

**The impact of staple crop value chain participation on the livelihoods of  
smallholder farmers in Nigeria and Malawi**  
Changes in poverty, gender relations, and food security

**LORA FORSYTHE**

A thesis submitted in partial fulfilment  
of the requirements of the University of Greenwich  
for the Degree of Doctor of Philosophy

August 2017

## Declaration

I certify that the work contained in thesis, or any part of it, has not been accepted in substance for any previous degree awarded to me, and is not concurrently being submitted for any degree other than that of Doctor of Philosophy being studied at the University of Greenwich. I also declare that this work is the result of my own investigations except where otherwise identified by references and that the contents are not the outcome of any form of research misconduct.

PhD candidate Lora Forsythe \_\_\_\_\_ Date:

Supervisor Adrienne Martin \_\_\_\_\_ Date:

Supervisor Andrew Westby \_\_\_\_\_ Date:

Supervisor Helena Posthumus \_\_\_\_\_ Date:

## Abbreviations

ADP	Agricultural Development Programme
CBSD	Cassava Brown Streak Disease
CMB	Cassava Mealybug
CMD	Cassava Mosaic Disease
C:AVA	Cassava: Adding Value for Africa
CAADP	Comprehensive Africa Agriculture Development Programme
CGAP	Consultative Group to Assist the Poor
CPG	Community Processing Group
DFID	Department for International Development, UK
DHS	Demographic Health Survey
ECA	European Commission for Africa
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
FHH	Female Headed Household
GSM	Green Spider Mite
GNP	Gross National Product
ha	hectare
HDI	Human Development Index
HQCF	High Quality Cassava Flour
IFAD	International Fund Agricultural Development
IITA	International Institute of Tropical Agriculture
IHS3	The third Integrated Household Survey Malawi
kg	Kilogram
km <sup>2</sup>	Kilometres squared
LGA	Local Government Area
LSS	Living Standards Survey

MDG	Millennium Development Goal
MGDS	Malawi Growth and Development Strategy
MHH	Male Headed Household
MK	Malawian Kwacha
N	Naira
NACAL	National Census of Agricultural and Livestock
NDHS	National Demographic and Health Survey
NRI	Natural Resources Institute
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organisation
PACI	Pan-African Cassava Initiative
PPP	Purchasing Power Parity
PRA	Participatory Rural Appraisal
PIP	Policies, Institutions and Processes
RCPMI	Regional Cassava Processing and Marketing Initiative
SACCO	Savings and Credit Co-operatives
SCI	Social Capital Initiative
SLF	Sustainable Livelihoods Framework
SSA	sub-Saharan Africa
UNDP	United Nations Development Programme
USD	United States Dollar

## Acknowledgements

There are many people I would like to thank for their support throughout this journey. First and foremost, I am tremendously grateful to my parents who have been a significant source of encouragement throughout this process, and have also instilled in me my curiosity about the world. I am also profoundly thankful to the women and men farmers in Nigeria and Malawi who I had the pleasure of meeting and spending time with over the course of the study. Their time and candidness in discussions made the study possible.

I would like to thank my supervisors, Adrienne Martin, Helena Posthumus, and Andrew Westby, for their continual patience and guidance, both personal and academic, throughout the lengthy process of a part-time PhD.

I would like to thank the Cassava: Adding Value for Africa (C:AVA) project led by Andrew Westby and the Cassava Growth Markets project, led by Keith Tomlins, both of the Natural Resources Institute (NRI), University of Greenwich, that provided me with the opportunity to carry out this important research. My thanks extend to the project country partners who gave their insights, logistical and moral support during the fieldwork. Immense thanks go to Professor Lateef Sanni of Nigeria's Federal University of Agriculture at Abeokuta and Visiting Professor of Food Science and Technology at the NRI, and Vito Sandifolo, of Chancellor College, University of Malawi. Prof Sanni and Vito Sandifolo are country directors of the C:AVA project, for Nigeria and Malawi respectively. My gratitude extends to Celestina Omohimi, *o se ma*, and Eunice Nyirendo who provided assistance and translation, friendship and humour during the fieldwork. Thank you to my colleagues for their helpful feedback, particularly Richard Lamboll, John Morton, Julian Quan and Kate Wellard.

A tremendous thank you to my friends and other family members not mentioned here. With a special mention of David Phillips, Gillian Summers, Caroline Troy, Fedra Van Huyse and Dudley Farman; for your support, especially towards the end. Last but not least I would like to thank the Bill & Melinda Gates Foundation and the European Commission for providing the funds for this research through grants to NRI for the C:AVA and Cassava Growth Markets projects.

## Abstract

In markets across sub-Saharan Africa, the tropical root, cassava, can be seen in abundance. It is boiled, pounded, fried, and sold fresh and processed in its various forms, often by women. Contemporary development narratives have identified smallholder agriculture – involving staple crops such as cassava – as the crux of the challenge to reduce poverty, boost economic growth and ensure food security across the region. These narratives promote smallholder market participation, through staple crop commercialisation, as the pathway to change. However, such narratives also reflect a neoliberal approach that tends to underestimate the importance of individual choice, social norms, and inequalities. Little is known about how smallholders, particularly women, are involved in commercialisation involving staple crops and the resulting livelihood outcomes. This research addresses this gap in knowledge, focussing specifically on cassava commercialisation in Malawi and Nigeria.

Drawing on a livelihoods approach that is adapted to include decision-making, gender and markets, the research partially supports the claim in development narratives, that smallholders who commercialise often acquire more income, and that the income is spent on food, education, healthcare and small assets that contribute to household resilience. However, the transformative power of cassava commercialisation to reduce poverty is limited due to market and supply-related challenges, linked to the uncertain economic and environmental context.

Smallholder strategies and value chain participation are influenced by gender and social norms, and can result in different outcomes for different people. In addition, certain commercialisation strategies and value chains can pose greater risks for food insecure smallholders, despite their benefits for the many. From a gender perspective, there are different opportunities for men and women. Some markets, particularly those involving community-level cassava processing, provide space where women can benefit. However, constraints on women's agency, the social conditionality of assets and the responsibilities of household care and food security, limit women's ability to respond to new market opportunities and participate in more formal cassava value chains. The subject of the thesis is a contemporary topic with important implications for international development thinking and practice, specifically whether agricultural commercialisation can work for the poor. This research takes its place among the challengers, to question the validity of assumptions and the rationale of the current development paradigm.

## Contents

Declaration .....	ii
Abbreviations .....	iii
Acknowledgements .....	v
Abstract.....	vi
List of Tables and Figures .....	xii
1. Introduction .....	1
1.1 Introduction to the study .....	1
1.2 Context of the study .....	2
1.3 Research aims, contributions and questions .....	5
1.4 Thesis structure .....	7
2. Literature review: narratives on smallholder farmers and agricultural commercialisation..	9
2.1 Introduction.....	9
2.2 Economic theory, narratives and assumptions on smallholder agriculture.....	10
2.2.1 The ‘peasantry’: a theoretical background.....	10
2.2.2 Contemporary narratives and conceptualisation of smallholders and agricultural commercialisation.....	12
2.2.3 Smallholder constraints in agricultural commercialisation.....	17
2.2.4 Impact of staple crop commercialisation .....	19
2.3 Filling the gaps in contemporary narratives.....	21
2.3.1 Gender, agriculture and crop commercialisation .....	21
2.3.2 Household food security and crop commercialisation.....	25
2.4 Understanding rural livelihoods: the Sustainable Livelihood Framework .....	27
2.4.1 Opening the ‘black box’ of the smallholder household .....	36
2.4.2 Value chain development and analysis .....	38
2.5 Chapter conclusion .....	40
3. Conceptual framework and methodology.....	41
3.1 Conceptual framework.....	41
3.2 Scope of the research .....	44
3.3 Definitions used in the research.....	45
3.4 Positionality, representations, and challenges of field research .....	47
3.5 Methods .....	48

3.5.1	Literature review .....	49
3.5.2	Focus group discussions.....	50
3.5.3	Individual panel interviews .....	51
3.5.4	Key informant interviews.....	54
3.5.5	Analysis of C:AVA baseline and endline surveys .....	54
3.6	Research ethics.....	57
3.7	Chapter conclusion .....	57
4.	The study context in Nigeria and Malawi: cassava and policies, institutions and processes (PIPs).....	58
4.1	Introduction.....	58
4.2	Country contexts .....	58
4.2.1	Nigeria country description.....	58
4.2.2	Malawi country description .....	61
4.2.3	Populations in the study areas.....	65
4.3	Cassava: an introduction .....	67
4.3.1	Cassava production and processing .....	68
4.4	Cassava and gender.....	69
4.5	Scale of cassava markets in the case-study countries .....	70
4.6	Cassava products and value chains .....	74
4.7	The Cassava: Adding Value for Africa (C:AVA) project .....	77
4.8	Chapter conclusion .....	78
5.	What is the role of cassava in rural smallholder livelihoods? .....	80
5.1	Introduction.....	80
5.2	Household and socio-cultural characteristics of smallholder farmers in the study .....	80
5.3	Smallholder livelihoods .....	87
5.3.1	Livelihood goals and strategies.....	88
5.4	The role of cassava in smallholder livelihood strategies .....	92
5.5	The gender division of labour and decision-making in cassava activities.....	96
5.6	Access and control over agricultural assets for cassava .....	102
5.7	Food security.....	107
5.8	Gender roles and responsibilities in food security .....	115
5.9	Cassava market participation .....	116



5.10	Household decision-making: control of farms and income .....	118
5.11	Chapter conclusion .....	121
6.	Do smallholders respond to commercial cassava opportunities and how? .....	124
6.1	Introduction.....	124
6.2	Context.....	124
6.3	Cassava commercialisation pathways.....	126
6.4	Commercialisation in Nigeria .....	128
6.4.1	Increased use of inputs (pathway 1).....	130
6.4.2	Increased land area planted with cassava (pathway 2).....	134
6.4.3	Results from pathways 1&2: total output and yield/ha.....	135
6.4.4	Change in planting/ harvesting to sell in bulk (pathway 4) .....	139
6.4.5	Increased processing (pathway 5) .....	140
6.4.6	Cassava group membership (pathway 7) .....	141
6.4.7	Results from strategies: selling more cassava .....	142
6.4.8	Rankings of the importance of cassava for income.....	146
6.4.9	Strategies not used.....	150
6.4.10	Reduction and no change in commercial activities (pathways 8 and 9) .....	150
6.4.11	Asset requirements for different strategies .....	151
6.4.12	Section summary - Nigeria.....	155
6.5	Commercialisation in Malawi.....	159
6.5.1	Increased use of inputs (pathway 1).....	159
6.5.2	Increased land area planted with cassava (pathway 2).....	163
6.5.3	Results from pathways 1&2: total output and yield/ha.....	163
6.5.4	Reduction in cassava consumption (pathway 3) .....	165
6.5.5	Change in planting/ harvesting to sell in bulk (pathway 4) .....	166
6.5.6	Increased processing (pathway 5) .....	166
6.5.7	Processing different product (pathway 6) .....	167
6.5.8	Results from strategies: selling more cassava .....	167
6.5.9	Rankings of the importance of cassava for income.....	169
6.5.10	Strategies not used.....	170
6.5.11	Reduction and no change in commercial activities (pathway 8 and 9).....	171
6.5.12	Asset requirements for different strategies .....	171

6.5.13	Section summary – Malawi.....	173
6.6	Factors in smallholder decision-making regarding cassava commercialisation.....	176
6.6.1	Smallholder perceptions of cassava commercialisation and risk.....	177
6.6.2	Women’s agency and the social conditionality of assets.....	178
6.7	Chapter conclusion.....	181
7.	What are the outcomes from cassava commercialisation?.....	185
7.1	Introduction.....	185
7.2	Commercialisation and income.....	185
7.3	Income generation from commercial cassava activities (claim 1).....	192
7.3.1	Nigeria.....	192
7.3.2	Malawi.....	199
7.3.3	Section summary.....	204
7.4	Expenditures, household wellbeing and vulnerability (claim 2).....	204
7.5	Poverty reduction and cassava commercialisation (claim 3).....	207
7.6	Women’s decision-making and control over cassava income (claim 4).....	212
7.6.1	Women’s independence in decision-making regarding cassava marketing.....	212
7.6.2	Women’s control over income from cassava sales.....	216
7.6.3	Change in gender relations: gender norms, roles, and agency.....	222
7.6.4	Section summary.....	224
7.7	Changes in food security (claim 5).....	224
7.7.1	Changes in food intake and diet diversity.....	225
7.7.2	Buy back cassava.....	232
7.7.3	Section summary.....	236
7.8	Chapter conclusion.....	236
8.	Conclusions.....	239
8.1	Introduction.....	239
8.2	Background and rationale for the study.....	239
8.3	Summary of empirical findings and critical discussion.....	241
8.4	Answer to the main research question: what are the impacts of staple crop commercialisation?.....	247
8.5	Implications of the findings for theory.....	251
8.6	Implications for development policy and practice.....	254

8.7	Limitations of the research.....	258
8.8	Contributions of the research to new knowledge.....	258
8.9	Future research.....	260
8.10	Closing remarks .....	260
	References .....	262
	Appendix A: Focus group discussion guide .....	282
	Appendix B: 1st round panel interview discussion guide .....	286
	Appendix C: 2nd round panel interview discussion guide .....	292
	Appendix D: C:AVA baseline household survey questionnaire, Malawi.....	301
	Appendix E: C:AVA endline household survey questionnaire, Nigeria.....	318
	Appendix F: List of the focus group discussion sample locations .....	335
	Appendix G: List of the panel interview locations.....	336
	Appendix H: List of communities in the C:AVA baseline and impact surveys sample .....	337
	Appendix I: Sample description for the C:AVA baseline and endline surveys .....	338
	Appendix J: List of codes for the panel interviews in Atlas.ti .....	347
	Appendix K: Example of notes from a panel interview .....	351
	Appendix L: Prices and Costs of cassava products in Nigeria and Malawi.....	369
	Appendix M: Sample of SPSS Chi-Square tests .....	374
	Appendix N: Sample of Tukey multiple comparison tests.....	378
	Appendix O: Regression analysis.....	386

## List of Tables and Figures

### List of Tables

Table 1 Selected cassava product value chains for the study .....	45
Table 2 Overview of fieldwork schedule in Nigeria (N) and Malawi (M).....	49
Table 3 Population characteristics of Ogun and Ondo states, Nigeria (NPC, 2010).....	66
Table 4 Population in the study area districts and nationally, Malawi (NSO, 2008) .....	66
Table 5 Estimated area and production of ten top major crops, Nigeria (NBS, 2013).....	71
Table 6 Estimated hectares, output and yield of cassava in Ogun and Ondo states in 2006, Nigeria (C:AVA, 2008) .....	72
Table 7 Gender of household head in 2009 survey by sample group, Nigeria.....	82
Table 8 Literacy levels, Nigeria (NPC, 2013) .....	84
Table 9 Gender of household head in the 2010 survey by sample group, Malawi .....	85
Table 10 Percent distribution of descent and settlement systems, Malawi (2007 Census data from Berge et al., 2014) .....	86
Table 11 Literacy levels in 2010 survey by sample group, Malawi.....	87
Table 12 Most important crops for household food consumption and income (2010), Nigeria ...	93
Table 13 Most important crops for household food consumption and income (2010), Malawi ...	95
Table 14 Gender norms in cassava production and processing activities (2010), Nigeria.....	97
Table 15 Cassava production activities by sex, region and district, Malawi (Kaitano, 2009) ....	100
Table 16 Person who decides on cassava production practice , Malawi (Kaitano, 2009).....	101
Table 17 Total land size (ha) by percentage of sample group and gender (2009), Nigeria .....	103
Table 18 Total land size (ha) by percentage of sample group and gender of head of household and district (2010), Malawi .....	106
Table 19 Household food security: number of meals per day, quantity and quality of food (2010), Nigeria .....	109
Table 20 Food security status percentage of the population by region (2010), Malawi (IHS3, 2010/11).....	111
Table 21 Household food security: number of meals per day, quantity and quality of food (2010), Malawi.....	113
Table 22 Smallholder typologies and household decision-making processes.....	120
Table 23 Description of commercialisation indicator and measurement .....	127
Table 24 Smallholder categories, commercial access strategies and assets, Nigeria .....	158
Table 25 Smallholder, commercial access strategies and assets, Malawi.....	176
Table 26 Change in poverty status from 2009 to 2014 among those who had an improvement in income by ethnicity, Nigeria .....	210
Table 27 Change in level of women’s independence in decision-making on selling fresh and processed cassava from 2009/10 to 2014 .....	215
Table 28 Change in women’s independence in decision-making and change in income from selling processed cassava from 2009/10 to 2014, Nigeria .....	216

Table 29 Change in women’s level of control over income from fresh and processed cassava from 2009/10 to 2014 .....	220
Table 30 Change in income from fresh and processed cassava and change in women’s level of control over income from 2009/10 to 2014 .....	221
Table 31 List of focus group discussions (2010), Nigeria.....	335
Table 32 List of focus group discussions (2010), Malawi .....	335
Table 33 Nigeria Panel interview communities .....	336
Table 34 Malawi Panel interview communities .....	336
Table 35 Nigeria baseline and impact communities.....	337
Table 36 Malawi baseline and impact communities .....	337
Table 37 Results of significance testing, Nigeria .....	338
Table 38 Gender of structure of survey respondents by sample group, Nigeria .....	339
Table 39 Age of structure of survey respondents sample group, Nigeria .....	340
Table 40 Ethnicity of the survey respondents by sample group and ethnicity, Nigeria .....	341
Table 41 Literacy of survey respondents, Nigeria.....	341
Table 42 Literacy of survey respondents by sample group and gender, Nigeria .....	342
Table 43 Average total land size (ha) of survey respondents, Nigeria.....	343
Table 44 Results of significance testing, Malawi.....	343
Table 45 Gender of the household head of survey respondents, Malawi.....	343
Table 46 Mean age of survey respondents, Malawi .....	344
Table 47 Age structure of respondents by sample group, Malawi .....	344
Table 48 District of survey respondents by sample group, Malawi .....	345
Table 49 Literacy of survey respondents by sample groups, Malawi .....	346
Table 50 Average land size of survey respondents, Malawi .....	346
Table 51 Results for total output of cassava by sample group, gender and survey, Nigeria.....	378
Table 52 Results for cassava yield/ha, fresh and processes cassava sold, by sample group, gender and survey, Malawi .....	382
Table 53 Summary output from regression: revenue as a function of total cassava production and total sales, Nigeria (2014).....	386
Table 54 Summary output from regression: revenue as a function of total cassava production and total sales, Malawi (2014) .....	386

## List of Figures

Figure 1 Sustainable Livelihoods Framework.....	28
Figure 2 Diagram of the conceptual framework.....	42
Figure 3 Map of Nigeria (NBS, 2013).....	59
Figure 4 Map of Malawi (DHS, 2010) .....	62
Figure 5 Annual average cassava production of the world’s top five cassava producers (tonnes) 1993–2013 (FAOSTAT, 2014) .....	70
Figure 6 Annual average production of the most produced commodities (tonnes) from 1993–2013, Nigeria (FAOSTAT, 2014) .....	71
Figure 7 Annual average production of the most produced commodities (tonnes) from 1993–2013, Malawi (FAOSTAT, 2014) .....	72
Figure 8 Cassava, maize and potato production (tonnes) from 2000 to 2013, Malawi (FAOSTAT, 2014).....	73
Figure 9 Cassava producer price (USD/tonne) from 2008 to 2015, Nigeria and Malawi (FAOSTAT, 2016) .....	74
Figure 10 Cassava value chains in Ogun and Ondo states, Nigeria .....	76
Figure 11 Cassava value chains, Malawi .....	77
Figure 12 Scale of independence in decision-making for married women in cassava activities	120
Figure 13 Cassava commercialisation strategy decision-making map .....	129
Figure 14 Use of inputs (herbicide, fertiliser, and high-yielding varieties) by percentage of sample group in 2009 and 2014, Nigeria.....	131
Figure 15 Use of high-yielding cassava varieties by percentage of gender in sample group in 2009 and 2014, Nigeria .....	132
Figure 16 Use of high-yielding cassava varieties by percentage of ethnic group in sample group in 2009 and 2014, Nigeria .....	132
Figure 17 Use of herbicide by percentage of ethnic group in sample group in 2009 and 2014, Nigeria .....	134
Figure 18 Mean total cassava output (tonnes) and yield (tonnes/ha) by sample group in 2009 and 2014, Nigeria .....	136
Figure 19 Mean total cassava output (tonnes) by sample group and gender in 2009 and 2014, Nigeria .....	137
Figure 20 Mean cassava yield (tonnes/ha) by sample group and gender, in 2009 and 2014 Nigeria .....	138
Figure 21 Mean quantity of fresh and processed cassava sold (tonnes) by sample group in 2009 and 2014, Nigeria .....	143
Figure 22 Mean quantity of fresh cassava sold (tonnes) by sample group and gender in 2009 and 2014, Nigeria .....	144
Figure 23 Mean quantity of processed cassava sold (tonnes) by sample group and gender, in 2009 and 2014 Nigeria .....	145
Figure 24 Relative importance of cassava for income as a percent of respondents ranking cassava as first, second or third in importance by sample group in 2009 and 2014, Nigeria.....	146

Figure 25 Relative importance of cassava for income as a percent of respondents ranking cassava as first, second or third in importance by sample group and gender in 2009 and 2014, Nigeria	148
Figure 26 Relative importance of cassava as an income generating crop % of informants ranking cassava as first, second or third in importance, by sample group and ethnicity in 2009 and 2014, Nigeria	149
Figure 27 Use of inputs (agro-chemicals and new varieties) by percentage of the sample group in 2010 and 2014, Malawi	159
Figure 28 Use of improved cassava varieties by percentage of the sample group and gender of the household head in 2009 and 2014, Malawi	161
Figure 29 Use of improved cassava varieties by percentage of the sample group and district in 2010 and 2014, Malawi	162
Figure 30 Use of agro chemicals on cassava by percentage of the sample group and district in 2010 and 2014, Malawi	162
Figure 31 Mean total cassava output (tonnes) and yield (tonnes/ha) by sample group in 2010 and 2014, Malawi	164
Figure 32 Mean quantity of fresh and processed cassava sold (tonnes) by sample group in 2010 and 2014, Malawi	168
Figure 33 Relative importance of cassava for income as a percentage of respondents ranking cassava as first, second or third in importance, by sample group in 2010 and 2014, Malawi	169
Figure 34 Quantity of cassava produced and sold by cassava revenue 2014, Nigeria	186
Figure 35 Network map of the link between smallholder commercialisation strategies and income, Nigeria	190
Figure 36 Network map of the link between smallholder commercialisation strategies and income, Malawi	191
Figure 37 Improvement in income from cassava production from 2009 to 2014, by sample group, Nigeria	193
Figure 38 Percentage of smallholders reporting an improvement in income from cassava production from 2009 to 2014, by sample group and ethnicity, Nigeria	194
Figure 39 Reason for increase in income from cassava production, Nigeria	195
Figure 40 Improvement in income from cassava processing from 2009 to 2014, by sample group, Nigeria	196
Figure 41 Improvement in income from cassava processing from 2009 to 2014, by sample group and gender, Nigeria	196
Figure 42 Percentage of smallholders reporting an improvement in income from cassava processing, by sample group and ethnicity, Nigeria	197
Figure 43 Reasons for increase in income from cassava processing, Nigeria	198
Figure 44 Improvement in income from cassava production from 2010-2014, by sample group, Malawi	200
Figure 45 Improvement in income from cassava production from 2010-2014, by sample group and gender of head of household, Malawi	200
Figure 46 Reasons for improvement in income from fresh cassava sales by sample group (2014), Malawi	201

Figure 47 Improvement in income from processed cassava from 2010 to 2014, by sample group (2014), Malawi .....	203
Figure 48 Reasons for improvement in cassava processing income, Malawi.....	203
Figure 49 Poverty likelihood in 2009 and 2014 by sample group, Nigeria .....	208
Figure 50 Poverty likelihood by change in cassava income from 2009 to 2014, Nigeria.....	209
Figure 51 Poverty likelihood in 2010 and 2014, by sample group, Malawi .....	210
Figure 52 Poverty likelihood score by change in cassava income from 2010 to 2014, Malawi.	211
Figure 53 Level of women’s independence in decision-making with selling fresh cassava and processed cassava 2014, Nigeria .....	213
Figure 54 Level of women’s independence in decision-making with selling fresh cassava and processed cassava 2014, Malawi .....	214
Figure 55 Women’s level of control over income from fresh cassava and processed cassava from 2009 to 2014, Nigeria .....	218
Figure 56 Women’s level of control over income from fresh cassava and processed cassava from 2010 to 2014, Malawi.....	219
Figure 57 Change in food intake and diet diversity from 2009-2014, Nigeria .....	226
Figure 58 Change in food intake by improvement in cassava income from 2009 to 2014, Nigeria .....	227
Figure 59 Change in diet diversity by improvement in cassava income from 2009 to 2014, Nigeria .....	228
Figure 60 Change in food intake and diet diversity from 2010 to 2014, Malawi .....	229
Figure 61 Change in food intake by improvement in cassava income from 2010 to 2014, Malawi .....	230
Figure 62 Change in diet diversity by improvement in cassava income from 2010 to 2014, Malawi.....	231
Figure 63 Frequency of smallholders buying cassava due to selling too much earlier in the season 2014, Nigeria .....	233
Figure 64 Frequency of smallholders buying cassava due to selling too much earlier in the season 2014, Malawi.....	233
Figure 65 Frequency of smallholders buying back cassava due to selling too much earlier in the season by change in cassava income 2014, Malawi.....	234
Figure 66 Impact pathways of cassava commercialisation .....	249
Figure 67 Poverty likelihood status by quantity of cassava sold (tonnes) in 2014 based on LSS, 2014, Nigeria .....	387
Figure 68 Poverty likelihood status by quantity of cassava sold (tonnes) in 2014 based on LSS, Malawi.....	388



# 1. Introduction

## 1.1 Introduction to the study

Improving the effectiveness of agricultural markets has been a central focus of development policy and initiatives, particularly in sub-Saharan Africa (SSA). As the largest sector in most developing economies and source of employment for the greatest number of people, the importance of agriculture cannot be overlooked. In the last decade, development narratives have increasingly focussed on smallholder agriculture, a term which refers to agricultural activities of farmers who depend on small plots of land as part of their livelihoods. The justification is that greater participation of smallholders in agricultural markets would increase incomes, and subsequently contribute to a range of development goals for the country, including economic growth, poverty reduction and food security. Discourses around smallholder agriculture are also gendered, linking women's involvement to development specifically, as they are more likely than men to contribute to food security, education and health expenditures for their household.

While narratives and policies on commercial agriculture have in the past focused on lucrative cash crops, more recently the focus has shifted to staple crops. This is because staple crops are considered to be more accessible and less invasive compared to (often inedible) cash crops by nature of being a food staple. Furthermore, the historic emphasis on plantation agriculture has restricted smallholders to mainly benefit from a small number of employment opportunities. The cassava crop, the focus of this research, is a good case in point. Cassava is a starchy root crop grown by millions of smallholders throughout SSA for food security and income. The crop has had a low market value in the past and has been considered a traditional food grown and consumed at home. Its characteristics of being durable and drought-tolerant, requiring few inputs, make it a strategic crop in the sometimes-unpredictable livelihoods of smallholders. In addition, there is an association between cassava and women in SSA, and cassava is often referred to as a 'woman's crop'. These narratives have resulted in initiatives supporting specific agricultural value chains to improve staple crop market access for smallholder farmers, particularly women.

However, little is known about how these narratives play out in practice; important questions are whether and how smallholders, and women in particular, can engage with cassava commercialisation and what outcomes stem from it, particularly given the importance of cassava for food security and managing risk. This study seeks to address this lacuna in research by

examining the assumptions implicit in these narratives, in particular if staple crop commercialisation processes are, in fact, inclusive and beneficial to smallholders, including women and other social groups who typically face barriers to accessing agricultural markets.

The research is based on fieldwork using qualitative and quantitative methods, conducted over five years (2009–2014) in south-west Nigeria and in central and southern Malawi, two locations where cassava commercialisation has been taking place in past decades (Nigeria) and more recently (Malawi). For brevity of language throughout this research, these locations will be referred to as ‘Nigeria’ and ‘Malawi’, though the findings do not claim to apply to more than the study areas.

## 1.2 Context of the study

Growth in the agricultural sector is widely accepted as the key to economic development, poverty reduction and food supply in developing countries (Cervantes-Godoy and Dewbre, 2010; DFID, 2014). In SSA Africa, it is also the sector that produces the majority of food and employs the largest number of people, particularly women (World Bank, 2008; FAO, 2012). International organisations and governments have therefore adopted a range of market-led agricultural strategies to ‘develop’ rural economies. This has featured in development discourse in two contrasting approaches. One approach is the promotion of large-scale, plantation agriculture led by private sector investment, reminiscent of Green Revolution policies of the 1960s. The other approach, and the focus of this research, involves promoting smallholder farmers’ participation in agricultural markets, which has grown in focus in the last decade. The latter approach has focused on SSA where economic growth has not met the promises brought about through the Green Revolution (Dorward and Kydd, 2005; World Bank, 2008). However, the focus on smallholder farmers is not new, as it is reminiscent of development discourse during the 1970 world food crisis, where smallholders were recognised for their importance in food supply and labour for agricultural and industrial development (Deer and de Janvry, 1979).

The focus on smallholder farmers has also been taken up by international development agencies, primarily the World Bank and the Food and Agriculture Organization (FAO) of the United Nations, national governments and Non-Governmental Organisations (NGOs), civil society organisations such as Oxfam Great Britain, along with some private-sector entities with a leaning towards corporate social responsibility initiatives. The broad consensus among these stakeholders, and influenced by neoliberalism, is that the commercialisation of agriculture, namely increasing the amount of crops smallholders grow, harvest and sell to markets, is an important pathway to achieve certain development outcomes (DFID and SDC, 2008; von Braun, 1995; Leavy and

Poulton, 2007; Coles and Mitchell, 2011). However, there are divergent views among academics and practitioners of the ability of smallholders to meaningfully participate in agricultural markets, and development processes for that matter. Perspectives become more complex when gender is taken into account, as there are a number of approaches regarding women and development (e.g. Women in Development, Women and Development and Gender and Development approaches, the World Bank's 'Smart Economics approach'), along with different ideas on the role of structural barriers women experience regarding market participation (e.g. by critiquing the idea of the 'rational man' in economics from a feminist perspective - Ferber and Nelson (1993), or Sen's (1993) Capability approach). In addition, despite the increasing attention on smallholder agriculture, the perceptions, goals and views of farmers themselves are often overlooked.

In the last decade, low-value commodities and durable, often staple, crops, with low-input requirements are being promoted in agricultural development as they are considered to be the most relevant and accessible to smallholders. In contrast, market interventions aiming to integrate farmers with cash crop (e.g. cotton or coffee) markets or high-value crops (e.g. fresh fruits and vegetables) can exclude poor farmers due to the high transaction costs involved, price volatility and the need for a high level of inputs (Handsouch and Wollni, 2015). Cassava is one such staple crop that is being promoted in SSA as a "poverty fighter" (NEPAD, 2004), as not only is it cultivated widely but is also a low-risk crop due to its drought tolerance and low-input requirements, which is important in the context of climate change (IFAD and FAO, 2000:8; Nweke, 2005; Jarvis et al., 2012). This position contrasts sharply with perceptions of the crop as being a poor person's crop or solely for household consumption, (Nweke et. al., 2002; Dixon et. al., 2003).

For these reasons, cassava has been the focus of many market-led development initiatives, including the Pan-African Cassava Initiative (PACI) launched by the New Partnership for Africa's Development (NEPAD) and The International Institute of Tropical Agriculture (IITA) in 2004; the Cassava: Adding Value for Africa (C:AVA) project led by the Natural Resources Institute (NRI); and the Regional Cassava Processing and Marketing Initiative (RCPMI) led by IFAD in West Africa. These initiatives have promoted cassava commercialisation in different ways, including support in production and processing through improving access agricultural inputs such as new cassava varieties, to the development of new cassava products, and policy and advocacy to support growth in commercial demand.

However, strategies for increasing agricultural commercialisation among smallholder farmers, namely through value chain development interventions such as C:AVA, raise several questions around the impacts and consequences on poverty reduction and rural livelihoods (von Braun, 1995; Brown and Kennedy, 2005; Leavy and Poulton, 2007; Jaleta et al., 2009; Donovan and Poole, 2013). This is particularly important due to cassava's role in food security and risk mitigation, especially in the context of climate change, which could present problems if the crop is directed towards the market at the cost of household consumption. It also raises questions about whether cassava commercialisation is, in fact, more inclusive of smallholders compared to other high-value or cash crop value chains, or plantation agriculture.

At the same time, there is increasing emphasis on the importance of women's income and broader empowerment, both in its own right and to contribute to development goals such as food security, education and health (World Bank, FAO and IFAD, 2009). These narratives have resulted in initiatives supporting specific agricultural value chains to improve market access for women with staple crops such as cassava.

Cassava value chains and related development narratives are explicitly gendered, and the crop is often referred to as a 'woman's crop' (Forsythe et al., 2015, 2016). This is a result of the strong role of women in cassava processing for home consumption and income generation (Nweke, 1994; Afolami and Ajani, 1995; Enete et al., 2002), particularly in West Africa. Cassava is also associated with women because of its important role in household food security, which is often related to the role of women in smallholder farm families. Practically, the low-risk characteristics and low-input requirements of cassava are particularly important for women who experience more severe constraints in accessing agricultural inputs in comparison to men, and participating in alternative markets such as those for cash crops (Kiriti and Tisdell, 2003). For these reasons, it is often assumed that new commercial opportunities in cassava could increase women's income specifically. Research also indicates that women's income is more likely to be spent on food, education and health for the household, and therefore it is more likely to contribute to a number of development indicators (World Bank, FAO and IFAD, 2009). However, Cornwall et al., (2008) caution the use of 'gender myths' used in development narratives as they are often divorced from context-specific realities. Indeed, little is known about how cassava commercialisation benefits women in practice, creating a need for greater attention on the complex interplay of markets and gender to ensure real benefits for women.

This study explores the dynamics of cassava commercialisation using results from in-depth qualitative and quantitative research conducted under the C:AVA project (Phase 1: 2008–2014) that promoted opportunities for smallholders to gain additional income in cassava markets in Ghana, Malawi, Nigeria, Tanzania and Uganda. The project supports existing cassava value chains and the development of new value chains for High Quality Cassava Flour (HQCF), in order to create income opportunities for smallholders through value addition. This involves three key interventions: 1) ensuring a consistent supply of raw materials by supporting local cassava producer groups; 2) supporting local processing groups and intermediaries acting as secondary processors or bulking agents in value chains, and 3) encouraging market demand for HQCF among industries and consumers (Adebayo et al., 2010:3).

The research was conducted in C:AVA project areas in the south-west Nigerian states of Ogun and Ondo, and in Malawi in the Central (Nkhotakota district) and Southern Regions (Zomba and Mulanje districts). Nigeria and Malawi were selected as case studies for this research because of their differences in terms of the size and range of their cassava markets (being at almost opposing ends of the commercial spectrum) and they therefore provide important lessons with regard to cassava commercialisation in different contexts.

### **1.3 Research aims, contributions and questions**

This research has several aims. The first aim is to better understand the processes of staple crop commercialisation and its impact on smallholder farmers, particularly on poverty, gender and food security outcomes. By drawing on qualitative and quantitative research methods, the study also aims to contribute to literature on smallholder market participation and gender analysis of household decision-making and income use, in the context of cassava commercialisation. The fieldwork examined cassava commercialisation in Nigeria and Malawi, where initiatives are being implemented to support the development of cassava value chains, which have previously not been studied in-depth. This study aims to make a conceptual contribution, namely by providing an analytical framework to understand the role of commercialisation in livelihoods, and the gender, household decision-making and value chain dynamics in livelihood strategies and outcomes as related to cassava. It is hoped that this framework will strengthen the analysis of development processes in relation to staple crops that are deeply rooted in local context and culture.

The overarching research question is *‘what are the livelihood impacts of staple crop commercialisation for smallholder farmers?’* This examines the role of cassava in the livelihoods of smallholder farmers (cassava producers and processors) over time in the context of broader

commercialisation processes. It investigates if, and how, smallholder farmers respond to new and growing commercial cassava opportunities, and the changes brought about by commercialisation on livelihood strategies and outcomes, particularly in terms of income, gender relations and food security.

The research question is examined through the lens of a modified Sustainable Livelihoods Framework (Chambers and Conway, 1991; Scoones, 1998). Modifications to the framework involve integrating gender, household decision-making and value chain dynamics to provide greater analytical depth into understanding livelihood strategies and change brought about through cassava commercialisation.

The main research question is broken down into three sub-questions and form the chapter headings for findings in chapters 5 to 7, which follow the literature review, methodology and context chapters. The first sub-question is: '*What is the role of cassava in the rural livelihoods of smallholder farmers?*' (Chapter 5). This examines the socio-economic and cultural role(s) of cassava within the household in the context of other livelihood activities. The chapter is organised into the main components of a livelihoods analysis: livelihood activities, including gender roles and responsibilities in relation to cassava, how household members use livelihood assets to engage with these markets in the context of other household activities, and how livelihood strategies contribute to household food security and income-generation. It also provides typologies of household decision-making in relation to cassava. The question is largely addressed through qualitative fieldwork that explores the broader context of smallholder livelihoods in the research area and how cassava fits within household agricultural systems.

The second sub-question is '*How do smallholders respond to commercial cassava opportunities?*' (Chapter 6). This chapter examines whether smallholder farmers participate (or not) in cassava commercialisation processes, given the crop's importance for food security. It examines if and how smallholder farmers participate in commercialisation processes, the strategies for managing commercialisation of a staple crop, and exploration of the barriers to participation from economic and socio-cultural perspectives.

The third sub-question is '*What are the outcomes from cassava commercialisation?*' (Chapter 7), which examines the livelihood outcomes resulting from engagement in different cassava markets. The question focuses on three major areas of impact: income and poverty reduction; gender relations and women's benefit, and food security. Gender relations are an important area of study

when looking at impacts, as literature has suggested that there is a risk that staple crop markets that are increasingly profitable may exclude women due to inequities in access to the means of production (Manzanera-Ruiz, et. al., 2016; Nweke et al., 2001). Food insecurity may be an additional risk with cassava commercialisation, as the important food staple is sold outside of the home and women's control over the crop declines (Quisumbing, 1996). On the other hand, income from the sale of cassava outside of the home could provide households with more diverse food sources.

#### **1.4 Thesis structure**

The thesis is structured as follows: Chapter 1, the current chapter, provides the introduction to the research, including the context, research aims, contributions and research questions, along with the thesis structure. Chapter 2 contains the literature review. The literature review provides a summary and commentary of literature on a number of subjects. First, the review examines literature on economic theory and agricultural commercialisation, and its reflection of narratives and assumptions about smallholder farmers. As there is sparse literature available on gender, food security and staple crop commercialisation, key publications are included on the individual subjects that are applied to the specific subject of this thesis. A theoretical background for the conceptual framework, which is presented later in the thesis, is also provided in the literature review. This includes reference to literature on the livelihoods framework, household decision-making and value chain development. Chapter 3 presents the conceptual framework and methodology for the work. Chapter 4 provides a background on Nigeria and Malawi, referring to main development indicators and information on cassava production, processing and marketing in the two countries.

Chapters 5 to 7 present the findings from the fieldwork in Nigeria and Malawi according to the research questions: Chapter 5, the role of cassava in the livelihoods of smallholder farmers; Chapter 6, if and how smallholders respond to commercial cassava opportunities, and Chapter 7, the outcomes from cassava commercialisation. Chapter 8 is the final chapter and presents the conclusions from the study.

These chapters are accompanied by appendices: Appendix A: Focus group discussion guide; Appendix B: 1st round panel interview discussion guide; Appendix C: 2nd round panel interview discussion guide; Appendix D: C:AVA baseline household survey questionnaire, Malawi; Appendix E: C:AVA endline household survey questionnaire, Nigeria; Appendix F: List of the focus group sample locations; Appendix G: List of the panel interview locations; Appendix H: List

of communities in the C:AVA baseline and impact surveys sample; Appendix I: Sample description for the C:AVA baseline and endline surveys; Appendix J: List of codes for the panel interviews in Atlas.ti; Appendix K: Example of a panel interview; Appendix L: Prices and Costs of cassava products in Nigeria and Malawi; Appendix M: Sample of SPSS Chi-Square tests, and Appendix N: Sample of Tukey multiple comparison tests.



## **2. Literature review: narratives on smallholder farmers and agricultural commercialisation**

### **2.1 Introduction**

This is a study of the impact of cassava commercialisation in two SSA contexts, Nigeria and Malawi, which takes place within a broader context of development policy and practice narratives. These narratives support the participation of smallholder farmers, particularly women, in commercial agriculture to achieve poverty reduction along with broader development outcomes. Supporting this narrative is a line of deductive reasoning common in economic development, and based on an assumption that smallholders, and women in particular, will benefit from commercialisation policies and projects such as C:AVA. This chapter reviews literature representing these narratives and assumptions and will be challenged and unpacked through the research, followed by a presentation of the main concepts for the analytical framework.<sup>1</sup> This chapter explores the ideological and disciplinary underpinnings of these narratives and how they have been challenged through alternative perspectives in socio-economics, anthropology, and sociology. It further presents the gaps in thinking from a gender and food security perspective, and an alternative way of examining the impact of cassava commercialisation through a modified sustainable livelihoods framework.

It is important to note that there is a lack of robust and comprehensive research regarding cassava and staple crop commercialisation (some exceptions include Poole et al., 2013, Finnis, 2006, Ochieng et al., 2016, as explained in section 2.2.4), particularly involving its intersection with gender and other factors of social difference, which this study attempts to partially fill.

This chapter is structured as follows: Section 2.2 examines literature on economic theory, narratives and assumptions that will be challenged in the thesis. Sub-section 2.2.1 looks at the theoretical foundations of the main economic concepts relevant to smallholder farmers, or the ‘peasantry’. Sub-section 2.2.2 presents contemporary narratives and assumptions around smallholders and their interaction with commercial agriculture, examining how a diverse population is defined and how commercialisation is conceptualised. Sub-section 2.2.3 explores the constraints, identified in economic literature, which smallholders experience in agricultural

---

<sup>1</sup> The assumptions are: if staple crop commercialisation processes are inclusive of smallholders, along with being both inclusive and beneficial for women farmers and other social groups, and if there is an improvement in household food security.

commercialisation; essentially, how the problem of smallholder underdevelopment is conceptualised. Sub-section 2.2.4 presents the literature on the impact of staple crop commercialisation on smallholders and its limitations. The second part of the chapter, section 2.3, addresses some of the gaps found in the previous section by exploring gender-oriented and feminist literature (sub-section 2.3.1) and food security (sub-section 2.3.2) perspectives relevant to agricultural commercialisation. The final section of the chapter, section 2.4, presents the conceptual foundations for the research, the Sustainable Livelihoods Framework and how its limitations can be addressed through the addition of household decision-making (sub-section 2.4.2) and value chain development s (sub-section 2.4.3). The chapter concludes with a summary of findings and conclusions from the chapter.

## **2.2 Economic theory, narratives and assumptions on smallholder agriculture**

### **2.2.1 The ‘peasantry’: a theoretical background**

The concept of smallholder farmers, traditionally termed ‘peasantry’, has been at the centre of modern development thinking for many decades, but is ultimately ambiguous. Its placement at the centre of inter- and intra-disciplinary debates has occupied academics, policy makers and practitioners in their attempts to address some of the world’s most pressing development problems, including poverty, hunger and exploitation. The differences among these debates concern the role of the ‘peasantry’, or ‘smallholders’ in contemporary debates, in the economy and society more broadly (Bryceson, 2000). The debates presented in this section illustrate the classical economic conceptualisations of smallholders of which most development policies and approaches remain rooted, along with limitations of the concept.

A study on agricultural commercialisation and smallholder livelihoods occurs in a broader theoretical debate starting in the early 20<sup>th</sup> century by Marxist scholars. Originally the Marxist tradition viewed the peasantry as relatively unimportant, occupying a precarious position in the class structure as the “exploited producers of pre-capitalist society” dependent on household labour (‘theory of surplus value’) (Shanin, 1971: 292; Katz, 1992). In the Marxist school, the peasantry is considered to be the bottom of the social power hierarchy, a productive but powerless group whose agricultural surplus was expropriated by capitalists (Shanin, 1971), but who would eventually disappear with land appropriation by capitalists and further agricultural commercialisation (Gledhill, 1998).

