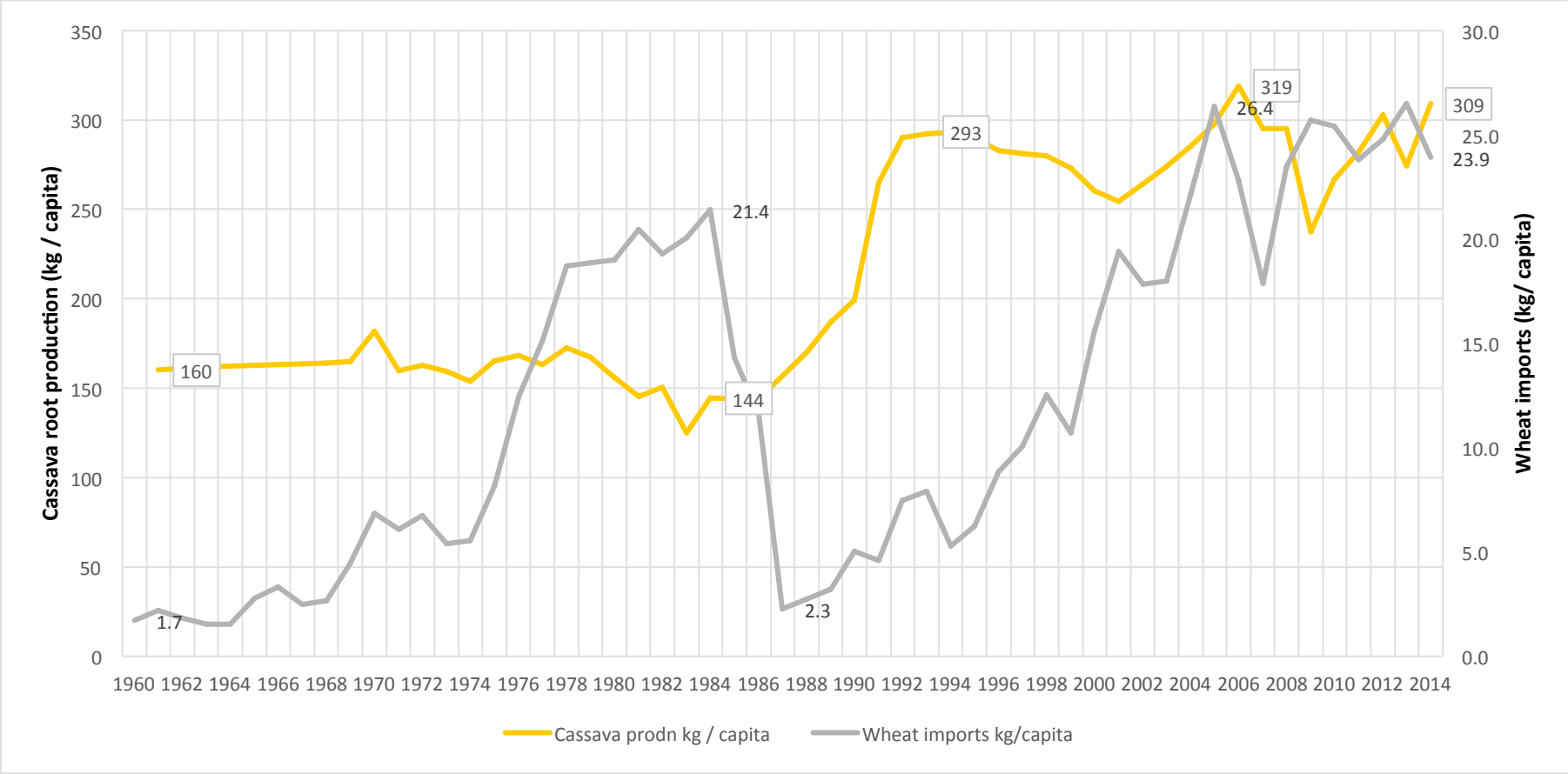
  i) How far policies favouring the use of HQCF will be enforced.

  ii) Whether changes in government will result in policies being continued or abandoned.
- Changes in the policy environment for HQCF since the 1980s have involved wheat import bans, X% HQCF inclusion in bread flour stipulations, various forms of support to farmers and processors.
- In some cases, policy has had a pronounced effect.

  E.g. mid-1980s TMS cassava varieties led to increase in production and dramatic fall in prices (Nweke, 2004).
- Presidential Initiative on Cassava in 2002 led to the establishment of over 500 micro-processing centres and 100 SMEs manufacturing cassava products. Before 2002 there were only 2 flash dryers in Nigeria, but by 2014, there were over 160 (Ohimain, 2014.
- In other cases, however, the effects of government policy were limited.

Market for HQCF related to HQCF as a substitute for wheat flour

- For processors to include HQCF in bread flour, the price of HQCF needs to be significantly lower than the price of wheat flour
- Consumer acceptance of HQCF in bread flour is low.

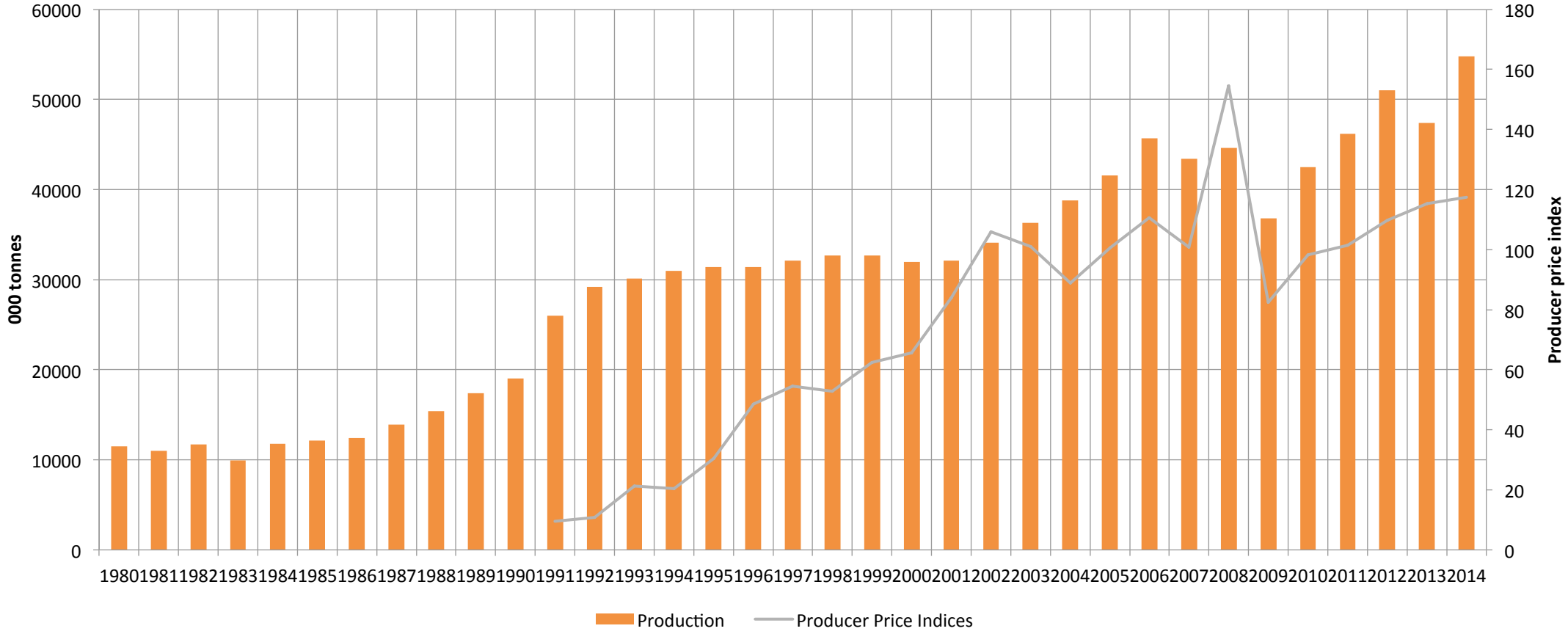


Availability and quality of HQCF

- supply of high volumes of HQCF is key area of uncertainty
- Processors face challenges aggregating and transporting roots to factories through a value chain originating from many smallholders, as well as meeting quality standards.
- Millers face similar problems. Millers are wary of buying small volumes of HQCF from large numbers of SMEs with associated risk of variable quality and possible damage to brand (Graffham et al, 2013).
- Prime area of uncertainty for the milling industry (Oludiran (2002); UNIDO/FGN (2006); Sawyer (2012); Ajao and Adegun (2009); Ohimain (2014) and Graffham et. al., 2013).

Availability of cassava and price fluctuations

Annual and seasonal variation in production and prices



Cassava production and price trends in Nigeria, 1980-2014

The supply and cost of energy

- Fuel costs for the flash drying process are 2nd highest component in HQCF production.
- Energy is required to generate heat and power the flash drier.
- Fluctuations in the supply and price of energy required for processing.
- Nigeria has available capacity of 4,500 MW, while in 2016, the demand for electricity was 12,800 MW (Latham & Watkins Africa Practice, 2016).
- Average number of power outages reported by enterprises 32.8 per month (8.3 for SSA) (Latham & Watkins Africa Practice, 2016).
- Cost of energy in HQCF processing depends on a number of factors, including the type and source of fuel and the efficiency of drying process.
- Based on use of fossil fuels, fuel represented 36% of total cost of producing HQCF in 2014 (Marchant el al, 2015).
- Foreign exchange scarcity and the removal of fuel subsidy in May 2016 also contributed to increasing costs of domestic production. Diesel prices rose by 42% between July 2015 and July 2016, following the removal of government subsidy (NBS, 2016).