'The Agrarian Question' by Kautsky (1899), re-examines and gives greater prominence to the role of the peasantry. In his 'theory of utility' Kautsky argued that the peasantry had a distinct economic logic and social structure in the capitalist economy, and were a necessary part of capitalism (Shanin, 1971; Deere and de Janvry, 1979). Chayanov (1925) argued further that smallholders' distinct logic was rooted in their family, whereby production and consumption activities are combined. Through their own production, the goal for the peasantry was to obtain a minimum standard of living as opposed to profit maximisation. These goals result in contrasting behaviour between peasants and commercial agriculturalists over time. However, Chayanov argued that ultimately the peasantry would modernise through support and the establishment of cooperatives within socialist society (Chayanov, 1966; Shanin, 1971; Goody, 1958; Gledhill, 1998).

Smallholder behaviour was further examined in the Durkheimian tradition, which emphasised the cultural aspects of class dichotomies left out of traditional Marxist theory. In this line of theory, the peasantry, or 'traditional' society, was juxtaposed against 'modern' industrialised society, commonly associated with Western rationality<sup>2</sup>. However, social change brought about through market relations, specialisation, acculturation and political change would ultimately alter this balance. Therefore, the peasantry is viewed not as a static entity, but as a *process* that changes through economic and cultural influence (Shanin, 1971: 298-299).

In the 1950s, economic sociology/anthropology further amplified the significance of unique characteristics of smallholder behaviour. In 'The Great Transformation' (1944), Polanyi presented his 'substantivist' approach, which emphasises the subjective reasoning in farmer behaviour. Polanyi also describes the importance of institutions (such norms, values), in influencing behaviour and choice, and stresses the social embeddedness of markets and how economic behaviour occurs through social relationships (such as marriage, kinship) (Hinrichs, 2000). The post-modern era ushered in a new wave of critique of this approach with greater emphasis on the role of socio-cultural dynamics in livelihoods and economic behaviour. A leading scholar, Gudeman (1986), argued that peasant livelihoods are culturally constructed and subsequently there is no single universal model for understanding behaviour. Consequently, Gudeman argues that it

---

<sup>2</sup> In Durkheim's view, traditional societies are made of autonomous, closed, uniform, informal and cohesive units, in contrast to modern societies which are based on the division of labour and formalised interaction of units. This places peasantry in an intermediate position between self-sufficient segments of the 'folk' societies and the modern societies of 'organic' interaction.

is necessary to see how local people understand their livelihoods, otherwise the approach is ethnocentric and tautological.

Neo-substantivism arose in contrast to substantivism and classical economics, with work by Mark Granovetter (1985) which criticised the over-socialisation of economic actors by substantivists and the under-emphasis of culture by neoliberal economists. He analysed market societies, as opposed to the ‘peasantry’ per se, and argued that ‘rational’ economic exchanges are ‘embedded’ in traditional and social arrangements and are thus influenced by pre-existing social ties (Granovetter, 1985). The concept of ‘embeddedness’ from Granovetter was an important contribution in emphasising the importance of the local context in which society and market operate, and which influences the lens of this study.

Debates starting in the early 20<sup>th</sup> century resonate today in development policy and practice, reflecting neoliberal principles. Many global and national development policies, however, remain rooted in classical economic conceptualisations of smallholder farmers. While conceptual elements have been revisited and adjusted over the years to account for greater heterogeneity of knowledge and experiences, contemporary narratives regarding smallholder farmers are rooted in a deductive logic that ignores individual choice, social norms and behaviour, and the diversity of farmers. This is particularly apparent with contemporary narratives on staple crop commercialisation and smallholder participation, which the following section examines.

### **2.2.2 Contemporary narratives and conceptualisation of smallholders and agricultural commercialisation**

Contemporary development narratives have reflected a renewed emphasis on the importance of agriculture in the last decade, and refocused on the conceptual category of ‘smallholder farmers’ as opposed to the ‘peasant’. However, the term has many meanings and there are few published definitions of the term (Morton, 2007). Other terms, such as ‘family farms’ and ‘farming households’ are often used synonymously with smallholders, adding to the confusion (Garner and de la O Campos, 2012)<sup>3</sup>. The foundations of the concept are derived from earlier Marxist definitions, relating to an individual who owns, operates (labour), or manages a farm either in part or fully. However, thinking around the term has changed over time with livelihood perspectives that tend to emphasise diversity and complexity in rural activities and needs, and the importance

---

<sup>3</sup> A review by Garner and de la O Campos (2012) on 36 definitions of family farms found a number of common elements that reflect earlier theory on the peasantry.

of understanding farmer behaviour from the farmer's perspective. This has altered both the conceptualisation of smallholders and development practice that in principle has been widely adopted (Scoones, 2009).

Mainstream development narratives reveal an important role of agricultural commercialisation for smallholder farmer development, which reflects a neoliberal approach to economics. The neoliberal approach emphasises market-led growth for development, with its central features being market deregulation, comparative advantage, economic efficiency and privatisation (Brohman, 2000). Applied to smallholder agriculture, neoliberalism results in a focus on removing barriers to market participation for economic growth, poverty reduction, and even food security (DFID and SDC, 2008; World Bank, 2008; the African policy framework Comprehensive Africa Agriculture Development Programme (CAADP); *Making markets work for the poor* initiatives DFID, SDA, SIDA; FAO, 2012).<sup>4</sup> Smallholder integration into markets is expected to increase the incomes of smallholder farmers by creating crop surplus(es) to be sold to the market, and contribute to other 'transition mechanisms' important for development such as reducing food prices (due to low elasticity of demand), and spill-over effects resulting in growth in the non-farm sector, particularly in manufacturing and services (RNRAT, 2004:4–6). These narratives have resulted in a growing number of initiatives designed to increase smallholder participation in agricultural commercialisation.

However, agricultural commercialisation, like smallholder farming, is an ambiguous concept. Generally, agricultural commercialisation refers to greater interaction and engagement with markets or the market system (DFID and SDC, 2008:11). Since the 1970s, a number of definitions of agricultural commercialisation have been developed, which mainly involve the level of inputs purchased and output sold, or extend to the household unit to measure the degree to which agricultural production reflects diversification or specialisation of outputs over the long term (Wiggins et al., 2011: vi).

Pingali and Rosegrant (1995: 171) argue that commercialisation occurs when household decision-making is increasingly made in terms of household profit maximising strategies, with limited

---

<sup>4</sup> Justification for linking the agricultural sector with national economic growth is produced from national statistics measuring economic growth and poverty e.g the agricultural sector contributes up to 80% of the Gross National Product (GNP) in the poorest countries and 64 per cent of all employment on the African continent (DFID and SDC, 2008:35). Furthermore, in a study of 48 developing countries, each one per cent increase in (recorded) agricultural productivity between 1985 and 1993 had a corresponding fall of between 0.6% and 1.2% in the number of people living below one US dollar a day (Thirtle et al., 2003).

influence of the other factors. Block (1990) offers two additional elaborations that define agricultural commercialisation based on smallholder market motivation. Firstly, Block introduces a spectrum of market motivation called 'Marketness', which indicates how much people are influenced by price compared to non-price considerations. Block's second concept is 'instrumentalism', which refers to the degree to which an individual is motivated by economic goals in contrast to non-economic goals such as friendship, family or ethnic ties, and displays opportunistic behaviour (Hinrichs, 2000: 296-297).

However, the limitations of commercialisation concepts and measurements have led to criticism of over-simplification of complex processes (portraying commercialisation processes as a linear trajectory), and often looking only at specific parts of commercialisation and not the process itself. Wiggins et al., (2011) argue that the definitions often rely on unhelpful binaries (sales/no sales), excluding the fact that the majority of smallholders sell some produce and have other objectives such as non-farm work and socio-cultural livelihood objectives, resulting in a lack of analytical depth. In contrast, Ellis (1993:10) recognises the fluid nature of market participation that overcomes the binaries of commercial vs. non-commercial farmers: "varying rather than total commitment to the market where markets function sporadically in a disconnected way across location and time" (Ellis, 1993:10). Therefore, perhaps a more useful way to understand commercialisation is to identify differences in scale and frequency of supply, and orientation.

Some attempts have been made to reduce the ambiguity around smallholder commercialisation by providing typologies or market segmentation of smallholders that show common behaviour. This started with Lenin, who Lenin refuted Marx's thesis that commercialisation would polarise the wealthy and poor and introduced new categories reflecting more nuanced levels of society's participation in commercial agriculture. The first were 'bourgeois peasants' who could participate in commercial agriculture, were profit-orientated, and could accrue capital by exploiting paid (non-family) labour. This enabled them to own the means of production and buy or rent land. In contrast, 'middle peasants' were subsistence farmers with some participation in commercial agriculture. They occupied a more vulnerable position where they often struggled to meet household needs, requires to borrow money or become labourers. However, a key characteristic was that they were *mobile* and could move up in status if they had a certain level of means to produce a surplus. On the bottom of the socio-economic strata were the 'poor peasants' who may have a small plot of land but also depended on labour for survival (Gledhill, 1998).

There are numerous more contemporary typologies that have been used in development thought and practice to segment differences in smallholder commercial orientation, with some providing more holistic assessment (von Braun and Kennedy, 1994; Pingali, 1997; Pingali and Rosegrant, (1995). For example, Pingali and Rosegrant (1995) classify a household's market orientation in three categories: subsistence, semi-commercial and commercial systems. Each of these categories draws on a combined set of measures both 'objective' and farmer-centric, such as including the farmer's own objectives, in addition to sources of inputs, the level of product diversification and sources of income. Ferris and Seville (2011) present four categories of commercialisation, based on the quantity and frequency of which farmers sold maize to markets, if they purchased food and conducted manual labour. These classification systems provide a simplification of smallholder market participation.

Development agencies, organisations and governments have also drawn on commercialisation classification systems. For example, the World Bank's 2008 World Development Report on agriculture presented five typologies of rural household livelihoods: farming households that are market oriented, farming households that are subsistence oriented, labour oriented, migration/transfers and diversified households (2008:76).<sup>5</sup>

DFID's (2015) strategy on agriculture, uses Dorward's (2009) three categories of livelihood strategies in reference to agriculture for its conceptual framework, showing different roles and relationships of rural people with commercial agriculture and in long-term economic transformation in developing countries. These population categories are: 1) those who can participate in commercial agriculture and agribusiness (with assets and endowments) to move out of poverty ('step up'), in addition to creating employment; 2) those who cannot participate in commercial agriculture to a full extent but can improve their resilience through agriculture ('hang in') as 'holding strategy' during the transition to employment outside agricultural production, and finally, 3) smallholders who are resource poor and will 'step out' of agriculture towards employment in manufacturing and rural non-farm economy.

---

<sup>5</sup> Farm, market oriented household: more than 75 % of total income from farm production; Farm, market-oriented household: more than 50 % of agricultural production sold on market; Farm, subsistence-oriented household: less than or equal to 50 % of agricultural production sold on market; Labour-oriented household: more than 75 % of total income from wage or nonfarm self-employment; Migration/transfers-oriented household: more than 75 % of total income from transfers/other nonlabour sources; Diversified household: Neither farming, labour, nor migration income source contributes more than 75 % of total income.

Approaches such as these have been criticised for being divorced from the reality of smallholders. Kay (2009) argues that frameworks categorising smallholders and their engagement do not include the poorest of the poor. Poole et al., (2013: 156) also states that it can “gloss over the development ‘loser’, whose limited assets and capabilities consign them to exit from agriculture”, as described in the DFID’s (2015) conceptual framework of agriculture. There is also a reiteration in narratives of a linear trajectory of commercialisation whereby smallholders can progress through different ‘levels’ or ‘steps’ of commercialisation. Vorley (2002) has also challenged this discourse and questioned mobility of smallholders out of poverty, as he finds growing polarisation and incommensurability between ‘rural worlds’. He argues that the rural poor are increasingly marginalised and disempowered to negotiate with the state and private sector.

Broad, global, categories or segments may not reflect the reality for smallholder farmers in some countries and do little to highlight complex socio-economic and power relationships that occur within and between these groups. Conceptual categories of different types of smallholder farmers, which can open space to specify constraints for particular groups, need to be developed based on the context in which they are situated. Vorley argues the livelihoods approach, discussed later in this chapter (Section 2.4), arose from the need to investigate and communicate common misperceptions and over-generalisations of this group of people (Vorley, 2002:12). The livelihoods approach, which was widely disseminated via a paper by Chambers and Conway (1991), results in differentiating farmers according to their need. This expands an analysis of smallholders’ lives away from one focused primarily on income levels, towards livelihoods strategies, with greater attention to vulnerability, to risk and lack of resources (Chambers, 1986).

While this emphasis on smallholder farming is welcomed after decades of being ignored, development policy often reflects a number of assumptions about smallholder farmer behaviour and socio-economic mobility in relation to market participation. The lack of conceptual clarity along with the vast population to which the term loosely refers, often results in over-generalisations. These generalisations reflect the normative nature of an ‘ideal type’, which excludes or generalises parts of social phenomena in an attempt to understand particular phenomena (Weber, 1964). The unquestioned use of the concept often results in stereotypes that smallholders are poor, exploited, and are subsistence-based (Murphy, 2010; Seville et al., 2011).

Indeed, whether a household employs a strategy of diversification (non-commercial) and specialisation (commercial) provides little understanding of livelihood strategies that diversify market activities for risk reduction, or of market participation that is a result of sales made during



a shock or stress. Over-simplification of market participation can also ignore smallholder decisions based on competing goals within the household, such as maintaining food reserves, risk aversion to market participation or respecting socio-cultural norms such as household gender roles. Leavy and Poulton (2007:3) further argue that, indeed, there is not one type of commercialisation, but rather a range of ‘commercialisations’ that occur with households’ engagement with markets. This encompasses a range of activities including use of outputs and inputs, type of labour, along with decision-making and perceptions, which is drawn upon in this research.

### **2.2.3 Smallholder constraints in agricultural commercialisation**

There is a considerable body of literature examining the constraints to smallholder participation in agricultural commercialisation, with neoliberal perspectives dominating contemporary development policy and practice. This school of thought assumes that smallholder farmers, as any economic actor, will respond in expected (rational) ways to price, and as such, markets will allocate resources efficiently in conditions of perfect competition and information. However, in a developing-country context, particularly in SSA, achieving these conditions is challenging. Rural and urban agricultural markets can fluctuate significantly according to seasonality and external non-market-related factors, from policy to environmental issues. Resources are allocated inefficiently as smallholders often face constrained access to resources (e.g. insecure land tenure<sup>6</sup>, transportation<sup>7</sup>, capital/credit), due to an absence of market-regulating and coordinating structures (Brown and Kennedy, 2005; DFID and SDC, 2008; Heltberg and Tarp, 2002; Wiggins et al., 2011: viii; Stephens and Barrett, 2006; RNRAT, 2004:16-17). Transaction costs increase further for smallholders due to lack of information, trust, or physical separation or distance between transacting parties (RNRAT, 2004:7-8; DFID and SDC, 2008; Wiggins et al., 2011). This in turn limits the ability of smallholders to withstand risk and to operate flexibly in the market, so as to achieve gains from commercial opportunities (Wiggins et al., 2011).

For example, Stephens and Barrett (2006) show that in rural contexts, the cost of credit is distorted by high interest rates and stringent terms of borrowing, as formal lenders consider that loans to smallholders are high risk, which in turn affect smallholder farmer participation in markets.

---

<sup>6</sup> The lack of land tenure and rights is another market failure, as it can deter investment in land and agriculture. Policy may be biased against smallholder farmers, such as the threat of allocating land to large-scale farms, particularly in SSA (Wiggins et al., 2011; Oxfam, 2012).

<sup>7</sup> Heltberg and Tarp (2002) find that household ownership of the means of transportation increased participation in food-grain markets and sales volumes. Women are more likely to experience transportation constraints and high costs. This constraint is exacerbated in remote areas. (Barrett, 2008).

However, the rural population, particularly women and female-headed households (FHH), face additional constraints to credit as they are less likely to own collateral compared to men. As a result, households requiring credit often resort to using money lenders and pay high interest rates in return, which exemplifies the detrimental effect of high transaction costs (World Bank, FAO and IFAD, 2009).

Export market value chains are often characterised as being more problematic for smallholders due to high transaction costs related to quality and certification standards (Wiggins et al., 2011: 27; Swinnen, et al., 2013). As a result, smallholders have a greater tendency to participate in domestic markets than in international markets for higher value cash crops.

Market barriers and high transaction costs are thought to prevent smallholder participation in markets and as such, make them vulnerable to poverty. This is referred to as cause for the ‘the poverty trap’, a concept relating to the reinforcement of poverty over time (Azariadis and Stachurski, 2005). This locates the ‘problem’ for smallholder farmers as being unable to produce a meaningful marketable surplus due to market inefficiencies. As smallholder farmers cannot benefit from meaningful market participation, it in turn limits their ability to accumulate assets, and thus, reinforces the status quo. Consequently, many governments and development agencies focus on market inefficiencies and transaction costs to reduce the barriers to market participation. One such approach that has been popularised in the last decade is value chain development (refer to the next section).

However, there has been substantial criticism of the ‘poverty trap’ and more broadly, of neoliberal understanding of underdevelopment and the constraints to market participation, particularly from cultural anthropology and sociology traditions, along with new institutional economics. Criticism from these disciplines mainly pertains to the over-emphasis on transaction costs, access to assets and incentives for market participation. Donovan and Poole (2013) argue that while it is necessary for development agencies, such as the World Bank, to focus on assets and structural factors as the causes for poverty, it is not sufficient; more focus is needed on institutional dimensions and socio-cultural relationships. In addition, market studies often ignore smallholder perspectives, without attention to the choices or strategies of individuals themselves (Barrett, 2008). These criticisms move the debate towards the smallholder farmers having active, but constrained, choices in deciding on how to use available resources in light of the specific market constraints they experience.

Moreover, inequalities and power relations between value chain actors, and within households, underlie market constraints for smallholders and affect market participation, as well as inefficiency and distorted markets (Wiggins et al., 2011; Brown and Kennedy, 2005). While the recognition that market barriers and transaction costs are vital for understanding market participation, a more nuanced approach in understanding power dynamics and household decision-making in the context of socio-cultural factors could offer greater insight (Attwood, 1992; Finnis, 2006); which this research aims to demonstrate.

This thesis argues that narratives reflecting classical and neoclassical economic approaches often ignore the voice of farmers. Smallholders' constraints in commercial markets are not only ones of external pressure of markets, donors and government, but can also be understood as a choice of smallholder farmers. This reflects back to the argument of Robert Chambers and others in the mid-1980s, that the needs, priorities and experiences of farmers should be central to understanding rural development (Chambers, 1986). Therefore, the approach taken in the research is to understand farmers' needs, decision-making and livelihood outcomes in the context of staple crop market engagement. A widely used analytical framework for this is the Sustainable Livelihoods Framework, which can identify context-specific dynamics. This framework is used as the foundation of this research and discussed later in this chapter (Section 2.4).

#### **2.2.4 Impact of staple crop commercialisation**

Currently there is sparse literature on the impact of commercialisation processes involving staple crops specifically, of which this thesis addresses. The majority of literature focuses on cash or non-food crops for export markets and global value chains (Barrientos et al., 2003; Tallontire et al., 2005; Helmsing and Vellema, 2011). Strasberg et al., (1999) observes that agricultural development narratives often over-generalise the effects of commercialisation, and that effort is needed to disentangle how context-specific commercialisation efforts are organised, and their effects on smallholder access to inputs, market outlets, price levels and yields.

Poole et al., (2013) examined policy narratives around cassava commercialisation in Zambia and found a disconnect between meta-narratives that tout the benefits of market development of staple crops, and the reality of smallholder engagement in cassava markets. Finnis (2006) argues that environmental insecurity and changes in the environment have influenced smallholders in their decision to commercialise cassava. These papers have started to address the significant gap in knowledge regarding the impact of the commercialisation of staple crops, which is particularly

important due to vital role staple crops play in household food security and risk mitigation in SSA (Montagnac et al., 2009).

Staple crops play an important cultural role as opposed to products in global value chains where the end product is not intended for sale in the country where it was produced. The nature of staple crops provides an example of what Poole et al. (2013) label *particularity* to the local, as staple crop value chains may not cross regional or national borders, or be subject to the standards and certification formalities brought about through government regulation. This also makes commercialisation processes more difficult to quantify and measure using more conventional economic measures (e.g. GNP).

There are a number of studies examining investment and use of inputs and changes in selling patterns, within the confines of agro-economic concepts, without exploring farmer perceptions and more nuanced understandings of commercialisation. For example, Ochieng et al. (2016) examined how commercialisation influenced banana and legume intensification in Rwanda and the Democratic Republic of Congo (DRC). They found that there were positive effects of commercialisation on improved seed varieties on yields and fertiliser use, though the positive effects were not defined; the findings also suggest that programmes targeting farmer productivity through commercialisation need to consider production and marketing conditions surrounding the target households.

Academic literature examining the intersection of staple crop commercialisation with poverty, gender and other factors of social difference is severely limited; an absence of accounts of the perceptions and views of smallholders themselves in this process adds to this limitation.

In contrast, development narratives often reflect broad statements and assumptions about the dynamics and benefits of smallholder commercialisation. In relation to cassava, the ‘claims’ or assumptions that are reflected in narratives, as summarised by the author, are as follows:

- Claim 1: Cassava commercialisation will increase income.
- Claim 2: An increase in income will be used to improve household wellbeing.
- Claim 3: An increase in household wellbeing will contribute to poverty reduction.
- Claim 4: An increase in income will support women’s empowerment, as cassava is a ‘woman’s crop’, and thus, they will have control over the income. As women are more likely to make expenditures to improve household wellbeing, it will reinforce claim 3.

- Claim 5: An increase in income will contribute to food security through more diverse food purchases.

This research attempts to fill these gaps by examining these intersectional issues that may influence commercialisation processes and outcomes.

## **2.3 Filling the gaps in contemporary narratives**

### **2.3.1 Gender, agriculture and crop commercialisation**

Literature on rural markets, livelihoods and gender reveals great complexity around women's participation and benefit from markets (USAID, 2005 and 2006; Doss, 1999; FAO, 2011; SOFA and Doss, 2011; World Bank, 2012). Women's roles in agriculture have been a frequent subject of study in the context of developing countries. A significant body of early scholarship started in the 1970s with the seminal work of Ester Boserup (1970) 'Women's role in economic development', which aimed to draw attention to the contributions and roles of women in the gender division of labour, which had previously been ignored. This work highlighted the dual roles of women in both reproductive and productive spheres, and their significant contribution to national economies and the wellbeing of the population. Therefore, a purely economic or 'public' perspective on livelihood outcomes and impacts undermines the important roles that are often played by women.

A significant amount of gender analysis in agriculture has focused on identifying gender roles with regard to labour between different agricultural tasks and between crops (Doss, 2002 and 2011). Often, activities that are perceived to require considerable strength are left to men and the more repetitive, time-consuming tasks are assigned to women (although perceptions are often not accurate). For example, Enete et al.'s (2002) study on gender roles in cassava production in six African countries found that men generally provided more labour on farm tasks such as land clearing and preparation, while women provided more labour for activities such as planting and weeding. Enete's work importantly provides a foundation for examining inequalities and the role of social norms.

Swindell's (1985) study of agricultural production and household systems in SSA argued that gender roles lead to different responsibilities for men and women: women for household food security and men with commercial agriculture. This distinction extends to development narratives today. It also resulted in certain crops being labelled 'women's crops' or 'men's crops' – the former often associated with subsistence crops, including staples like cassava, and the latter with cash and

export crops (World Bank, FAO and IFAD, 2009). However, while gender divisions between tasks and crops can be useful in simplifying the complexity of rural agriculture, binaries of female/subsistence crops vs male/cash crops can overlook the multiple roles of men and women in agriculture and the needs that stem from them (see Doss, 2002 for example). Cassava is a useful case to demonstrate this complexity as it has been considered to mainly be a woman's crop, due to its important role in household food security along with low-market value (Nweke, 2005).

More recent literature has recognised women's roles in agricultural markets, particularly from a value chains perspective (Section 2.4.2), which has made a significant contribution to highlighting the diversity of market actors and gender differences in barriers to marketing and upgrading. However, this body of work is, for the most part, located outside feminist and gender scholarship, which often does not give adequate attention to the embeddedness of gender inequalities in the very structure of the economy and wider society. The concept of the 'gendered economy' is particularly useful, which refers to the gendering of institutions and structure of the economy that emphasises the dual nature and perceived low value of women's roles in both productive and reproductive work (e.g. childbearing, domestic tasks etc. done by women and required to maintain the labour force), despite its importance for productive work to take place (Elson, 1999). The low status of women, related to the low valuing of women's work, is at the core of this discrepancy and is a result of the patriarchal systems in which national economies are embedded. Therefore, in this view, without tackling issues of power and control, little will change as any benefit or change will be usurped by those who have patriarchal control and power. This is a common feminist critique of development projects. Despite the best intentions, mainstream market-led development projects often do not challenge underlying power structures that maintain the subordination of women and usually operate in meeting practical needs of women as opposed to the more strategic work (e.g. Quisumbing, 2003).

Similar to literature on smallholder constraints to market participation (Section 2.2.3), gender literature has also related market inequality to inequality in access to assets for women compared to men. This body of feminist scholarship has enriched our understanding of intra-household dynamics, the relationship between individual identities and use of resources, and development outcomes (Haddad et al., 1997; Quisumbing, 2003). Gender differences in access and control over resources, in particular, has explained differences in the type of crops that men and women produce, the markets they engage in, and ultimately livelihood outcomes (Doss, 1999; Udry, 1996). This has been illustrated in research demonstrating men's association with cash crops and

women's crops mainly being subsistence or low-value crops (Koopman, 1993; Kiriti and Tisdell, 2003). Gender inequality in market participation agenda has also been taken up by more mainstream agricultural economics scholars and development practitioners, which has been facilitated by the 'business' case argument for addressing gender inequality, based on a study by Wheeler (2006) that linked asset inequality to negative impacts on growth (World Bank Group, 2006).

However, agricultural development programmes often ignore issues of unequal access to assets between men and women, despite its primary importance for positive development outcomes (Meinzen-Dick et al., 2011). There have been a number of studies showing that men and women spend money differently and that women are more likely to spend their income on food, health and education of their children. Njuki et al.'s (2011) study in Malawi and Uganda showed that women were more likely to spend money on food, and men were more likely to spend money on assets. Doss (1999) argued that women's ownership of assets is also an important factor influencing their control over income and bargaining power in the household.

Gender differences in expenditures are linked to a field of study on household decision-making and individual bargaining power in a household context. Bargaining power refers to the ability of household members to access and control resources, and exercise choice, influence and power over others, based on individual interests (Doss, 2011). The assumption is that household members bargain and negotiate (and conflict over) different outcomes, including consumption, production, labour allocation, and asset ownership (Doss, 2011). According to Haddad et al., (1997) women's general lack of bargaining power affects their ability to participate in markets and maintain control over benefits when the market value of a crop increases, or technology is introduced. This trend is found in a number of studies demonstrating women's exclusion from markets (Doss, 1999; Dolan, 2001; Quisumbing, 2003) or poor market position such as the inability to demand fair prices compared to men (Handsouch and Wollni, 2015). However, it is not known whether these same dynamics apply to commercialisation processes within staple crop markets, particularly with regard to post-harvest activities because of women's high involvement and roles with staple crops.

Another body of literature in gender studies is on gender norms, which are argued to structure inequalities and bargaining power. Gender norms refer to informal rules and shared social expectations that distinguish expected behaviour on the basis of gender (Overseas Development Institute, 2015). Contemporary gender studies have explored how gender norms underpin the gender division of labour and bargaining power. This literature examines gender differences in

time-use, responsibilities and power to differences in opportunities and actions of men and women, based on beliefs of what are acceptable gender roles (Muñoz Boutdet et al., 2012). Evans (2014) argues that gender norms justify unequal gender divisions of labour on the basis of self-interest, as an individual can acquire social respect by following cultural norms. Gender norms subsequently garner resources, decision-making power and control towards particular individuals in the household that are negotiated and contested (Pearse and Connell, 2016). Women's agency plays a key role in these processes, which refers to women's ability to contradict gender norms, while also upholding positive gender norms, creating debate and contestation within and outside of the household (Kabeer, 1999 and 2002; Pearse and Connell, 2016).

At the same time, there is increasing emphasis on women in agricultural development in policy narratives, which relates the importance of women's participation, income and broader empowerment in achieving development goals such as food security, education and health, as well as recognising its importance in its own right (World Bank, FAO and IFAD, 2009). For example, the FAO (2011) and the World Bank (2012) regularly cite statistics on women's contributions to agriculture: women produce more than half of all the food that is grown (80% in SSA); however, their output is 20–30% less than men's output in developing countries. They argue that this discrepancy is related to gender inequalities in access to resources and opportunities to increase agricultural production, because women possess smaller farms, have fewer livestock, and greater workload, less decision-making power, time, education, and access to agricultural information, extension services, credit, and inputs. Gender inequality is then linked to an economic case for supporting women in agriculture due to its potential to increase productivity, which is claimed to be an increase of 2.5–4% (FAO, 2011; World Bank, 2012). These narratives have resulted in initiatives supporting agricultural value chains that highly involve women (including staple crops) and improve women's market access and participation.

Organisations such as the World Bank and FAO have raised attention of gender inequality and forms part of a discourse that aims to justify targeting women in agricultural initiatives. However, targeting women can also burden women with greater or reinforced responsibility in commercial agriculture, food provision and poverty reduction.<sup>8</sup> A second critique of this narrative is that it generalises gender issues on a global scale, and often victimises women and undermines their

---

<sup>8</sup> One of the critiques of these narratives is from scholars utilising rights-based approaches that argue for a re-emphasising of women's rights, that supporting women is important in its own right, which is separate from development objectives.



power in particular contexts. Alternative stories have arisen in response to this, such as the story of Mama Benz, powerful female market traders in West Africa (SFINX film, 1994). Doss (2013) argues against generalisations of women in regard to household decision making, particularly in the context of Africa where households are complex and varied. She argues that it is necessary to understand “systems of household behaviour” as an alternative, which look at different levels of interactions of socio-economic dynamics, in order to understand gender dynamics in a particular context to prevent overgeneralisation.

Cornwall, Harrison and Whitehead (2008) further argue that discourse around women and agriculture has created gendered myths and fables that are used to promote some aspects of feminist agendas, while “pushing others out of the frame” (2008:4). While this can raise awareness and funding to address certain types of gender issues, it can also perpetuate representations of women that are indeed mythical and far from reality. For Jackson (2008:108), this means that these myths become “part of the unquestioned... dispositions of thought which may be reproduced over generations of scholars”. This research questions the myths of gender roles in cassava commercialisation.

### **2.3.2 Household food security and crop commercialisation**

The lack of access to and availability of food is a central concern in SSA (Benson, 2004). The FAO (2012) reported that SSA has the highest prevalence of undernourishment: more than one in five people. Current discourse emphasises the role of agriculture, particularly smallholder agriculture, in addressing food security. The discourse reflects an assumption that an increase in smallholder market participation will grow the commercial agricultural sector and both feed the population and generate employment (World Bank, 2008, Seville et al., 2011). This runs contrary to arguments described earlier that smallholders do not have the resources available to take advantage of market opportunities (‘the poverty trap’).

There have been a number of studies examining the linkages between agricultural commercialisation and food security (Bouis et al., 1990; von Braun, 1994 and 1995; Wiggins et al., 2011, Leavy and Poulton, 2007; Otsuka and Yamano, 2006). The majority of these studies focus on non-food or cash crops and their impacts on food security and nutrition (Anderman et al., 2014; Moore and Vaughan, 1987). The line of inquiry is around whether and how assets such as land, labour and agricultural inputs are directed towards cash or non-food crops with new commercial opportunities, which could threaten food crop production and thus food security at household level. Jayne et al., (2003) argue that this dynamic is particularly problematic among

households where land is a significant constraint. However, results from von Braun and Kennedy (1994) show that households investing in cash crops rarely sacrifice food security to do so. Although they decrease the portion of land allocated to food crops, their yields tend to be higher due to the labour and inputs provided to cash crops, from which food crops can also benefit.

In addition, food security outcomes may depend on the type of agricultural markets that a household is involved in. For example, other research indicates that participation in staple grain markets has indirectly discouraged other cash crop production as households reallocate resources towards self-provision of essential food commodities to maintain food security (Barrett, 2008). However, von Braun (1995) argues that using binaries of cash versus staple crops in research has limited explanatory power particularly as the distinctions ignore the changing roles of crops for income and food security. For example, cash crops were previously considered those not used for household consumption, but were grown for income and considered to be profitable (e.g. cotton, coffee and cocoa); however, as staple crops, along with legumes, and vegetables, have become more profitable, the distinction is becoming less clear (von Braun, 1995).

The dynamics of agricultural commercialisation and food security also has important gender dimensions (Quisumbing et al., 1996; FAO, 2001). If it is accepted that particular staple crops are traditionally the domain of women, it may mean that new market opportunities could threaten women's involvement and benefit from these opportunities, and as such, their ability to provide food for the family, either through their own production or through selling to the market. The premise is that, because of women's low bargaining position, poor access to resources, and responsibility for home consumption, women will be less likely to take advantage of market opportunities to sell staple crops for market, compared to men, who are also able to enter more lucrative markets. In addition, women's control over crops for household consumption or for selling small quantities to the market may wane as they become more profitable in the market and control and benefit is usurped by men (husband or relative for example). However, there have been minimal studies examining gender dynamics in staple crop markets. This highlights the need for a holistic analysis incorporating intra-household and gender dynamics when examining food and nutrition changes with processes of commercialisation.

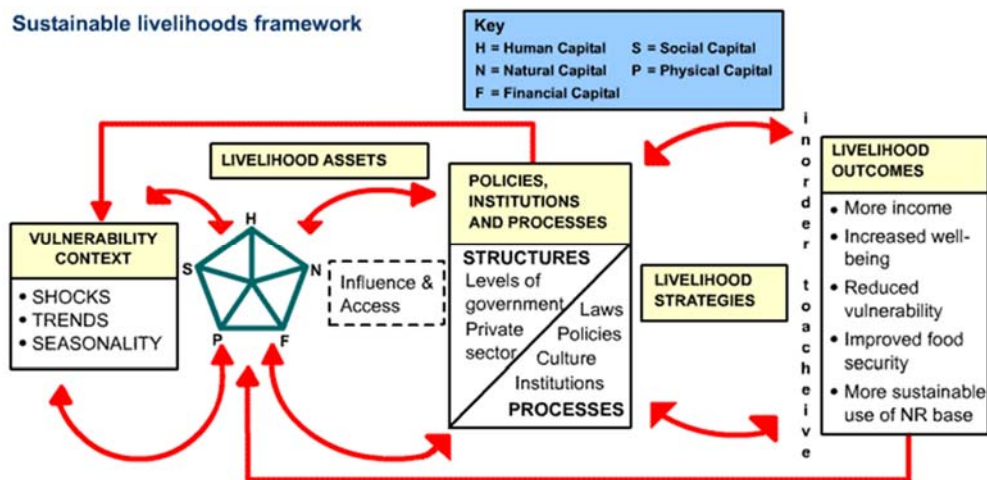
There have been few studies on smallholder participation in staple food markets, commercial agriculture, and its impact, despite the growing emphasis in policy circles (Barrett, 2008). This could be because of the perception that staple crops are of low compared to the cash crops usually

directed to export markets. Therefore, it is unknown if commercialisation of staple crops in particular exposes smallholders to greater risk of food insecurity.

#### **2.4 Understanding rural livelihoods: the Sustainable Livelihood Framework**

Throughout this chapter, the narratives around smallholder farmers and agricultural commercialisation have been examined for their ideological and disciplinary underpinnings and challenged through alternative perspectives in social economics, anthropology, and sociology. A significant component of these ‘alternative perspectives’ is livelihoods thinking, which refers to a widely-recognised approach that essentially a study of “how different people in different places live” (Scoones, 2009). Since the early 1990s the livelihoods framework has evolved into a conceptual tool that identifies how assets are used by household members to manage stresses and shocks, and the extent to which these choices are sustainable (leading to the addition of ‘Sustainable’ to the ‘Livelihoods Approach’ (Chambers and Conway, 1991). The approach is mainly used in the context of developing countries and at the household level, and used by international development organisations including DFID, the World Bank, FAO, UNDP and Oxfam (Scoones, 2009). This type of thinking and practice is in direct contrast to traditional economic models that interpret smallholder behaviour within limited market-related parameters.

A livelihoods approach emphasises the multi-faceted nature of livelihoods, vulnerability, and people-centred change (Dorward et al., 2003). A central component is the analysis of capabilities, assets and activities, and how they are combined into livelihood strategies that result in a set of livelihood outcomes for rural households (Carney, 1998; Scoones, 1998; Holland and Campbell, 2006). The Sustainable Livelihoods Framework (SLF) highlights the interaction between the use of capital assets (financial, human, natural, physical and social) in developing individual and/or household livelihood strategies that improve wellbeing, in the context of household vulnerability and transforming structures (policies, institutions and processes). A diagram of the conceptual framework prepared by the DFID is provided in Figure 1, although there are many other iterations (Scoones, 1998). However, the interpretation and application of the livelihoods framework varies considerably among academics and practitioners.



**Figure 1 Sustainable Livelihoods Framework**

Source: DFID, 2000.

The benefit of the framework is that it is multi-layered, considering micro, meso and macro levels; it is multi-disciplinary, incorporating a range of socio-economic and cultural factors, and is process-related, revealing how livelihoods are shaped over time. These features provide greater analytical depth and breadth in poverty analysis, in contrast to approaches which can focus too narrowly on income changes and transactions for understanding poverty, based on technical input-output binaries (Wiggins et al., 2011; Serrat, 2008).

Scoones (1998) emphasised the need to examine livelihoods dynamically, by examining trends over time. For example, livelihood resources, including food, can be accumulated and stored as reserves, or livelihood activities may incorporate different sources of income at different points in time according to agricultural calendars, in order for households to remain food secure in times of shock and stress. This is also an important feature for examining gender relations and power dynamics, which can also shift subtly over time. Therefore, livelihood strategies and outcomes are understood in a more long-term and nuanced perspective, and is considered when designing the methodology for this research (e.g. panel interviews).

The components of the livelihoods framework are explored for the remainder of this section: capital assets; the vulnerability context; policies, institutions and processes; livelihood outcomes, and livelihood strategies.

### **Capital assets (financial, human, natural, physical and social)**

As discussed in the previous section, a central feature of the SLF is livelihood assets, which are commonly displayed in a hexagon diagram. The starting point is that households use different

combinations of assets that are available to them, to develop strategies to obtain income, and achieve food security and an adequate level of wellbeing (Messer and Townsley, 2003). Access to assets differs among smallholders, and therefore their strategies reflect trade-offs and choices about what livelihood activities they will participate in, resulting in different livelihood outcomes (Serrat, 2008). The majority of applications of the livelihoods framework focus on the assets part of the framework, which is closer to an economics approach, but undermines the very interdisciplinary aspect that makes the framework so useful. Nevertheless, the livelihoods assets are explained in the remainder of this section referring to both policy and academic literature to exemplify the range of approaches and research in this area.

### *Financial*

Financial assets include cash, savings, remittances, wages, credit, and financial investments such as livestock and jewellery (DFID, 1999). Finance is of central importance to smallholder farmers (particularly during planting, harvesting etc.), and is related to low and seasonal income. Credit can be accessed through different means including formal (e.g. banks), informal (e.g. friends, relatives, traders, money lenders) and semi-formal (e.g. rotational savings, credit groups and credit unions). However, the formal financial sector (e.g. banks) plays a less significant role for smallholder farmers who often lack the collateral and income required (FAO, 2011). However, access is a considerable constraint for smallholder farmers, particularly for women and vulnerable groups. Compared to men, women face significant constraints in accessing finance, reflecting their poorer socio-economic status along with discrimination, despite their prominent role as producers, processors and traders in agricultural markets. Some of the most significant barriers to accessing finance for women are related to limited ownership over items that can be used as collateral, particularly insecure land tenure, along with lack of identification documents (Coles and Mitchell, 2011; FAO, 2011; World Bank, 2012). Napier et al. (2013) argue that inequality in finance also limits women's ability to pursue self-employment opportunities.

Traditional and informal credit supply has greater reach to smallholders but often at a high cost and in limited amounts. In rural communities, informal credit systems can reflect traditional patron-client relationships that can tie smallholders to providing labour or produce, or purchasing inputs from some suppliers. There are numerous examples of abusive lending practices which perpetuate financial exclusion. Some of the associated costs with micro finance can be considerable, including transaction fees, minimal balance requirements, account maintenance fees, and high interest rates (30–35%) (CGAP, 2010). Women are more likely to use semi-formal

means, such as Savings and Credit Co-operatives (SACCOs) or community-level savings groups (e.g. tontines) to access credit on a rotational basis based on savings (Napier et al., 2013). These savings-based loans can reduce the risk and interest rates for members, making loans more acceptable; however, they are often too small to make significant productive investments in agricultural enterprise. Microfinance is also another important channel for rural credit, particularly for women, which generally provides small loans at low interest rates. This has been the subject of considerable research (CGAP, 2010).

### *Human*

Human assets refer to skills and knowledge related to an individual's access to information and education (Chapman et al., 2003). In an agricultural context, agricultural extension services play an important role in developing the capacity of farmers, and also distributing information and materials (physical capital) and facilitating collective activities. However, the effectiveness of extension services in SSA has been limited, partly due to capacity constraints which effect outreach to remote communities (Davis, 2008). Women were also found to experience additional barriers to accessing agricultural extension services, as services have been shown to reflect male bias in staffing and outreach (FAO, 2011). Human assets also involve being in good health (Chapman et al., 2003) to perform livelihood activities, which can be problematic in rural areas and in low-income households with limited access to healthcare. HIV-affected households are a vulnerable group, and are more likely to live in rural areas and undertake farming (UNAIDS, 2013). Households in these situations have increased vulnerability as finances/assets are diverted towards managing the disease, and household labour is lost due to illness or caring for others who are ill (Slater and Wiggins, 2005).

In a rural context, human assets are vital for supplying labour for agricultural activities, the majority of which is supplied within the family. Wiggins et al. (2011) argue that family labour is important to smallholder agriculture due to its lower cost and of better quality compared to hired labour, because household members have more of an interest and stake in the benefits from production activities. Ellis (1993) further argues that farm households also have access to reciprocal labour in their communities, as opposed to labour accessed through the market, as farmers often provide labour for each other during times of need. This is also referred to as the 'moral economy' (Scott, 1977) or the 'economy of affection' (Hyden, 1980).

### *Natural*

Natural assets refer to natural resources such as land, water, plants forests, and air (DFID, 1999), along with services (e.g. soil erosion protection) that facilitate access to these resources. Land access is particularly vital for rural livelihoods, but is often constrained or insecure due to complex tenure systems that envelop both customary and legal frameworks in developing countries. Insecure land access and tenure is characteristic of the lives of the majority of women in developing countries, which increases their vulnerability to dispossession, in case of widowhood, divorce or migration of the husband. This is also linked to credit issues, where the lack of secure land tenure affects women's ability to access formal credit, agricultural inputs, group membership and social status (Duncan and Brants, 2004). Land rights are negotiated along class, ethnic and family lines where particular social groups, such as youth, orphans, people with HIV/AIDS, often lack secure access and control over land, and is often related to social ostracism.

### *Physical*

Physical assets refer to infrastructure (transportation, roads, vehicles, structures and buildings, water supply and sanitation, communications, energy, markets) and tools, equipment and technology (improved seed, fertiliser, pesticides, machinery etc.) (Serrat, 2008). Transportation plays a vital role in market participation for smallholder farmers, and can be a considerable constraint for farmers in remote communities and with poor quality roads. Significant waste and spoilage can occur during transportation due to long journeys and the low quality of packing and storage, which can lead to high transaction costs (Wenham, 1995). Transportation is a significant constraint for cassava farmers and traders, as the roots must be processed within 48 hours of harvesting or they deteriorate. In terms of processing, access to cassava processing equipment (held within the household, private enterprise or processing group), is important for capturing 'added value' of staple crops., Access to a clean and affordable water supply, which requires some infrastructure, is an equally important factor.

### *Social*

The final asset category is social assets or social capital, of which there is considerable research. The World Bank's Social Capital Initiative (SCI) defines social capital as "the internal social and cultural coherence of society" and "the norms and values that govern interactions among people and the institutions in which they are embedded" (Sorensen, 2000). It refers to formal and informal groups, networks and connections, shared values and behaviours, common rules and sanctions,

collective representation, mechanisms for participation in decision-making and leadership (Serrat, 2008).

The concept was popularised by academics such as James Coleman and Robert Putnam in the 1990s, who argued for the importance of social structures and relationships in facilitating economic transactions. Coleman later emphasised how some types of relationships were characterised by unequal power distribution and hierarchy, which could lead to harmful effects for society (Rossing-Feldman and Assaf, 1999). Another perspective on social capital emphasises the importance of institutional relationships and structures (e.g. government, rule of law, the judiciary) for economic growth, along with the level of trust that civil society have in them (North, 1990). Recent scholarship includes a focus on social network analysis, which studies the spectrum and density of social relationships in networks occurring at various levels (micro, meso or macro) (Wasserman et al., 1994; Putnam, 2000).

In the context of rural development, Sorensen (2000) argues that social assets, including participation in farmer groups, usually have a positive effect on agricultural productivity and marketing, particularly if the groups function well and are managed effectively. It also improves the effectiveness of agricultural development interventions and agricultural extension services as it increases the likelihood that farmers will share information and be receptive to extension projects. Social capital was also found to be very important for women, who were more likely to access information through networks as they are often excluded from other information channels such as extension services. Sorensen (2000) highlights the importance of social capital in agricultural commercialisation, showing that membership in a farmers' group for example, can enable smallholder farmers to aggregate produce, source the means of transportation, access new markets, increase their bargaining position with buyers and exploit economies of scale through being group members. Social networks play an important role in reducing transaction costs of marketing produce as they facilitate access to assets and market by reinforcing compliance and norms (Henning et al., 2011). Therefore, for farmers, market participation is more viable in these circumstances than working individually. However, there are also negative issues raised around social capital, including social exclusion (e.g. group restrictions), conformity and authoritarian clientelism, of which future research also needs to take account (Sorensen, 2000). Cassava producer and processor groups are expected to be an important example of social assets in this study.



## **Summary of livelihood assets**

Smallholder interaction with each of the livelihoods assets is intricate and complex. For example, Subir and Baumann (2001) focus on a sixth asset, political capital (commonly under social capital) to highlight its importance and independence within the framework (Toner, 2003). Bebbington (1999) places more emphasis on social and cultural assets that have important meaning within people's lives, as livelihood analysis can often become too focused on income, physical and financial assets. Furthermore, assets have multiple dimensions and can fall into different categories (Putnam, 2000). For example, Morton and Meadows (2000) argue that in the case of livestock, it can be considered a natural as well as a financial asset as it can be used as a form of savings and sold for income. In the context of smallholder farming, financial capital is also closely interlinked with social capital, where credit is accessed mainly through informal means and facilitated through social relationships including friends and family.

## **Vulnerability context**

The vulnerability context plays an important role in rural livelihoods. This concept refers to the level of security of individuals, households and communities in a changing external environment, which influences the availability of assets and resources at particular times (DFID, 1999). The concept incorporates three sources of vulnerability (DFID, 1999; Serrat, 2008):

- Events or shocks (e.g. conflict, illnesses, floods, storms, droughts, pests, diseases)
- Long term changes or trends (e.g. demography, economy, environment, migration, governance, and technology)
- Seasonal fluctuations (e.g. prices, employment)

Vulnerability has two facets, one being the external nature of events or external trends affecting smallholders, and the second being the ability of individuals, households and communities themselves to cope with these events. The ability to cope or recover from difficulty is where the notion of 'sustainability' was included into livelihoods analysis, as it is an important indicator that the household will not fall back into poverty, but will have enough assets to manage the situation (Serrat, 2008). For this research, the concept of vulnerability and how it changes at the household level is important in the context of cassava commercialisation (e.g. does selling more cassava affect the ability of smallholder farmers to cope with environmental shocks?).

### **Policies, institutions and processes**

Policies, institutions and processes (PIP) refer to institutions, organisations, policies and legislation, along with their interaction, which influence livelihoods strategies. The processes component refers to the operational arrangements, agreements, social norms and practices, decision-making, cultural practices, power relations and belief systems. Policies refer to regulations and legislation that regulate all areas of public life, and economic, social and political realms that influence rural livelihoods. Institutions refer to “complexes of norms and behaviours that persist over time by serving some collectively valued purposes”, and refer to both physical organisations and informal practices or ‘rules of the game’ (Messer and Townsley, 2003).

PIP links back to the discussion and debates on social assets and capital and incorporates the meso and macro levels. The interaction within and between PIPs influences all components of the framework, including capacity, incentives and behaviour of individuals, groups, communities, and organisations. This influences the type of livelihood activities a household undertakes, their access to and transformation of assets into others through markets, and influences interpersonal relations (Albu, 2008; Serrat, 2008). PIPs are embedded in, and develop from, of the cultural context and power relations.

### **Livelihood strategies**

An important focus of the framework is on livelihood strategies, which refer to the combined set of activities that individuals and/or households pursue with the various resources or assets to which they have access, in order to achieve expected livelihood outcomes. In this research, smallholder perceptions of their livelihood strategies and expected livelihood outcomes are explored. In rural areas, most livelihood strategies involve agricultural activities and natural resources, but can be used in conjunction with off-farm and non-natural resource-based activities, such as employment and wage labour. Livelihood strategies can also include decisions on food budgeting and security, migration, remittances, pensions and grants. Other elements that a livelihood strategy can include are intensification versus diversification of activities, the level of commercialisation or market engagement versus provision for home consumption, having a short or long-term perspective in mind (Serrat, 2008).

The livelihoods framework uses holistic understanding of livelihood strategies, including choices of subsistence (or non-commercial) activities. This is a positive departure from neoliberal economic models that have traditionally ignored non-income-generating activities in the economy

despite their importance in rural livelihoods (Bolwig et al., 2008). These strategies are dynamic and change over time, and differ according to socio-economic status and preferences of households and individuals, including for example, gender and class, along with geographical location. A key element of the livelihoods framework is understanding the constraints for individuals and households in developing livelihoods strategies that result in positive livelihood outcomes.

### **Livelihood outcomes**

Livelihood outcomes are the results from livelihood strategies and are what most development interventions target to address. Outcomes reflect the goals of individuals and/or households for certain periods of time, in the context of limited resources and assets (Serrat, 2008). Scoones (1998) divides livelihood outcomes into five components that contribute to poverty reduction livelihood outcomes:

1. creation of gainful employment: income, production and recognition
2. poverty reduction: relative poverty and inequality
3. wellbeing and capabilities (Chambers, Sen)
4. livelihood adaptation, vulnerability and resilience: cope and recover from stress and shocks (Davies, 1996)
5. natural resource base sustainability: system to maintain productivity when subject to disturbing forces

This research is focused on outcomes 1 and 2, along with gender relations and food security, which is relevant to outcome 3.

### **Limitations of the Sustainable Livelihoods Approach**

There are a number of criticisms of livelihoods thinking since its introduction in the late 1990s; three of which are relevant to this research. One criticism is that the framework minimises the importance of markets in livelihoods (Dorward et al., 2003). Under the traditional livelihoods framework, markets have been included under the PIP component and conflated with a range of other institutions, resulting in the PIP becoming a 'black box' (Kanji et al., 2005). Another criticism is the lack of emphasis on power dynamics, exclusion and entitlement in poverty, which is a feature found predominantly in rights-based approaches. Related to this point, Serrat (2008) argues that the framework assumes equity within the household in access to resources.

Related to power, the framework also ignores gender, household-decision-making and the role of gender norms in structuring access and control over assets and livelihood outcomes for men and women (Meinzen-Dick et al., 2011). Instead the household is presented as ‘black box’, devoid of any differences in interests, characteristics or goals that could influence livelihood strategies. Meinzen-Dick et al., (2011) argue that each step of the livelihoods analysis should consider both the separation and union of decision-making and ownership over assets, activities, consumption strategies, etc. (2011:9). However, at the same time the aforementioned authors offer little insight into how gender influences different aspects of the framework. Therefore, despite the importance of Meinzen-Dick and colleagues highlighting the importance of gender in livelihoods thinking and application, there remains a conceptual gap in understanding decision-making processes from a gender perspective, within the livelihoods context.

In light of the criticisms the SLF mentioned in this section, the conceptual framework for this study has been modified from a traditional livelihoods framework and is presented in Chapter 3. The next two sections, Section 2.4.1 and 2.4.2, review literature on household decision making and value chains, and have also informed the modifications in the conceptual framework for this research (Section 3.1).

#### **2.4.1 Opening the ‘black box’ of the smallholder household**

Theories on household behaviour have made important contributions to the understanding of smallholder farmer behaviour. In the 1980–90s there was considerable debate on understanding household decision-making and outcomes in relation to markets. Theories of household decision-making were modelled in different ways, namely the unitary and cooperative models. The unitary model dominated development discourse and had its roots in neo-classical economic thinking, which has based household decision-making on rational choice and maximisation of utility (profit, leisure and wellbeing)<sup>9</sup> (Ellis, 1993). This conceptualised the household as both a production and consumption unit. Critics of this theory argue that this model treats the household as a ‘black box’ because it ignores the behaviours and negotiation that takes place within households, and assumes

---

<sup>9</sup> The three components are the production function, the level of output corresponding to different levels of variable inputs; method or technique of production, which is a combination of two or more inputs required to produce a specified output, and enterprise choice, the varying outputs which could be obtained from a given set of farm resources, within the context of the household specific goals and constraints (Ellis 1993:17–18).

that individuals within the household agree on key decisions either through a single decision maker or consensus (Burns and Keswell, 2006; Doss, 2011).

The collective household bargaining model was developed in response to the shortcomings of the unitary model. Collective models hold that household members have different interests and preferences that may or may not come into conflict. Each individual has different levels of access to income or control over resources, which in turn affect how resources are allocated to meet different demands, including for production and reproduction. Access to resources is influenced by social norms and institutions that determine one's 'bargaining position', and consequently may not result in efficient allocation of resources (Burns and Keswell, 2006; Kabeer, 1999).

One's 'bargaining position' or 'bargaining power' is an important concept in understanding intra-household dynamics. It refers to differences in the ability of household members to access and use resources, and to exercise choice or power over household members in doing so (Doss, 2011). Gender relations are one such institution that influences bargaining position. Bargaining power, according to Haddad et al., (1997), is affected by five sets of determinants: (1) control over resources, such as assets; (2) factors that can be used to influence the bargaining process; (3) mobilisation of interpersonal networks; (4) basic attitudinal attributes, and (5) increases in profitability of crops. The assumption is that household members bargain or negotiate on different outcomes, including consumption, production, labour allocation, and asset ownership among others. If both parties are on an equal footing, they will have equal bargaining power, such as in a perfectly competitive market (Doss, 2011).

Differences in bargaining power within a household have also been linked to gender inequality in the distribution and efficiency of resource use for agricultural production (Urdu, 1996). Therefore, bargaining power is a potential determinant of inefficiencies and inequities in cassava commercialisation that could affect livelihood outcomes (von Braun, 1995). However, caution is needed in interpreting gender inequalities. As O'Laughlin (2008) points out, both spaces of conflict and cooperation are evident in a household when examination of the household goes beyond agricultural production alone, to the gender division of labour.

Kabeer's empowerment framework (1999, 2005) further expands the concept of the non-unitary household to examine women's positionality in relation to men through the concept of empowerment. For Kabeer, empowerment refers to resources, agency and achievement. Resources include financial, natural or physical/technical, social, and human resources, and

influence how men and women participate in, and benefit from, markets. Policies, institutions and social norms structure the rules of access, entitlement, distribution and exchange of resources, which reflect and reinforce the roles and responsibilities of different household members. Agency is defined as the ability to define one's goals and act upon them. This can play out in the form of decision-making, bargaining and negotiation, deception and manipulation, subversion, and resistance, and is exercised by individuals or collectives. Importantly, agency can lead to more transformative processes of empowerment when it involves not only exercising a choice, but doing it in a way that challenges existing power relations (2005:15). Kabeer also adds additional elements to agency which are helpful in our understanding of empowerment: firstly the difference between 'passive' forms of agency (action taken when there is little choice), and 'active' agency (purposeful behaviour), along with 'effectiveness' of agency (efficiency in carrying out their given roles and responsibilities), and agency that is 'transformative' (ability to act on the restrictive aspects of these roles and responsibilities in order to challenge them) (Kabeer, 2005: 16). Finally, achievements are a result of resources and agency, which are the outcomes of the combination of resources and women's agency, such as education, food security, healthcare and income.

Kabeer's (1999) concept of achievements reiterates Sen's (1985) notion of capabilities and Chambers' (2006) concept of wellbeing, which is determined by one's preferences, entitlements and assets. For many scholars examining gender relations, this is the site of gender discrimination, where women experience poor livelihood outcomes or achievements due to their limited access to assets and low bargaining power. The opposite is also true. There is considerable evidence that women's bargaining power can improve development outcomes for children including health and education and the wellbeing of women themselves (Doss, 2011).

#### **2.4.2 Value chain development and analysis**

Value chains research arose from the French filiere approach to market studies in the 1960s that examined physical commodity flows. In the 1980s, business strategy literature made the first mention of the value chain, which was represented by a single firm with value adding activity. In the 1990s thinking developed into the global commodity chain, and later the global value chain. The latter was a more politically radical approach of industrial commodity chains and introduced issues around governance.

The value chain approach has received renewed attention in development policy and practice of late, particularly as a lens to develop poverty reduction interventions through private sector engagement (DFID 2008 and USAID 2008 in Donovan and Poole, 2012). This has led to the

development of an analytical framework frequently used in development spheres - 'value chain analysis'. A value chain refers to a set of value-adding activities carried out by different actors through which a product passes from the initial production or design stage to final delivery to the consumer (Kaplinsky, 2000) and occurs on different levels, from local to international. The commodity's value increases, or value is 'added', at each stage of the chain through processing, packaging or transport. A value chain analysis is used to identify different stages of a supply chain and linkages between them, and understand market inefficiencies and barriers to entry at each stage that inhibit producer participation in, and returns from, markets (e.g. cost, consumer preference, control of raw material, economies of scale, finance and credit, access to information) (Kanji et al., 2005; ECA, 2008). It is assumed that smallholders participating at higher sections of the value chain, where there is greater value addition, are able to capture greater benefit and returns from market participation. As such, the more value addition that smallholder farmers can participate in, the greater their profit revenues from activities. This approach starts with a mapping of the value chain and analysis of market opportunities, along with the different constraints and opportunities at each node.

The value chains concept is useful in providing conceptual clarity of the market by breaking down complex market processes and illuminating different relationships between actors at various stages of value addition. However, as an approach, a value chains framework does raise concern around its effectiveness and impact in poverty reduction. Poverty impacts of these approaches are found to be limited and questionable (Donovan and Poole, 2012) and participation and/or investment by smallholders in markets may in fact be risky as some smallholders may be more vulnerable to changes in the market and trade-offs that participation may involve (Mannon, 2005).

In addition, value chain development too often ignores the social context in which it is embedded. Bolwig et al., (2008) argue that issues of power relations and inequality are fundamentally missing from value chain approaches, due to preoccupation with 'functional upgrading'. A gender perspective is useful in highlighting this. Women are disproportionately represented in low-value chains, and the lower value nodes within them. Whereas men tend to dominate functions with relatively high barriers to entry but also have correspondingly greater returns along with greater control over chain management functions (Coles and Mitchell, 2011).

Value chain and livelihood approaches in the work of Bolwig et al., (2008), Riisgaard et al., (2008), Kanji et al. (2005), attempt to overcome limitations of both value chain and livelihoods analysis by combining the two. For example, livelihood analysis in Bolwig et al., (2008) includes an

analysis of social relations, power dynamics and exposure to risk (horizontal value chain analysis), along with market value chain components and operations (vertical value chain analysis). This type of approach informed the conceptual framework used in this research.

## **2.5 Chapter conclusion**

This chapter explored the ideological and disciplinary foundations of contemporary development narratives of smallholder farmers and market participation. This began with a review of classical economic approaches that viewed smallholder farmers, or peasants, within the context of class struggles, occupying a somewhat transient space in development of neither labour nor capitalists. As theory developed around smallholders and agricultural development, smallholders were viewed primarily as household-based economic units operating mechanically and devoid of interests outside the market. These classical approaches were challenged by other branches of economics, anthropology, and sociology, which highlight the importance of people's agency and broader society on market relations. Neoliberal approaches, that are reflected in more contemporary development narratives, argue for increasing smallholder participation in agricultural markets namely by tackling market inefficiencies (e.g. transaction costs) in staple crop markets that are considered to be more accessible to smallholders. While the renewed emphasis on smallholder farming in policy is welcomed, there is a gap in knowledge of the impacts this approach has on smallholder farmer livelihoods, if it is indeed inclusive.

The second part of the chapter presented literature on two areas of impact that the study is focused on: gender and food security. Feminist literature shows that binaries such as 'women's crop' and 'men's crops', along with gendered myths, are employed in narratives undermine the complexity of gender roles in agriculture. Furthermore, gender norms and power dynamics influence women's long-term participation and the benefits from markets, particularly when there is a change of a crop's value. In addition, literature related to crop commercialisation and food security has paid scant attention to issues specifically around staple crops, how households manage the distribution of crops for sale and for food, and how gender influences these processes.

The third section of the chapter presented the conceptual background for the study as an alternative way to examine markets and poverty. The chapter demonstrated that a livelihoods perspective, provides a more comprehensive understanding of smallholder behaviour, choices and desired outcomes, and how they interact within the broader context. However, the limitations of the framework for interrogating gender and market dynamics and household decision making were also highlighted. This framework and the methodology are presented in the next chapter.

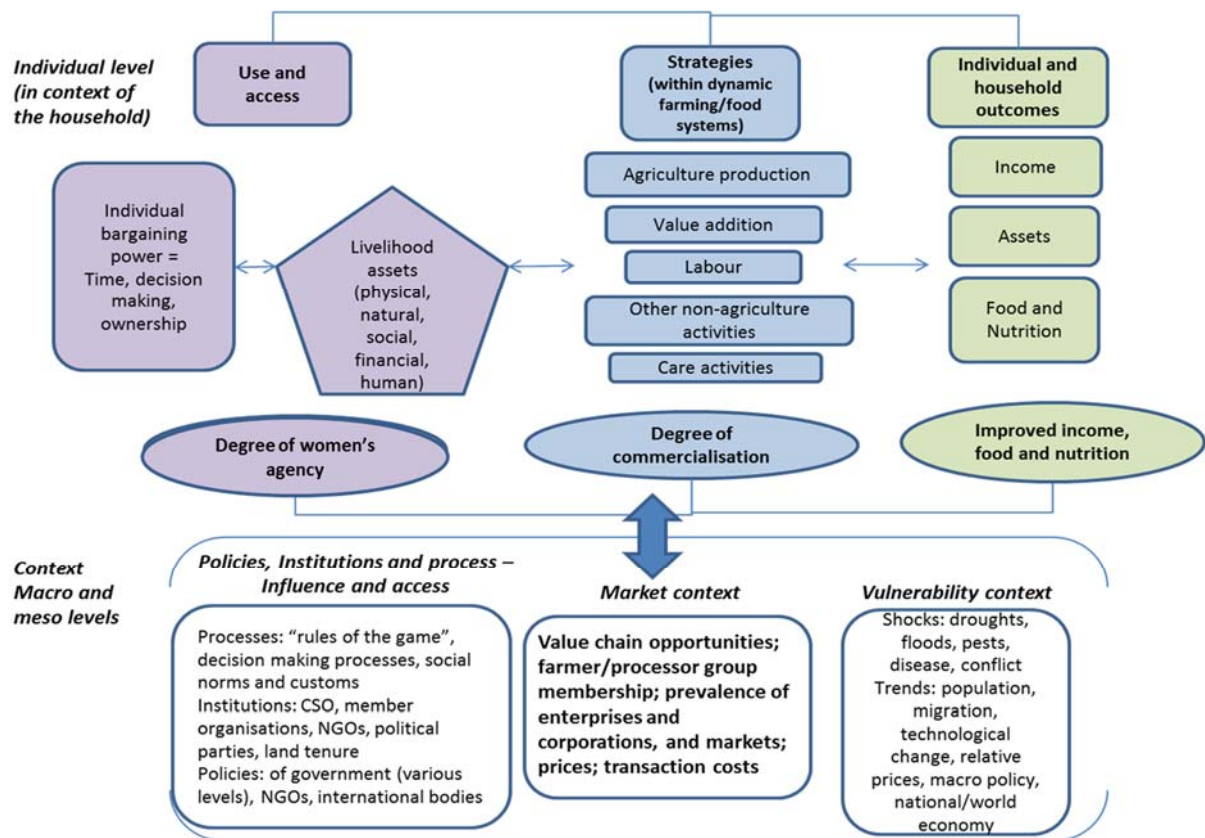


### **3. Conceptual framework and methodology**

This chapter presents the conceptual framework and the methodology for the research. The chapter is structured as follows: Section 3.1 presents the conceptual framework for the study, which is a modified livelihoods framework that includes household decision-making, gender and markets/value chain. Section 3.2 presents the scope of the research, including the geographical areas and the cassava value chains that are of focus of the research. Section 3.3 presents important definitions used in the research, and Section 3.4 establishes the positionality of the researcher. Section 3.5 presents the methodology of the research, including the literature review (3.5.1), Focus Group Discussions (FGDs) (3.5.2), individual panel interviews (3.5.3), key informant interviews (3.5.4), and an analysis of the C:AVA baseline and endline surveys (3.5.5). Section 3.6 presents a statement on research ethics, and Section 3.7, the chapter conclusion.

#### **3.1 Conceptual framework**

A modified livelihoods approach (Carney, 1998; Scoones, 1998) is used in the research to understand the impact of cassava commercialisation on the livelihoods of smallholder farmers and processors (referred to as smallholder farmers). The modifications to this approach include drawing on the concepts of women's agency, value chains and commercialisation, to provide greater focus on the issues pertaining to the research questions. The framework, depicted in Figure 2, involves examining the relationship and interaction between women's agency, which influences access and control over livelihood assets (purple boxes); participation in commercial cassava opportunities in the context of other livelihood activities (blue boxes), and the livelihood outcomes (green boxes), at the level of the individual smallholder farmer.



**Figure 2 Diagram of the conceptual framework**

The conceptual framework reflects the central hypotheses of this research, that the extent to which individual farmers participate in commercial agriculture is influenced by individual agency, which will produce specific livelihood outcomes for the individual and household (specifically in terms of income and food security). Women’s agency (purple boxes), is referred to in order to identify how women specifically participate in commercialisation processes. For example, the greater one’s level of agency, the greater one’s ability to access and use livelihood assets to participate in commercial (cassava) activities, including ‘value added’ activities that enable the capture of more benefit and profit and other reproductive and off-farm activities as part of their livelihood strategies. The converse can also be argued. When agency is low, individuals are unable to participate in commercial activities to the extent that will enable them to change their livelihood status. This in turn would enable smallholders to purchase a diversity of food that previously they were unable to grow relying on their own production.

The concept of women’s agency recognises the reproductive responsibilities that are often assigned to women through cultural norms. Drawing on Kabeer’s definition of women’s agency (2005), the ability to define one’s goals and act upon them, is used in this research, to understand decision-making, bargaining and negotiation, regarding cassava commercialisation, and if

commercialisation can impact on women's agency to contribute to more transformative processes of empowerment by challenging power relations. Women's agency is influenced through complex systems of beliefs and norms that influence and regulate behaviour and attitudes, both within and external to the household. This determines what are acceptable gender roles and responsibilities, and influences entitlement and decision-making authority over resources (including one's own time). These dynamics are studied in the context of cassava commercialisation to identify how this mediates market behaviour in cassava value chains. The concept of women's agency is used in conjunction with key concepts from the livelihoods framework, along with intersectional equalities, referring to inequalities occurring on multiple lines, including social/identity, economic, spatial, and temporal inequalities between individual and groups (Kabeer, 2010).

The second part of the framework is 'commercialisation' (blue boxes). This refers to the extent to which individual smallholder farmers participate in cassava value chains (are they undertaking more, less or the same level of commercial activities over time?), and at which node of the value chain (e.g. producer, community-level group processing, or factory processing). Cassava-related activities are examined in the context of the individual and household's broader livelihood strategy, including reproductive responsibilities and household food security.

The third part of the framework is livelihood outcomes, which are the results derived from livelihood strategies that relate to cassava market engagement. For this research, the focus is on financial outcomes (income and assets) as income is the primary reason for market engagement, along with food security, due to the importance of cassava for household consumption, and women's agency.

The three core components of the framework operate at the individual level but within a household context. The analysis also incorporates meso- and macro-level factors: PIP, the vulnerability context, and the market context, shown at the bottom of the Figure 2. The PIP and the vulnerability context are included in a standard livelihoods framework. The 'markets' box was added (lower centre of the diagram) to emphasise its influence on shaping the opportunities available to smallholder farmers. This modification also emphasises the importance of value chain characteristics and how the interaction between different types of value chains may impact on the livelihoods. The focus on markets at the meso and macro levels, however, does not come at the cost of ignoring other influences (e.g. policy), which are examined when found to be pertinent to the research.

### 3.2 Scope of the research

The research focuses on cassava value chains in south-west Nigeria and in central and southern Malawi. It examines change at and between three specific points in time: 1) 2014, 2) 2008/2009, before support to cassava value chains in that locality (through the C:AVA project) and 3) the far past (over a decade ago). Specifically, the research focuses on the commercialisation of the cassava root, which was identified as being the most important part of the crop during initial focus group discussions in both countries. For this research, the two countries represent different types and scales of opportunities for cassava commercialisation for smallholders, which can provide a number of important lessons for a number of reasons:

- **Size of the cassava market:** Perhaps most importantly, the two countries are profoundly different in terms of the size of markets and range of products, presenting different opportunities for cassava commercialisation for smallholders.
- **History of cassava production:** Nigeria has a longer history of cassava commercialisation in local markets and range of cassava products, compared to Malawi where cassava is mainly prepared for home consumption (Pauw et al., 2010). Therefore, smallholders in Nigeria are more likely to have experience of cassava commercialisation or for a longer time compared to Malawi, where these processes have begun more recently.
- **Structure of value chains and products:** The relevant cassava value chains in the selected countries can be grouped into two categories: traditional or local processed products and new processed products (such as HQCF), which are detailed in the table below. There are different types of actors at each stage of the value chain, from raw material to end product, which also reflect different gender roles of men and women.
- **Context:** Nigeria is the most populated country in SSA with the largest economy. In contrast, Malawi is a smaller country with a smaller population and economy. It also faces a number of climate and environmental related challenges that threaten food security.
- **Agricultural production system:** For example, the practices of men and women cultivating on the same plot in Malawi and separate plots in Nigeria, could influence the level of women's independence in decision-making (including their bargaining power of women in the household), which could in turn, lead to different livelihood impacts.

The cassava value chains focused on for the research (Table 1) in Nigeria includes the local cassava products in Ogun and Ondo states: gari and fufu, and HQCF, a new cassava product that is

processed at medium to large scale factories. In Malawi, the local cassava products makaka and kondowole are examined, which are products consumed in the south and central regions respectively, and HQCF that is processed at the community and factory level. A description of the value chains for the different cassava products is provided in Section 4.6.

**Table 1 Selected cassava product value chains for the study**

<b>Nigeria</b>	
Gari	A granular product, made into a thick paste with boiling water and consumed. It is a popular staple food in West Africa and is the largest processed cassava market in south-west Nigeria. Processing gari involves grating, pressing, fermenting, and frying cassava, which is then cooked and added to boiling water before being consumed. It can be made from sweet or bitter varieties.
Fufu	A sticky or heavy dough made from fermented cassava paste. Processing fufu involves fermenting peeled cassava roots and mashing the soaked roots into a pulp. It is another major product processed and consumed in Nigeria (IFAD and FAO, 2000:24).
HQCF (factory processed)	A new, non-fermented cassava flour that is dried with ‘flash dryers’ by medium to large scale factories. It can be used as a partial wheat replacement for various industrial uses and in baking.
<b>Malawi</b>	
Makaka	Made from non-fermented dried roots (Moyo et al., 2004). The process involved in makaka processing is: peeling, sometimes chipping, drying of large chips or whole roots. It is then sold, stored or further prepared for immediate consumption as fermented cassava flour. The sweet variety is preferred for makaka (C:AVA Value Chain Study, 2009). It is mainly consumed in the southern districts of the country (Zomba and Mulanje study areas), and is considered a secondary staple to maize.
Kondowole	Made from fermented cassava flour. The steps involve soaking, peeling, sun-drying and pounding. It is eaten predominantly in the central and northern regions (Nkhotakota study region). It is made from bitter varieties.
HQCF (factory and CPGs)	HQCF is a new product processed by factories, using flash drying, as well as Community Processing Groups (CPGs), using sun drying. CPGs typically sell HQCF locally as a partial wheat replacement.

### 3.3 Definitions used in the research

**Smallholder farmers:** are “small-scale farmers, pastoralists, forest keepers, fishers who manage areas varying from 1-10 hectares. Smallholders are characterized by family-focused motives such as favouring the stability of the farm household system, using mainly family labour for production and using part of the produce for family consumption” (FAO, 2012b).

**Women's Agency:** The ability to define one's goals and act upon them. This can play out in the form of decision-making, bargaining and negotiation, deception and manipulation, subversion, and resistance, and is exercised by individuals or collectives. Importantly, agency can lead to more transformative processes of empowerment when it involves not only exercising a choice, but doing it in a way that challenges existing power relations (Kabeer, 2005:15). Kabeer also adds additional elements to agency which are helpful in our understanding of empowerment: firstly the difference between 'passive' forms of agency (action taken when there is little choice), and 'active' agency (purposeful behaviour), along with 'effectiveness' of agency (efficiency in carrying out their given roles and responsibilities), and agency that is 'transformative' (ability to act on the restrictive aspects of these roles and responsibilities in order to challenge them) (Kabeer, 2005: 16). This concept relates closely to women's empowerment.

**Empowerment:** According to Kabeer (1999), a woman is empowered if she has access to resources, possesses the ability to make choices (agency), and make livelihood achievements. The research draws on this concept in the context of commercialisation. Concepts such as empowerment do not lend themselves to quantitative measurement because they are not observable phenomena. Therefore, proxies are required which need to be analysed within the cultural context of the phenomena (Rogers and Scholssman, 1990; Agarwal, 1997; Folbre, 1994).

**Commercialisations:** The process by which smallholder farmers decide to participate or increase their participation in cassava markets through four main indicators: increase in use of inputs (e.g. high-yielding varieties or fertilisers), increased production, increased sales/marketing, along with a change in perception of cassava as an income-generating crop (von Braun, 1995; von Braun and Kennedy, 1994; Pingali and Rosegrant, 1995). However, a complementary objective of this research is to identify if and how these definitions reflect or relate to farmers' own perceptions of commercialisation.

**Food security:** The four pillars of food security, as defined by the FAO (2009), which need to be met simultaneously, are:

- **Food availability** - sufficient quantities of food of appropriate quality, supplied through domestic production or imports (including food aid).
- **Food access** - adequate access to resources (entitlements) for acquiring appropriate foods for a nutritious diet.

- ***Food utilisation*** - adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met. This brings out the importance of non-food inputs in food security.
- ***Food stability*** - access to adequate food at all times, and therefore refer to both the availability and access dimensions of food security.

There is an important link between food and nutrition security that is often overlooked. Nutrition security refers to secure access to an appropriately nutritious diet, comprising all essential nutrients and water, coupled with a sanitary environment and adequate health services and care to ensure a healthy and active life for all household members (FAO 2012). Hwalla et al., (2016) argue that food availability is often understood in terms of food quantity and overemphasised in food security work. This overemphasis tends to obscure the important role of nutrition in all four aspects of the FAO definition of food security. This research focuses on perceptions of food security, which can provide some, but incomplete, insight into nutrition security. In particular, by examining perceptions of diet diversity, it can provide some indication of whether individuals are receiving a broad range of foods that can provide access to different nutrients.

### **3.4 Positionality, representations, and challenges of field research**

*“Bias comes not from having ethical and political positions – this is inevitable – but from not acknowledging them. Not only does such acknowledgment help to unmask any bias that is implicit in those views, but it helps to provide a way of responding critically and sensitively to the research.”* (Griffith, 1998, p.133)

Prior to discussing the research methods, it is important to acknowledge issues of positionality and power which take place in any fieldwork, within the relationship of the ‘researcher’ and the ‘researched’. This refers to the impossibility of research objectivity, which can only be considered an aspiration in the research process, and how research is ultimately and unintentionally steered by the beliefs, values and the worldview of the researcher. This worldview is reflected by one’s lived experience, and is influenced by age, gender, wealth and education, and shapes the relationships between the researcher and the researched (Moser, 2008). Translation creates another level of worldview and reinterpretation that is not neutral (Spivak, 1988). This creates chances of bias, misunderstanding and replication of unequal power relations if fieldwork is undertaken

without reflection on positionality (Haraway, 1988; Spivak, 1988; Moser, 2008; Kindon et al., 2007).

While it is not possible for a researcher to undertake research with true objectivity and neutrality, I have taken measures to reflect on my positionality and limit the perpetuation of inequalities in an attempt to address these issues. Firstly, I recognise that my position as a white female, educated academic who is part of a development project (C:AVA) has influenced the research process. My position inherently created the opportunity to conduct fieldwork, influenced my ability to speak with people on a truly neutral basis and reflected the way people expressed themselves to me, what I was exposed to and how I interpreted the data. I have attempted to reduce the impact of my positionality by making myself aware of the ethical issues and the multiple histories of communities and individuals I worked with, particularly in the context of colonialism and development agendas that impact on the way foreign people are perceived and engaged with. In addition, in the research methodology and sampling strategies I have tried to incorporate marginalised voices, through both random and purposive sampling and participatory approaches, instead of relying on leaders to speak and represent others. I also considered the limited time of participants and tried to fit around their schedules, sometimes joining them in their work and assisting with activities (e.g. peeling kola nuts).

The far majority of the fieldwork was conducted by myself, with an interpreter who facilitated discussions in the local language. The interpreter and I worked together prior to starting the fieldwork to pilot the questionnaire and share ideas and perspectives on the research questions and programme, and how responses could be interpreted. Time was integrated into the fieldwork schedule for regular discussions on our interpretations of the fieldwork process itself along with the information expressed by the participants. Finally, a grounded theory approach informed the collection of data and is used for the majority of the data analysis, which is hoped that it will enable greater space for the words of the research participants themselves to inform the theory for this work.

### **3.5 Methods**

The methodology for the research is based on mixed methods (quantitative and qualitative) and incorporates different levels of analysis (individual, household, community and wider environment) over a period of time to capture the changes in circumstances and assess the impacts. The study also includes elements of participatory research to identify differences in perceptions, experiences and outcomes among smallholder farmers with different characteristics or socio-



economic backgrounds. Different methods were used to triangulate evidence to ensure the reliability and validity of the findings, including:

- Literature review
- Focus group discussions with smallholder cassava producers and cassava processors
- Individual panel interviews with smallholder cassava producers and cassava processors
- Key informant interviews (e.g. local authorities, private enterprise, politicians and various other value chain actors/stakeholders)
- Analysis of baseline and endline surveys of the C:AVA project

The literature review, focus group discussions, key informant interviews and the analysis of the baseline and endline surveys were conducted by myself, the author of this thesis. The author also contributed to the design of the baseline and endline surveys. An overview of the fieldwork schedule is provided in the Table 2 for both countries.

**Table 2 Overview of fieldwork schedule in Nigeria (N) and Malawi (M)**

	2009	2010	2011	2014
<b>Focus group discussions</b>	June (N)	Feb (M)	Sep (M) Nov (N)	Jul (M) Nov (N)
<b>Key informant interviews</b>	June (N)	Feb (M)	Sep (M) Nov (N)	Jul (M) Nov (N)
<b>Panel interviews</b>			Sep (M) Nov (N)	Jul (M) Nov (N)
<b>Baseline</b>	Oct (N)	Feb (M)		
<b>Endline</b>				Aug (N) Jun (M)

### 3.5.1 Literature review

A desk-based literature review was conducted during the entire research process, using aspects of systematic reviews. The review focuses on theory related to agricultural commercialisation among smallholder farmers in SSA. The findings informed the development of the study tools, contextualised the field data and provided an understanding of the theoretical foundations of the research. The literature reviewed covered academic peer-reviewed journal articles; grey literature including government and international donor policy documents; and C:AVA project documents, studies and survey data. The literature search was conducted using the following databases for

academic publications: Swetswise; Elsevier; Wiley; Springer-link; Taylor and Francis; Scopus; Google Scholar. Google was also used to search for grey literature and government reports on the basis of pre-selected search words in a specified timeframe.

### **3.5.2 Focus group discussions**

Focus group discussions (FGDs) involve a group of people who are selected based on a commonality or difference that relates to the topic under discussion. The purpose is to find out how people understand, think and feel about an issue(s) in a defined area of interest (Krueger and Casey, 2000: 4-5). FGDs were used in the initial fieldwork in Nigeria and Malawi in 2010 and on an ad hoc basis in 2012 and 2014 (e.g. when encountering a group meeting in a community, the opportunity was taken to ask a few questions). FGDs were used to elicit a wide breadth of perspectives and experiences from men and women in various socio-economic positions and locations, to test specific concepts and understandings from the literature review, and to inform the design of the in-depth individual interviews where issues are explored in greater depth. FGDs included some Participatory Rural Appraisal (PRA) techniques, such as group ranking (Chambers, 1994) and transect walks when time allowed (Chambers, 1994b).

The sample for the FGDs was selected in each country based on region, ethnic and linguistic representation, and logistical ease and safety of travel. Farmer or processor groups supported through the C:AVA project were also an important factor in the sample selection as it enabled access to individuals who were involved in commercial cassava activities. Separate FGDs were held with men and women in order to capture differences in responses, ensure the comfort and openness of participants, and identify any gender-related issues between men and women. Individuals were selected based on their availability for a two-hour discussion, providing consent to participate in the discussion, and involvement in cassava production and/or processing. Efforts were also made to select participants for the FGDs that would reflect community diversity (e.g. ethnicity, wealth status). Community leaders and participants were contacted through service provider staff and local contacts.

Qualitative data was collected using a discussion guide that focused on gender roles and responsibilities in the household, including cassava production and processing, access to assets, decision-making, perceptions of the importance of cassava as a cash and food security crop, and levels of food security (Appendix A). The data was analysed using a simple cross-table to compare and contrast responses within and between the districts in the country, and between the two case study countries. The data was interpreted to identify the trends, inconsistencies, and specific

language or symbols found within and across the focus group responses. Further description of the fieldwork sample of the focus group discussions are presented in Appendix F.

The strengths of using FGDs are that a wide breadth of information can be elicited on a range of topics that is guided by the participants themselves. However, due to the sensitivity of the subject matter (e.g. gender issues and food security) it is recognised that some personal experiences and stories may not be heard within a focus group setting due to their private nature. In addition, because FGDs are often attended by people who are available in that timeframe and can be reached by an extension worker, participants are more likely to be better networked (e.g. have contact with extension workers, and/or have access to mobile phones), or experience fewer time constraints compared to others in the community (e.g. people who work as hired labourers or in formal employment may not be able to attend). To address this, efforts were made to schedule the FGDs with participants, provide advance notice, and emphasising diversity when mobilising individuals to participate.

### **3.5.3 Individual panel interviews**

A two-phase, in-depth, semi-structured panel study was held with individual cassava producers and processors. The aim of the interviews was to obtain information on livelihood strategies and outcomes from the same individuals at two points in time. The semi-structured interview questionnaire was based around the three conceptual themes of the research: the individual's agency (empowerment/bargaining power), participation in cassava commercialisation processes and livelihood outcomes, which were based around the aforementioned indicators. The questionnaire was revised slightly in the second phase to add questions focusing on the changes that had occurred since the first interview (Appendix B and C for the interview discussion guides and Appendix G for a list of the locations).

The panel method was selected for a number of reasons, which highlight the strengths of this method. Firstly, the panel method enabled the researcher to gain greater depth of understanding on specific issues for individuals over time, which provides insight into market dynamics and their effects on smallholders. This method also enabled the researcher to identify outcomes that arise from changes in levels of commercialisation among the same individuals, and livelihood changes from a new cassava opportunity (HQCF), within the panel study timeframe. It also provided the opportunity to identify trends and contradictions to be questioned with participants, such as the if the agricultural season, weather or market prices contributed to certain outcomes (e.g. if cassava prices are unusually high or low, if there is a glut in the market, etc.). Therefore, it allows the

researcher to identify change based on pre-defined indicators instead of relying solely on recall or perception-based data from one interview, which enhanced the reliability of the data.

The first phase of the in-depth household and individual interviews was conducted in September 2011 in Malawi and November 2011 in Nigeria. In total, 50 interviews were held in Zomba, Mulanje and Nkhotakota districts, and 60 interviews in Ogun and Ondo states in Nigeria. Cassava producer and processing groups were used as the basis on which to select individuals, as they were exposed to new market opportunities through the C:AVA project. The farmer/processor groups and locations were selected randomly from a list of communities/groups visited for the baseline study, but with representation from each region. Individuals were selected randomly from farmer/processor group lists. The sample size for the individual household interviews was determined by the perceived saturation point of new information, given the differences between regions, ethnic and linguistic groups, and types of cassava value chains and drying technology, which is a common strategy used in analytic induction (Bryman, 2008).

The second phase of interviews was conducted in July 2014 in Malawi and November 2014 in Nigeria. The sample size for the second phase of panel interviews was reduced in both countries to 30 individuals each. It was decided not to include the entire sample of individuals from the first phase because a) some of the original interviews were of poor quality (e.g. poor discussion, contradictory responses), b) the interview responses were repetitive, c) the researcher found that more insight could be gained by interviewing other people in the household or community, and d) new members of groups were included (people who decided to take up membership during the lifetime of the C:AVA project). Focusing on a smaller sample for the panel interviews provided more time to investigate the larger context and elicit information from non and new member. This strengthened the research findings using ‘snowball sampling’, a non-probability sampling technique where existing study subjects refer other individuals to be interviewed to allow for investigation of issues arising during interviews.

Analysis and synthesis of the data from the panel interviews drew on a ‘grounded theory’ approach. This is an iterative approach which entails systematically analysing the text from the interviews and establishing concepts, categories, themes, and relationships between them, which arise from the data. The analysis is then used to establish a theory. This approach aims to analyse the data with limited preconceptions or theories, and relies on the text itself to develop the theory. In some cases, researchers undertaking grounded theory will not review literature or structure the fieldwork inquiry so as to reduce the influence of their preconceptions. However, grounded theory

can also be used to *extend an existing theory* by deepening understanding of specific concepts, the relationships between them (see quote below). It is in this context that the grounded theory approach is used for this research: to inform the conceptual framework (Section 3.1)

*“If the researcher is interested in extending an already existing theory, then he or she may enter the field with some of the concepts and relations in mind”* (Strauss and Corbin, 1998:50).

A grounded theory approach also entails that the researcher must strive towards objectivity and sensitivity by regularly questioning themselves and their analysis, going back and reflecting on data, and making continual revisions. It is not forcing the data, but being inclusive to a range of meanings and perceptions (Strauss and Corbin, 1998). It also requires that the analysis be systematic and accurate, which is why software is often used; in this case Atlas ti. (see Appendix J for the list of codes used in the analysis and Appendix K for an example of panel interviews with one respondent). This software is used for qualitative analysis of large bodies of textual, graphical, audio and video data. The first stage involves line by line analysis, or microanalysis, of the text to develop categories or codes in a process referred to as ‘open coding’. This process attaches meaning to the data through categorising the text. This was followed by axial coding, which establishes connections between categories and concepts found in the data. Finally, selected coding was conducted which selects and validates core categories and relationships (Bryman, 2008). The data, codes and relationships are constantly compared to one another and revised based on new information and cases. Codes and the content are then analysed by comparing concepts and relationships until ‘theoretical saturation’ is reached, meaning that there is no new information, concepts or categories that emerge from the data.

Descriptive statistics were run on the panel interviews, including frequencies and cross-tabulations using SPSS software (Statistical Package for the Social Sciences). Significance testing was conducted for key variables of panel interview respondent characteristics against the respondent characteristics of the C:AVA project baseline and endline survey to note any differences that should be considered when interpreting the results. Key indicators are also compared for panel participants to identify changes over time, such as the level of cassava commercialisation.