4. Stakeholders strategies to respond to uncertainty

Shaping

- Main shapers have been supporting services including **research organizations** -Federal Institute of Industrial Research, Oshodi (FIIRO) and IITA– that developed HQCF.
- Research has also involved the design of processing equipment, particularly flash-driers.
- Researchers modified existing flash driers to achieve major gains in energy efficiency, and identified alternative fuel sources such as cashew nut and palm kernel shells.
- An economic and carbon emission assessment of heat exchangers with alternative fuel sources showed fuel cost reductions of 90% (Marchant et. al., 2015).
- Nigeria's main manufacturer of flash dryers has produced 25 improved units, and 15 SMEs have been retrofitted with waste fuel heat exchangers.
- However, poor management by SMEs means operational efficiency is substantially reduced (Marchant et al., 2015).
- The **government of Nigeria**, primarily through a range of policy interventions. Policies to shape the economic environment in favour of HQCF have had limited success.

Adapting

Farmers

- Have adapted by switching to alternative chains. Eg fufu and gari .
- Competition for cassava roots has driven up prices, further eroding margins for HQCF processors.
- Despite this, farmers complain of cassava being rejected at the factory-gate, not because of poor quality, but due to lack of demand.
- At the same time, factory managers complain of not being able to access sufficient cassava roots
- **SME processors**
- Entered the industry in response to a favourable policy environment.
- Assumed that the stipulation of 10% inclusion of HQCF in bread flour would stimulate demand .
- Together with other forms of support, this induced SMEs to make **"big bets"** and invest in HQCF processing.
- As these assumptions haven't held up, processors forced to adapt in order to survive.
- Many have made **no-regret moves** to reduce their costs (e.g. switching sources of fuel) and diversified into gari, fufu.
- Vertical integration. Investing in their own farms
- Cutting transport costs by first processing cassava roots into wet cassava cake at village level
- Selling HQCF to local users such as smaller bakeries and food processors close to the factory gate e,g. biscuit manufacturer 10% HQCF in class "C" biscuits
- SMEs producing HQCF appear to have relatively low adaptive capacity. Survey of 7 SMEs identified a low skill base of supervisory staff in HQCF factories, frequent change-overs, and weak management (Abayomi and Adegoke, 2016).

Reserving the right to play

- Actors with greatest capacity for adaptation to uncertainty – the wheat milling companies – have largely stayed out of the HQCF value chain. They have **reserved the right to play**.
- Millions of tonnes of wheat are injected into Nigeria each year through decisions of a small number of firms and individuals (Wheat Trap).
- Millers, traders and bakers have established an industry where the quantity and quality of the main commodity is relatively well controlled.
- The wheat milling industry has successfully adapted to uncertainties in the supply of wheat imports
- The proven ability of the millers to adapt to changes in the world market for wheat means that they occupy a privileged position which has allowed them to reserve the right to play as long as incentives are limited and high levels of uncertainty remain in the value chain for HQCF.

- Some milling companies have begun to explore the **options** however.
- FMN recently acquired the largest HQCF processors in order to secure a regular supply of flour.
- Followed by further backward integration with investments in land for very large-scale, heavily mechanized farms in order to secure the supply of fresh cassava roots.
- To protect its existing brands, FMN incorporates HQCF into separately branded composite flours or sells to food processing companies. Other milling companies are vertically integrating to produce food products using their own wheat flour, with potential scope for HQCF.
- FMN's recent investments may signal a change of role that could shape future of HQCF value chains.
- The business model which allows the wheat milling industry to adapt to uncertainties in the value chain for HQCF has implications for other business actors.
- Huge factories and mechanised cassava root production will give economies of scale and may exclude both smallholders and SMEs.
- Successful adaptation to uncertainty may carry a heavy price in terms of social and environmental outcomes.

Photos courtesy of Uli

5. Conclusions

- Several sources of uncertainty that have played a pivotal role in restricting the development of the value chain
- Value chain actors have responded to these uncertainties in different ways.
- A actors with greatest adaptive capacity (wheat millers) have until recently reserved the right to play.
- In absence of demand for HQCF from the milling industry, other actors in the value chain have had mixed fortunes.
- Smallholders have adapted to the lack of demand for HQCF by supplying cassava roots to rival value chains. Growing demand for cassava products, namely *fufu* and *gari*, kept prices for roots high and benefitted growers.
- Main losers have been HQCF processors, squeezed by high roots costs, , high energy costs, and the lack of strong demand from the milling industry. High failure rate of SMEs with limited management and technical capacity .
- Main shapers have been research organisations and the government. While research was able to develop suitable technology, its successful operation required favourable conditions for the development of the value chain.
- Governments attempted to create this environment but inconsistently. With its over-reliance on oil revenues and inability to provide a sustainable electricity supply, government is itself a major source of uncertainty
- Without demand from wheat millers and active participation, limits to what policy-makers could achieve.
- Recent developments suggest that the most effective strategy for the milling industry to reduce uncertainty in the HQCF value chain is through vertical integration, producing their own cassava roots and flour.
- To what extent can these development of HQCF value chains combine economic growth, equity and environmental objectives as set out in the SDGs? Is an open question.