There are potential risks with this methodology, such as the individuals selected for the panel are unavailable or no longer able to participate, in an event such as death, illness, or moving to another location that cannot be reached during the field work. In reality, this happened in very few cases.

Another limitation of this approach, which is reflective of qualitative research more generally, is that the findings cannot be generalised for the population as a whole, nor can it answer the question of the correlation between the categories. However, as this study uses quantitative data from the baseline and endline surveys to identify trends and correlations, the approach adds to the analysis by asking how and why these exist. This adds considerable value to the research and opens space for the words of the research participants themselves to inform theory, and hopefully address issues of power inequality between the researcher and the ‘researched’.

#### **3.5.4 Key informant interviews**

Key informant interviews were conducted with C:AVA project managers, community leaders, local authorities, private enterprise and other relevant key informants, and identified throughout the fieldwork. The interviews were mainly face-to-face; however, email and Skype interviews were conducted when it was the only feasible means of communication. The interviews were based on a topic guide developed with the key informant’s area of expertise in mind with mainly open-ended, qualitative, questions. Key informants were selected through snowball sampling.

The key informant interviews added in-depth expertise and insight into specific areas of inquiry from first-hand knowledge. They are held on a one-to-one basis with a diverse range of people in a confidential environment, so interviewees can raise issues that may be difficult to illicit from other means. For example, during the panel interviews in Malawi it was found that even on a one-to-one basis, women were reluctant to discuss their relationships with their husbands, or talk about control over income, due to shame or embarrassment. However, interviews with male and female community leaders provided information on the ‘culture’ of households in the community to understand people’s reactions. They also helped to examine specialist issues. For example, interviews with small and medium-sized enterprises (SMEs) processing HQCF in Nigeria provided valuable insight into their decision-making regarding sourcing raw materials, which has important implications for how smallholder farmers are included in value chains. The data from each interview was analysed on an individual basis as the subject of discussions and expertise varied between interviews.

#### **3.5.5 Analysis of C:AVA baseline and endline surveys**

The researcher was involved in the design of the baseline and endline surveys used in the C:AVA project, designed and led by NRI. These surveys incorporated a range of methods, but the most important component for the purposes of this research was the household questionnaire, which is

used in this research to provide a wider set of comparative quantitative data for contextualisation of the panel interviews. The baseline surveys were conducted in October 2009 in Nigeria and February 2010 in Malawi<sup>10</sup>. The endline surveys were conducted in August 2014 in Nigeria and June 2014 in Malawi. The surveys were conducted in collaboration with a third-party organisation local evaluation team in Malawi, with hired and trained enumerators who administered the questionnaires. In Nigeria the team was recruited through the Federal University of Agriculture but not part of the project team. Together with the NRI team involved in the C:AVA project, the researcher developed questionnaires and sampling frames for the surveys. The researcher's specific input involved designing questions for the aforementioned indicators used in this research.

The baseline data was collected using a structured household questionnaire (Appendix D). This aimed to identify key information on farmer and processor livelihood activities and their status at the start of the C:AVA project. The endline study used a similar questionnaire to identify changes that have occurred within the timeframe of the project by investigating similar variables (Appendix E). Additional reflective questions were added to the endline questionnaire to collect data on research questions that were not part of the baseline. The main areas added to the questionnaire were to gender disaggregation of key variables, questions on women's empowerment and changes in food security and food consumption, which had not been addressed in sufficient depth in the baseline. The questionnaires were slightly different between the two countries based on their context (e.g. measurements, ethnic groups, organisation of production and processing), and questionnaires for the impact study were shortened to be less time consuming for the interviewees.

The sample for the baseline and endline surveys involved statistically representative sampling procedures to enable robust statistical analysis. The surveys included individuals participating in cassava production and/or processing groups supported by C:AVA (treatment group) along with two control groups: those in the same communities but not participating in a cassava group (Control Group 2– C2), and those living in surrounding communities without support from the C:AVA project (Control Group 1– C1). The control groups helped to determine whether changes were attributable to the C:AVA project, which provided support for farmers and processors to commercialise. Details on the sample locations for the baseline and endline surveys are provided Appendix H.

---

<sup>10</sup> This is later than when the baseline was conducted in Nigeria as the C:AVA project started later in Malawi and the C:AVA strategy refresh in 2010 redirected staff resources and time which delayed the baseline.

For the baseline and endline surveys in both countries, the communities containing the ‘treatment’ group were selected randomly from the list of communities with whom C:AVA was planning to work. The household sample was also selected randomly; in the case of the ‘treatment’ sample, they were selected from the list of members of the C:AVA farming and processing groups and for C2, from among households in the same community who were not members of the C:AVA supported groups. In addition, non-participating communities were randomly selected from within the same districts as the C:AVA groups. Individual households were randomly selected for C1. This ensured reliability and validity of the evaluation sample in terms of representing the evaluation population.

The Progress out of Poverty Index (PPI) was used to examine poverty levels in the sample and changes in poverty between the baseline and endline surveys. However, the PPI index was not included in the baseline survey and consequently respondents were asked questions in the endline based on retrospection to the time of the baseline study, which limits the validity and reliability of the data on this time period. The PPI measures the likelihood of poverty at the household level based on ten, country-specific questions that tally to a poverty likelihood score. The score then requires comparison to poverty thresholds, for which the Living Standards Surveys (LSS) for both countries was used, as a nationally representative survey. A look-up table on the PPI website based on the LSS national survey then provides a percentage of likelihood that the household or population is living in poverty.

The limitations of the survey design in terms of attribution of impact, relate to the non-random nature of the project target communities and the difficulty of identifying comparable communities which are not influenced by the project. To overcome this, the characteristics of the treatment and control groups (gender, age, ethnicity, literacy and farm size) were compared for key variables using different significance tests (parametric and non-parametric) depending on the type of data and inquiry. Significance testing was undertaken on the identified characteristics between the baseline and endline sample, and between sample groups at the baseline and endline. Results are provided in Appendix I. Significant differences, where relevant to the interpretation of the data, are noted throughout the thesis. Quantitative results were also triangulated with qualitative and discrepancies are noted. The analysis identified changes between baseline and endline surveys, along with outcomes, by individual characteristics. Analysis of the data was conducted through SPSS and R. The data analysis included an analysis of descriptive statistics such as frequencies and cross-tabulations, similar to the panel-interviews. Statistical significance testing was



conducted for some survey variables. This included ANOVA tests to test for significant differences between means, Chi-square tests for cross-tab significant testing, and a regression analysis to test the relationship between scale variables (Chapter 6 and 7).

### **3.6 Research ethics**

The data collection and storage process followed the NRI Code of Practice on Research with People, under the University of Greenwich research ethics policy. The NRI ethics committee member reviewed the material and advised that the subject of the research, the sample, and questions of participants, fall under the jurisdiction of the NRI code of practice and did not require ethical approval from the university. All research participants were informed about the purpose of the research and the interview or FGD, and how the information would be used. Personal data was stored separately from personal responses in password protected folders and computers.

### **3.7 Chapter conclusion**

This chapter presented the conceptual framework and methodology for the study. The conceptual framework reflects livelihoods thinking: examining the connections and relations between livelihood assets, strategies and outcomes, within the broader socio-cultural and economic context. However, the conceptual framework also provides modifications to the livelihoods framework by adding in household decision-making, gender and markets, to understand the dynamics of livelihood decisions within households in the context of commercialisation. The modified livelihoods framework also draws on aspects of value chain analysis to provide a more detailed examination of cassava markets.

The study applies the conceptual framework to understand the livelihood impacts of cassava commercialisation in Nigeria and Malawi, of which both locations have been exposed to the C:AVA project, which supports the development of cassava value chains. The study uses mixed-quantitative and qualitative methods in fieldwork conducted over five years. The methods included initial scoping fieldwork with key informant interviews and FGDs, one-to-one panel interviews at two points in time, and the analysis of the baseline and endline surveys in both countries. Qualitative data was analysed using grounded theory that informed the development of the conceptual framework. Atlas ti. was used for the analysis of the panel interviews, and SPSS for *R* for the quantitative survey data.

## **4. The study context in Nigeria and Malawi: cassava and policies, institutions and processes (PIPs)**

### **4.1 Introduction**

This chapter provides the broader context in which the research takes place and is based on the literature review and field observations, drawing on the Policies, Institutions and Processes (PIPs) component of the livelihoods framework. The section starts by providing a brief description of the study countries, Nigeria and Malawi, and the specific locations where the research takes place (section 4.2). This is followed by a description of the cassava crop, and how it is produced and processed (section 4.3). Then an examination of literature is presented on the gender dynamics related to cassava to show how production and processing processes are gendered (section 4.4). This is followed by a description of cassava markets, their size and scale in the two countries (section 4.5), along with relevant policies, which have provided different opportunities for smallholder farmers in each of the study areas. The cassava value chains in the study areas, and their corresponding maps, are then presented showing the different products that are the focus of this research (section 4.6). This is followed by a description of the C:AVA project, which promotes cassava value chain development, in the study areas (section 4.7). The chapter ends with the conclusions from the chapter (section 4.8).

### **4.2 Country contexts**

This section presents the national contexts for Nigeria and Malawi, the case study countries for this research, along with information on the study sites. Specifically, the section covers information on the population, land area, and key economic and development indicators used by international development institutions such as the World Bank and United Nations. The limitations of using international indicators of development is recognised, however they are presented here to provide some insight into the development status of the two countries in a global context. The section also presents information on the cassava sector for each country and the different cassava value chains that have developed over time.

#### **4.2.1 Nigeria country description**

Nigeria covers an area of approximately 923,768 km<sup>2</sup> in West Africa, with the Gulf of Guinea on the Atlantic coast to the south and the Sahara Desert to the north. Neighbouring countries are Niger and Chad to the north, Cameroon to the east, and Benin to the west. Nigeria has varied geography,

with highland and lowland areas. It has a tropical climate with wet and dry seasons. The dry season occurs from October to March, the wet season occurs from April to September, and a cool, dry, and dusty Harmattan wind occurs in December and January, mostly in the north of the country. The temperature ranges between 25°C–40°C, and annual rainfall ranges from 2,650 mm in the southeast to less than 600 mm in the north. The vegetation across the country also varies as a result of climatic differences, from mangrove swamp forest in the Niger Delta and Sahel grassland in the north (NDHS, 2013). Its varied climate, vegetation, soil conditions and natural resources mean that there is a good potential for the country to increase agricultural production (NPC and ICF, 2013).



**Figure 3 Map of Nigeria (NBS, 2013)**

In 2017 Nigeria had a population of 182 million making it the most populous in Africa (one in five people in SSA are Nigerian) (Nigeria National Population Commission). Nigeria is a federal constitutional republic with 36 states and a Federal Capital Territory, Abuja. The states are grouped into six geopolitical zones or states, including the south west, which is the focus of this research. States are divided into Local Government Areas (LGAs). There are approximately 374 identifiable ethnic groups, and the Yoruba ethnic group is dominant in the study area of the south west (NPC and ICF, 2013). The official language is English, in addition to other official regional languages including Yoruba in the south west. Nigeria experienced British colonial rule from the late 19<sup>th</sup> century, becoming fully independent in October 1960. The country became a republic in 1963 (NPC and ICF, 2013).

Internationally, Nigeria is one of the economic and political leaders of SSA, with leading roles in the African Union, NEPAD, and in the Economic Community of West African States (ECOWAS) (World Bank, 2014a). In 2013, the country's gross domestic product (GDP) was USD \$521.8 billion, with a GDP growth rate of 5.4% and per capita GDP of \$2,760 (World Bank, 2013). In 2014, Nigeria was declared Africa's largest economy with GDP surpassing South Africa, though Nigeria is considered a lower-middle income country (BBC, 2014). The GDP per capita is also growing: from \$949 in 2009 to \$1,056 in 2013 (World Bank Open Data).

Despite economic growth in the country, there has been little improvement in the poverty rate in the last decade. World Bank (2014b) data indicates that the poverty ratio as a percentage of the population in 2010 was 46%, which shows only a minor decline from 48.4% in 2004. The World Bank (2014ab) has linked the lack of poverty reduction to slow growth in the agricultural sector (at 4.2% from 2011–13), which the World Bank related to poor incentives and policies affecting agricultural productivity, poor governance, education, and infrastructure more generally. At the same time, agriculture is the most common income generating activity among all age groups (NPC and ICF, 2013). The total land area cultivated is a considerable 37.3% of all land, or 32,031,825ha (FAOSTAT). Out of the total area cultivated, 83.9% is under owner-like possession, followed by 10.6% family land, 4.1% rented/royalty, 1.0% squatters and 0.4% other (NBS, 2013).

The UN Human Development Index (HDI), while not comprehensive indicator of development per se, provides some indication of how Nigeria is situated globally in terms of key development measures. In 2013, the country ranked 153 out of 187 countries, which positioned the country in the low human development category. This has improved slightly over the years with improvements in life expectancy (+6.8 years), the average years of schooling (+0.2 years) and

expected years of schooling (+2.4 years). However, despite these positive trends, Nigeria has one of the highest maternal mortality rates in the world (annual female deaths of 560 out of 100,000 live births in 2012, ranking 175 out of 183 countries).<sup>11</sup>

Nigeria also has extreme inequality in wealth and human development. While the HDI masks inequality in distribution of human development across the population, the Inequality Adjusted HDI (IHDI) quantifies inequality by discounting the average value of the level of inequality in each dimension of the measurement. This adjustment results in Nigeria's HDI reducing by 41.4% in 2012. This is above the average loss from inequality for low HDI countries (33.5%) and for SSA (35.0%) (UNDP, 2013).

Nigeria's high level of poverty relates to periodic food insecurity. Findings from the 2013 Demographic Health Survey (DHS) show that nationally, 20% of households reported that they needed to reduce the number of meals taken in the 12 months preceding the survey due to insufficient food. In addition, urban households were more likely to have reduced their meal intake than rural households (21% compared with 15%) (NPC and ICF, 2013).

National policy since the 1980s has attempted to support industrial and formal cassava value chains through the promotion of HQCF. However, in reality, policy has created uncertainty with regard to cassava markets (Lamboll, *forthcoming*). This is because changing Governments have introduced and re-introduced a 10% cassava flour inclusion policy (into bread and biscuit products) to promote the domestic industry for cassava processing and reduce wheat imports. However, changes in Government and their priorities, have led to limited effectiveness and enforcement of these policies. In turn, investors and manufacturers, are hesitant about HQCF. Therefore, there has been varying levels of enthusiasm exchanged with disappointment among cassava growers of how cassava industrial markets will develop.

#### 4.2.2 Malawi country description

Located in south-east Africa, Malawi covers an area of approximately 118,484 km<sup>2</sup>. It is a land-locked country bordering Zambia to the north east and Mozambique to the east, south and west. The Great Rift Valley runs through the country, where the surrounding landscape has an elevation

---

<sup>11</sup> Excluding: Tuvalu; Andorra; Saint Maarten (Dutch part); St. Kitts and Nevis; Isle of Man; Liechtenstein; Faeroe Islands; Macao SAR, China; Seychelles; Guam; Dominica; Greenland; Hong Kong SAR, China; Turks and Caicos Islands; Palau; French Polynesia; Monaco; Marshall Islands; New Caledonia; Bermuda; Aruba; St. Martin (French part); Kosovo; Northern Mariana Islands; Curacao; Virgin Islands (U.S.); San Marino; Antigua and Barbuda; Cayman Islands; American Samoa.

of 800–1200m with peaks up to 3,000m. The country’s climate is tropical, but the influence of high elevation cools temperatures. The warmest months are September to January, with temperatures ranging from 22–27° C. Rains vary in timing and intensity from year to year. In the south, the rainy season normally lasts from November to February but continues until March or April in the north (McSweeney et al., 2010). The country is severely affected by intense climate variation, including heavy and changing patterns of rainfall, floods and droughts and dry spells, which affect agricultural productivity and food security in the country (ActionAid, 2006).



**Figure 4 Map of Malawi (DHS, 2010)**

Malawi is divided into the Northern, Central and Southern regions. The country’s capital and largest city is Lilongwe, located in the Central region. There are 28 districts that are subdivided into Traditional Authorities. The population has increased rapidly from 4 million in 1966, to a recorded 16.3 million in 2013 with a population density of 129 per km<sup>2</sup> (World Bank, 2014).

Malawi is primarily a rural country, with 85% of the population residing in rural areas (The Third Integrated Household Survey Malawi, IHS3, 2010/11). The official languages of the country are

Chichewa and English, though Malawi has considerable ethnic and linguistic diversity. The Tumbuka and Tonga ethnic groups are primarily settled in the Northern region, the Ngoni in the Northern and Central Regions, the Chewa in the Central Region, and the Yao, Lomwe, Sena, and Mang'anja in the Southern Region. The Chewa is the largest ethnic group, followed by Lomwe, Yao and Ngoni (MHRC, 2005). However, increasing migration furthers the point that communities are not ethnically homogenous.

The area was settled by migrating Bantu groups around the 10<sup>th</sup> century. It was colonised by the British in 1891. In 1954, Malawi, which was known as Nyasaland at the time, became part of the semi-independent Central African Federation. This was dissolved in 1963 and in 1964 Nyasaland gained independence and was renamed Malawi. The country was a single-party state under Hastings Banda who remained President until 1994. Malawi is now a democratic country with a multi-party government.

Malawi's economy is agriculturally based, which accounts for 30% of GDP. The country's major exports are tobacco, tea and sugar (DHS, 2010). Using the World Bank's indicators of economic health, Malawi is considered a developing economy, but presents "positive prospects" (World Bank, 2014c). GDP per capita is low, at \$264 in 2013, up from \$250 in 2009 in (World Bank Open Data). However, the country has recently experienced an improvement in economic growth (5.2% in 2013), which was previously stagnant (1.9% in 2012). From 2006–2010, growth was at 7% (World Bank, 2014c). The World Bank (2014c) reports that the rapid decline in growth in 2012 was related to a fiscal and governance crisis, in contrast to the DHS (2010) report which relates the decline to heavy rains and dry spells. In 2011/2012 the country experienced a foreign exchange crisis with a devaluation of the Kwacha.

The agricultural sector is primarily based on smallholder agriculture: 85% of households are engaged in agriculture, of which 84% are engaged with crop production, and more women are reported to be involved compared to men (88% and 84%, respectively) (IHS3, 2010/11). Smallholder farming contributes to 75% of the food consumed in the country. However, the small size of plots, declining soil fertility and limited access to credit and extension services limit smallholder productivity and benefit from farming (New Agriculturalist, 2012). Overall, 47% of the country is agricultural land. The most important crops for smallholders are bananas, cassava, groundnuts, maize, pulses, rice, sorghum, sugarcane and sweet potatoes (New Agriculturalist, 2012).

The Malawi Growth and Development Strategy (MGDS) is the national development plan from 2006, in which agriculture and food security, irrigation and transport infrastructure are prioritised. Some of the objectives of the strategy include the mechanisation of agricultural production, value addition, fair international and internal trading and sustainable exploitation of natural resources. Government projects, such as the Greenbelt Initiative which provides irrigation to farmers, are designed to address common agricultural constraints. However, execution of the plan is highly dependent on foreign assistance (New Agriculturalist, 2012).

Malawi is deeply affected by poverty. It is a low-income country ranked 170 out of 186 countries in the 2013 Human Development Index and is characterised by high inequality with a Gini coefficient of 46.2 (World Bank, 2010).<sup>12</sup> The Third Integrated Household Survey reports that over half the population are poor and one quarter live in extreme poverty (IHS3 2010/11). Reductions in poverty rates over time are marginal; from 52.4% in 2004/05 to 50.7% in 2010/11. Total expenditure remains below the food poverty line level (an income of 22,956 Malawi Kwacha (MK) or below \$146 per person, per year). The depth of poverty (the mean poverty gap for the population as a proportion of the poverty line) and severity (the mean of the squared poverty gap index; poorer households receive greater weight) have also increased. Almost half (47%) of the children aged five and under in Malawi are stunted due to malnutrition and 20% are severely stunted.

Other social indicators have shown some improvements, including increased life expectancy from 46 years in 2000 to 54.8 years in 2012. Literacy levels among the population aged 15 years and above have increased, albeit slowly from 68.1% in 2000 to 76.9% in 2013 (World Bank, 2013). Adult HIV prevalence is high in the country, but has reduced from 15.8% in 2000 to 10.8% in 2012.

Similar to Nigeria, Malawi has one of the highest maternal mortality rates in the world. It reports 510 annual female deaths out of 100,000 live births in 2012, with a ranking of 172 out of 183 countries).<sup>13</sup> This has reduced slightly from 540 in 2010 (World Bank Open Data). Due to poverty

---

<sup>12</sup> The Gini coefficient is a statistical measure of the degree of variation represented in a set of values, used especially in analysing income inequality.

<sup>13</sup> Excluding: Tuvalu; Andorra; Saint Maarten (Dutch part); St. Kitts and Nevis; Isle of Man; Liechtenstein; Faeroe Islands; Macao SAR, China; Seychelles; Guam; Dominica; Greenland; Hong Kong SAR, China; Turks and Caicos Islands; Palau; French Polynesia; Monaco; Marshall Islands; New Caledonia; Bermuda; Aruba; St. Martin (French part); Kosovo; Northern Mariana Islands; Curacao; Virgin Islands (U.S.); San Marino; Antigua and Barbuda; Cayman Islands; American Samoa.



and a shortage of adult labour resulting from migration and HIV/AIDS-related deaths, Malawi has the highest number of child labourers in Africa (New Agriculturalist, 2012).

The Malawi IHS3 survey results report that a substantial proportion of the population experiences extreme forms of food insecurity. One in every three people (33% of the population) experience multiple occasions of reduced food intake and disrupted eating or hunger due to lack of resources. In addition, levels of food security differ among the districts and regions of the country. Proportions are higher in rural areas compared to urban areas, and among FHH compared to male-headed households (MHH).

Key challenges for the country reported by the World Bank (2014c) are the sustainability of policy reforms, inefficient and poorly targeted public spending, weak governance, poor investment climate, dependency of the agriculture sector on tobacco exports, high population density and poverty contributing to decline in the country's natural resource base, and being prone to natural disasters related to climate variability and change.

The Malawi National Policy on agriculture, food security and nutrition, executed through the Agricultural Development Programme (ADP), is based on household, community and national food and nutrition security enhancement. The objective of the ADP is to improve food security and generate growth in agricultural income through increased productivity of food and cash crops, while ensuring sustainable use of natural resources. Further, the ADP aims to improve resilience to shocks for smallholder farmer as well as for the broader agricultural environment. Hence, the programme, at least in policy terms, aims to address both agricultural productivity and the adoption of more environmentally sustainable practices.

#### **4.2.3 Populations in the study areas**

This section provides a brief description of population characteristics in the study areas from the literature review. Additional information on the study areas from fieldwork is provided in the next chapter.

#### **Nigeria**

Ogun and Ondo states are the study areas in Nigeria and are located in the South West Region of Nigeria. Ogun state borders Lagos state to the south, Oyo and Osun to the north, Ondo state to the east, and Benin to the west. Abeokuta and Akure are the state capitals of Ogun and Ondo states respectively. A Federal University of Agriculture is located in Abeokuta. Ogun state has 20 LGAs

and Ondo state has 18. The area of Ogun and Ondo states ranks 24 and 25 out of 36 states, respectively (measuring 16,980.55 km<sup>2</sup> and 15,500 km<sup>2</sup> respectively). Based on the 2006 Census, Ogun state has a population of 3.8 million and Ondo State's is 3.4 million (NPC, 2010) (Table 3). Nationally, Nigeria's population is young, a scenario typical of countries with high fertility rates. The proportion of children under age 15 is around 46%, while the proportion of individuals age 65 and older is 4%.

**Table 3 Population characteristics of Ogun and Ondo states, Nigeria (NPC, 2010)**

	Census 1991	Census 2006				
		Male population	Female population	Total population	Growth rate (%)	Population Density Km <sup>2</sup>
<b>Ogun</b>	2,333,726	1,864,907	1,886,233	3,751,140	3.31	220.9
<b>Ondo</b>	2,249,548	1,745,057	1,715,820	3,440,000	3.01	221.9

## Malawi

The study areas in Malawi are Zomba and Mulanje districts in the Southern Region and Nkhatakota in the Central Region. The Southern Region is the most populated region (Table 4). This reflected in the population figures for Zomba and Mulanje districts, compared to Nkhatakota in the Central Region. A fair proportion of the population are mobile; ten percent of the population reported having moved in the last five years, 54% from rural to urban areas, according to the IHS3 2010/11. These regions are also highly dependent on smallholder agriculture, where 82% of households farm in the southern region, compared to 88% in the Central Region and 87% in the Northern Region.

**Table 4 Population in the study area districts and nationally, Malawi (NSO, 2008)**

District	Region	Men	Women	Total
Zomba	Southern	276,650	302,989	579,639
Mulanje	Southern	243,970	277,421	521,391
Nkhatakota	Central	150,833	152,826	303,659
National	-	6,358,933	6,718,227	13,077,160

### 4.3 Cassava: an introduction

Cassava (*Manihot esculenta Crantz*), a crop native to South America, is the world's fourth most important staple, after rice, wheat and maize, and it is grown in Latin America, Africa and Asia (IFAD and FAO, 2000; El-Sharkawy, 2012).<sup>14</sup> In Africa, cassava is the second most important food staple in terms of per capita calories consumed (second to maize) (Nweke, 2005). Its roots and leaves can be consumed; the roots being high in carbohydrates and the leaves in protein and minerals (IFAD and FAO, 2000). Cassava can be cultivated in a range of tropical environments, temperatures and rainfall conditions and is tolerant to drought and poor soil quality, and requires few inputs other than labour (IFAD and FAO, 2000:8). However, cassava yields are improved with adequate water, fertiliser and soil fertility. These characteristics make the crop valuable in SSA due to its low level of risk, particularly in comparison to maize which is risky due to unpredictable rains (Nweke, 2005).

Prior to the year 2000, there had been minimal investment in the crop related to its low market value. Notwithstanding, cassava had started to appear on African policy agendas in the 1970–80s when cereal production lost government support through continental-wide droughts, but otherwise the crop received little support (IFAD and FAO, 2000). There were perceptions that cassava was an inferior food and consumption would reduce with income, and was uncompetitive compared to other crops such as imported rice and wheat (Nweke et al., 2001). Consequently, yields were, and are, considered to be below potential. Cassava yield has the potential to be 20–25 tonnes per hectare, though this is extremely rare among smallholder farmers in SSA. IFAD and FAO (2000) reported that low cassava yields are related to negative perceptions of the crops' value, along with poor soil fertility, low application of inputs, slow dissemination of improved cassava varieties, adverse climatic conditions (i.e. droughts), infestations by Cassava Mealybug (CMB), Green Spider Mite (GSM), and outbreaks of Cassava Mosaic Disease (CMD) and Cassava Brown Streak Disease (CBSD) that can devastate the crop.

However, the new millennium saw the importance of cassava as a source of income and food start to grow (IFAD and FAO, 2000). More recent policy initiatives have promoted cassava and cassava industry, for income and household food security among smallholders (e.g. PACI launched by

---

<sup>14</sup> The word cassava is derived from the word 'casabi', which is an Arawak Indian name from South America, and is also known as 'manioc' in French, 'mandioc' in Portuguese and 'yuca' in Spanish. The crop was cultivated widely in pre-Columbian tropical America and was introduced by European traders in Africa in the 16<sup>th</sup> century (El-Sharkawy, 2012).

NEPAD and IITA in 2004; the C:AVA project run by NRI and funded by the Bill and Melinda Gates Foundation from 2008, and the RCPMI with IFAD in West Africa). However, the global cassava sector faces a number of challenges including competition with cereals, fluctuating commodity and input prices and limited new markets and saturated traditional markets (Adebayo et al., 2010:8).

#### **4.3.1 Cassava production and processing**

In SSA, cassava is traditionally produced on smallholder farms and inter-cropped with other crops such as maize, yams, bananas and legumes (IFAD and FAO, 2000). Farmer's fields are the most common source of planting materials; however, the distribution of high-yielding varieties is taking place through governments and NGOs, as was evident in the study locations during the fieldwork (e.g. the President's initiative in Malawi) (Nweke, 2005). Nweke (2005) further reports that cassava production under continuous cultivation is an increasing practice in many African countries in response to the growing population pressure on land, cassava's long growth period and pests and disease.

The Collaborative Study of Cassava in Africa (COSCA) of six African countries (Congo, Côte d'Ivoire, Ghana, Nigeria, Tanzania and Uganda) found differences in perceptions of cassava depending on its use (FAO, 2005). For example, the perception that cassava requires minimal inputs was only true in areas where the crop is used mainly for household consumption or famine reserve. However, when cassava was marketed, farmers use significantly more labour. Inputs such as pesticides and fertilisers are not very common, but were more common in large commercial centres in Nigeria. One thousand local cassava varieties were identified in the COSCA study, but specific varieties differed according to context. Nweke (2005) also argues that harvesting labour had increased with the use of high-yielding varieties. Farmers commonly classify local cassava varieties into the bitter and the sweet varieties. The bitter variety is so named because of the bitter taste of the root that is often associated with higher cyanide content, though bitterness is not necessarily a reliable indicator (FAO, 1990).

The variety of cassava can determine the method of processing and consumption. Sweet varieties can commonly be consumed fresh, without soaking and sun drying. Bitter varieties are normally processed before consumption to reduce cyanide content. This is usually done through peeling, grating and squeezing the root to remove water and cyanide. The pulp can then be dried and stored for several months. Some processed cassava products, such as gari - a staple food in West Africa,

can be made from either sweet or bitter varieties, but other products such as kondowole in Malawi, requires bitter varieties (Nweke, 2005; researcher's own field observations).

Cassava roots are typically processed and prepared for home consumption and sale in community markets and transported to urban centres. The high-water content of the crop makes it bulky and highly perishable, and therefore processing should occur within 48 hours of harvest. This makes harvesting and transportation a challenge. Consequently, local markets typically contain local produce. Processing the root involves removing the toxins, bulk and weight, which, in theory, adds value and reduces breakage, making it easier to transport and store (Nweke, 2005).

#### **4.4 Cassava and gender**

Cassava activities and cassava-related narratives in policy and development discourse have important gender dynamics. Development narratives often relate the crop to women and thus it is often stated that cassava is considered a 'women's crop' (Forsythe et al., 2015). This is associated with the strong role of women in cassava processing for home consumption and income generation (Nweke, 1994; Afolami and Ajani, 1995; Enete et al., 2002), which is particularly evident in West Africa. However, cassava is also linked with women because of its important role in household food security, which is often the responsibility of women. Practically, the low-risk and low-input requirements of cassava are important for women who experience more severe constraints in accessing agricultural inputs in comparison to men, and face more constraints in participating in cash crop markets (Kiriti and Tisdell, 2003).

Due to women's prominent role in cassava processing, logic may imply that new commercial cassava opportunities for processed products could increase women's direct benefit through increased income and employment opportunities. Furthermore, research indicates that an increase in women's income is more likely to be spent on education and health expenditures, contributing to a number of development indicators. However, pervasive market inequalities raise the question whether women can capture additional benefits from a larger cassava market. As, for example, Odebode (2008) found that in Nigeria, female producers and processors face more pronounced constraints to increasing cassava production compared to men, such as labour shortages, lack of access to inputs, equipment and finance, and poor transportation and infrastructure, which can affect commercialisation. Adebayo et al. (2003) found that, as cassava processing has become more commercialised in some contexts, men increasingly own and manage cassava processing enterprises, not women. This finding was also reported by Nweke et al. (2001) who argued that commercialisation and mechanisation processes have tended to exclude women, as men become

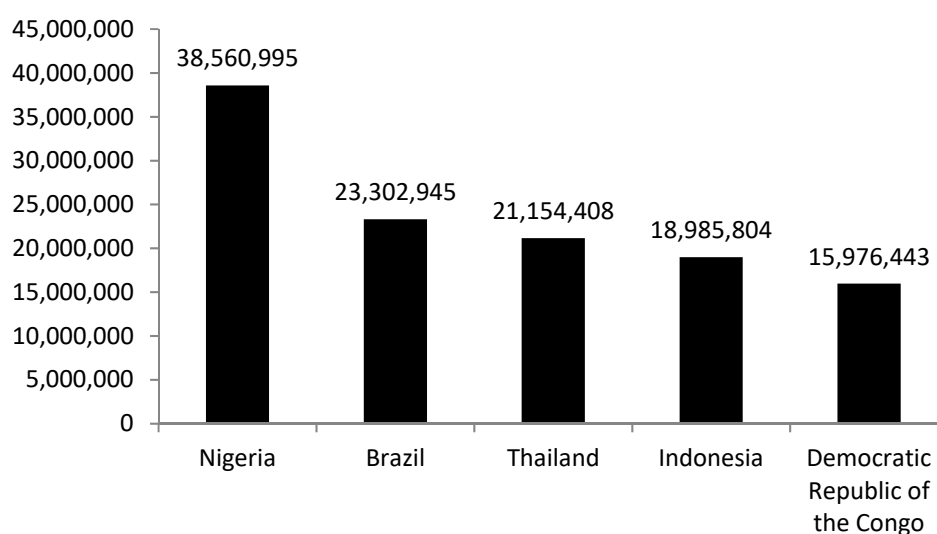
increasingly involved in what is seen as a viable market opportunity. This could imply that farmers with larger landholdings, who are better resourced, are often male and are typically are in a better position to respond and manage the risks of new commercial opportunities (Lamboll et al., 2013).

The change in cassava market dynamics may indeed alter gender roles and responsibilities. Consequently, cassava commercialisation raises a number of issues around control, access, efficiency, growth and benefits between men and women (Timothy and Adeoti, 2006). However, the impacts of these changes on gender dynamics are generally under-researched.<sup>15</sup> Furthermore, as the next section demonstrates, due to varying gender dynamics in different types of value chains, there may be different outcomes from commercialisation.

#### 4.5 Scale of cassava markets in the case-study countries

##### Nigeria

At a national level, Nigeria has the highest cassava production in the world, above Brazil, Thailand, Indonesia and the Congo (Figure 5).



**Figure 5 Annual average cassava production of the world's top five cassava producers (tonnes) 1993–2013 (FAOSTAT, 2014)**

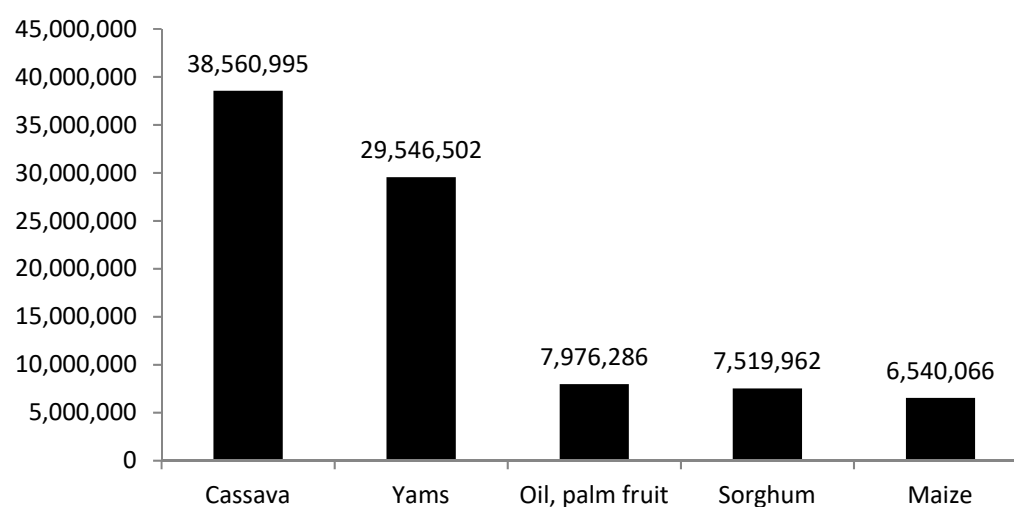
<sup>15</sup> There has been some research on women, global value chains and labour standards (see Barrientos et al., 2003; Tallontire et al., 2005); however, this has focused on the gendered aspects of employment opportunities, and not on livelihood aspects in domestic economic activities such as staple crop markets.

Cassava is the most widely grown crop by smallholders: almost half (46%) of all households were reported to cultivate cassava nationally (Table 5). This is followed by maize (45%), sorghum (39%), and yam (35%), the latter of which are popular crops in the south-west region (NBS, 2013).

**Table 5 Estimated area and production of ten top major crops, Nigeria (NBS, 2013)**

Crop	Share of households growing crop (%)	Average area per household (ha)
Cassava	45.9	0.2
Maize	45.2	0.3
Sorghum	39.2	0.4
Cowpeas	29.8	0.3
Yam	35.4	0.1
Millet	23.6	0.4
Groundnut	13.6	0.4
Rice	10.7	0.5
Cocoyam	9.5	0.1
Oil palm tree	8	0.1

Compared to other commodities, cassava has the highest level of production in Nigeria: 39 million tonnes from 1993–2013, which has steadily increased since 1993 (FAOSTAT, 2014). This is higher than yam, palm oil, sorghum and maize (Figure 6). In 2013, Nigeria produced 54 million tonnes of cassava, which was mostly for domestic consumption.



**Figure 6 Annual average production of the most produced commodities (tonnes) from 1993-2013, Nigeria (FAOSTAT, 2014)**

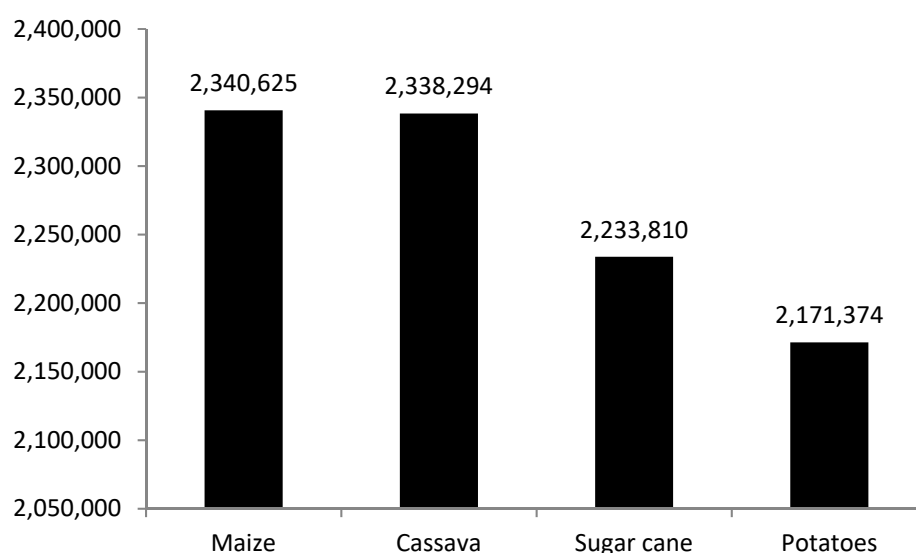
Nationally, 33 out of 36 states cultivate cassava on a total area of 3.5 million hectares (NBS, 2013). Table 6 shows the estimated hectares, output and yield of cassava in the two states in 2006. Ogun state shows more cultivation and output of cassava compared to Ondo state. However, yield in Ondo state is higher than Ogun.

**Table 6 Estimated hectares, output and yield of cassava in Ogun and Ondo states in 2006, Nigeria (C:AVA, 2008)**

State	Hectares (ha)	Output (tonnes)	Yield (tonnes/ha)
Ogun	362,721	5,720,263	15.77
Ondo	103,360	2,182,343	21.114

## Malawi

Malawi's cassava production is considerable smaller compared to Nigeria. However, cassava production is high compared to other crops produced in the country. It is second only to maize in terms of the average quantity of total production from 2009 to 2013, followed by sugarcane and potatoes (Figure 7).

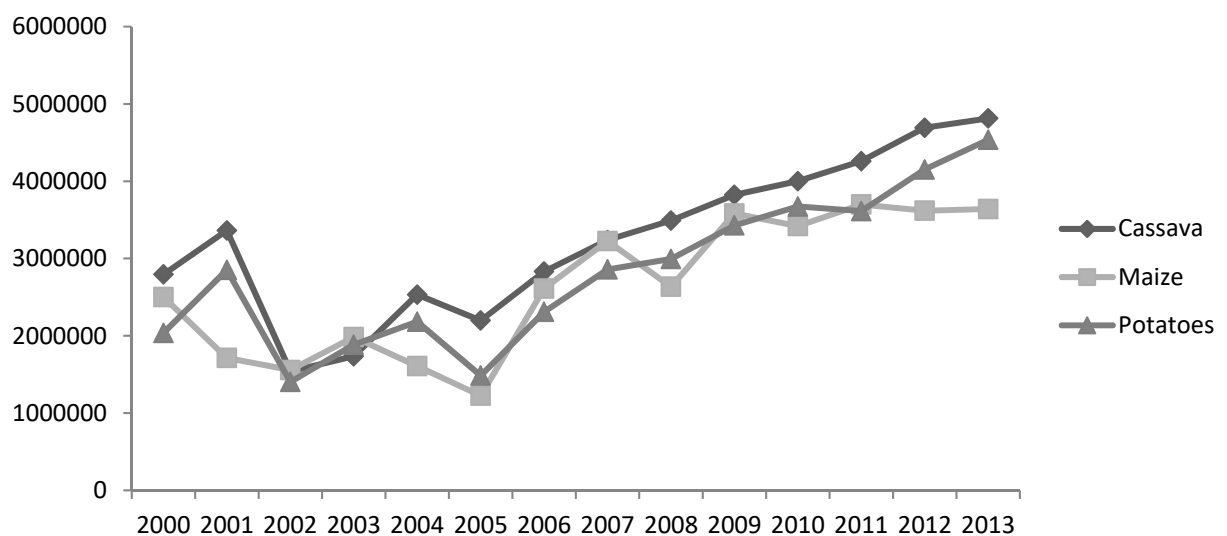


**Figure 7 Annual average production of the most produced commodities (tonnes) from 1993–2013, Malawi (FAOSTAT, 2014)**

However, in 2013 cassava had the highest level of production in the country compared to other crops (4.8 million tonnes compared to 3.6 million tonnes for maize and 4.5 million tonnes for



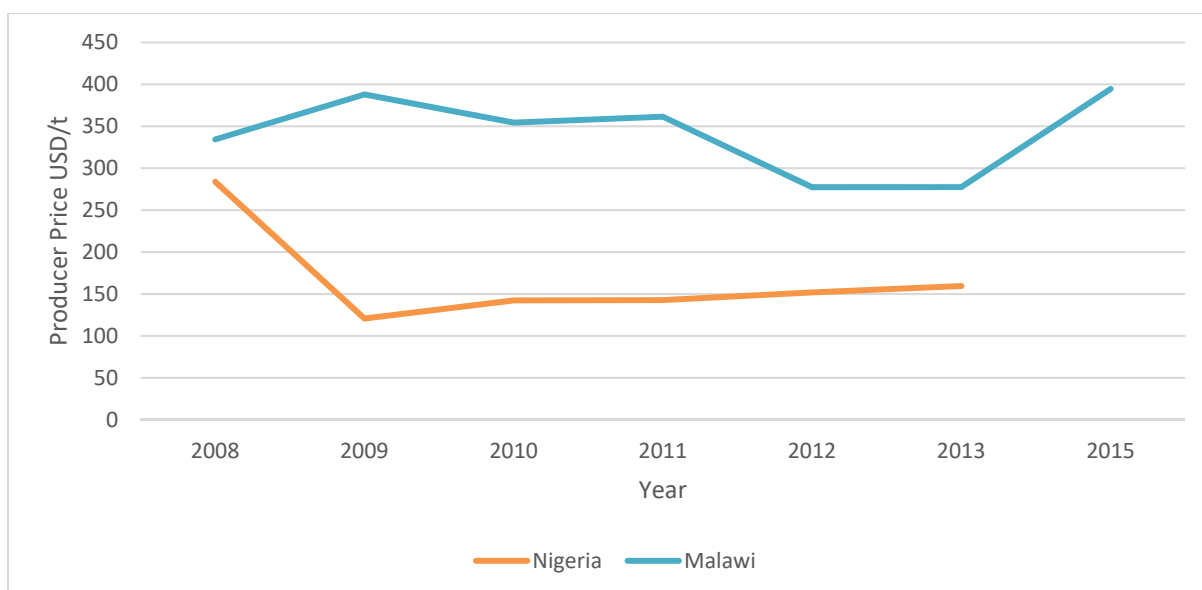
potatoes), and in 2007 cassava production surpassed maize as shown in the figure below. Figures at the district level are difficult to obtain as cassava is intercropped with other crops, particularly maize (C:AVA Malawi Value Chain Analysis, 2009; author’s field observations). However, these figures should be interpreted with caution. Figures may be overestimated to reflect the effort that government and development projects have put into the crop rather than its actual production; figures can be misleading by the inclusion of non-dry matter in weight figures which discount real weight (Sergeant, 2009). Nevertheless, the importance of cassava in Malawi is significant. The crop plays an important role in income generation and food security of smallholder farmers, particularly given the drought conditions and poor soils that are common in the country.



**Figure 8 Cassava, maize and potato production (tonnes) from 2000 to 2013, Malawi (FAOSTAT, 2014)**

### Cassava prices

The figure below provides the national producer price for cassava in Nigeria and Malawi between 2008 and 2015, which shows the fluctuation in price over time and the differences between the two countries. Cassava prices in Nigeria and Malawi reflect a number of factors, including distance to the market, type of product and market conditions, and can deviate significantly locally because of these reasons (refer to Appendix L for examples of price information in different locations).



**Figure 9 Cassava producer price (USD/tonne) from 2008 to 2015, Nigeria and Malawi (FAOSTAT, 2016)**

#### 4.6 Cassava products and value chains

Cassava is the main component in a number of foods across SSA, and is increasingly used for livestock feed and in industry use (e.g. starch used in paperboard adhesives). In terms of food products, cassava is consumed differently in a number of traditional dishes that vary among the regions. It is commonly processed into a product that often accompanies vegetable and meat as a main staple. Linking the two case-study countries is the C:AVA project (explained in the next section), which supports the processing of local cassava products along with a relatively new cassava product, high-quality cassava flour or HQCF, in both countries. However, Nigeria also has a longer history of processing cassava products for local markets compared to Malawi, and a larger demand for the crop for both industrial and food consumption purposes.

HQCF is an unfermented cassava flour and can be used as a partial wheat replacement for various industrial uses or in baking. The processing of cassava roots into HQCF involves peeling, washing, grating, pressing, disintegrating, sifting, drying, milling, screening, packaging and storing. ‘High quality’ refers to the way of drying and processing cassava without fermentation and contamination. Cassava used to make HQCF can be dried using two different methods: sun drying and artificial drying. Sun drying refers to a process which requires equipment for grating or squeezing cassava roots to remove moisture followed by drying the pulp in the sun. Sun drying value chains are characterised by processor groups engaged in seasonal small-scale processing, as evident in Malawi. Artificial drying (or ‘flash’ drying) is a more advanced technology which dries

rapidly by passing hot air through the cassava pulp. A flash dryer can dry one to three metric tonnes of HQCF per day and is operated by large-scale factories or small and medium enterprises (SMEs), who process their own cassava roots or roots purchased from farmers as raw material (Lamboll et al., 2015). In the study areas, there were factory producing HQCF with a flash dryer in Ogun state, Nigeria, and one in Zomba, Malawi. The technology used for cassava processing, particularly which drying technology issued (sun or flash drying), influences the way cassava value chains are organised and who they include (Lamboll et al., 2013).

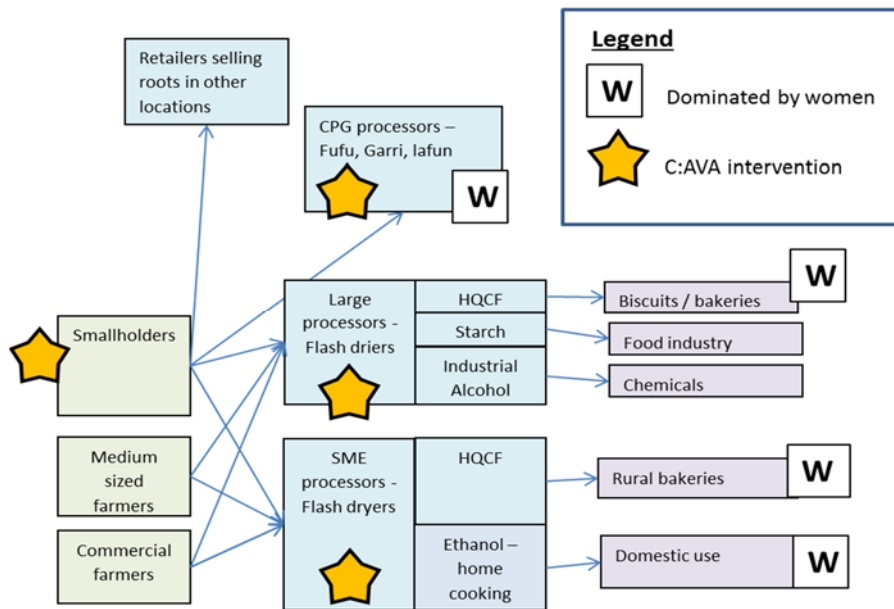
## **Nigeria**

In Nigeria, the cassava value chains start with smallholder cassava producers who sell roots to retailers, traders and CPGs or individual processors who process cassava to make a range of local cassava products (Figure 10). Marketing is mainly done within the LGA and sometimes to urban markets, depending on the networks of the individual or group. Smallholders can also sell fresh cassava to SMEs or large-scale processors/factories depending on the demand and proximity to the factory. These processors make a range of cassava products including gari, fufu and HQCF to supply rural and urban bakeries, and the food and chemical industries (Table 1). The different value chains involve smallholder farmers in different ways and scales. SMEs and large-scale processors require a large source of roots close by and may prefer to use their own land and/or purchase from smallholders close to the processing centre due to the 48-hour window until deterioration. Other large-scale industries may prefer to buy from larger landholders as they are perceived to provide a more consistent supply of roots in larger quantities.

In Ogun and Ondo states, the majority of cassava production is for home consumption and for making traditional food products such as gari and fufu, which are sold locally and to traders to sell at urban markets. However, processing for industrial markets such as starch, flour mills, plywood, instant fufu, animal feed and bakeries is growing (particularly with the support of Government initiatives and the C:AVA project) (Kleih et al., 2008). Flash dryers for the production of HQCF have been located in the two states in different enterprises operating at different levels of capacity and success. These enterprises also produce other cassava products.

The C:AVA project supported CPGs to produce HQCF and other processed cassava products from 2008–2010. However, following the implementation of a new project strategy in 2010, the emphasis of the project shifted to improving the artificial drying capacity and fuel efficiency of SMEs in order to increase the scale of HQCF production and numbers of smallholder farmers

supplying roots (Lamboll et al., 2013). HQCF production in Nigeria has been influenced by changing government regulations that have supported (or not) the 10% rate of inclusion of HQCF in wheat flour, which has had varying levels of success. The market for HQCF is also highly dependent on the price of wheat (Kleih et al., 2008).



**Figure 10 Cassava value chains in Ogun and Ondo states, Nigeria**  
Source: Author's own

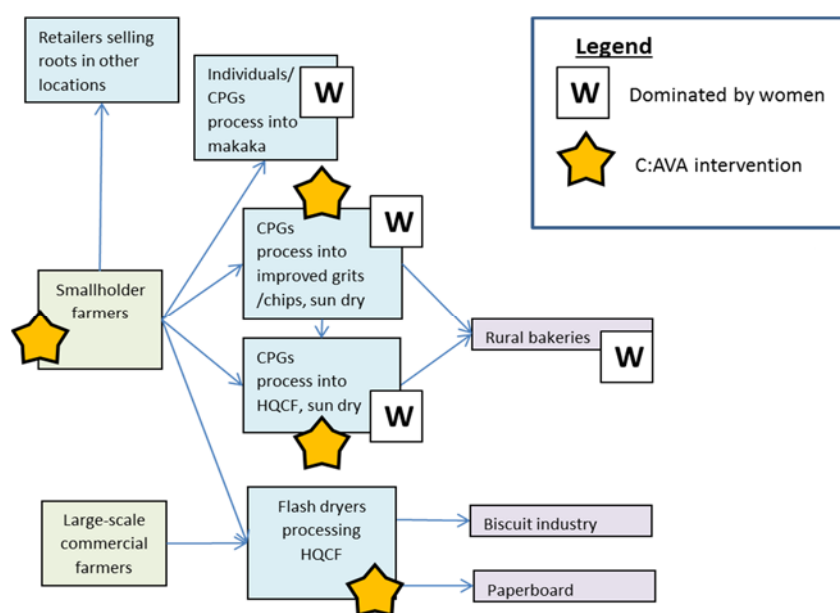
## Malawi

In Malawi, cassava is mainly prepared as makaka in the southern region and kondowole in the central and northern regions (Table 1). Processing of local cassava products occurs at household or group (CPG) level, often using simple, hand-operated equipment. Fresh cassava is sold by smallholder farmers to local markets or community-level processors for home consumption or further trading. Makaka and kondowole are part of the sun-drying value chain. Both products involve minimal technological requirements as cassava is dried in the sun, which also means that greater numbers of smallholder farmers can participate, the majority of whom do not own technical processing equipment. Individuals participating in these value chains are, to a large extent, organised into CPGs, which are generally characterised by large numbers of women. Some of the CPGs focus on processing cassava grits or chips.

HQCF has two value chains in Malawi. The first involves smallholder farmers and processors sun-drying the cassava, which is processed somewhat similarly to local cassava products and involves CPGs. Processors using sun-drying techniques predominantly use their own roots or purchase from

within their communities. HQCF in this chain is mainly sold within communities to households or local bakers. As previously described, these processing groups are supported by the C:AVA project.

The other HQCF value chain uses artificial drying with flash dryers. This value chain has different characteristics compared to the sun drying chain, as the flash dryer requires large-scale, factory infrastructure. In Malawi, this supply chain mostly involves large-scale farmers selling fresh roots directly to a cassava processing factory. Investors in artificial drying technologies prefer to obtain their raw materials from larger, more commercially focused farmers. HQCF is used in this context as a starch substitute in the packaging industry and for export markets.



**Figure 11 Cassava value chains, Malawi**  
Source: Author's own

#### 4.7 The Cassava: Adding Value for Africa (C:AVA) project

The C:AVA project started in 2008 to support cassava value chains, particularly HQCF, in operated in Ghana, Tanzania, Uganda, Nigeria and Malawi. This approach is supported by the Economic Commission for Africa (ECA) and is promoted as a strategy for poverty reduction (ECA, 2008). The first phase ran from 2008-2014 and aimed to improve the livelihoods and incomes of smallholder households as direct beneficiaries, with an emphasis on promoting opportunities for women and disadvantaged groups. A particular focus of the C:AVA project is to develop new value chains for HQCF, creating opportunities for value addition. HQCF markets range from community-level bakeries to large-scale manufacturers of products such as starch,

plywood, paperboard, and biscuits. The project involves three key intervention points in the value chain: 1) ensuring a consistent supply of raw materials through working with cassava producers; 2) developing viable intermediaries acting as secondary processors or bulking agents in value chains; and 3) encouraging market demand (Adebayo et al. 2010:3). Activities of the intervention include: training in cassava production; the provision of processing equipment and high-yielding varieties; training in quality and hygiene; and working with end-users to grow demand for the new product as a wheat replacement in baked and manufactured goods. C:AVA has also been promoting larger-scale private sector enterprises to invest in flash drying technology to dry large amounts of cassava rapidly and to ensure its quality.

The C:AVA intervention provides the context for the research, as it defines a population who have been incentivised to increase their market participation with cassava, and as such can offer insight into if and how farmers respond to market opportunities, and the outcomes as a result of their participation.

#### **4.8 Chapter conclusion**

This chapter provided the context of PIPs for the study in Nigeria and Malawi, a description of the characteristics of cassava, along with gender dynamics and value chain structures. The findings show two drastically different contexts. Nigeria is a large and densely populated country, and is considered the economic and political powerhouse of SSA. In contrast, Malawi is a land locked country with a smaller economy and modest growth. It is also drought-prone and faces severe problems of food insecurity and malnutrition. However, both countries, unfortunately, have high levels of poverty, slow growth and low human development indicators. Smallholder agriculture also plays an important role in the economies and livelihoods of the people in both countries.

Cassava is an important staple crop in both countries and throughout SSA. This is because it is a durable crop, requires minimal inputs, and is drought tolerant. It is commonly produced on small farms and intercropped. There are numerous varieties of cassava, which have different uses and markets. However, cassava contains cyanide and must be processed quickly after harvesting. In addition, cassava is associated with being a ‘women’s crop’ because women often carry out cassava processing and are active in marketing. In terms of cassava commercialisation, the two countries show significant differences. Nigeria is currently situated as the largest cassava producer in the world, and the study areas specifically are among the highest cassava production regions in the country. Fresh and processed cassava value chains are vibrant and dynamic, and include a number of local products representing significant markets, such as gari and fufu. In contrast,

Malawi's cassava markets are smaller in scale and complexity. Cassava is grown throughout the country but particularly in the central and northern regions where it is the preferred staple crop to consume, in a processed product named kondowole, whereas in the south, maize is the preferred staple; however, they also consume a local processed cassava product, makaka. Local products present growing markets in both countries.

Prior to 2000, there was minimal interest or investment in cassava despite its role as a staple food. However, the new millennium saw the importance of cassava as a source of income grow, which was supported by policy initiatives promoting cassava production and industry in both countries with varying degrees of success. Some of the industries contributing to an increase in demand for fresh cassava include HQCF, livestock feed and starch manufactures, in addition to a range of food products. The C:AVA project has been working in the study locations to support cassava commercialisation by working to ensure consistent supply, developing viable intermediaries, and encouraging market demand for HQCF and local cassava products. The next chapter explores cassava production, processing and commercialisation, from a smallholder perspective.

## **5. What is the role of cassava in rural smallholder livelihoods?**

### **5.1 Introduction**

This chapter presents the findings for sub-research question one: what is the role of cassava in rural smallholder livelihoods? The chapter provides the results of a gendered livelihoods analysis, using the modified livelihoods framework (Section 3.1, Chapter 3). Section 5.2 presents the overall context of the study areas: the household and socio-cultural characteristics of smallholder farmers that may influence commercialisation processes. Section 5.3 presents the livelihood goals and strategies of smallholder farmers. Sections 5.4 through to 5.6 focus on cassava, which includes an exploration of the role of cassava in smallholder livelihoods (5.4); the gender division of labour and decision-making (5.5), and important livelihood assets for cassava production and processing (5.6). This is followed by an examination of food security (5.7), and gender roles in food security (5.8). Section 5.9 describes smallholder market participation with cassava at the time of the initial fieldwork in 2009. Household decision making typologies are presented in Section 5.10, followed by the chapter conclusion.

The content of the chapter is based on the first round of fieldwork data that includes FGDs, the first round of panel interviews and the baseline survey data (2009 and 2010 in Nigeria and Malawi, respectively), as explained in the methodology (Section 3.5.3). Literature is integrated in areas where there are gaps in field data. The quantitative data is disaggregated by sample group, which demonstrate three contexts: those who were directly targeted for a cassava market intervention through the C:AVA project, referred to as C:AVA participants; those who live in the same communities as C:AVA participants but are not participants in the project, referred to as non-participants in C:AVA communities, and those who live in communities without the C:AVA project, referred to as non-participants. Non-participants and non-participants in C:AVA communities (C1 and C2, respectively) are control groups.

### **5.2 Household and socio-cultural characteristics of smallholder farmers in the study**

This section presents the household and socio-cultural characteristics of smallholder farmers in the study areas that may influence commercialisation processes and decision-making. These characteristics were identified as being pertinent to commercialisation through the literature review and initial fieldwork findings, which are further explored in Chapter 6 and 7. For example, household characteristics, such as the sex of the head of household and type of marital relationship, influence how decisions are made in the household, and the roles and responsibilities of men,



women, girls and boys. As discussed in the literature review, household structure, kinship networks and inheritance patterns are important for smallholders to participate in commercialisation processes, particularly because of their reliance on family-based networks for agricultural labour and access to assets. Furthermore, socio-cultural demographics and belief systems can also influence how a person or household is positioned in the market and their market behaviour (Forsythe et al., 2015). These aspects will be examined for Nigeria and Malawi, respectively. Further information on key characteristics of the survey samples are provided in Appendix I.

## **Nigeria**

**Household structure** is influenced by the culture of the Yoruba ethno-linguistic group, which is characterised by patriarchal customs and traditions. Household headship is male, unless a male is absent. Marriage and inheritance practices are affected by both legal and customary systems of Nigeria (Nkonya et al., 2005). According to Yoruba customary practices, land and other possessions are inherited through the male line, and virilocal settlement<sup>16</sup> and bride price are practiced. However, there are exceptions to these norms among ethnic minorities (non-Yoruba). For example, some groups such as the Ilaje and Idanre people of Ondo State have bilineal inheritance patterns (Oladeji, 2009), however this was not encountered during the fieldwork. Factors like age and sex affect the scale of distribution of ‘household’ assets, as a female child might inherit a smaller share compared to her brothers (Adetunji Oni, 2014).

The majority of spousal units are a man and single wife (68.4%), and a minority are polygamous (11.4%). Households can consist of the nuclear family, such as the spousal unit and their unmarried children, and sometimes grandparents (mainly paternal, some maternal), and brothers and sisters in a larger-extended family dwelling. In polygamous households, each wife and her children reside in a separate house or in different communities or towns. The NPC and ICF (2013) report that the average household size is three people per household, compared to five for the national average.

Polygamous households have an explicit division of labour that influences economic activities. Typically in the study areas, the livelihood activities of polygamous households were planned to involve little interaction between wives, but with wives contributing to both personal (including

---

<sup>16</sup> Virilocal is where a married couple settles in the husband's home or community. Uxorilocal is where a married couple settles in the wife's home or community. Neolocal is where a married couple settles in a location that is not the husband or wife's home community.

their own children) and household objectives, under the management of the household patriarch. For example, in the panel interviews, a community Chief's wife explained that either herself or the second wife would undertake the processing work in one community and the other wife would work as a tailor in a town six hours away). Every two weeks the wives traded places to share the work. The rationale of the husband, according to the interviewed wife, was to keep his wives separate to treat them equally. This practice made it impossible for the women to undertake independent livelihood activities on a continual basis because they were frequently moving locations. Women in monogamous marriages often feared that if their husband's financial status improved that they would marry another wife, and could increase competition for household resources.

FHH constituted slightly under ten percent (9.9%) of households in the study area (Table 7). FGDs with community members would typically classify FHH a vulnerable household, particularly due to patrilineal land inheritance practices and constraints for women in accessing credit (e.g. collateral) and other goods and services without a male. One woman interviewed in Ondo state described that she lost access to all the land she farmed with her husband after his death, as his extended family reclaimed the land for their own use. Details of the survey respondents by gender is provided in Appendix I.

**Table 7 Gender of household head in 2009 survey by sample group, Nigeria**

	<b>MHH</b>	<b>FHH</b>	<b>Total (n)</b>
C:AVA participant (treatment)	91.2%	8.8%	171
Non-participant, C:AVA community (C2)	88.7%	11.3%	62
Non-participant, non-C:AVA community (C1)	89.6%	10.4%	182
<b>Total</b>	<b>90.1%</b>	<b>9.9%</b>	<b>415</b>

There are indications that household structures are changing over time. For example, younger, wealthier and more educated women are reported to be less likely to be in polygamous unions (NPC and ICF, 2013). There is also increasing stigma associated with the practice; interviews and FGDs with youth in rural communities, particularly Christian youth, were less accepting polygamy. Migrant households also exemplify how households structures change in relatively short periods of time. In these households a male typically migrates first, and then their spouse and children accompany him, with their extended family residing in their community of origin

In terms of **ethnicity**, the south-west region is primarily settled by the Yoruba ethno-linguistic group. However, there are numerous minority clans as the region has experienced a long history of migration from neighbouring areas due to its large commercial centres. In the study area, 69.5% of the individuals sampled were Yoruba, and 30.5% ethnic minorities, including: Ohoris, Egun, Igede, Igbiras Idomas, Igede, Igbos/Ibos, Delta and Edo.<sup>17</sup> Initial fieldwork indicated that ethnicity, or being a member of an ethnic minority group (non-Yoruba), influenced livelihood activities and strategies. For example, ethnic minorities are not considered by Yoruba to be “sons of the soil”, or the original inhabitants of the land, and consequently experience constraints in land access such as additional fees to rent land. Therefore, non-Yoruba households could not easily increase the cassava land area planted to increase production, which led to alternative strategies (Section 5.6).

In the survey sample, there were significant differences between sample groups at baseline and endline. This is related to the membership of farmer and processing groups being influenced by ethnicity (see Appendix I and Section 6.4.6)

The **belief systems** of smallholder farmers influence their agricultural practices and participation in markets. The two dominant religions in the region and country are Islam and Christianity; however, traditional religions are still practised and also form part of Christian or Islamic beliefs. Beliefs in ‘juju’ or witchcraft, which cut across different religious groups and form part of the broader belief systems of the area, and West Africa more generally, were also found to influence agricultural activities. For example, a male producer interviewed explained when his wife became ill he immediately stopped growing *pepe* (chilli peppers). He feared her illness was a result of juju and that if his wealth continued to increase with the high-value crop, he would attract more juju and his wife may die. While there were no examples of beliefs specific to cassava that were encountered in the fieldwork, it is evident that smallholders feared invoking jealousy from others due to an increase in their income as it may inspire juju or spiritual attacks.

**Literacy** plays an important role in agriculture, particularly in terms of access to information. Agricultural extension in both states, for example, relies on written material for training despite high illiteracy in the area. The study area had some of the highest literacy rates in the south-west region and country, particularly for women (Table 8). Men and women in both states had literacy rates of 75% and above, indicating that they had completed primary education, compared to 75% and 53% for men and women nationally (NPC and ICF, 2014). The survey sample had lower

---

<sup>17</sup> The groups are listed from largest to smallest proportion of the sample.

literacy rates that were likely due to the focus on smallholder farmers, who are predominately rural. Just over half of the sample was literate (53%), which was lower due to a much lower literacy rate for women compared to men (37% compared to 62%, respectively,  $p \leq 0.001$ ). Female C:AVA participants had higher literacy levels compared to their community counterparts (49% compared to 23%) and non-participants (25%), which is likely to influence their interest and ability to participate in commercial cassava activities. There were higher levels of literacy among the endline respondents compared to the baseline (Appendix I).

**Table 8 Literacy levels, Nigeria (NPC, 2013)**

	<b>Men (%)</b>	<b>Women (%)</b>	<b>Total (%)</b>
<b>National</b>	75.2%	53.1%	64.2%
<b>Ogun</b>	75.3%	74.9%	75.1%
<b>Ondo</b>	87.7%	78.9%	83.3%
<b>2009 Survey total (n=405)</b> Chi-square: sample group $p \leq 0.1$ ; gender $p \leq 0.001$ * (* refers to statistical significance)	61.5%	37.1%	53.1%

**Wealth:** the DHS (2013) shows that the south-west region of Nigeria has the largest proportion of wealthy people compared to other states. For example, half of the population is located in the highest wealth quintile, compared to three in ten households in the south-south region (NPC and ICF, 2014). However, there is considerable inequality in the region and the rest of the country. A Poverty Profile based on data from the Harmonised Nigeria Living Standard Survey (LSS) found that 62.3% of the population in Ogun state are considered to be living in absolute poverty, which is higher than both Ondo state (45.7%) and the national rate (60.9%) (NBS, 2010).<sup>18</sup> The survey shows similar poverty rates in the study area. Using poverty likelihood scores<sup>19</sup>, there is a 48.3% likelihood of the sample as being ‘very poor’ and 76.7% ‘poor’ (using the Nigerian Labour Standards Survey, \$1.25 measure). Poverty likelihood was significantly lower among C:AVA

<sup>18</sup> The definition of absolute poverty in the LSS survey is: as an individual unable to meet the minimal requirements necessary to afford minimal standards of food, clothing, healthcare and shelter. This method considers both food expenditure and non- food expenditure using the per capita expenditure approach.

<sup>19</sup> This uses the Progress out of Poverty Index (PPI), a quantitative tool that measures the likelihood of poverty at household and group levels (Section 3.5.5).

participants, compared to other sample groups in 2009, which is likely to affect their ability to invest in commercial agriculture, which is explored further in Chapter 6 and 7.

## Malawi

In Malawi, the **household structure** is based around the spousal unit, who commonly reside in a nuclear family or extended family compounds. Nationally, the number of household members was 4.5 in 2011, which increased slightly from 4.4 in 1998 (IHS3 2010/11). Polygamous unions are more prevalent in rural areas compared to urban areas and in the northern region compared to southern districts. In the study sample, over half of couples were monogamous (57.6%), but polygamy was also practised (8.1%). This is lower than the national rate of 14%, which is likely because polygamy is more common in the north, where this study did not sample (DHS, 2010).

FHH are 36% of the sample (Table 9), which is higher than the national figure for Nigeria at 10%. In the southern matrilineal districts, vulnerability among FFH may be less substantial as land is inherited through the female line. However, women can still be disadvantaged in terms of the availability of household labour and land management skills that men are perceived to possess. For example, one woman interviewed as part of the panel study was divorced at the time of the first interview, and had re-married at the time of the second interview. Despite her husband having previous convictions and lacking any financial assets to bring to the marriage, she felt more secure given that she had someone to assist her in managing the farm. There were a higher number of FFH C:AVA participants compared to non-participants (41% compared to 30%, respectively), which is likely related to a high-level of FHH participating in farmer and processing groups (which were targeted for C:AVA participation). Due to a likely difference in commercial participation between MHH and FHH, Chapters 6 and 7 use the variable ‘gender of the household head’ to identify gender differences in the data. There were no significant differences in the number of MHH or FHH between sample groups or between baseline and endline.

**Table 9 Gender of household head in the 2010 survey by sample group, Malawi**

	<b>MHH</b>	<b>FHH</b>	<b>Total (n)</b>
C:AVA participant (treatment)	59.1%	40.9%	115
Non-participant, C:AVA community (C2)	70.4%	29.6%	54
Non-participant, non-C:AVA community (C1)	65.7%	34.3%	70
Total	63.6%	36.4%	239

Malawi has matrilineal and patrilineal kinship systems. The 2007 National Census of Agricultural and Livestock (NACAL) data shows that nationally, 45% of communities are matrilineal and 30% patrilineal, and the smallest group (2%) is matrilineal and virilocal (Table 10). Zomba and Mulanje districts are located in the southern region with matrilineal households and inheritance patterns, as well as being uxori-local and neolocal<sup>20</sup>, whereas Nkhosakota district has patrilineal and matrilineal practices (Berge et al., 2014). Matrilineal areas are predominately settled by the Chewa, Lomwe, Ngoni, and Yao ethnic groups.

**Table 10 Percent distribution of descent and settlement systems, Malawi (2007 Census data from Berge et al., 2014)**

District/ number of communities	Lineage system - 50%+ of communities	Matrilineal - uxori-local + neolocal (%)	Matrilineal and virilocal (%)	Patrilineal - virilocal + neolocal (%)	Don't know (%)
Nkhosakota (n=146)	Mixed	16.4	43.2	39.7	0.7
Zomba Rural (n=302)	Matrilineal	94.7	3.3	1	1
Zomba Urban (n=59)	Matrilineal	71.2	1.7	11.9	15.3
Mulanje (n=121)	Matrilineal	100			
<b>All (n=5,253)</b>		45.1	23.7	29.9	1.2

In terms of **ethnicity** in Malawi, there are few districts where one ethnic group does not dominate more than 50% of the communities (only four, nationally). The 2010 study survey found that the major ethnic groups were Chewa (50%), Yao (23%), and Lomwe (21%). Chewa are settled primarily in Nkhosakota, Yao and Lomwe in Zomba, and Lomwe in Mulanje. Other groups included the Tumbuka, Sena, Senga, Nynja and Mang'anja. This pattern was also reflected in the ethnicity of panel interview respondents, with some exceptions of Chewa and Ngoni individuals in Zomba and Yao in Mulanje district. Due to the influence of ethnicity on the type of inheritance systems (e.g. access to assets) and household headship, which are linked to certain districts,

<sup>20</sup> Neolocal is where a married couple settles in a location that is not the husband or wife's home community.

Chapter 6 and Chapter 7 use the ‘district’ variable for disaggregated analysis. There were no significant differences between sample groups or between baseline and endline.

**Belief systems** in Malawi are nationally categorised as Christian (80%), Islamic (19%) and traditional beliefs (1%); however, as noted previously for Nigeria, people practise elements of traditional belief systems in addition to their main religion. Similar to Nigeria, belief in witchcraft was strong, and was found to influence farming decisions. In Nkhotakota, it was common practice for higher value crops, or crops with certain taboos associated with them (e.g. Bambara), to be planted away from obvious sight so it would not attract spells and jealousy (Forsythe et al., 2015b).

**Literacy** in Malawi is 65% nationally, 74% for men and 57% for women. The highest literacy rate is in the northern region, followed by the central and southern regions (IHS3 2010/11). However, the study sample has a much higher rate of 75% (Table 11). The table also shows high levels of literacy among women, and in some sample groups women’s literacy rates were higher than the men (C:AVA treatment group, the baseline survey found a 76% literacy rate for women compared to 69% for men). Higher literacy levels were found in Zomba and Nkhotakota compared to Mulanje. There were no significant differences between sample groups or between baseline and endline.

**Table 11 Literacy levels in 2010 survey by sample group, Malawi**

	<b>MHH (% of MHH)</b>	<b>FHH (% of FHH)</b>	<b>Average of all households (% of sample group)</b>
C:AVA participant (treatment)	81.3%	73.9%	78.4% (110)
Non-participant, C:AVA community (C2)	84.2%	68.8%	79.6% (54)
Non-participant, non-C:AVA community (C1)	76.1%	60.9%	71.4% (70)
<b>Total</b> Chi-square: $p \leq 0.5$ , gender $p \leq 0.05^*$	73.6%	76.5%	75.4% (234)

### 5.3 Smallholder livelihoods

Livelihoods for smallholder farmers in Nigeria and Malawi reflect a rich diversity of activities that support individual and household-oriented goals. These are specific to the characteristics and endowments of the location, household and individual. As expected in a rural context, livelihoods

are centred on subsistence/commercial agriculture to varying degrees, to meet the main objectives of household food security and income-generation. Agriculture is combined with a range of other off-farm activities to ensure consistent income throughout the year. Activities are shared or separated between different household members and are characterised by factors such as gender, age, ethnicity and position in the household. Trends in the two study locations are explored below.

### 5.3.1 Livelihood goals and strategies

A good starting point for understanding and explaining smallholder commercialisation activities is to understand the livelihood goals of smallholder farmers and how they may differ within such a large conceptual category. Responses in FGD and in-depth interviews reflected practical goals that included having enough food throughout the year and a varied diet; earning enough income for household needs and children's education; the ability to have time to perform reproductive goals and social roles (friendships and networks), and to care for themselves in future and for children at present. In Nigeria, paying for their children's education was a very important livelihood goal for men and women interviewed, as education was considered a way out of agriculture and poverty; however, not for them necessarily, although there were care expectations from children as they aged. This is linked to negative perceptions of farming that make agricultural work almost a source of shame. In Malawi, the subsistence nature of agriculture was more apparent, and individuals described their goals mainly in terms of food security.

The general picture of livelihood goals for smallholder farmers is surprisingly consistent among different farmers within and between countries, whether producing at a large or small scale, being male or female. Differences were not found in the goals themselves, but in how they were expressed by individuals. Mainly in terms of the tone of voice and body language used when describing their goals, indicating perhaps a greater or lesser degree of hope associated with these goals, which may reflect their socio-economic status. Older women for example, had starker responses when describing what they expected in the future, often stating that their goals were only to survive, which required both food and a small amount of money.

Despite the consistency in the livelihood goals among the smallholders interviewed, the initial fieldwork found that their livelihood *strategies* differed by gender and ethnicity in Nigeria, and gender and district (ethnicity + patrilineal/matrilineal system) in Malawi. The difference in strategies was linked to different farm management systems, such as shared or separate farms between the spousal unit. The implications of the differences in strategies is discussed in chapters 6 and 7. Therefore, while livelihood goals were similar, individuals required different strategies in



achieving those goals. These strategies differed by gender, and reflected gender roles and socio-cultural norms of responsibilities often particular to location or ethnicity. For example, household income and wealth are normally associated with male responsibility and commercial activities, therefore perceptions of masculinity are derived from the ability of men to provide for and coordinate their household around income generation, even in matrilineal areas in Malawi.

*“This is my father’s house, so I am responsible because I am the first son and my father is dead. I can’t keep any income for myself as I have so many mouths to feed” (male, ethnic minority, Ogun state, Nigeria).*

However, the findings from the fieldwork show that ‘man as the provider’ is an outdated archetype that hides women’s participation in commercial markets and their current, and in some cases increasing, responsibilities in the commercial sector. Women in both countries expressed the importance of their ‘contributions’ to the household, which was recognised by men to some extent but perhaps not fully valued.<sup>21</sup> Responsibilities and expectations of women to earn income were increasing over time, and in some cases, women stated that men were defecting from their own responsibilities. In southern, matrilineal Malawi, women reported men were not tied to the land, or to marriage, because it was the homestead is not a man’s original birth place. Therefore, women in the region said that it was common practice for men to leave their wives for women (with larger land, and/or younger) and women are thus responsible for the household despite perceptions that the man is the provider in even matrilineal areas. These dynamics challenge assumptions that men dominate the commercial sphere.

### **Strategies in Nigeria**

In Nigeria, livelihoods of smallholders involve a diverse array of commercial agricultural activities, as opposed to production largely for household consumption. The panel of men interviewed revealed that their main livelihood activities may or may not be farming, and they were often engaged in driving, tailoring, office and factory work on a full-time basis, alongside farming activities. Women in the panel had a lower incidence of full-time, formalised employment compared to men, but had a broad range of livelihood activities that were undertaken flexibly as suitable to their time, mobility and need for income. Some of these activities included the small

---

<sup>21</sup> The word ‘contributions’ is in quotation marks to highlight that there is a sense that women perceive that they do not significantly support the household, despite the contributions in labour and income used for the household.

trade of charcoal, wood, vegetables and other food crops and snacks, herbs and spices, and livestock, which were conducted in addition to their reproductive responsibilities such as childcare, food preparation, water collection, cleaning, providing clothing and healthcare, which is usually the responsibility of women alone.

Agricultural activities for men and women are equally diverse, and include crop and fruit farming, food processing, hunting and small trade of agricultural products. Among the Yoruba, the largest and indigenous tribe in the south-west region, the husband and wife (or wives) farm separate plots. As land is patrilineal, men allocate plot(s) to their wives, which are typically smaller in area than their husbands'. Contrary to common myths of women's produce being strictly for food security, in this context both men and women grew crops for income and food security, although the extent and proportionality varied depending on several factors including one's relationship with spouse (e.g. the reliability of the spouse to budget enough food for the household). In contrast, in the same area, husband and wife in migrant and ethnic minority households would farm on shared plots. Thus, the initial fieldwork found that gender and ethnicity, performed through different agricultural practices in Nigeria, may influence how they participated in cassava commercialisation. Data is subsequently analysed in this way throughout the thesis.

Common crops grown in the study area in Nigeria include maize, yam, wateryam, cocoyam, beans, vegetables (e.g. okra, pepper), along with cassava (importance of crops is discussed in section 5.4). There were some gender differences in crop preferences (e.g. women preferred wateryam to yam, and the reverse for men). Some of the differences relate to gender differences in access to resources. For example, a FGD found that cocoa production was preferred by men in Ondo state, but not women, which was related to the long gestation period of cocoa that requires long-term land ownership, which women were excluded from.



***Community environment. Ondo state, Nigeria.***  
Source: Author's own. Used with permission.

## Strategies in Malawi

Similar to Nigeria, livelihood activities in Malawi were also diverse. Panel interviews indicated that farming is combined with off-farm activities that are often gender differentiated. For men this included small-scale business, artisan work, factory work, carpentry, building, bike taxi and fishing. For women this included brewing and selling beer, casual work, making and selling mandazis (traditional donut) and processing. Women also undertook reproductive activities such as childcare, food preparation, water collection, cleaning, providing clothing and healthcare. Some of the individuals also were small shop owners and landlords, with some receiving remittances from their husbands, sons or daughters in South Africa.

Men and women in Malawi grow crops on shared plots for both income and food security. There were some exceptions where crops such as cotton and tobacco were grown only for cash purposes in northern Malawi. In the southern region, some households grew cassava mainly for sale or a backup staple if they ran out of maize. The reverse was true in the northern districts. Other crops cultivated in the southern districts include chilli, groundnuts, sweet potato, pigeon peas, cow peas, millet, sorghum, vegetables, sugar cane, bambara, banana (see relative importance of crops in section 5.4). Smallholders practiced intercropping in general, however there were some instances of smallholders monocropping in Nkhotakota (for maize, groundnut, cassava, soya vegetables and rice), where there was greater land availability compared to the south.



***Community environment. Nkhotakota district, Central Region, Malawi***

Source: Author's own. Used with permission.

#### 5.4 The role of cassava in smallholder livelihood strategies

Cassava is an important crop for smallholder farmers and it is grown widely in the study areas. Its value lies in its dual role as a food security and income generation crop, but the crop also has important social roles. While cassava is considered important for both women and men, for different ethnic groups and in different locations, the use of the crop in livelihood strategies varies. This finding challenges the label ‘food security crop’ versus ‘income generation crops, as cassava clearly is used for both purposes in both countries. This section describes the role of cassava in smallholder livelihood strategies and the results from crop ranking exercises during FGDs in 2010.

##### **Nigeria**

In Nigeria, cassava is mainly prepared and consumed as *gari*, the main staple for Yoruba and other ethnic communities in the region. *Gari* markets are significant in the area, due to its close proximity to major urban centres such as Akure, Abeokuta and Lagos. There is a long history of cassava commercialisation whereby cassava has provided income for current and past generations; however, its importance has grown over the past decades. Despite that it is consumed on a daily basis by most ethnic groups, people associated cassava’s importance with income. Cassava was also found to be important for vulnerable groups and women because it required very little inputs and that processed products were an important source of income for women, which confirms findings from the literature review.

*“Cassava is now more important for income and food security. We had nothing to depend on before [for income], just palm oil”* (female producer, Ogun state, Nigeria).

The importance of cassava compared to other crops produced by smallholders is reflected in Table 12. Cassava ranks as the most, or second most, important crop for household consumption and income. Other crops, such as vegetables, yam and maize are also used for both objectives. There were no gender differences in rankings of cassava’s importance between FGDs, which was similar to findings from the 2009 baseline survey. Chapter 6 examines how perceptions of cassava’s importance have changed from 2009 to 2014.

Cassava also has a social role. Due to the importance of the crop in marketing, cassava production and processing groups have formed since the 1990’s, which provide support and access to information and inputs from extension and other farmers, for small membership fees (see Section 5.6 for more information on the importance of groups). Furthermore, as processing cassava can be

tedious and time consuming, particularly the peeling process, women often undertake activities together, providing a fertile environment for discussion and debate. The C:AVA project has targeted cassava production and processing groups for its activities. There were no cultural associations or practices related to cassava specifically; however, there were associations with *pepe* and yam.

**Table 12 Most important crops for household food consumption and income (2010), Nigeria**

Group name, sex and location	Crop ranking (1 <sup>st</sup> = most important)					
	Home Consumption			Income generation		
	1 <sup>st</sup>	2 <sup>nd</sup>	Other crops	1 <sup>st</sup>	2 <sup>nd</sup>	Other crops
Women processing group 1, Ogun	Cassava	Vegetable	Maize, yam, pepper, okra	Cassava	Vegetable	pepper
Male Farmer group 2, Ogun	Cassava	Yam	Maize	Cocoa	Cassava	Pineapple, plantain
Mixed sex farmer group 3, Ogun	Cassava	Maize	Vegetable	Cassava	Yam	Rice, pineapple
Women Processing group 4, Ogun	Cassava	Beans	Papaya	Cassava	Beans	Papaya
Male farmers group 5, Ondo	Cassava	Yam	Vegetable	Cassava	Yam	Beans and bananas
Women Processing group 6, Ondo	Cassava	Beans	Vegetable	Cassava	Vegetable	Beans
Women Processing group 7, Ondo	Cassava	Beans	Vegetable	Cassava	Yam	Vegetable
Women Farmers Group 8 Ondo	Cassava	Beans	Vegetable	Cassava	Vegetable	Fruits

## Malawi

Similar to Nigeria, cassava is an important food security and income generation crop in Malawi. Table 13 shows greater variability in the rankings of cassava's importance compared to Nigeria. Some groups ranked cassava as the most or the second most important crop, with others not providing any rank. The table also reflects the higher importance of cassava in Nkhotakota compared to the southern districts, which is because it is the traditional staple food in the former. There were also differences in importance rankings by the gender of the FGD. For example, women in Mulanje stated that cassava was their second most important crop for household consumption, yet it was not ranked in the top three crops by men. This may be due to the greater involvement and responsibility of women with cassava cultivation and food security, along with its accessible nature for vulnerable groups, as demonstrated in the quote below. Similar to Nigeria, the same crops were ranked equally for their importance for household consumption and income generation. FGDs in all districts reported that the importance of cassava had increased over the past ten years due to growth in market demand and a decline in environmental conditions which made cassava's durability was highly valued.

*“Everyone in the community is able to grow cassava. Old people, people with HIV and women are able to grow it.”* (female producer, Nkhotakota district, Malawi).

In Malawi, there was little evidence that would suggest cassava played an important social role. There was limited organisation of producers and processors for cassava in the study areas compared to Nigeria, but some groups existed around more cash-oriented crops such as tobacco in the districts further north. To a limited extent, group cassava processing was evident (Mulanje) and was supported by the C:AVA project, but was a viable activity in most locations due to limited market demand.

**Table 13 Most important crops for household food consumption and income (2010), Malawi**

Focus group name, sex and location	Crop ranking (1 <sup>st</sup> = most important)					
	Home Consumption			Income generation		
	1 <sup>st</sup>	2 <sup>nd</sup>	Other crops	1 <sup>st</sup>	2 <sup>nd</sup>	Other crops
Men producers group 1, Mulanje	Maize	Sweet potato	cassava	Maize	Pigeon peas	Sweet potato
Women producers group 2, Mulanje	Maize	Cassava	Pigeon pea	Maize	Sweet potato	Cassava
Men producers group 3, Zomba	Maize	Rice	Cassava	Maize	Cassava	Pigeon pea
Women producers and processors group 4, Zomba	Maize	Rice	Pigeon pea	Rice	pigeon pea	Cassava
Women producers, group 5 Nkhotakota	Cassava and maize	Rice	Vegetable	Rice	Cassava	Maize
Men producers group 6, Nkhotakota	Maize and cassava	Rice	Vegetable	Rice	Cotton	Maize
Men producers group 7, Nkhotakota	Cassava	Maize	Groundnut	Cassava	Maize	Sugar cane
Men producers and processors group 8, Nkhotakota	Cassava	Maize	Rice	Cassava	Maize	Rice

## 5.5 The gender division of labour and decision-making in cassava activities

Labour for agricultural activities, including those related to cassava, are highly gendered, and show similarities between Nigeria and Malawi. The participation of both men and women in cassava activities, but different activities, calls into question the statement that cassava is a ‘women’s crop’. In addition, gender norms are being contradicted and changed, with regard to new investments and assets and commercialisation, which demonstrate the fluidity and changeability of gender roles.

### Nigeria

In Nigeria, the separate plots that Yoruba men and women farm also reflect gender differences in management, influence and control over profit on these plots. Yoruba men and women are broadly thought to be independent on these plots; however, the household unit still require coordination on the quantity of crops for household consumption between the different plots. In contrast, ethnic minorities farm on shared plots and decision-making and control over income is ultimately under the authority of a male household head, but decisions are negotiated. Interviews revealed different opinions among the interviewees on the implications of shared plots and decision-making among migrant communities: some women emphasised that the practice demonstrated the unity and mutual support among migrant couples, having shared goals and endeavours. However other women felt that this arrangement made it difficult for women to make decisions independently, and have control of their own income, which separate plots provide.

Among the Yoruba, men and women are responsible for the tasks on their own plots; however, men’s plots are typically larger, including those relating to cassava. Both Yoruba men and women rely on hired labourers, while men can also access his wife’s/wives’ unpaid labour for weeding and carrying cassava from the field to the homestead. Women contribute their labour to their own plots and their husbands. Yoruba men often provide oversight on their wives’ plots for income-generating crops such as cassava, particularly when this involves hiring labourers (who are predominately male) as men are considered to have more authority. Yoruba men commonly do not contribute their physical labour on women’s plots, but provide management guidance according to women interviewed.

*“For planting cassava on my farm, I hire labourers. My husband arranges the labourers for the cassava harvested on my land. Men usually monitor the hired labourers. I can’t because they will cheat me. On his land I help him with maize and cassava because it’s easy to do. I also carry the cassava from the field”* (female processor, Ogun state, Nigeria).



Table 14 demonstrates the different activities undertaken by men and women in cassava production and processing. Tasks such as land preparation, clearing and cassava harvesting are predominately undertaken by men or hired labourers who are managed by the male head of household. The former is due to the belief that men have more physical strength to undertake these tasks. However, women say that they can undertake these activities on their plots where necessary, along with their children, if hired labour is not affordable. Not having access to male labour for these tasks also partly explains why women farm smaller plots. Women conduct post-harvest activities such as carrying cassava, along with processing activities such as peeling. Some women hire other women (particularly poorer women) to carry out these tasks. Selling cassava in bulk is associated primarily with men (predominately Yoruba) in the study area, and Yoruba men will also sell their fresh cassava to their wives to process. Men are socially obligated to sell their roots to their wives before anyone else. Selling processed cassava is mainly the responsibility of women.

*“My husband can’t sell his [cassava] roots to other women. He did so once in 2006 and I said not to do it again because it’s like cheating in marriage if he sells to someone else”*  
(female processors, Ogun state, Nigeria).

**Table 14 Gender norms in cassava production and processing activities (2010), Nigeria**

Activity	Men	Women	Hired labour
Clearing	X		X
Cassava mounds	X		X
Planting		X	
Weeding		X	
Harvesting	X	X	X
Carrying /Transport		X	X
Processing (peeling, soaking, frying etc.)		X	X
Selling	X (fresh cassava to individual processors & companies)	X (processed cassava)	

Gender norms differ between different wealth categories and ethnic groups, but can be challenged in some circumstances. Wealthy women would not be seen frying gari if it could be helped, and would hire labourers instead, due to the level of drudgery involved. Interviews with migrant men and women explained how their farming practices differed compared to the Yoruba: on their shared plots they shared labour tasks between men and women, and undertake reciprocal labour with others in their ethnic group. Interestingly, men were also found to undertake processing activities, including labour intensive tasks such as frying gari, but not as often as women. Yoruba women, particularly FFHs, would break gender taboos and participate in land clearing for example (along with other family members or children for support). Both examples of contradicting gender norms relate to the difficulty of FFHs and migrants in accessing affordable labour, and small land sizes, where it can be more feasible to carry out tasks without assistance.

FGDs also revealed that cassava was not considered a ‘women’s crop’ by all, as it was only considered this by two women’s FGDs (out of five) and none of the men’s or mixed FGDs (3). This could be related to the focus groups, as the activity may have raised expectations of investment opportunities of the C:AVA project and therefore they should not state that the crop belongs to a certain sex. Alternatively, these references to cassava being a women’s crop are untrue. The most prevalent distinction found by gender in the FGDs was men selling fresh cassava and women undertaking processing activities, with exceptions among migrant communities who do both.



*Woman roasting gari, Olorulekan, Ogun State, Nigeria*

Source: Author’s own. Used with permission.

## Malawi

In the study areas in Malawi, cassava is grown on shared household plots, along with the household food security plot that is found in some cases in Nkhotakota. Both men and women were involved with cassava production on family plots, and in some cases on group plots (e.g. Zomba). Planting cassava is usually done by all household members. Activities like weeding and harvesting are mainly done by women but can also be shared with other household members including men. Management of cassava, once planted, is mainly the responsibility of women, particularly on household food security plots. Harvesting and transporting cassava (carrying on their backs) is mainly done by women, and men will arrange transport of cassava products (roots and processed products) to the market when using bicycle or vehicles. Table 15 provides an overview of activities and decision-making with regard to cassava production among household members from Kaitano (2009), which was verified during the fieldwork.

Similar to Yoruba households in Nigeria, processing cassava in Malawi is done almost exclusively by women. It is labour intensive, particularly pounding the cassava into flour. This is supported by strong cultural perceptions on gender roles in processing, as demonstrated in the quote below. In the northern region, women process kondowole at the homestead for daily household consumption, or as dried flour or chips for sale, whereas in the southern region, women process cassava at home or in processing groups to make makaka for household consumption as well as for the local markets. At processing sites, where mechanised equipment is available, men were involved in using the equipment while women undertook the non-mechanical activities such as peeling.

*“Women and girls do cassava processing. This has been passed from generation to generation. There is a belief that men’s hands and legs will swell if they are involved in some of the processes of fermenting cassava. Men find the processing of cassava ‘yucky’ and therefore this is considered women’s work and a proper man should never consider doing it”* (female producer and processor, FGD in Kaitano, 2009)

Different processed cassava products have their own implications for labour, which particularly impact on women. For example, the Tiyamike CPG in Malawi was the only group processing and selling HQCF, and their experience is telling. Overall, they felt that processing HQCF was more work (processing labour) than making makaka, their local food staple. This was because

HQCF was “having a number of different steps”, and a greater “length of time until it’s prepared”, but not necessarily related to labour exertion.

FGDs revealed differences in opinion on the gender division of labour regarding cassava (Table 15). Perhaps related to shared plots, most production activities were shared. In the three study regions male and female FGDs reported that all household members cleared and tilled the land. Men in each region reported that all household members contributed to cassava production activities (sourcing, planting, weeding, harvesting) but processing was carried out by women. However, a women’s FGD in Mulanje felt that only husband and wife sourced, planted and weeded cassava, but everyone would help to harvest. Women in Zomba stated that only women sourced and harvested cassava, but that the household would plant and weed together. In Nkhotakota, there were wider discrepancies, where women reported that they alone planted, weeded and harvested, while sourcing planting material was done with their husband.

**Table 15 Cassava production activities by sex, region and district, Malawi (Kaitano, 2009)**

<b>Region</b>	<b>Southern</b>				<b>Central</b>	
<b>District</b>	<b>Mulanje</b>		<b>Zomba</b>		<b>Nkhotakota</b>	
<b>Sex of focus group</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
Land clearance & tillage	HH	HH	HH	HH	HH	HH
Sourcing planting material	HH	H & W	HH	W	HH	H&W
Planting	HH	H & W	HH	HH	HH	W
Weeding	HH	H & W	HH	HH	HH	W
Harvesting	HH	HH	HH	W	HH	W
Processing	W	W	W	W	W	W

Key: HH = Household, H&W = Husband & Wife, W = Women, M = Men

There was indication that gender norms regarding these activities were changing at the time of the first round of panel interviews. For example, FGDs in the southern region found that men are increasingly assisting women in different cassava activities like weeding, harvesting and processing, due to its increasing market demand and profitability. As hiring labour isn’t a common

practice in the region, men needed to contribute their labour to these activities to take advantage of market opportunities.

In Malawi, there were also respondents who disagreed with the idea that cassava was a ‘woman’s crop’. This was particularly strong in Nkhotakota where fresh cassava markets have a greater market demand than in the south, and men were involved in the production and marketing of fresh cassava. In southern matrilineal Malawi, women played more decisive roles on cassava farms and marketing, but men still partook in these activities as well. Similar to Nigeria, women were involved in cassava processing, but these markets were limited throughout the country.

Decision-making on cassava production and processing activities were consultative between husband and wife, with the male head of household generally having the ultimate authority but with women having stronger rights regarding activities for which they were responsible (Table 16). However, there were a high number of FHH where women undertook decisions independently, with independence from her birth family or children. The table below shows who makes decisions on shared farms in Malawi.

**Table 16 Person who decides on cassava production practice , Malawi (Kaitano, 2009)**

<b>Region</b>	<b>Southern</b>				<b>Central</b>	
<b>District</b>	<b>Mulanje</b>		<b>Zomba</b>		<b>Nkhotakota</b>	
<b>Sex of focus group</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>	<b>Men</b>	<b>Women</b>
Land clearance & tillage	M	H & W	M	M	M	M
Sourcing	M	H & W	M	W	M	W
Planting	M	H & W	W	W	W	H&W
Intercropping	M	H & W	HH	N	W	N
Weeding	W	H & W	W	H & W	W	W
Harvesting	W	W	HH	W	W	W

Key: HH = Household, H&W = Husband & Wife, W = Women, M = Men



**Women peeling cassava, Zomba district, Malawi**

Source: Author's own. Used with permission.

## **5.6 Access and control over agricultural assets for cassava**

This section presents an overview of the important assets for cassava activities in both countries. Assets are an important component of the livelihoods framework as it represents a key factor for individuals and households to achieve their livelihood goals. Applying gender analysis and understanding the social conditions of access and control over assets is crucial (Chapter 2). These patterns are explored in this section.

### **Nigeria**

**Land:** the majority of smallholders in the baseline survey (2009) cultivated on small plots, the average being 2.6ha with the largest proportion of smallholders cultivating between one and three ha (Table 17). Women were found to have significantly smaller land sizes: 1.9ha compared to 2.9ha for men (ANOVA  $p \leq 0.005$ ), but reported similar quality of land. The table shows a higher proportion of women cultivated land under one ha (63%) compared to men (43.2%). This is higher than national rates (0.5ha for women and 1.5ha for men) (NBS, 2013). In the south-west region, women were increasingly accessing land independently through inheritance or rental. In south-west region for example, 16.3% of women rented land, which is comparable to men at 17.0% (NBS, 2013). See Appendix I for more details on land by survey and sample group.

**Table 17 Total land size (ha) by percentage of sample group and gender (2009), Nigeria**

	Land Size (ha)					Count
	<1	1 - 3	3 - 5	5 - 10	>10	
C:AVA participant (treatment)	36.8%	48.3%	6.9%	6.3%	1.7%	174
Non-participant, C:AVA community (C2)	37.1%	56.5%	3.2%	3.2%	0.0%	62
Non-participant, non-C:AVA community (C1)	35.5%	48.8%	10.8%	2.4%	2.4%	166
Men	43.2%	38.6%	10.2%	5.7%	2.3%	264
Women	62.5%	31.6%	3.7%	1.5%	.7%	136
<b>Column average</b>						
Chi-Square sample group: $p \leq 0.5$	49.8%	36.3%	8.0%	4.3%	1.8%	400
Gender: $p \leq 0.001^*$						

Women's independent land rights are of vital importance for accessing finance, agricultural inputs and services, and are linked to greater social status, resilience to hunger and poverty, investments in education and healthcare. However, in the study areas, it was evident that divorced and widowed women were disadvantaged, as there were reports of their land being reclaimed by family members after marital ties ended. These practices changed over time, as a number of women in the panel interviews stated that women were increasingly requesting or renting separate plots from their husbands.

There were no significant differences between majority and minority ethnic groups in terms of land size; Yoruba had 2.5ha while minority ethnic groups reported 2.8ha (ANOVA  $p \leq 0.6$ ) or between different land bands (Chi-Square  $p \leq 0.7$ ). However, initial fieldwork indicated that ethnic minorities had to rent land as opposed to having ownership because, which was also less secure, because they do not inherit land.

**Agricultural inputs** such as pesticides, herbicides and fertilisers, were used widely for crops such as maize and cocoa. FGDs revealed that the common inputs for cassava were high-yielding varieties, and to a lesser extent, herbicides. Inputs are explored in greater depth in Chapter 6 in relation to commercialisation strategies.

**Credit** for men and women producers and processors was largely obtained through informal savings and loans facilitated through ethnic-based groups. A shared ethnicity was important for credit access as it was perceived to provide greater accountability and stronger, trusting relationships. Loans from more formal institutions such as banks or government schemes were perceived to be appropriate for wealthier, larger land owners. Credit explored in greater depth in Chapter 6 in relation to commercialisation strategies.

In terms of **social capital**, membership-based farmer production and processing groups were of vital importance for cassava activities particularly in accessing new cassava varieties and training, along with the ability to access market opportunities through bulking activities. Membership in farmer and processing groups are also often mandatory to sell produce at certain markets. Farmer groups are typically made up of men and a smaller proportion of women. Processing groups consist largely of women who sell independently but undertake some activities in smaller groups (e.g. hiring transport, buying fresh cassava to process etc.). Each individual typically sources cassava to process and pays a fee to use processing facilities (in most cases owned by men), where men from the communities are hired to operate processing equipment such as graters and mechanical pressers on their behalf. Women's processing activities would sometimes be delayed if men were not available to operate the equipment.

As C:AVA targeted cassava groups in its activities, all C:AVA participants in the survey are group members, although not necessarily active members. Non-participants in C:AVA communities were non-group members, but still undertake commercial cassava activities. Interviewees in non-C:AVA communities may or may not belong to cassava groups, and they were not supported by C:AVA. Group membership does not necessarily explain the level of commercial orientation of an individual. For example, individuals with larger customer networks can bypass the group:

*"I don't belong to a group because I don't take things to market. I sell from home as I have good relations with people outside who I can sell to"* (female processor, ethnic minority, Ogun state, Nigeria)

FGDs found there was no explicit class dimension to group membership and that a cross-section of the very poor to the wealthy were involved, as demonstrated in the quote below.

*"10% of fufu processors are rich; they make fufu and have other businesses. 20% are making fufu with about ten acres of land for cassava. 30% of people are making fufu and can afford to buy cassava and farm about one acre of cassava. 40% are involved in fufu"*



*processing but don't have money for cassava so they take cassava on credit. Some cannot eat until they peel [cassava]"* (female processor, Ogun state, Nigeria).

Some cassava groups have strong social networks, which may facilitate other community activities, such as the celebration of traditional festivals as observed in Ogun state, and overlap with other groups such as informal lending groups. The groups operate with rules, which includes rules of acceptable behaviour outside of the group context: *"Don't drink, don't sleep with other people's wives, contribute and do not be lazy"* (male producer, Ondo state, Nigeria). Informal clan-based groups influence access to credit and reciprocal labour arrangements that influence commercialisation (Section 6.4.11).

## **Malawi**

**Land access** in Malawi is influenced by customary practices: matrilineal practices in the southern region (Zomba and Mulanje) and both matrilineal and patrilineal practices in the central region (Nkhotakota). Men and women worked on shared agricultural plots, with some women, especially from polygamous households in the central region having a smaller plot for themselves. It has been argued that matrilineal systems give women considerable authority over land decisions, but this is currently being eroded by commercial agriculture (Berge et al., 2014). Berge et al., (2014) found that in Malawi, migrants also tend to have more insecure land rights. Women in some households, particularly in the north, had a separate smaller plot to grow crops mainly for household consumption, similar to migrant communities. The land rental market exists, but it was not common for smallholders in the study areas to rent land.

Farming is conducted on small parcels of land. In the study areas, the average plot size was 2.2ha, with no significant differences between sample groups (ANOVA  $p \leq 1$ ). This is higher than the national average (1.5ha) (IHS3 2010/11). FHH have significantly less land compared to men, 1.7ha compared to 2.4ha (ANOVA  $p \leq 0.005^*$ ). There were also significant differences between the districts; the southern region in particular, experiences considerable land constraints. In Zomba the mean was 1.6ha, compared to 1.3ha for Mulanje and 2.9ha for Nkhotakota (ANOVA  $p \leq 0.0001^*$ ). Examining the land size distribution in the study survey (2010) (Table 18), the largest proportion of farmers cultivate on 1-3ha of land (59%). There were significant differences between MHHs and FHHs ( $p \leq 0.01^*$ ), where the majority of MHH cultivated on 1-3 ha (48%), but under 1ha for FFH (51%). Statistically significant differences were found between districts ( $p \leq 0.0001^*$ ), reflecting higher proportions of people with larger land sizes in Nkhotakota (53% cultivating 1-

3ha and 18.5% cultivating 3-5ha), compared to the southern districts (majority of the sample reporting under one ha). This is related to differences in land availability between the districts.

**Table 18 Total land size (ha) by percentage of sample group and gender of head of household and district (2010), Malawi**

	Land Size (ha)					Total
	<1	1-3	3-5	5-10	>10	
MHH	28.5%	48.3%	14.6%	7.9%	0.7%	151
FHH	50.6%	36.8%	6.9%	5.7%	0.0%	87
Zomba	52.5%	40.0%	6.3%	1.3%	0.0%	80
Mulanje	70.0%	25.0%	2.5%	2.5%	0.0%	40
Nkhotakota	15.1%	52.9%	18.5%	12.6%	.8%	119
<b>Column average</b>	15.0%	59.4%	15.4%	10.3%	0.0%	234
Chi-Square: gender HHH p≤0.01*; district p≤0.0001*						

**Agricultural inputs** such as pesticides and herbicides were not used widely. However, the far majority of farmers used fertilisers, particularly for maize, which was subsidised by the government and therefore was not necessarily a reflection of commercial investment. The majority of the sample population did not use high-yielding varieties. This was evident for different sample groups, MHHs and FFHs and districts. Chapter 6 provides more detail on input use.

**Credit** was available on an informal basis through community-based savings and loan groups which were used widely, however, similar to south-west Nigeria, formal credit was not used by the majority and considered risky.

**Social capital** played an important role in Malawi. Farmer groups were common, but not cassava groups specifically, which C:AVA had supported. Processing groups were less common. Groups require membership fees and provide a number of benefits for women including joint bulk purchases of fresh cassava, labour (paid for, but more easily sourced and reliable), and marketing. As stated for Nigeria, as C:AVA targeted groups for support, and were the basis of sampling, C:AVA participants reveal farmer group members, and non-participants in the same communities

were not members of farmer groups. Non-C:AVA communities could be members of groups, but were not supported by C:AVA.

FGDs reported that there were several advantages to group membership; mainly that they could sell as a group for improved bargaining power; it was possible to attract external assistance and access more support (such as C:AVA), and transportation could be sourced cheaper. In Mulanje, men stated that there had been little change in the way their crops were marketed in the past ten years. A women's FGD stated that they only recently had been gaining enough surplus crops to sell, so marketing produce was new for them. The groups in Zomba, both men and women, were selling cassava in a group, but other crops were sold by individuals.

The quote below highlights some of the reasons for individuals not taking up group membership, particularly for youth:

*“Youth aren't in the group because they are afraid of the work; they want soft work. Other people are already independent, so they think coming in a group is a waste of time. Other people don't like to be in a large group and being told what to do. The youth aren't usually allowed because in groups the leaders want people who are mature and can follow instructions” (female processor, Mulanje district, Malawi).*

## 5.7 Food security

This section examines smallholder farmer perceptions of food security, and the role of cassava and cassava commercialisation in food security strategies in Nigeria and Malawi. The inquiries were structured on the FAO's (2001) definition of food security (*food availability, food access, food utilisation and food stability*).

### Nigeria

According to the Nigeria Poverty Profile, there is a high level of food insecurity in the study areas: 41.8% are considered food poor in Ogun state and 36.1% in Ondo in 2009/10, similar to national rates (41%) (the definition for 'food poor' was not provided) (NBS, 2010). Households experience food shortages on a seasonal basis, primarily between January and February.

The fieldwork found that in terms of farmers' perceptions, smallholders generally perceived their *food availability* to be good, particularly in terms of the quantity of food (Table 19). Panel interviews indicated that for most months of the year and in most circumstances their household

had a nutritious diet, including proteins (fish, meat – chicken, bushmeat, beans and groundnuts), carbohydrates (cassava, yam, rice and maize), seasonal vegetables and fruits. Farmers' own production was a significant source of staple food and vegetables. Accessing sufficient quality and variation of food was more of a constraint for food security in this area, which was reflected in six out of eight groups, along with the majority of panel interviews, stating that they did not feel completely food secure due to lack of diet variation.

Regular access to cash income is an important factor ensuring diet diversity, providing *food access* and *food stability* when farm food supplies are low in the lean period. For this reason, the market was considered by smallholders to be essential for food security (although vulnerable individuals with labour constraints may be more reliant on the farm and trade), particularly cassava processing activities for which there was always a ready market. However, the fluctuation in markets can be detrimental to food stability if markets are relied on by farmers too heavily, as one FGD expressed, markets are growing but demand can be unpredictable. There were also many complaints of the increasing cost of food (seven out of eight FGDs), which made it important for smallholders to earn additional income.

During the dry season, diet quality was reported to decline indicating problems of *food access (purchases) and food stability*. Three out of eight FGDs, all women's groups, stated that the variety of their diets was poor during the dry season because they didn't have the funds to purchase foods, revealing their need for income to ensure diet diversity. During these times people often reduced their purchases and consumed more carbohydrates, but did not necessarily reduce the amount of food they ate. Participants also felt that at times they were not able to afford their food preferences:

*“Sometimes when we are making yam we can't buy egg to cook with it, so we use palm oil instead”* (female producer, Ondo state, Nigeria).

At the same time, diets were changing due to the increasing mobility of people from other regions:

*“Now we eat less yam as you need fertile land. Fufu has come here with the Igbo people. Before they came we also didn't eat pumpkin leaf. We got closer to the Igbos and people started eating it”* (male producer, Ogun state, Nigeria).

**Table 19 Household food security: number of meals per day, quantity and quality of food (2010), Nigeria**

<b>Description of group and location</b>	<b>Number of meals per day</b>	<b>Satisfaction with Quantity</b>	<b>Satisfaction with Quality</b>
Women processing group 1, Ogun	3	Satisfied – depending on what expenses arise	Satisfied – “depending on what expenses arise”
Male Farmer group 2, Ogun	2-4	Satisfied	Satisfied
Mixed sex farmer group 3, Ogun	3	Satisfied	Satisfied
Women Processing group 4, Ogun	5	Satisfied	Satisfied – “but there is more diversity in the rainy season”
Male farmers group 5, Ondo	2-3	Satisfied	Satisfied
Women Processing group 6, Ondo	3	Satisfied	Poor diversity
Women Processing group 7, Ondo	3	Satisfied	Satisfied
Women Farmers Group 8, Ondo	3	Satisfied	Poor diversity

In Nigeria, panel interviews found that smallholder strategies to ensure food security included portioning cassava fields for consumption and sale, which was usually discussed and agreed in advance by couples. Women said they preferred to leave cassava unprocessed in the field so that they or their husband could not sell it off quickly for money. Panel interviews suggested that despite their knowledge of the optimal time to harvest cassava, they may harvest early or late depending on when their need for cash.

*“For cassava, we don't keep a record. I go to the farm and uproot and sell when I need money for school fees”* (female processor, Ogun state, Nigeria)

*“I process when I need money and buy food”* (female processor, Ondo state, Nigeria)

Two women's FGDs in south-west Nigeria stated that men consume larger portions of food, particularly of proteins, and children are also given priority, meaning that women will receive less food when it is scarce. Otherwise, there were minimal discrepancies between men and women.

Most of the FGDs reported that drought was the most common agricultural problem affecting their livelihoods, as it often destroyed important crops like pepper and maize, affecting food supply and income which indirectly affects food supply. Participants stated that during these times they did not purchase fertilisers, but if they could afford it, they would rent land by the riverside or wetlands. One group stated that they began mixed cropping as a way to maintain enough food during periods of drought. Another group stated that they planted more cassava during these periods.

In terms of strategies used by households during food shortages, women's FGDs gave detailed descriptions of how they managed, which revealed their experience and roles in managing food shortages. One women's FGD stated that they had occasional difficulties, but they would manage the situation by reducing the quantity of food they ate, but not necessarily eliminating types of foods. Another women's FGD stated that they always had cassava to process and sell so they never felt food insecure, demonstrating the importance of cassava for women in meeting household needs throughout the seasons and times of hardship. Individual interviews revealed more complex strategies to manage food scarcity, including reducing the number of proteins purchased, storing certain goods (e.g. kola nut) to sell when money was needed, along with borrowing funds from family members and friends to purchase food.

## **Malawi**

In Malawi, national data shows food insecurity and vulnerability in the country (Table 20) (IHS3, 2010/11). Very low food security<sup>22</sup> was most prevalent in the southern region (36%) followed by the northern and central regions (30%). However, there is large variation between the districts and

---

<sup>22</sup> High food security: Households that did not experience any concern about accessing enough food and did not alter the quality, variety, and quantity or eating patterns. Marginal food security: Households have concerns about adequacy of the food supply but the quantity, the quality, the variety and the eating patterns were not disrupted. Low food security: Households might have been concerned about not having access to enough food, they reduced the quality and the variety of the food consumed but quantity of food intake and normal eating patterns were not disrupted. Very low food security: Households experience multiple indications of disrupted eating patterns and reduced food intake. They report reduction in food quality, variety, quantity and frequency of food consumed. Consumption by adults could have been restricted in order for small children to eat and could also depend on food assistance from relatives or friends.

in the study areas: Nkhotakota and Mulanje are lower than national average for the number of people with very low food security, but Zomba is higher.

**Table 20 Food security status percentage of the population by region (2010), Malawi (IHS3, 2010/11)**

	Food Security Status			
	High	Marginal	Low	Very low
Southern	50.7	2.3	11	36
Central	64.2	2.2	4.2	29.5
Northern	59.7	0.8	9.6	29.9
Male	59.6	2.1	7.2	31.1
Female	49.4	1.9	10.6	38.1
Nkhotakota	66.0	3.0	2.2	28.9
Zomba	48.6	2.8	12.1	36.6
Mulanje	47	1.9	22.7	28.5
National	57.6	2.1	7.9	32.5

According to FGDs, the majority of participants felt food secure; only two groups out of eight; one male (Zomba) and one female (Nkhotakota) felt that they were insecure (refer to Table 19). This is mainly in terms of *food availability* as smallholders rely more on what they grow than purchase, as compared to Nigeria.

Changes in food security differed among the study districts. In some areas, food security was reported to be improving due to support and exposure from government agricultural extension agents and government subsidies for agricultural inputs. More than half of the participants in the male FGD in Zomba, however, stated their food security had declined in the past ten years due to larger family sizes and lack of access to fertiliser for maize. Women in Nkhotakota also stated issues around *food stability*, due to a higher frequency of droughts and lack of market for their crops, particularly cassava.

*“It [household food security] has improved because the price of seeds, pesticides and fertilisers has decreased. And now extension workers have taught us about using manure for fertiliser. This has improved our lives”* (female producer, Zomba district, Malawi).

In Malawi food quality was reported to be problematic among smallholders due to the lack of variation in their diets. This was linked to their lack of income to purchase food that they do not produce themselves, along with declining environmental resources.

*“I am satisfied with the amount of food, but it isn’t varied. When I have more money, we have a more varied diet and buy things like milk”* (female producer, Zomba district, Malawi).

*“We just eat to fill the stomach”* (female producer, Mulanje district, Malawi).

Food purchases provided some diet diversity for households, underlining the importance of cash income for *food access*. These were typically salt and cooking oil, proteins such as fish and meat, and staple food crops such as rice and maize particularly during the lean season. Men and women in Mulanje stated that they would purchase staple foods like maize, despite that they were producers of the crop, because they often would sell all of their maize for income. This means that smallholders had to pay more for the product because they often had to purchase maize when the season was over and supplies were low. Men in Zomba stated that their food purchases had decreased due to increased productivity, a result of government subsidy programmes, agricultural extension support and improved agricultural markets. However, in contrast to the men’s FGD, women stated that agricultural productivity had improved over the years, which enabled more market participation and thus, income, which enabled them to make more food purchases and increased the diversity of the household diet.



**Table 21 Household food security: number of meals per day, quantity and quality of food (2010), Malawi**

<b>Description of group and location</b>	<b>Number of meals per day</b>	<b>Satisfaction with quantity</b>	<b>Satisfaction with Quality</b>
Male Farmer group 1, Mulanje	2-3	Satisfied – when money and good harvest	Mostly satisfied
Women Farmer group 2, Mulanje	2-3	Yes	No diversity
Male Farmer group 3, Zomba	1-3	Yes	No, “we just eat to fill the stomach”
Women Farmer group 4, Zomba	2-3	Yes	“Sometimes, it depends on our income”
Women group 5 Nkhotakota	2-3	Yes generally, but varies	No diversity
Male farmer group 6, Nkhotakota	2-3	Yes generally, but varies	No diversity
Male farmer group 7, Nkhotakota	1-2	No	No, “we eat to survive”
Women Processing group 8, Nkhotakota	1-3	Yes	No diversity

The initial field research demonstrated that household food security fluctuated throughout the year, which highlighted issues of *food stability*, particularly during the lean period. The main hunger period is January and February, but can be longer or shorter depending on the conditions of that year (e.g. soil, weather, pests). The strategy for the participants during the lean season was to reduce their food intake because they had neither the food stored in the home or the ability to purchase enough food to substitute for the decrease (they also have unimodal rainfall and one harvest season compared to bimodal rainfall in Nigeria). Wealthier farmers were able to sell food during this time, but this was found to be practised only by a few individuals in the first panel round, and most were purchasing their main staple if they could afford it. Two individuals stated that would always have food to eat because they could earn income quickly by working as casual labourers. The majority of smallholders did not perceive that food insecurity was due to their market participation, but poor weather conditions.

In Malawi, men and women's FGDs in Domasi, Zomba stated that men had better access to food because they often travelled to the market where they could purchase food for themselves, especially when there was little food at home. The men in Zomba and Nkhotakota also admitted that they received larger quantities and better quality of food.

*“Men eat when they go to market”* (female farmer, Zomba district, Malawi).

*“Men get bigger and better food”* (male farmer, Nkhotakota district, Malawi).

Food scarcity was common for the participants. Food scarcity was usually during times of long drought, which was a particular problem in the central region. Households also experienced food scarcity when there was an illness in the household, either because the people who provided agricultural labour were unable to work or that food was sold to pay for medical expenses. Food was also scarce during the lean or dry season when crops were difficult to grow.

To manage food security, smallholders estimated the amount of maize (in the south) and cassava (in the central district) required for each household member for a specific time period, based on their experiences. In Nkhotakota, a male FGD stated that they timed their planting to ensure that their cassava was mature during the dry season, so they have food to eat. They also reduced the amount of food they ate and eliminated some items from their diet, such as meat or fish that were expensive. Men in Zomba stated that they had also resorted to selling household assets, such as the radio, clothes or chairs in order to purchase food.

*“In the harvest season we have two to three meals. It is more plentiful in this season. During the lean season we eat twice a day and the amount is reduced so we have enough food for two meals”* (male producer, Zomba district, Malawi).

However, food management strategies were undermined when there was an unexpected need for cash, as the majority of smallholders interviewed were not able to save money. Women in Mulanje described their situation as a constant *“fight between having food to eat and selling it for cash”*. Shared plots between men and women also made it difficult in situations where husband and wife disagree about how produce was to be divided between household consumption and market sales.

*“There are situations where one person may be sick, so we are forced to sell crops that were budgeted for the house or sell a goat”* (male producer, Mulanje district, Malawi).

Women's FGD in Mulanje, Zomba and Nkhotakota stated that they often depended on assistance from friends, family and neighbours during food shortages, which was not mentioned by men, revealing the importance of social networks for women managing periods of food scarcity. Women also reported trading or undertaking casual labour.

*“If we have a food shortage we will do casual labour. We will borrow things from friends. This happens when the weather is poor, particularly a dry spell”* (female producer, Mulanje district, Malawi).

### **5.8 Gender roles and responsibilities in food security**

As presented in Chapter 2, there is a longstanding narrative in development discourse that associates women with food security. FGDs and the panel interviews also found strong expectations of women in fulfilling a food security role. Due to cassava's importance for household food security, cassava is considered as a 'woman's crop'. However, the gender dynamics are more nuanced around the ways men contribute to food security and women's influence on the proportionality of income, time and responsibilities for specific food security-related tasks, such as food production, preparation and purchasing.

With regard to production activities, cassava allocated for household consumption was taken from either a man or women's plot in Nigeria, but mainly from the household plot in Malawi, which was under the care of women. However, the proportion of time women spent in tending to cassava plots for household consumption, particularly weeding and daily management, is higher for women compared to men. In Nigeria for example, women contribute their unpaid labour to their husband's lands if it is for household consumption, as demonstrated in the quote below. Gender norms which associate women with reproductive roles, particularly childcare and feeding, add to women's responsibilities for daily food consumption for her children, in addition to the family.

In practice, processing cassava is an important method for women to obtain income in both countries, where they can earn additional income through processing compared to selling fresh. Income plays a significant role in food security, particularly in Nigeria, and contributing to diet diversity. In discussing the proportion of men and women's income used for purchasing food, there were different responses. A women's FGD in Ondo state, Nigeria stated that the norm in their community is for men to provide the income for food security, as he is the provider. Another women's FGD in Ogun state, stated that while the tradition is for men to be the provide food

security, it is increasingly the case that women use their income for food preparation, their plots for production and their time in food preparation, to a greater extent than men.

*“I don’t do weeding for him on his plots as I have to process cassava. But I help with vegetables because we must eat them”* (female processor, Ondo state, Nigeria).

There were similar differences between men and women in FGDs in Malawi, related to regional differences in patrilineal and matrilineal customary practices. One female FGD in Nkhotakota expressed that they had full responsibility for cultivating food in their household garden, but their husband had more responsibility for food purchases, which can reflect men’s greater access to, and control over, income. However, FGDs in Mulanje and Zomba found that women gave more of their labour to household food, in addition to their income. This responsibility was increasing over time, as it was felt that men were taking less responsibility and leaving their wives in households in the southern districts. FGDs also associated men’s interest of higher value crops that require more agricultural inputs, such as maize and tobacco in Malawi.

*“Women think about crops to eat at home and men are not always thinking like this”* (female processor, Nkhotakota district, Malawi).

### **5.9 Cassava market participation**

The initial fieldwork found that smallholder farmers were actively involved in cassava markets, particularly in Nigeria, prior to the C:AVA intervention. Smallholders perceived cassava commercialisation to be low risk due to minimal inputs required and because it was already grown by farmers. As described in Section 4.6, the organisation and characteristics of cassava value chains in Nigeria and Malawi differ considerably, and involve men and women, and other social groups, in different ways.

According to FGDs in Nigeria, men typically uproot and sell fresh cassava once mature to local processors, including their wife or wives, who then sell local cassava products such as gari or fufu, and increasingly to SMEs and large factories. Ethnic minority communities, men and women, are mainly involved in gari, and secondly, fresh cassava markets. Processors sell their products at traditional local markets or to traders. Buyers of local processed products ranged from large companies, bulking agents, retailers and other community members.

In Malawi, value chains are relatively short, as they involve few stakeholders and markets, compared to value chains in Nigeria. Selling fresh cassava is mainly undertaken by men, although there are exceptions particularly in matrilineal southern Malawi. Similar to Yoruba households in Nigeria, processing labour and marketing is done almost exclusively by women, but men would often manage selling when it involved larger amounts. In Nkhotakota, women process and sell kondowole as dried flour or chips for sale, and in the southern region, women process cassava at home or in groups to make makaka for household consumption as well as for the local markets. FGDs found that market demand was increasing for fresh roots and local processed products such as makaka, which led farmers to increase their production over the past ten years.

Some of the characteristics of cassava present challenges in marketing, along with benefits. Cassava requires rapid post-harvest processing to prevent deterioration, making quick responsiveness to markets a requirement for smallholders to sell, which relies on comprehensive networks with traders and buyers, along with timely information. However, the ability to keep cassava for relatively long periods in the field enables smallholders to harvest when a need arises, in contrast to crops with a short time-frame of maturity, which has led many women to refer to their planted cassava as their “bank”. In addition, in contexts such as southern Malawi where cassava was not households’ preferred staple crop to consume, it was used as a food security insurance when their maize stores were completed or if there was crop failure. These unique characteristics of cassava influence whether and how smallholders participate in markets, and how it is used in relation to broader household livelihood strategies.

Commercial cassava activities can also be limited due to their importance for food security. Due to the risks involved with agriculture, farmers in both countries described their tendency towards diversification of income sources in order to provide consistent income for the home. This may indicate that smallholders are not ‘commercialised’ to the extent where they are fully dependent on the market for their livelihoods in either of the countries at the time of the focus groups in 2010. Agriculture for food security and income-generation were not seen as mutually exclusive goals, but were complementary in household livelihood strategies. As crops themselves played dual roles in generating cash and food security, there was less of a trade-off between the types of crops to grow (e.g. cash versus consumption crops). Instead, livelihood strategies mainly involved making choices based on budgeting the amount of produce from each crop for the home and what could be sold at the market. Decisions on what crops to grow, therefore, were determined based on carefully coordinated production strategies that consider a number of factors.

*“When deciding what to plant, we first look at food security. But of course we consider if the crop is marketable and if it matures early”* (male producer, Nkhotakota district, Malawi).

FGDs revealed that smallholders in both countries experienced a time when staple crops had increased in price and smallholders had the opportunity to sell a large quantity. Responses were divided on how their households dealt with the situation. In Nigeria, smallholders stated that they would substantially increase the amount they sold in order to have income and to purchase foods they may not have had otherwise. However, other households were reluctant to do so for fear of the need to buy back cassava at a higher price later in the year. A women’s FGD in Ondo state described that there was a time when cassava was at a high price and everyone sold their stocks. Not long after, people had to buy back cassava and there was a large queue to purchase. This made women feel that they should always leave enough crop for home consumption.

*“We will not sell all our produce as household food security is a must”* (female producer and processor, Ondo state, Nigeria).

FGDs in Malawi also showed diverse responses among smallholders on whether they would sell more or prioritise food security if the price for the crop was high and there was increasing demand. There were many examples among the FGDs where this situation had occurred, and where food security was jeopardised, indicating vulnerability of smallholders in Malawi. Some of the male FGD participants in Mulanje, and the mixed-sex FGDs in Zomba, stated that they had sold too much food in the past. In the Mulanje group, incidences where people sold their stock to create income for food occurred in 2008 with maize and 2009 with pigeon peas.

### **5.10 Household decision-making: control of farms and income**

Processes of household decision-making and bargaining play a central role in commercialisation, and for women, the level of their agency in these processes, also likely affect outcomes for the household. As discussed in Section 2.4, the livelihoods framework lacked a clear articulation or modality for understanding household decision-making, and is therefore incorporated in the modified livelihoods framework.

A household is often conceptualised as a ‘coordinated economy’ unit whereby different actors play different roles in decision-making, activities and labour, to meet the livelihood goals of the household. The ‘collaboration boundaries’ in the household economy towards livelihood goals are

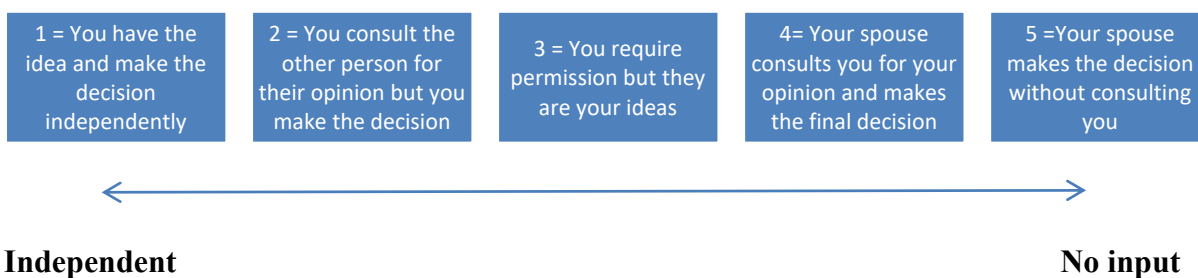
not only restricted to the nuclear, household unit but can be extended to outside the household to the broader community. This was particularly evident among ethnic minorities in Nigeria. It also differs between different types of household structures, such as MHHs and FHHs. Importantly, the household is a concept with fluid boundaries, which shifts with changes in marital relationships, birth and death or moving location. The household, while coordinated, is not a single coherent entity but is made up of parts that both come together and come into conflict.

Examining how income is managed at the household level shows the types of collaboration boundaries that arise from socio-cultural contexts. In Nigeria, in migrant households, and Nkhotakota in Malawi, FGDs revealed that while each household was different, the norm was for men and women to pool their income, reflecting shared farms, and decide on how it was used. However, the perception is that the income is ultimately under male authority. Despite these perceptions, panel interviews in Nigeria found that Yoruba men and women kept their income separate, along with the southern districts in Malawi. In Nigeria, Yoruba women reported that they had control over their income, including from cassava activities; however, they felt it could be threatened if they made more profit. In southern Malawi, women tended to have more control over their own income, but it was spent on the household. Women in both countries reported that men were more likely to spend “wastefully” on alcohol, or in Nigeria, marrying an additional wife, which could reduce the amount of support they would receive from their husband.

*“In our household my husband, me and the second wife bring all the money together and decide on what purchases need to be made. After that, it is my choice for how the rest of the money is used”* (female producer and processor, Ogun state, Nigeria)

*“We don't pool our income, we are both responsible. He meets one expense and I do the other depending on who has money at the time”* (female processor, Ondo state, Nigeria)

The typologies of smallholder farmers, their farm management systems and gendered decision-making norms, became apparent in the fieldwork. Using Atlas ti. network mapping, the following decision-making categories were developed to encompass the five-different decision-making models in the study areas (Figure 12). This shows a five-point scale of decision-making from complete independence for women (1) compared to no input in decisions (5).



**Figure 12 Scale of independence in decision-making for married women in cassava activities**

Based on the panel data, a description of the practices in decision-making using the farmer typologies and the decision-making scale are provided in

Table 22 Table 22. Individual households are expected to diverge from this typology and are identified where relevant. It is expected that these different typologies will influence on how women participate and benefit from cassava commercialisation processes, and whether this changes with increasing profitability. The five-point scale and typologies is used to examine women’s decision-making and commercialisation and changes with commercialisation in more depth in Section 7.6.

**Table 22 Smallholder typologies and household decision-making processes**

	<b>Group</b>	<b>Farm management</b>	<b>Decisions on farming and income</b>
Nigeria	Married Yoruba men	Independent plot(s)	1 on the scale: men were independent on decisions regarding farming and income from farming, but their priorities were similar to women: earn income and provide food, clothing and education for the family. Often, they acknowledged the contribution of their wives to the household but they considered themselves to be the important earner in the household.
	Married Yoruba women	Independent plot(s)	2 on the scale: women’s separate plots and authority over those plots was independent from their husband for the most part. However, this depended on whether it was land she inherited or rented or had been given by her husband. Women also had to consult their husband, or anticipate what he would do with his produce and income, to decide on what she sold or kept for household consumption, and how she used the income from it.



	<b>Group</b>	<b>Farm management</b>	<b>Decisions on farming and income</b>
	Husband and wife from minority ethnic groups	Shared plots	3-4 on the scale: minority ethnic groups tend to work on shared plots, with some women having a smaller separate plot for household consumption. Decisions were made under the authority of the male household head, but commonly in consultation with wife. Labour activities were often carried out together, as minority ethnic men were more likely to do farming, particularly cassava farming and processing, compared to Yoruba men (according to interviews in Ogun).
<b>Malawi</b>	Husband and wife in southern region	Shared plots	3 on the scale: despite matrilineal customary practices, women and men generally reported that they took decisions together regarding farming and expenditures. However, some women reported that they had to carry out more of the labour to fulfil their livelihood goals compared to their husband (and for some men, they had other off-farm work)
	Husband and wife in central region and polygamous families	Shared plots with women in some cases having separate plot	4 on the scale: men and women reported shared decision-making, but men were often considered to have the final decisions and the ultimate authority, and responsibility, for the household. Some women had separate plots, but this was often for household food security. She could sell some produce, but this was often in small quantities.

### 5.11 Chapter conclusion

This chapter presented an overview of smallholder livelihoods and the role of cassava, drawing on the livelihoods framework and findings from the initial fieldwork. The chapter provided a description of socio-economic conditions in the study areas. The study locations in south-west Nigeria were patriarchal households, with a mix of polygamous and monogamous family units. Yoruba is the dominant ethnic group, however, there are large numbers of migrants from neighbouring states and countries who have settled in the area. Literacy rates are high: over 75% for men and women. In the study areas in Malawi, there were a mix of polygamous and monogamous family units similar to Nigeria. However, there was also a mix in matrilineal (Zomba and Mulanje), patrilineal and mixed (Nkhotakota) lineage systems. Chewa is the dominant ethnic group in Nkhotakota, Yao and Lomwe in Zomba, and Lomwe in Mulanje. Nationally the literacy rate is 65%, with men at 74% and women at 57%.

The findings show rich diversity and complexity of smallholder livelihoods that aim to reduce risk and uncertainty through farm and off-farm activities undertaken by different members of the household to ensure income throughout the year. Activities are specific to the characteristics and endowments of the location, household and individual. Activities are also shared or separated between different household members and are characterised by factors such as gender, age, ethnicity and position in the household. Livelihoods are centred on subsistence and commercial agriculture to varying degrees, to meet the main objectives of household food security and income-generation, the twin livelihood goals which are surprisingly consistent among the interviewees across the two countries.

Cassava plays a very important role in livelihoods strategies and addresses the two main goals of household food security and income generation. Cassava is staple crop, calorie-dense and drought-tolerant, that is widely grown in both countries. It is considered to be highly accessible crop for smallholders, even for the most vulnerable. Cassava's unique agronomic characteristics make it a distinctive crop compared to other crops. It can be harvested throughout the year or left in the ground until it is needed, and therefore provide food and income security for households. Cassava's importance as an income-generating crop has also increased in the past decade with growing demand for local and new cassava product markets. However, cassava also requires rapid post-harvest processing to prevent deterioration, requiring smallholders to sell quickly, which depends on trusted customer networks.

The dual roles that cassava plays, for income and food security, means that household decision-making and management of the crop is intrinsically important for smallholders, which validates the decision-making modifications to the livelihoods framework (Section 3.1). Decisions regarding cassava take place within the household's 'coordinated economy', whereby household members have different roles, responsibilities, and rights, which vary by household structure, gender, age, ethnicity and position in the household. The 'collaboration boundaries' between household members, the extent of which individual members work and decide together or independently on an activity, are also influenced by gender norms in farm management, namely shared or separate farms between the spousal couple.

Cassava is also valued by smallholders because it is perceived to require few inputs. However, this perception overlooks the assets that are required for cassava commercialisation, and how access to assets are constrained for certain groups, such as land. Labour constraints are another barrier to commercialisation, which particularly effects women. However, social capital and networks also

play an important role in cassava commercialisation, particularly for women and ethnic minorities in Nigeria, where clan and gender-based groups provide access to loans, raw materials, land and labour. These networks enable otherwise vulnerable individuals and households to participate and benefit from cassava markets.

Smallholders in Nigeria and Malawi expressed similar levels of satisfaction with the quantity of food and dissatisfaction with their food diversity. However, Malawi was more prone to food insecurity and shortages, which influences their cassava market participation. Men and women both contribute to household food security but in different ways, but women generally spend more time and resources on food sourcing and preparation. Negotiations between the spousal unit of how cassava was proportioned for household or for sale, were important for women's market participation and household food security. This finding leads to the question addressed in the next chapter, if and how smallholders respond to an increase in commercial cassava opportunities, and if they do so on an equal basis.

## **6. Do smallholders respond to commercial cassava opportunities and how?**

### **6.1 Introduction**

This chapter examines whether smallholders respond to commercial cassava opportunities and if so, how. It explores whether men, women and different ethnic groups choose to increase their commercial activities associated with a staple crop important for food security, how they do so, and if they participate on a relatively equal basis. Thus, this chapter examines the reality behind the narrative that smallholder farmers, including women and vulnerable groups, can participate in cassava commercialisation, due to the accessible nature of cassava (Section 2.2.4).

The chapter is organised as follows: Section 6.2 contains a brief description of the contextual factors that have influenced the demand and supply of cassava in the study locations. Sections 6.3, 6.4 and 6.5 presents the different commercialisation pathways used by smallholders to participate in cassava commercialisation, and, where possible, the scale at which they are taken up, drawing out gender and ethnic differences. Section 6.6 presents key factors that influence participation in cassava commercialisation, including risk, vulnerability and socio-cultural norms. This is followed by the chapter conclusion.

### **6.2 Context**

This section presents some of the key meso and macro level contextual factors that influenced the participation of smallholders in cassava markets between 2009 and 2014, identified through key informant and panel interviews, and analysed using grounded theory (3.1). The overarching theme that brings together the different contextual factors which influenced commercial opportunities for cassava was market uncertainty. In many places, demand for cassava was highly localised, as many of the smallholders visited in the second fieldwork phase had not experienced an increase or change in demand. Perceptions of uncertainty can be more acute for crops such as cassava, where new products are still risky, and their profitability depends on their price and comparative advantage compared to alternative products (e.g. HQCF and wheat) (Appendix L for prices and costs at local level for Nigeria and Malawi).

Another important point is that cassava production and post-harvest characteristics shape the market opportunities open to smallholders, and to particular socio-economic groups. For example, the perishability of cassava means that it cannot be stored and sold or consumed at a later date (it must be processed within 48 hours of harvest). It can be retained in the ground; however, the land may be required for other crops. Therefore, increasing commercial cassava activities may pose a

risk if there is market uncertainty. Unforeseen dynamics in demand and supply can prevent new cassava value chains from developing as expected in certain locations. There were examples in both countries where SMEs and large factories bought cassava from smallholders outside the target C:AVA area as promoted by the project, as cassava from places further from the factory was cheaper. Demand from end-users was lower than expected in some areas, and thus SMEs could use their own source of raw materials, or from their friends, without purchasing from smallholders as originally (informally) agreed.<sup>23</sup> New opportunities were expected with HQCF, a relatively new product in both countries. However, demand for HQCF did not take off in Nigeria as preferred alternatives (wheat flour) were relatively cheap. In Malawi, the fact that wheat flour was more expensive made HQCF a more affordable alternative, therefore CPGs in a few locations had enough demand and a good enough price to make profit. For these reasons, there were more varied responses among smallholders to uncertain and dynamic cassava markets.

However, smallholders in other locations did not have access to new market opportunities as expected, which fed into negative perceptions among smallholders towards cassava markets.

*“Over the years, we have been producing cassava but now it has changed with improved (cassava) cuttings. The market is increasing but there is only one market - there is no alternative”* (female producer, Nkhotakota district, Malawi).

*“Cassava is not important. I made makaka last year and it didn’t sell well. Sometimes there is too much cassava in the market”* (female producer, Zomba district, Malawi).

A number of non-market related factors influenced cassava value chain development, particularly in Malawi. During 2010-2014, Malawi experienced drought periods in the survey areas that limited smallholder supply of cassava and led to difficulties for processing companies sourcing cassava. Smallholder farmers in the southern region reported incidences of cassava mosaic virus disease (CMD), failure of high-yielding cassava varieties distributed under the Presidential Initiative, and supported by C:AVA, and cassava theft due to both hunger and poverty in the area.

*“In 2012 there was a hunger problem around here. The harvests were not good and people reserved what cassava they had. In 2013 people planted cassava ahead of rains but instead*

---

<sup>23</sup> Cassava supply arrangements are mainly informal and contracts were rare if not completely absent from agreements between SMEs, large-scale factories and smallholders.

*they waited for two and a half months for rains and the stems dried”* (Vito Sandifolo, C:AVA Country Manager, Malawi).

The environmental and market contexts in both countries provide an important lesson on cassava value chain development, namely the significant influence of uncertainty, unpredictability and expectations in staple crop value chain development. Market initiatives, economic models and policy often assume that the market demand will exist and smallholders will supply automatically. However, markets for staple crops can be risky, and perceptions of risk are fundamental to the actions of smallholders. The remainder of this chapter examines how smallholders have responded to cassava markets within this context of uncertainty.

### **6.3 Cassava commercialisation pathways**

This section examines the cassava related commercial actions of smallholders, drawing on quantitative and qualitative perspectives over a five-year timeframe. The structure of this section presents the commercialisation pathways that smallholders have used to respond, or not, to commercial cassava opportunities. The commercialisation pathways were identified through the grounded theory approach of key informant and panel interviews (3.5), which identified recurrent themes, actions, consequences, and the linkages between them. The pathways vary by country and social group. The pathways are summarised in a decision-making map in Figure 13.

Figure 13 should be read by first looking at the actions of smallholders (blue boxes numbered one to nine) based on their decisions regarding cassava commercialisation. In some cases, smallholders have taken more than one of these strategies. These are: 1) increased use of inputs for cassava, including herbicides, fertilisers and varieties); 2) increased area of cassava planted; 3) reduced household consumption of cassava; 4) change in planting/harvesting to sell in bulk; 5) increased processing; 6) processing a different cassava product; 7) cassava group membership; 8) reduced cassava production/processing, and 9) no change (from 2009). In line with the livelihoods framework, these decisions link back to various assets (purple boxes) that are required for those strategies to take place, including capital and credit, land, family labour and cassava group membership, in addition to different forms of social capital that enable access to the aforementioned assets: good reputation, socio-cultural networks, and marital relationship, which are particularly important for women.

The boxes that follow the main decisions in Figure 13 are sub-decisions (blue boxes) that are labelled with a letter following the number associated with the main decision. For example,

decision 2) increased area of cassava planted, depends on sub-decisions (2a, b, c) such as reducing crop spacing and monocropping cassava, acquiring more land, and/or decreasing other crops. Risks (red boxes) involved in certain pathways are highlighted, such as a farmer using a new, high-yielding variety. Farmers also have shown a number of actions they use to mitigate risks (green boxes). The possible impacts (yellow boxes) of the pathways are also identified. For example, reducing other crops grown to increase cassava can impact the consumption of certain nutrients, if that crop is groundnuts for example. The results of the pathways (orange boxes), are also displayed with reference to outcomes. Pathways associated more with women or country are identified using a symbol and country flags.

Survey data is included where relevant to smallholder commercialisation strategies to provide some sense of scale of activities in the two countries. Table 23 presents a list of the quantitative commercialisation indicators and how they are measured in this chapter.

**Table 23 Description of commercialisation indicator and measurement**

<b>Dimension</b>	<b>Indicator</b>	<b>Measurement</b>
Investment	Use of inputs, including fertiliser, herbicides and pesticides on cassava	Frequency/percentage of the sample
Production	Cassava output* and yield per ha	Mean of total output Mean of yield/ha
Market participation	Quantity of fresh and processed cassava sold	Mean quantity of fresh and processed cassava sold
Perceptions	Importance of cassava for income generation	Frequency/percentage of sample ranking the crop 1, 2 or 3 in importance for income

\*Note: Output refers to quantity harvested – which is dependent both on yield and expected demand for cassava, as it can be left unharvested.

The quantitative analysis examines trends by sample group, identifying influence of the C:AVA project by comparing baseline (2009/2010) and endline (2014) measurements. The analysis by sample group demonstrates three different contexts: those who were directly targeted for a cassava market intervention through the C:AVA project, referred to as C:AVA participants; those who live in the same communities as C:AVA participants but are not participants in the project, referred to as non-participants in C:AVA communities, and those who live in communities without the C:AVA project, referred to as non-participants. As discussed in Chapter 2, Methodology, non-

participants and non-participants in C:AVA communities (C1 and C2, respectively) are control groups to identify the impact of the C:AVA intervention. However, some influence of the C:AVA project is also identified on non-participants in C:AVA communities, as shown in this chapter.

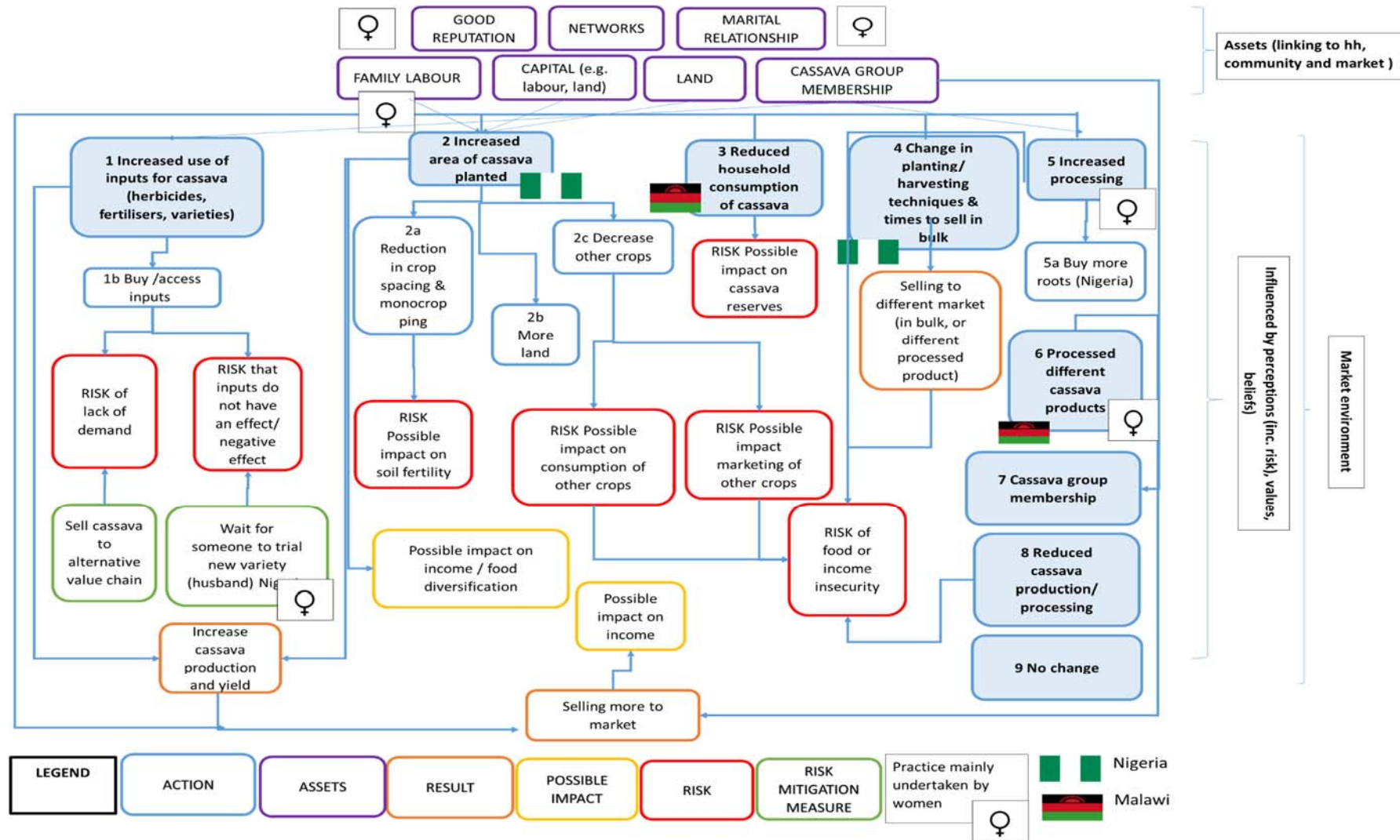
Gender and ethnicity/location (district) variables are used to examine areas of social difference as they were identified as being important factors in commercialisation strategies in the panel interviews. For Nigeria, the gender of the respondent can be used as men and women have separate farms, and sex of the respondent reflects different decisions and practices on each plot. This is followed by analysis by ethnicity, defined as ethnic majority (Yoruba) and ethnic minority (different minority ethnic groups combined). In Malawi, gender of the household head was used as a proxy for gender differences due to the shared-farm management system. District is used as a proxy for ethnicity in Malawi, along with land inheritance systems (matrilineal system in Zomba and Mulanje and mixed patrilineal/matrilineal in Nkhotakota).

#### **6.4 Commercialisation in Nigeria**

This section presents the cassava commercialisation pathways in Nigeria, which are shown in Figure 13. This includes strategic pathway 1, increased use of inputs; 2, increased area of cassava planted; 4, change in planting and harvesting techniques to support bulk sales; 5, increased processing; and 7, cassava group membership. Strategies that tended not to be used were 3, reduction in household consumption of cassava and 6, processing different products. Some smallholder farmers, although very few, choose 9, not to change their commercial participation, or 8, to reduce it.



Figure 13 Cassava commercialisation strategy decision-making map

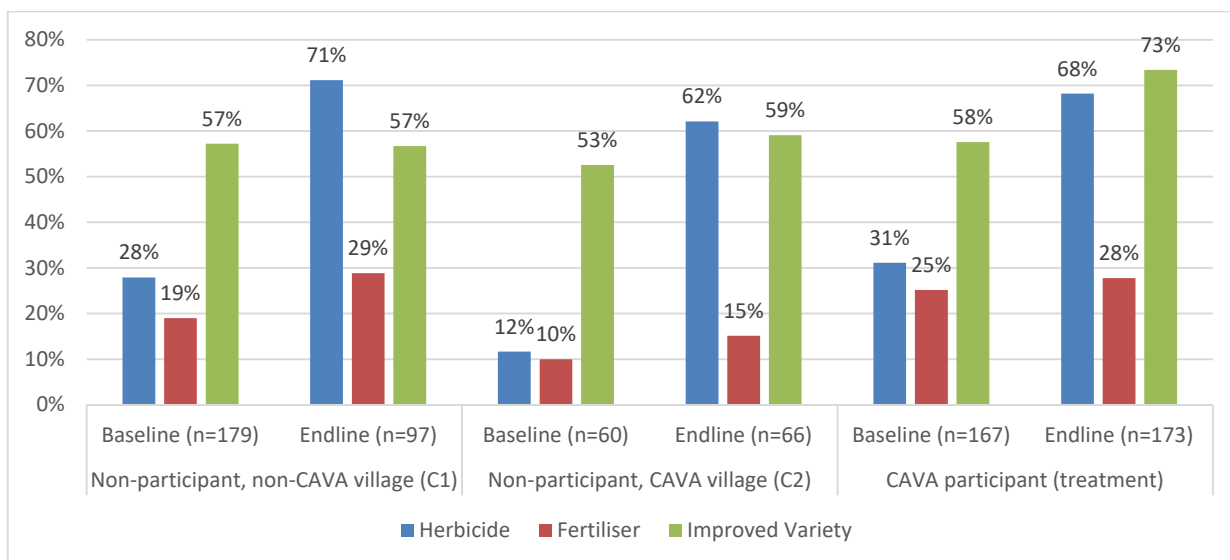


#### 6.4.1 Increased use of inputs (pathway 1)

This section examines the change in the use of three inputs used in cassava production, which provide a partial indication of smallholder investment in the crop: high-yielding ('improved') cassava varieties; herbicide, which is particularly important for cassava due to the intensive time required in weeding, and fertiliser, which is not a commonly used on cassava in either country but can improve yields. The C:AVA project distributed high-yielding varieties and provided training on herbicide use to smallholders. Overall, the 2009 and 2014 surveys indicate that there were increases in the use of high yielding cassava varieties among smallholders, but there were significant differences between sample groups. C:AVA participants showed a significant increase from 58% to 73%, from 2009 to 2014 (Chi-Square:  $p \leq 0.001^*$ ). C:AVA participants also had the highest rate of use high-yielding varieties in 2009 compared to the control groups, revealing existing commercial intent by their membership in cassava production and processing groups. Changes for the other sample groups were not significant. However, use of high-yielding varieties by non-participants in C:AVA communities increased (53% to 59%), which is likely related to C:AVA participants passing on improved stems to non-participants in their communities, which was encouraged by the project and substantiated by qualitative evidence. The use of high-yielding varieties was unchanged among non-participants (57%).

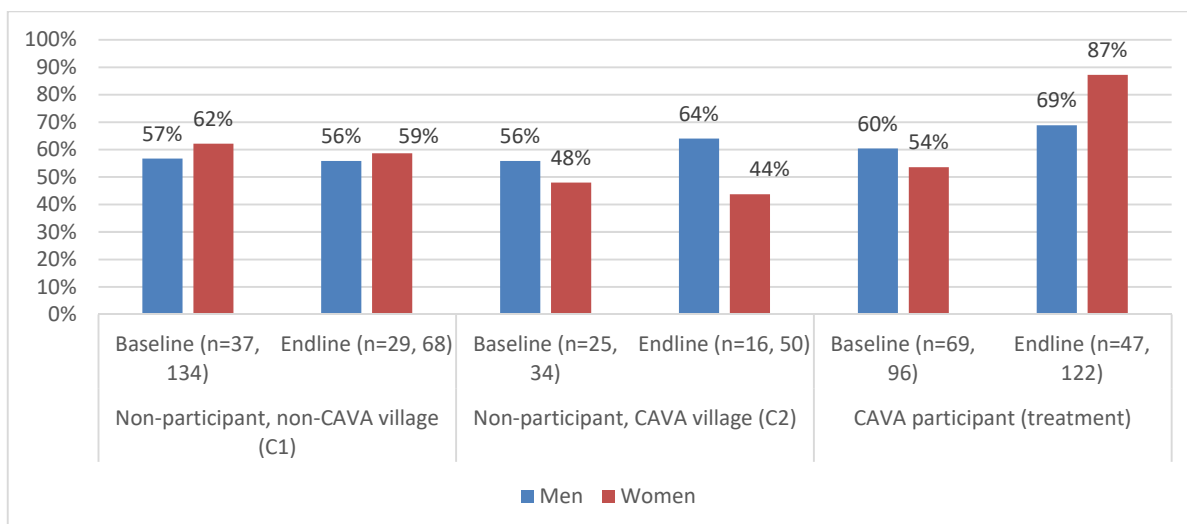
All sample groups significantly increased their use of herbicide by 2014 (Chi Square:  $p \leq 0.001^*$  for each group). The largest increase in the use of herbicide was among non-participants in C:AVA communities (+50 percentage points - pp), compared to non-participants (+43pp) and C:AVA participants (+37pp). However, non-participants essentially caught up with the other sample groups in 2014 reflecting a similar level of herbicide use by 2014, therefore the C:AVA intervention had no attributable effect in this area. Panel interviews indicated that herbicides were considered important for reducing labour cost, but were not thought to be accessible for most smallholders.

The use of fertiliser on cassava was not a common strategy for increasing cassava production due to its expense and perceptions that it was not necessary for cassava or it would hinder yield. None of the panel interviewees reported using fertiliser directly on cassava, however some stated that they did so indirectly as they intercropped cassava with maize, which requires fertilisers. This may explain why some smallholders reported using fertiliser in the 2009 and 2014 surveys. The data shows a slight, but not significant, increase for each sample group in fertiliser use (+6pp on average).



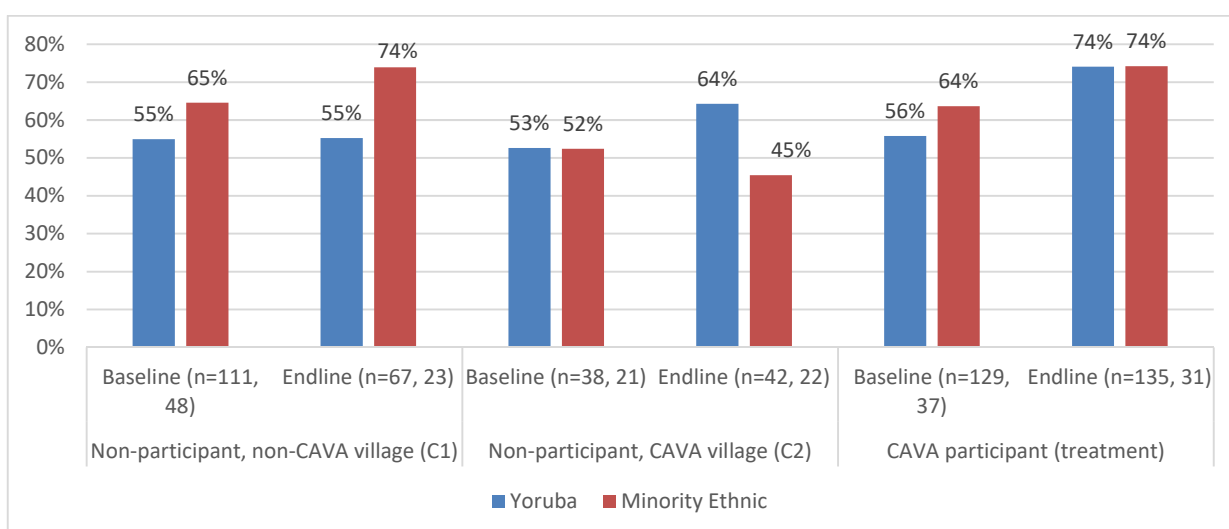
**Figure 14 Use of inputs (herbicide, fertiliser, and high-yielding varieties) by percentage of sample group in 2009 and 2014, Nigeria**

For all sample groups combined, the use of high yielding varieties was similar between women and men in 2009 (55% and 58%) and 2014 (71% and 64%), respectively. This shows that overall there is no significant influence of gender on use of varieties. However, examining trends for C:AVA participants shows that women’s use of high yielding varieties was lower compared to men’s in 2009 (-6pp), but their use significantly increased over three times that of their male counterparts (Fisher’s Exact test  $p \leq 0.001^*$ ): women’s use increased by +33pp compared to +9pp for men. In 2014, C:AVA women’s use rates were significantly higher compared to men’s (87% compared to 67%) ( $p \leq 0.05^*$ ) (Figure 15). The high use rate of C:AVA women is likely related to the project targeting women in the distribution of high-yielding varieties. However, the lack of gender differences for the other groups also shows relatively comparable access for men and women to cassava stems. Panel interviews show that women may be more hesitant to try new varieties due to the risk factor, but will often access stems from their husbands after they trial the variety. This shows less propensity of women to take risks (Section 6.6.1).



**Figure 15 Use of high-yielding cassava varieties by percentage of gender in sample group in 2009 and 2014, Nigeria**

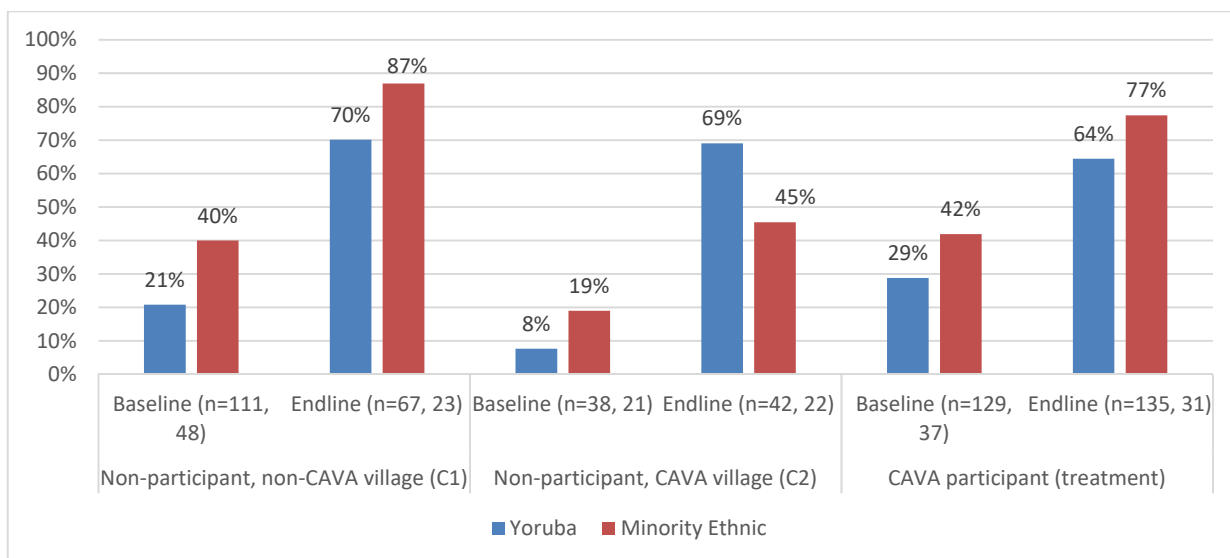
There were no significant differences in use of high-yielding varieties by ethnic group in 2009 and 2014. However, there is some variation by sample group (Figure 16). Yoruba C:AVA participants significantly increased their rate of use of new varieties from 64% to 74% to become equal with ethnic minority C:AVA participants (Fisher’s Exact test:  $p \leq 0.005^*$ ). This is likely related to the distribution of new varieties through the C:AVA project that targeted farmer group members.



**Figure 16 Use of high-yielding cassava varieties by percentage of ethnic group in sample group in 2009 and 2014, Nigeria**

Men and women (sample groups combined) both significantly increased their use of herbicide (Fisher's Exact test:  $p \leq 0.001^*$  for each group), and there were no statistically significant gender differences in use rates for any sample group in 2009 or 2014, revealing that gender does not affect use of herbicide. However, despite the non-significant results, women's rate of use was over 10pp lower compared to men in all sample groups in 2009. The highest rate of herbicide use among women was by C:AVA participants (27%), perhaps related to their already established commercial interest. The high use of herbicide among women at 2014 can reflect investment to alleviate the labour burden for women, as weeding is a task normally conducted by women (Section 5.5). However, the constraints women experiencing in purchasing herbicides, which were identified in qualitative interviews, make this an unexpected finding.

Use of herbicide by ethnicity, showed a significantly higher overall use among ethnic minorities compared to Yoruba in 2009 (36% to 23%, Fisher's Exact test  $p \leq 0.01^*$ ). In 2014 herbicide use by both ethnic groups increased, even more for Yoruba removing the significant difference between the two (71% and 67%). Examining differences by sample group (Figure 17), found significant differences between ethnic minority and Yoruba non-participants in 2009 ( $p \leq 0.001^*$ ), but no other groups. In 2014, all groups had higher rates of herbicide and levelled to each other, as there were no significant differences between groups. The increase in herbicide use was significant for Yoruba in all sample groups ( $p \leq 0.001^*$  for all groups), and for ethnic minority C:AVA participants ( $p \leq 0.005^*$ ) and non-participants ( $p \leq 0.001^*$ ) – but not non-participants in C:AVA communities. This shows no attributable effect of the C:AVA project and ethnicity on herbicide use, as the differences subsided in 2014. Therefore, significant increases among Yoruba could be related to a strategy for Yoruba to address labour shortages in the area with chemical herbicides. Labourers are typically ethnic minorities and generally prioritise their own farms, along with work on clan member's farms through reciprocal arrangements, before working for others. The high level of herbicide use among ethnic minority groups is surprising as they commonly use reciprocal labour on other clan members land.



**Figure 17 Use of herbicide by percentage of ethnic group in sample group in 2009 and 2014, Nigeria**

The use of fertiliser showed no statistically significant gender differences in 2009 or 2014, or between the dates, for any of the sample groups or all sample groups combined.<sup>24</sup>

Use of fertiliser by ethnicity shows a significantly higher use among ethnic minorities compared to Yoruba in 2009 (28% to 19%, Fisher’s Exact test  $p \leq 0.05^*$ ), but not 2014 (29% and 24%) (all sample groups combined). Only Yoruba non-participants increased their use significantly by 2014, to a similar rate as ethnic minorities (to 31% and 30%, respectively) (Fisher’s Exact test  $p \leq 0.05^*$ ).

#### 6.4.2 Increased land area planted with cassava (pathway 2)

In Nigeria, panel interviews with cassava farmers indicated that one of the most common strategies used to commercialise was to plant more cassava. Some farmers reduced spaces between crops and a few others who were large land holders (20ha+) monocropped, but they started this practice over five years ago (2a). However, the main strategy was for smallholders to acquire additional land through purchase, renting or borrowing (2b). This strategy demonstrates the availability of land in the area,

<sup>24</sup> In 2009, 16% of women in the sample used fertiliser compared to 23% of men, which changed to 29% and 23% in 2014, respectively. However, qualitative evidence suggests that women face difficulties in accessing inputs for cassava and other farming activities (Section 2.4).

particularly in Ogun state, along with a functioning land market. It is also likely the reason that there were no cases where smallholders decreased the area of other crops planted (2c), as was the case in Malawi. Farmers related this to the new and growing demand for cassava:

*“Since 2012, Company X (large-scale cassava processing company) gave us the feeling that we should expand our cassava farms on new land. Before we didn’t want to expand”* (male producer, Ogun state, Nigeria).

However, land access is a constraint for women and ethnic minorities whose access depends on loan or rental from Yoruba men. In particular, for married women, land access depends on her marital relationship to her husband, along with the ability to rent land. Furthermore, additional constraints in obtaining capital and credit may have added difficulty to accessing land to increase production which is likely to have influenced women’s strategy of increasing processing rather than production (refer to processing strategy). The individuals who reduced crop spacing were women, a practice which can, unfortunately, influence soil fertility in the long term if fertilisers are not applied.

#### **6.4.3 Results from pathways 1&2: total output and yield/ha**

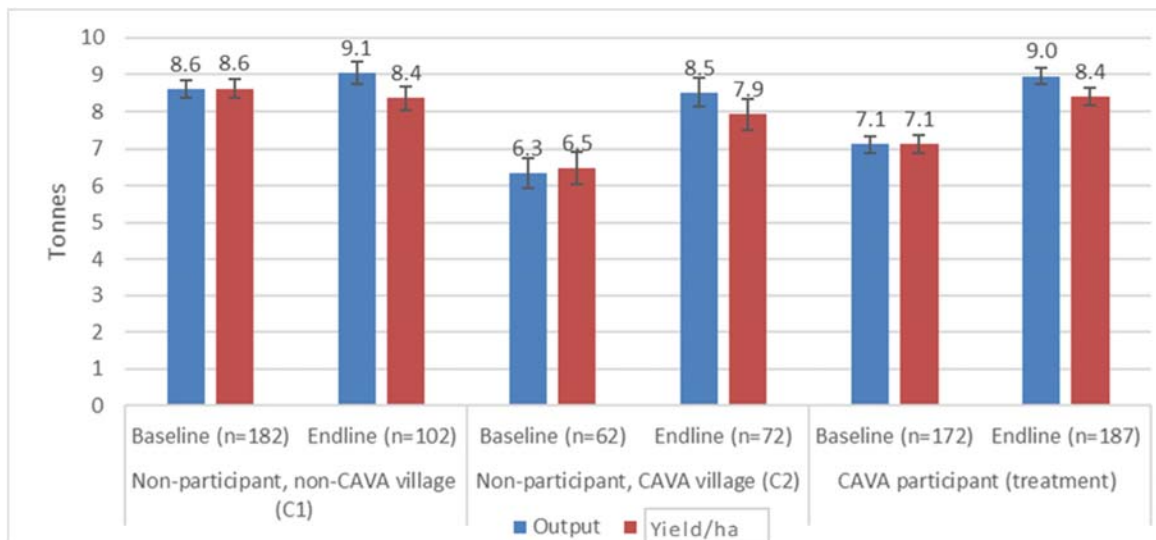
The expected results from the increase in the use of inputs and increasing the area of cassava planted are increases in cassava total output and yield/ha. This section looks at both these measures to identify if the strategies had the intended effect.

Results show that smallholders have increased their cassava output from 2009 to 2014 (Figure 18). Significant increases were found in C:AVA communities, those directly exposed to C:AVA (+1.9t) and indirectly (+2.2t) (Tukey multiple comparisons following a 2-way ANOVA  $p \leq 0.0001^*$  and  $p \leq 0.0001^*$ , respectively). The change for non-participants in C:AVA communities suggests a spill over effect of C:AVA on total cassava output of smallholders. In contrast, non-participants did not have a significant change. This group had a significantly higher baseline total output (8.6t) ( $p \leq 0.0001^*$  for comparisons with both sample groups), but these differences levelled out. The reason for the high level of output in 2009 for non-participants is unknown.

Similar to the results above, yield/ha increased among C:AVA participants and non-participants in the same communities (+1.3t/ha and +1.4t/ha, respectively), however, only the change for C:AVA participants was statistically significant (Tukey multiple comparisons following a 2-way ANOVA

$p \leq 0.0001^*$ ) (Figure 18). Similar to the trend for total output, the lower yield/ha among non-participants in C:AVA communities in 2009 was significantly different compared to C:AVA participants and non-participants (both  $p \leq 0.0001$ ). The significant difference disappeared in 2014 as all groups came to a similar level of productivity.

According to interviews with C:AVA participants, the significant increase in total output and yield/ha was related to the use of improved cassava varieties distributed to C:AVA beneficiaries (which they were encouraged to share with neighbours), along with technical training for smallholders farmers in planting techniques to improve productivity, and the increase in the area of cassava planted that was undertaken by the majority of the smallholders interviewed in the panel studies.

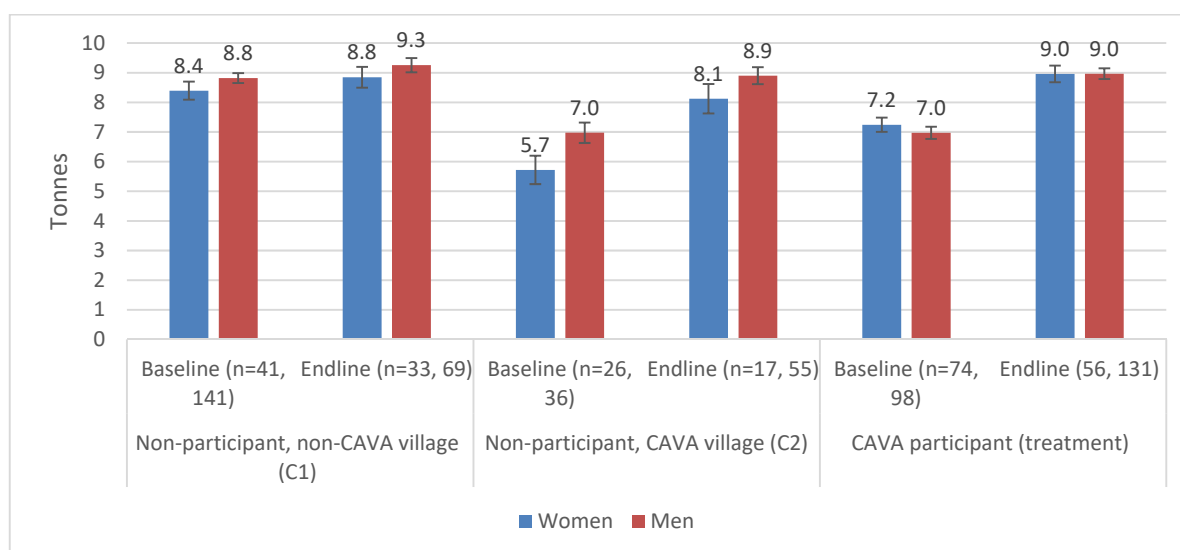


**Figure 18 Mean total cassava output (tonnes) and yield (tonnes/ha) by sample group in 2009 and 2014, Nigeria**

Examining trends in total cassava output by gender (all sample groups combined), men were found to have a significantly higher total output compared to women in 2009 (7.6t compared to 7.1t, respectively, Tukey multiple comparisons following a 3-way ANOVA  $p \leq 0.01^*$ ). Both had significant increases in output ( $p \leq 0.0005^*$  women,  $p \leq 0.0001^*$  men), but women caught up with men and no significance between the two groups was found in 2014 (8.6t men and 9.1t women), with all sample groups combined.



There were no significant gender differences in cassava output in 2009 or 2014 for any of the sample groups, showing that average total output was the same for women and men at both points in time.<sup>25</sup> However, this may be unreliable as there were significant gender differences in 2009 without distinction by sample group, which increases the sample size and thus reliability of the data. Both men and women C:AVA participants and non-participants in C:AVA communities experienced significant increases in cassava output from 2009 to 2014 (Figure 19).<sup>26</sup>



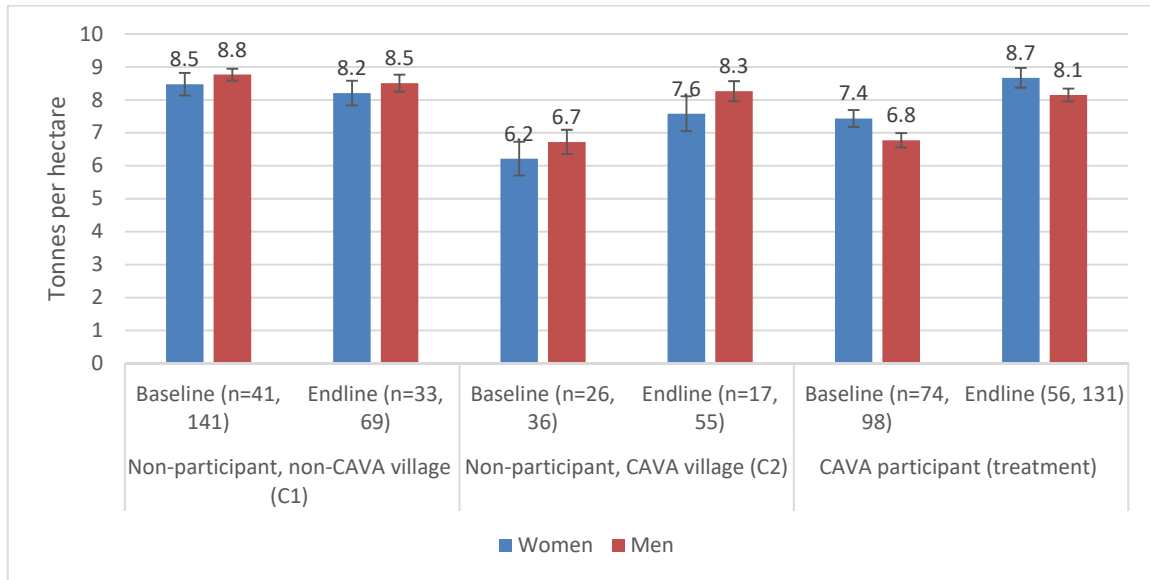
**Figure 19 Mean total cassava output (tonnes) by sample group and gender in 2009 and 2014, Nigeria**

There were no significant gender differences in yield/ha (all sample groups combined) in 2009 or 2014. However, there was a statistically significant increase for C:AVA participants in productivity for men between 2009 and 2014 (Tukey multiple comparisons following a 3-way ANOVA  $p \leq 0.01^*$ ), but not women (Figure 20). Male participants increased from 6.8t/ha to 8.1t/ha (+1.3 t/ha), while women increased from 7.4t/ha to 8.7t/ha (+1.3t/ha). The lack of significant increase for women could be related to the variability of the data, but shows that essentially, men caught up with women.

<sup>25</sup> The only significant differences in output between sample groups were among the same sex: in 2009 women non-participants in C:AVA communities and non-participants, and men in the same groups, were statistically different ( $p \leq 0.0001^*$  and  $p \leq 0.0001^*$ , respectively), showing that smallholders in the different sample groups had a different starting point in 2009.

<sup>26</sup> For C:AVA participants +2.0t and +1.8t, for men and women respectively (Tukey comparison tests in a three-way ANOVA  $p \leq 0.0001^*$  and  $p \leq 0.0001^*$ ), and non-participants in C:AVA communities by +1.9 and +1.1t, respectively ( $p \leq 0.00^*1$  and  $p \leq 0.01^*$ ).

Interviews with women C:AVA members suggest that the higher yield/ha among women compared to men in 2009 that they plant more cassava on smaller plots compared to men, and put more care into their cassava plots, and was not due to input use.



**Figure 20 Mean cassava yield (tonnes/ha) by sample group and gender, in 2009 and 2014 Nigeria**

Overall, total output significantly increased for both Yoruba and ethnic minorities from 2009 to 2014 equally (Tukey multiple comparisons following a 3-way ANOVA  $p \leq 0.0001$  and  $p \leq 0.0001$ ), and there were no significant differences between the groups in either 2009 or 2014 overall, or for any of the sample groups individually.<sup>27</sup> This shows that despite constraints that ethnic minorities experience in land access and other inputs, they are still able to overcome these barriers to increase their total output.

Similarly, there were no significant differences in yield/ha between Yoruba and ethnic minorities in 2009 or 2014 (all sample groups combined); however, there were only significant increases in productivity for Yoruba ( $p \leq 0.01$ ), not for ethnic minorities. By sample group, only Yoruba in C:AVA communities, participants and non-participants, showed significant increases in yield/ha, +1.2t/ha and +1.8t/ha, respectively ( $p \leq 0.0005^*$  and  $p \leq 0.05^*$ ). The lack of significant increase in productivity for

<sup>27</sup> Differences in 2009 between Yoruba for C:AVA participants and non-participants ( $p \leq 0.0001^*$ ); Yoruba direct and non-beneficiary groups ( $p \leq 0.0001^*$ ); minority ethnic groups indirect and non-beneficiary groups ( $p \leq 0.005^*$ ), and minority ethnic group direct and non-beneficiary groups ( $p \leq 0.001^*$ ).

ethnic minority participants shows that Yoruba have ‘caught up’ with their ethnic minority counterparts. The panel interviews suggest this is likely due to an increase in interest in cassava as they were exposed to ideas of potential cassava market opportunities as a result of the C:AVA project. Therefore, while women and ethnic minorities face constraints in commercialisation, they can increase market participation through different means than those used by men and people of a Yoruba background. This finding has a number of consequences for the farming strategy, risks and results from commercialisation.

#### **6.4.4 Change in planting/ harvesting to sell in bulk (pathway 4)**

In Nigeria, smallholders planted, harvested and processed cassava on a staggered and piecemeal basis to ensure income throughout the year, and intercropped, commonly maize. In principle, these practices did not change from 2009 to 2014, and indeed had not changed for decades. For example, none of the smallholders interviewed, even larger land owners, had stopped intercropping or staggered planting to support more commercial and large-scale sales.

Despite this, there were a few, slight changes to planting and harvesting practices that are relevant to commercialisation. C:AVA provided training in cassava planting practices, such as spacing and density limits to optimise yield, which influenced the planting practices of C:AVA participants and others in the community, according to the panel interviews. Another notable change was that three smallholders had increased the quantity of cassava they harvested at one time. This practice was gendered, as it was only found among men, and influenced the type of value chains that men and women participated in. Yoruba men in the study areas were found to sell in bulk when possible, even at a lower price. This is because they receive a large sum of money that is more conducive to further agricultural investment and in meeting larger expenditures. To facilitate this, planting and harvesting was staggered but in fewer time increments, whereas women stated their techniques had stayed the same. Alternatively, Yoruba men would commonly sell to local (female) processors, but the local processors could often only buy roots in small quantities and usually on credit.

As presented in Chapter 5, women in the panel interviews stated that they planted and harvested in smaller increments compared to men. Women often referred to their cassava fields as their ‘bank’, making cassava withdrawals (and processing it for the local market) when they needed income. They all intercropped cassava, planted and harvested in a piecemeal basis in terms of high frequency and

low quantities, based on their need for cash instead of responding to a particular buyer. They did not harvest more cassava to respond to a more advantageous price, but would continue to manage it over time to minimise risk of having no income or food later in the year.

*“We don’t harvest all at once. If we need cassava we take little amounts from our farms”*  
(female processor, Ondo state, Nigeria).

In addition, strategies between husband and wife, or wives, were interdependent. Despite separate plots providing men and women with independence, there were cases when marital relations were not amicable and communication was poor, and women had to subsequently anticipate what their husband would do with his cassava (e.g. how much they market and when) prior to women deciding what to do with their own cassava. .

*“Even if there is a good price for gari I will uproot gradually for food security. Because of this, my husband doesn’t do this method and he can sell it all. He sells his cassava roots to companies”* (female producer and processor, Ogun State, Nigeria).

There are risks for food and income security that are associated with selling more cassava in bulk. In addition, if men are increasing bulk sales it can jeopardise a woman’s ability to access her husband’s cassava for processing, or the use of her own roots for income, and limit the quantity of cassava available for household consumption. Interviewees recognised that these scenarios and risks exist, however, few people stated that they experienced this themselves.

#### **6.4.5 Increased processing (pathway 5)**

Another strategy of cassava commercialisation is the increase of the scale of cassava processing. Of those interviewed in the panel study, 13 out of 26 individual producers/processors reported increases in gari or fufu activities to meet increasing market demand for traditional cassava products. This was a viable strategy for many with limited access to land, but with some funds or good relations with cassava producers (including husbands) who will supply cassava on credit. The amount processors can sell was also dependent on their reputation and whether their customers make repeat purchases. Reasons given for processors not increasing their processing are presented in the section on ‘reduction and no change in commercial activities’ and ‘constraints’ are found later in this chapter.

The strategy of increased processing was also common among Yoruba women and ethnic minority households, which is likely related to the additional profits from value addition and lack of access to land. It is common practice for Yoruba men to pay hired labourers or ask their wives to process their cassava if there is a favourable price. In addition, Yoruba women, often 30 years or older, were the established, long-time members of processing groups (pathway 7).

In ethnic minority households, greater household effort was directed to cassava processing, particularly gari, compared to other activities according to interviews. However, among the generally wealthier Yoruba, this was not the case, and hired labour was often used. Importantly, strategies in ethnic minority households were integrated, and gender roles between men and women more interchangeable. Men were found to process cassava when there is high demand and their wives cannot do all the work; however, couples and individuals return to traditional gender roles when they return home, it was said. In these households, breaking gender norms enabled them to undertake this strategy of increasing their processing and benefit from favourable prices, the latter contributing to some negative feelings of Yoruba towards ethnic minorities.

#### **6.4.6 Cassava group membership (pathway 7)**

One of the ways smallholders were demonstrating increased orientation towards cassava commercialisation was increasing membership of cassava groups. Membership in processing groups was important for commercial activities as it provided access to the market and processing equipment. These processes were supported by the C:AVA project that provided training to processor groups in production techniques (care for new varieties, crop spacing, use of herbicides), increasing the quality of processed products, record keeping and group governance. Twelve processor groups were visited in Ogun and Ondo states in 2009 and 2014 who undertook these activities. For some members, training increased expectations of benefit from cassava markets. Other members linked the training to outcomes such as increased cassava output and selling greater volumes, along with improving the reputations of processors in providing better quality and more hygienic products. However, between the first and second visits of the fieldwork, there was surprisingly little change in the facilities of processing groups. While some of the groups gained access to new cassava pressing equipment, the fryers used for gari and the general environment had not seemed to have improved hygienically. In particular, despite the development of new, smoke-free or smoke-reducing gari fryers by IITA in the south-west region, women were still using the older models that exposed them to smoke, resulting in

negative health implications. This finding raises issues with information dissemination and group management, and broader inequalities in agricultural innovation and extension services locally, and within the CGAIR system.

There were contradictory opinions on the change in group membership within groups, with some saying it was declining due to poor demand, or increasing due to new opportunities. The inconsistency in responses may be related to different perceptions of group members with varying levels of knowledge about the group as a whole, in the absence of group membership records. There were a few new members that were interviewed, however, through observation, the norm was for young Yoruba women to take up membership in a processing group in order to use the processing equipment and sell in particular markets. Processors mainly acted as individual entrepreneurs but undertook some activities, such as quality training through C:AVA, as a group.

Group leaders and members felt that their groups were inclusive of different social groups, however there were examples of formal and informal social criteria that may prevent some individuals from membership. For example, a woman described that she and other members of her clan had left the processing group in the time between the panel interviews because the group practised traditional Yoruba rituals that non-Yoruba do not practice or identify with, and are perceived to be against their beliefs. In these cases, and where women had processing equipment at home, they forwent group membership.

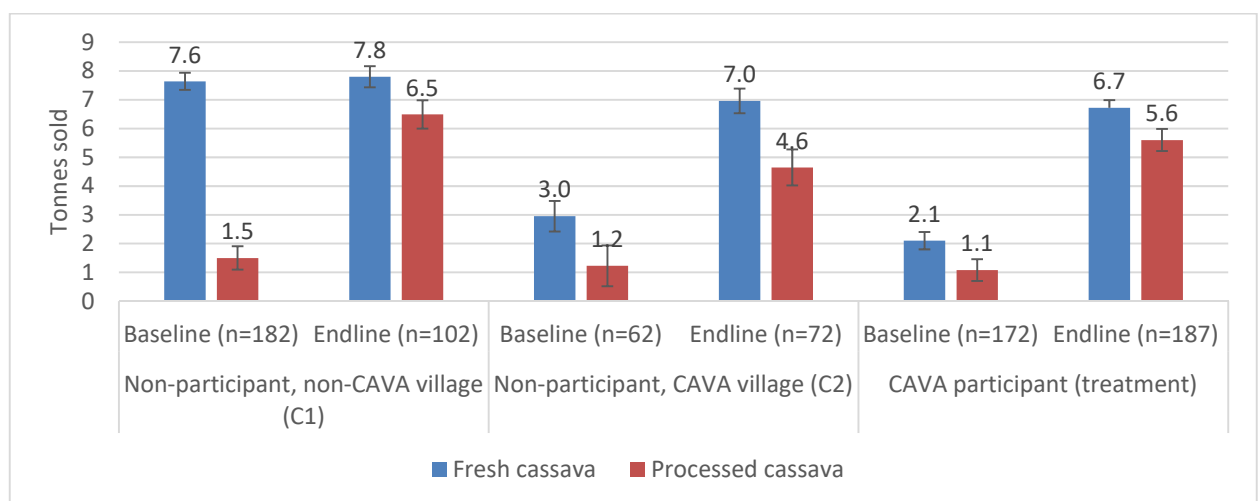
#### **6.4.7 Results from strategies: selling more cassava**

Quantitative evidence shows that the mean quantity of cassava sold by smallholders selling fresh and processed cassava has increased between 2009 and 2014 (Figure 21). C:AVA communities experienced significant increases in fresh cassava sales, C:AVA participants and non-participants increased by +4.6t and +4.0t, respectively, and processed products sold +4.t and +3.2t, respectively. These changes were statistically significant ( $p \leq 0.0001^*$ ) for both processed and fresh cassava markets for C:AVA participants, and the same for non-participants in the same community) (all significance testing uses Tukey multiple comparisons in a 2 and 3-way ANOVA unless otherwise noted). Qualitative evidence suggests that there was growing interest in cassava markets among non-participants in C:AVA communities through indirect exposure to the C:AVA intervention and perceptions of increasing demand for cassava. In addition, interviews suggested that men in particular,

changed between fresh and processed cassava markets frequently depending on market conditions, which was not found among women.

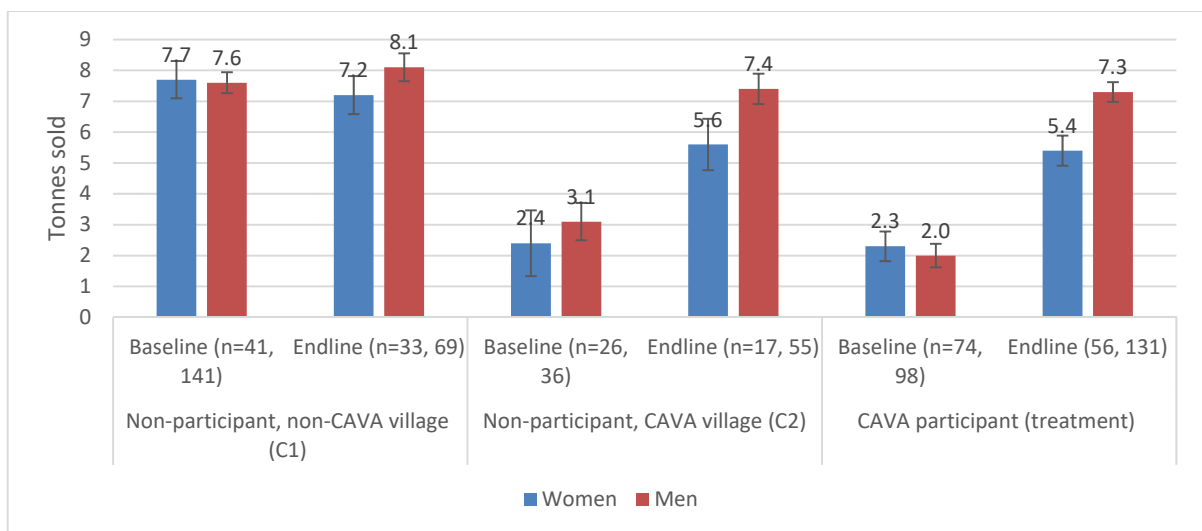
In contrast, the quantity of fresh cassava sold by non-participants in non-C:AVA communities showed no significant change, but there was an increase in processed products sold in 2014 (+5.0), which was significant ( $p \leq 0.0001^*$ ) and therefore indicating the same or greater net participation in cassava markets. Non-participants showed a significantly higher level of fresh cassava sale in 2009 compared to C:AVA participants and non-participants in C:AVA communities ( $p \leq 0.0001^*$  for both). However, by 2014 the differences between the three sample groups disappeared.

Participation in processed markets showed different trends between sample groups: there were no significant differences between groups in 2009 (all groups generally showing low sales). However, by 2014, non-participants in C:AVA communities showed significantly lower quantities of processed cassava sold compared to C:AVA participants and non-participants ( $p \leq 0.0001^*$  and  $p \leq 0.05^*$ , respectively), despite that both sample groups increased processed sales to 4.6t and 5.6t, respectively. This shows that non-participants in C:AVA communities opted to sell fresh cassava instead of processed products. Qualitative evidence suggests that this may be related to constraints for this group in processing cassava, such as sourcing (female) labour, along with gender norms which may prevent some women from processing, which is discussed later in this chapter.



**Figure 21 Mean quantity of fresh and processed cassava sold (tonnes) by sample group in 2009 and 2014, Nigeria**

By gender, men showed significant increases in the quantity of fresh cassava sold (all sample groups combined, +3.4t,  $p \leq 0.0001^*$ ), but not women (+1.9t). Thereby this created a significant gender difference in the quantity of fresh cassava sold in 2014 between men and women ( $p \leq 0.001^*$ ), which was not evident in 2009. This was due to significant increases for men in C:AVA communities specifically (+5.3t and +4.3t,  $p \leq 0.0001^*$  and  $p \leq 0.0001^*$ , for participants and non-participants in the same community) (Figure 22). This reaffirms the preference and participation of men in fresh cassava markets described in the previous chapter, and may also be related to the constraints women experience in participation in this value chain, as described later in this chapter. However, it also shows that there is participation of some women in fresh cassava markets, albeit not to the same extent as men, despite preferences and trends of women participating in processed cassava markets more generally.



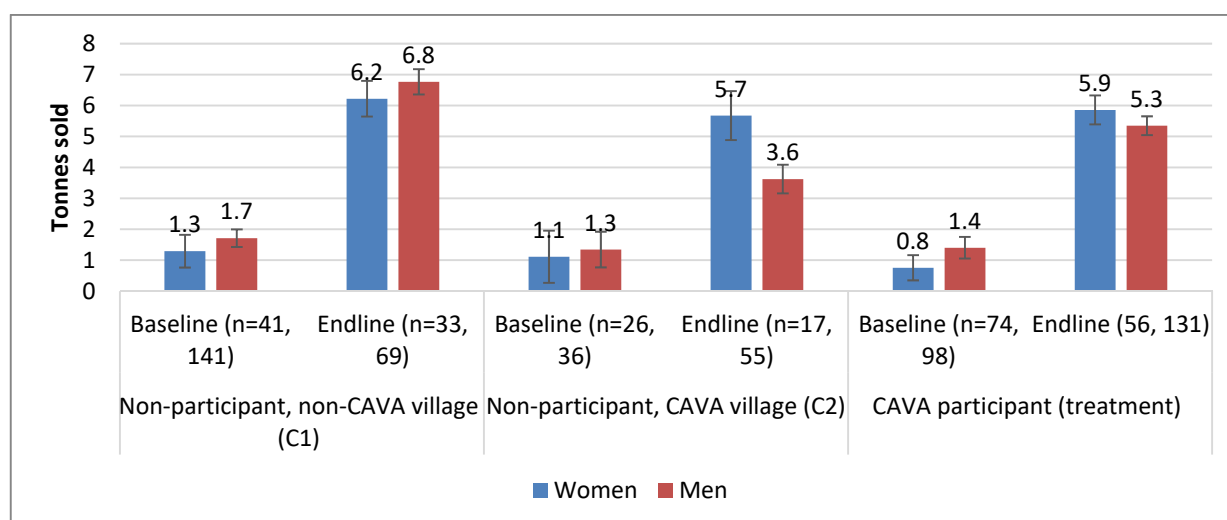
**Figure 22 Mean quantity of fresh cassava sold (tonnes) by sample group and gender in 2009 and 2014, Nigeria**

Both men and women had significant increases in the quantity of processed products sold (sample groups combined) ( $p \leq 0.0001^*$  for both), and there were no significant differences by gender in 2009 or 2014<sup>28</sup> (Figure 23). The only gender difference was for women non-participants in C:AVA communities who had a significant increase (+4.6t,  $p \leq 0.005^*$ ), but not their male counterparts (+2.3t).

<sup>28</sup> Men C:AVA participants increased by +3.9 and women by +5.1, and men non-participants increased by +2.3 and women by +4.6, which were all significant ( $p \leq 0.0001^*$ ).



This demonstrates that women who participate in processed cassava markets do so in similar quantities as men. As interviews with smallholders indicated that women have greater involvement in processed cassava markets and selling, this could be due to men hiring labourers, including their wives to process cassava, or a problem with the enumerators allowing men to answer the question on behalf of their wives (despite training).



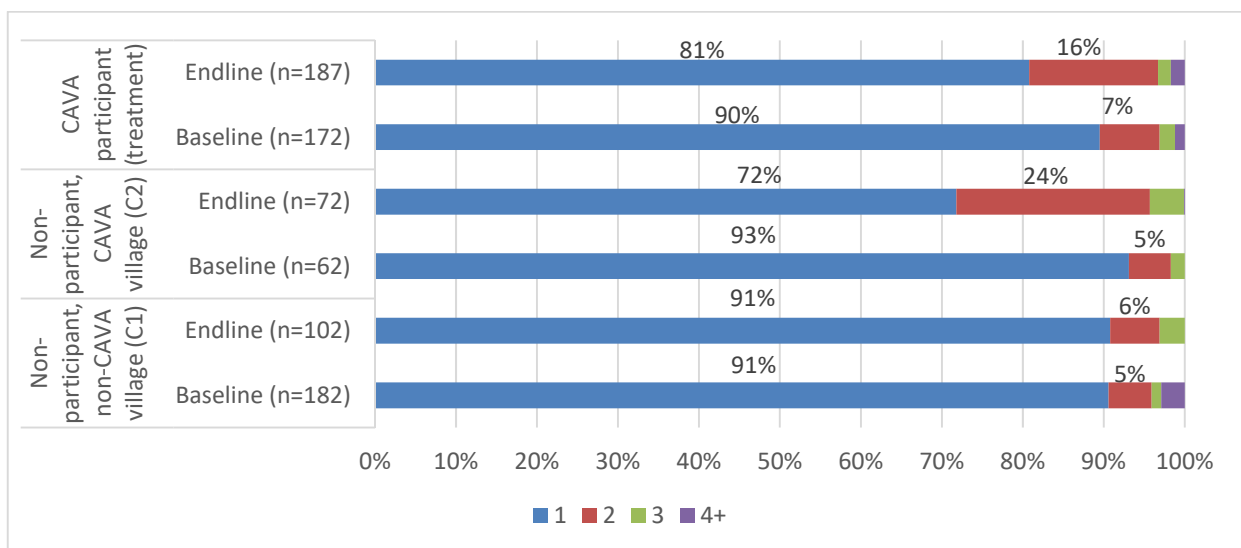
**Figure 23 Mean quantity of processed cassava sold (tonnes) by sample group and gender, in 2009 and 2014 Nigeria**

Ethnicity did not play a significant role in the quantities of fresh or processed cassava sold. There were no significant differences between the mean quantities sold of both products of Yoruba and ethnic minorities in 2009 to 2014 (all sample groups combined), and both experienced significant increases in both products between 2009 and 2014 for Yoruba ( $p \leq 0.0005^*$  for fresh and  $p \leq 0.0001^*$  for processed) and ethnic minorities ( $p \leq 0.001^*$  and  $p \leq 0.0001^*$ ).<sup>29</sup> Therefore, ethnicity does not play a role in the quantity of processed cassava sold, despite other differences in output levels along with differences in access to assets.

<sup>29</sup> Yoruba increased fresh root sales from 0.8t to 5.4t and ethnic minorities 1.9t to 5.8t. Yoruba also increased processed cassava from 3.9t to 6.9t and ethnic minorities from 4.7t to 7.7t.

### 6.4.8 Rankings of the importance of cassava for income

Overall the ranking of cassava’s importance for income was very high, as 97% to 99% of all smallholders ranked the crop in the top three most important crops for income (Figure 24). There are some slight differences between rankings by sample group. The percentage of non-participants ranking cassava as the most important crop for income stayed the same (91%). For non-participants in C:AVA communities and C:AVA participants, the rankings of cassava as the most important crop for income were lower at 2014 (-21pp and -9pp, respectively), a change which was statistically significant (Chi-Square  $p \leq 0.005^*$  and  $p \leq 0.01^*$ , respectively). However, rankings of cassava as second in importance were higher in 2014 (+19pp and +9pp, respectively), also statistically significant (Chi Square  $p \leq 0.005^*$  and  $p \leq 0.01^*$ , respectively). Panel interviews indicate that this related to changes in demand for alternative crop markets (maize, yam, vegetables and chilli, which were other important income-generating crops).



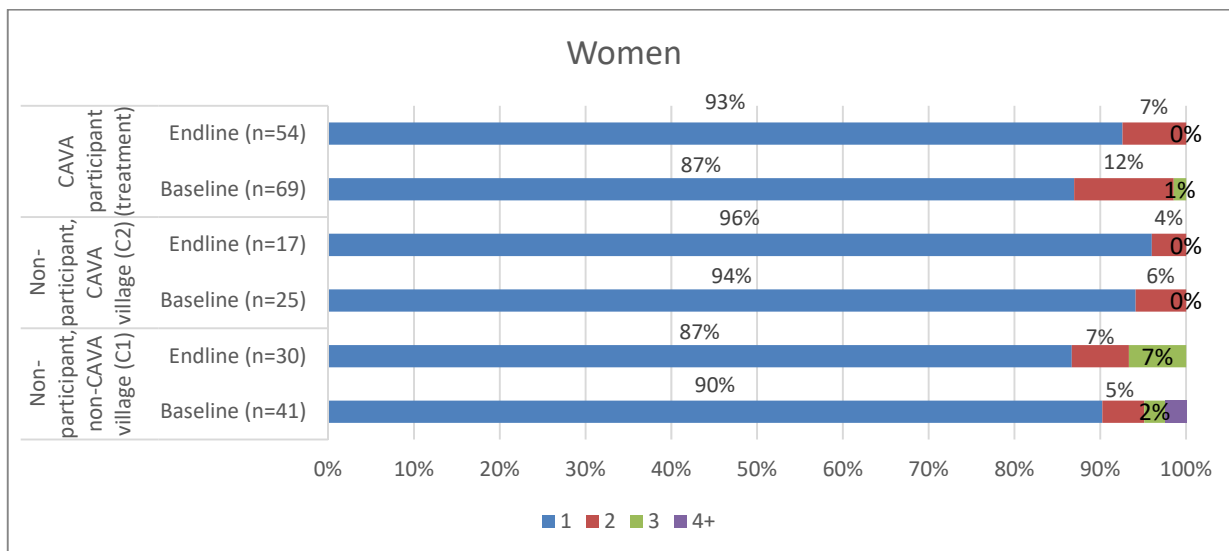
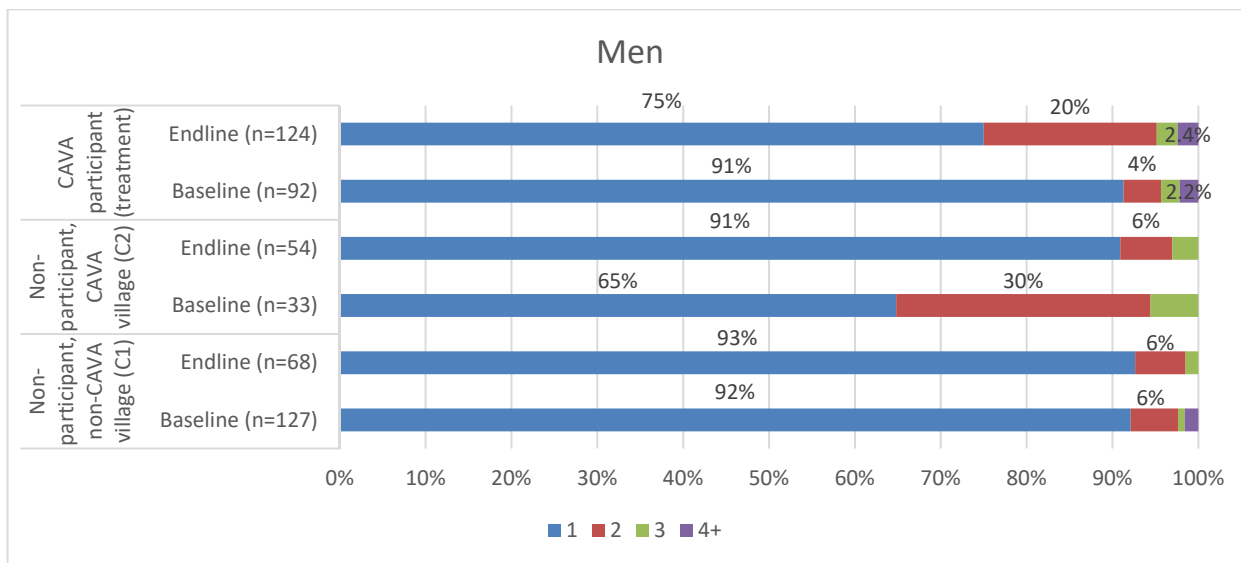
**Figure 24 Relative importance of cassava for income as a percent of respondents ranking cassava as first, second or third in importance by sample group in 2009 and 2014, Nigeria**

The results show the high level of importance cassava for income in 2009 and 2014. Qualitative evidence suggests that cassava has also been viewed as an important food and cash crop for over a decade in south-west Nigeria. Respondents reported that cassava’s importance was increasing due to its income generation potential, but mostly due to its consistency and frequency of returns on the crop throughout the year. Fluctuations in rankings may reflect short term market trends rather than a fundamental change. Expectations smallholders may have had in 2009 for new market opportunities

could also give reason for lower rankings in 2014 as their expectations may not have been met, which is supported by qualitative evidence.

*“Cassava is important for income all year round. You can sell it fresh or process it. You can sell cassava at any quantity, no matter how small, and get money. It is the most important for this reason. Other crops are sold annually”* (female producer, Ogun state, Nigeria).

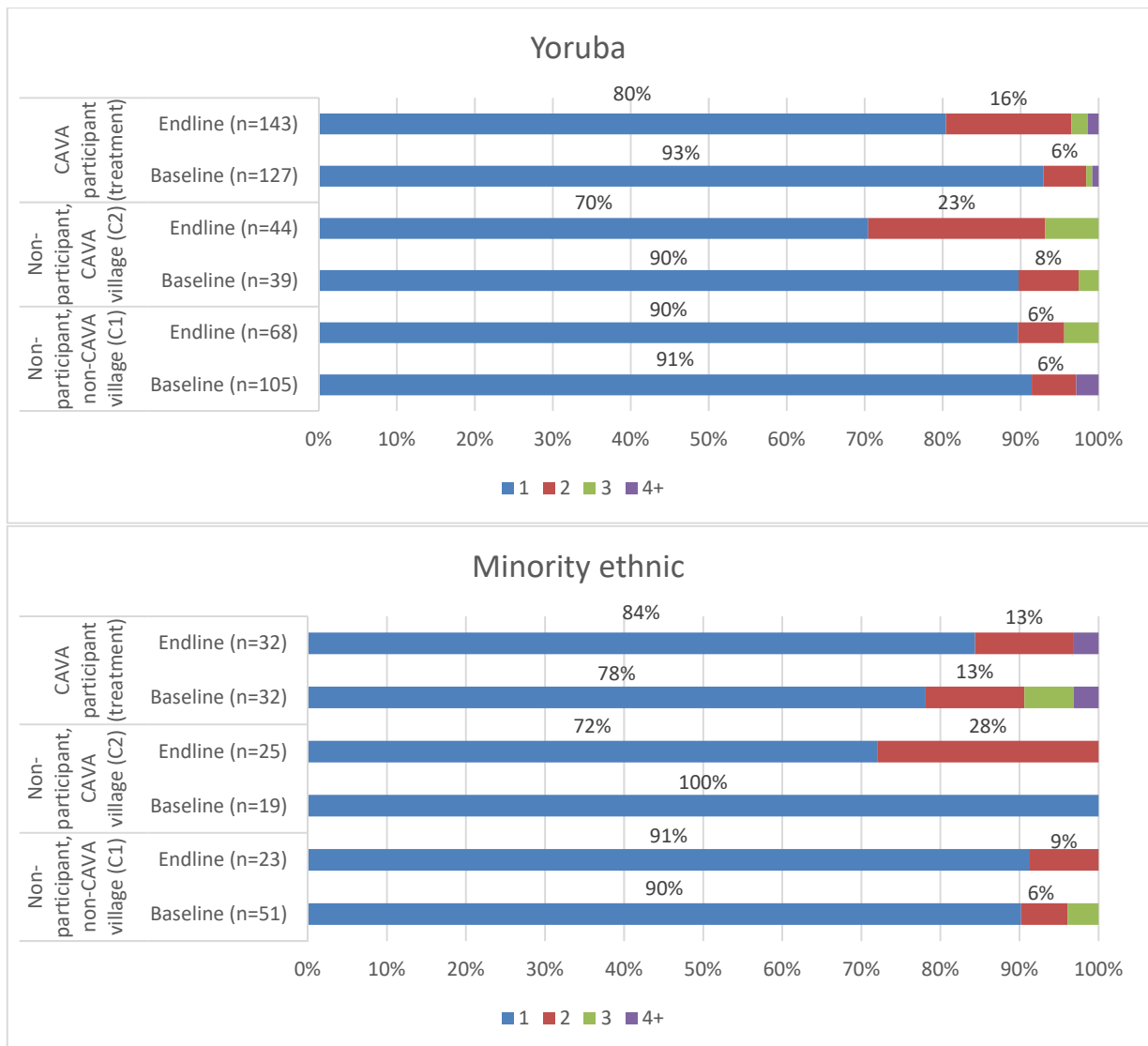
There were no statistically significant differences between women and men in 2009 and 2014 in their rankings of cassava as first, second and third in importance compared to other crops. However, there were gender differences by sample group (Figure 25). Namely, the rating for cassava as the most important crop for income significantly decreased among male C:AVA participants and non-participants in C:AVA communities (Fisher’s Exact test  $p \leq 0.005^*$  and  $p \leq 0.01^*$ , respectively). There were no significant differences in women’s rankings between 2009 and 2014.



**Figure 25 Relative importance of cassava for income as a percent of respondents ranking cassava as first, second or third in importance by sample group and gender in 2009 and 2014, Nigeria**

There were some ethnic differences in the ranking of the importance of cassava for income (Figure 26). Namely, there were significantly different rankings of cassava in 2009 as the most important crop for cash among C:AVA participants, 93% for Yoruba and 78% for ethnic minorities (Fisher’s Exact Test  $p \leq 0.05^*$ ). However, by 2014 there were no ethnic differences in rankings as the first, second or third in importance for any sample group. Yoruba C:AVA participants and non-participants in the same communities showed significant decreases in the ranking of cassava as the most important for

income, -13pp and -20pp, respectively ( $p \leq 0.005^*$  and  $p \leq 0.05^*$ ). For ethnic minorities the only statistically significant change was for non-participations in C:AVA communities which decreased their most important rankings by -28 ( $p \leq 0.05^*$ ), however the ranking of cassava as second in importance grew by almost the same amount.



**Figure 26 Relative importance of cassava as an income generating crop % of informants ranking cassava as first, second or third in importance, by sample group and ethnicity in 2009 and 2014, Nigeria**

#### **6.4.9 Strategies not used**

In Nigeria, pathway 3, reducing the amount of cassava consumed in the household to sell more to market, was not a strategy found to be used by women or men according to the panel interviews. Interviewees reported that their cassava consumption was consistent throughout the year, and that their increasing participation in cassava markets had not affected cassava consumption. This is related to the scale of cassava production and processing in Nigeria: people produce more cassava than they consume, and therefore cassava consumption is not affected by sales. Indeed, processors are purchasing additional cassava roots to process greater quantities, rather than reducing household consumption.

Pathway 6, processing a different cassava product, was not a strategy found in Nigeria. This is because there was not a viable opportunity to do so. It was intended at the start of the C:AVA project that an emerging HQCF market would provide the opportunity to process a new product, however low prices were a disincentive particularly compared to gari. There were some individuals in CPGs processing wet fufu, which were supported by the C:AVA project in training and market linkages. However, demand for wet fufu was small in comparison to gari, and therefore limited the number of CPGs involved. Those who did process wet fufu preferred to do so as there was less exposure to smoke and the intensive labour involved in gari frying, along with the product being more lucrative. There were restrictions for women processing wet fufu. Customer networks, mainly with restaurants, were essential, along with easy access to water. One processor explained that her community king restricted processing fufu to a small group of women, whom she believed were his relations and he was discouraging others to join for fear of competition.

#### **6.4.10 Reduction and no change in commercial activities (pathways 8 and 9)**

There were only a small number of smallholders in the panel interviews who had decreased their commercial cassava activities by the time of the second interviews in 2014. Those who had, did so for reasons unrelated to their perceptions of the benefits of market involvement. Instead, the reasons given were related to personal issues of illness in the family and old age; along with constraints on accessing inputs such as land.

Similarly, there were a few smallholders who did not change in their commercial activities (pathway 9). Those who reported no change said this was due to a lack of hired labour available and poor access

to cassava roots, which was reported by two female processors. It is notable that the majority of smallholders were able to increase their commercialisation despite also experiencing these same labour constraints, along with land and capital. In terms of processing, reasons given for processors not increasing their processing were lack of funds for purchasing cassava, lack of time to process combined with the lack of funds to hire others, along with limited demand in some locations. These constraints, and the social dynamics around them, are discussed in more detail later in this chapter.

#### **6.4.11 Asset requirements for different strategies**

During the panel interviews, several livelihoods assets became apparent for their importance in cassava commercialisation, and each asset had their own socio-economic dynamics associated with access. In Nigeria, these were land, cassava roots, capital and credit, and labour.

##### **Access to land**

Land access was fundamental for a number of the commercialisation strategies used by smallholders, with differences by gender and ethnicity (Section 5.6). Increasing the land area planted (pathway 2), or changing planting or harvesting techniques for increasing bulk sales (pathway 4), requires sufficient land to produce cassava on substantial scale, and as such, smallholders using this strategy can supply SME and larger cassava factories, who often only purchase in large quantities. This was common among Yoruba men, who traditionally inherit land in the region. Panel interviews indicated that individuals with the least access to land and have the most limited land rights, often migrants and women, utilised their cassava for *gari* or *fufu* processing (pathway 5), a decision related to the monetary gains they make through value addition in processing in contrast to selling fresh cassava in bulk as Yoruba men did.

For female Yoruba processors, access to fresh roots for processing is determined, in part, by their access to secure land (along with ability to purchase roots, as described in the next section). Patrilineal land inheritance practices inhibited women's access to land, however women were given plots from their husband where they wield considerable autonomy in decision-making, management, and control over profits from the land. The large land rental market also enabled women to access land if they could afford it. In addition, women are increasingly inheriting land from their families in their own

right, which is in part due to changing gender norms in the region according to panel interviews.<sup>30</sup> This has enabled women to increase their cassava market activities without compromising food security obligations of cassava used for home consumption.

The private land rental market has also enabled ethnic minorities to access land and to take advantage of cassava market opportunities, where they cannot own land through inheritance. However, the ability to rent land is strongly influenced by social networks and social conditions. For example, ethnic minorities stated that they required a personal relationship and a certain level of trust with land owners in order to rent land. Yoruba men who wanted to access more land could access it often at a lower cost or at no cost, as they are considered to have priority as the original inhabitants of the region and were viewed as more trustworthy. These terms were not afforded to women or migrants, which shows that land rental is not a purely financial transaction, but about trust and relationships. There were reports of a few women and ethnic minorities having their rented land reclaimed by the owners in Ondo state, and losing some of their crops. In these cases, people tended to grow crops with short maturity instead of cassava, which required one to two years, depending on the variety.

*“With Yoruba’s they don’t have to pay (land) rent or the rent they pay is reduced after a year. I am not a Yoruba so I don’t have this situation. I am not a son of the soil”* (male producer, Ondo state, Nigeria).

### **Access to cassava roots**

Access to cassava roots was important for increasing processing (pathway 5). In addition to cassava from their own separate farms, Yoruba women also purchase roots from their husbands, which are given on loan until they process and sell. In most marriages, the norm is for men to give their spouse priority over other processors when selling fresh cassava, ensuring women have regular supply. However, when the relationship is poor and this transaction is jeopardised, it is considered as infidelity, as the quote below demonstrates:

---

<sup>30</sup> Other reasons were that they did not have brothers to inherit the land, or that their brothers were not interested in farming.



*“Once in 2005 I paid my husband for his roots before I processed them, but then he sold them to another woman. This brought trouble to the home. I have never recovered my money. He can’t sell his roots to other women. I said not to do it again to him because it’s cheating”* (female processor, Ogun state, Nigeria).

Women also buy fresh cassava from other men in the communities, or traders. When women have good relations with their suppliers, they can have the cassava on credit until they sell their products. In these cases, the processors and sellers explained, it is essential that women have a good reputation and are trustworthy as there are many cases where women do not pay on a timely basis.

There are potential problems for processors in accessing fresh cassava to process, if their husbands and other fresh cassava producers increasingly sell to larger factories, particularly during the dry/hunger periods where availability of cassava is low. While there were no cases of this happening, the potential for these problems occurring due to increased demand for cassava from competing businesses was recognised by the women interviewed.<sup>31</sup>

### **Access to capital, credit, and social capital**

Another important factor in determining commercial activities was capital and credit for investment, including for land, cassava roots and/or hiring labour. Traditionally this is an area where women and migrants have difficulty, however cultural and social networks have developed over time to meet the need for these groups, at least partially. This includes family-based loans, where women use loans from their husbands to purchase additional roots or hire labour to increase their processing. Clan-based credit and savings groups also provide loans, but the ability to receive loans and the size of loan is determined by the social standing and reputation of the individual and their family within the clan. Fresh cassava, gari and fufu were also frequently sold on credit to customers; therefore, trust and strong social relationships within market networks were vital for scaling commercial activities.

In addition, increasing competition in local cassava markets in the last decade has meant that women are now often selling products to customers on loan, which is paid back at a later date or in instalments.

---

<sup>31</sup> This was at the time of the fieldwork. Similar interviews conducted with women in Ogun state in 2017 found that this was happening.

This makes it difficult for a woman to invest, scale-up her processing activities, and repay her creditors (including her husband).

*“I can wait six months for payment and sometimes people pay me in small portions”* (female processor, Ogun, Nigeria).

*“This (the fluctuating market) has an impact on me. I don’t have any roots. I have 70,000 naira in debt of people owing me money for fufu. I can’t do any more and buy roots until this money is paid. I can’t call the police”* (female processor, Ogun state, Nigeria).

*“When I take gari to the market I use the income to pay for urgent expenses. So to process again I have to reduce the amount I process because I don’t have the money. I could use credit but I don’t want to because they will hound you to pay back on a weekly basis and I don’t want this; as prices for gari will fluctuate and I don’t know if I can pay back”* (female processor, Ogun state, Nigeria).

As the quotes below demonstrate, men are perceived to have greater access to credit and labour. Lack of land ownership for women and migrants also affects their ability to obtain credit.

*“As women, we have no money for labour so we must weed by ourselves, whereas men hire labour for these activities. One woman here has three hectares and undertakes the land clearing herself”* (female producer and processor, Ondo state, Nigeria).

*“My husband can get funds for expanding but I can’t. I can’t uproot cassava and sell it because people won’t buy my small amount of roots. I can’t get a loan I just have my income from gari sales”* (female processor, Ondo state, Nigeria).

*“We process according to how much money we have. It isn’t about the price we get”* (female producer and processor, Ogun state, Nigeria).

### **Labour availability and social capital**

The availability of hired labour was another constraint for both men and women in production and processing, which was again influenced by clan-based relationships. Migrants would typically work as hired labourers for Yoruba, but provide reciprocal labour for people within their clan. As there were

frequent labour shortages, migrants would prioritise their own processing, work for other members of their clan, or for Yoruba households of whom they had good relations (e.g. paying on time, treating with respect). Therefore, Yoruba households could be at a disadvantage in accessing labour when there was high demand. Migrant spousal couples also conducted processing together. Yoruba women would complain that this gave migrants a competitive edge to the processed cassava markets.

Labour availability and women's time also effected women's ability to commercialise, which was related to women's stage in the life-cycle. The social norm was for most women to weed their husbands' plots, along with their own, without remuneration or reciprocation of labour. Women with childcare responsibilities often lacked time to increase their processing, and in some cases small children were not allowed at gari processing centres. This provided explanation as to why those working at processing centres were often predominately middle-aged women.

#### **6.4.12 Section summary - Nigeria**

This section has shown that smallholders are engaged with cassava commercialisation using a range of strategies that differ by gender and ethnicity in Nigeria. The panel interviews indicated that two-thirds of those interviewed (out of 30 individuals) had increased their cassava production and processing since the first interviews (four years prior). FGDs also reported that cassava production and processing had also steadily increased in their communities over the last ten years. This was achieved through a number of different pathways.

There were broad indications of increasing investment and production of cassava from 2009 to 2014, with significantly higher increases among C:AVA participants, women and Yoruba. There were significant increases in the use of high-yielding varieties and herbicides (pathway 1) among the sample, however, C:AVA participants demonstrated significantly higher rates of use of high-yielding varieties and herbicides compared to other sample groups, which were pathways actively promoted by C:AVA. Women and Yoruba significantly increased their use of high-yielding varieties, particularly among existing cassava groups.

The most common strategy for smallholders was to increase the cultivation of cassava (pathway 2), which was mainly achieved through renting additional land; however, this was a challenge women and ethnic minorities who experience constraints in accessing land and secure tenure. These pathways resulted in increases in total cassava output and yield/ha, with C:AVA participants showing significant

increases in both, and higher than non-CAVA participants in the same village. Women in the total sample, who in 2009 had a significantly lower level of cassava output compared to men, had surpassed men by 2014. Only C:AVA participants experienced significant increases in yield, despite women's increasing investment, however women already had high yields. Male C:AVA participants, particularly the Yoruba, experienced significant increases in cassava yield, to equal that of ethnic minorities in 2014.

Smallholders also made some changes to planting and harvesting techniques to participate in cassava markets (pathway 4), however staggered planting and harvesting continued to be the overall norm. Noted changes were the use of new planting techniques among participants acquired through C:AVA training, along with some men increasing the quantity of cassava harvested to sell to SMEs and large companies in bulk.

An increase in processing (pathway 5) was an important pathway for women and ethnic minorities according to the panel interviews. However, the survey showed a high involvement of men in these markets. However cassava activities are known to be particularly important to women and ethnic minorities compared to their other income-generating activities, despite being at a similar scale to Yoruba men.

Group membership of production and processing groups increased over time (pathways 7), providing members with access to assets such as training, inputs and markets. At the group level, groups also demonstrated increased capacity through C:AVA. However, the panel interviews indicated there were areas of concern that had not improved during the fieldwork (e.g. lack of smoke-reducing fryers). There were also examples where practices excluded some ethnic minorities and younger women from membership either by the group (rules existing prior-to the C:AVA intervention) or the family.

Smallholders did not reduce the quantity of cassava they consumed to sell more in the market (pathway 3), because smallholders typically already had large surpluses. There were very few smallholders who reduced or did not change their cassava market participation during the time between the panel interviews (pathway 8 and 9). Those who did not increase their activities experienced personal difficulties such as illness or death in the family.

The expected result from the commercialisation strategies was to increase the quantity of cassava sold (fresh and processed) for a higher income (income results are presented in Chapter 7). Overall, C:AVA participants sold a higher quantity of cassava, both fresh and processed, compared to the other sample groups. Among C:AVA participants, men increased their sale of fresh cassava, likely related to supply to SMEs and large factories, but there was a decline among women. There were no significant gender differences in processed cassava sales, except for women non-participants in C:AVA communities, but not men (showing male non-participants did not take up these activities but women did). Given the increases in women's investment in and production of cassava, and the high levels of women's involvement with cassava activities, the results are surprisingly modest, and show a slight advantage of men in capturing new markets. Another surprising result was the lack of significant differences between Yoruba and ethnic minorities in the quantities sold of both cassava products, despite interviews showing that ethnic minorities are also heavily involved in cassava activities.

Cassava was ranked as the most important, or second important, crop for income, with a decline in most important ranking among C:AVA communities, and particularly among men between 2009 and 2014. This could be related to market fluctuations or perhaps unmet expectations from market opportunities anticipated under the C:AVA project. However, rankings for second in importance increased by a similar frequency. Rankings of cassava as the most important crop were significantly higher among Yoruba in 2009 compared to ethnic minorities, however this declined by 2014, particularly in C:AVA communities and ethnic differences disappeared.

There were a number of assets required for smallholders to participate in commercial activities. These included secure access to land, networks, labour availability and group membership. Social networks and marital relationships played an important role for women and ethnic minorities in facilitating their participation in cassava activities, particularly for access to capital, labour and for women, access to roots.

**Table 24 Smallholder categories, commercial access strategies and assets, Nigeria**

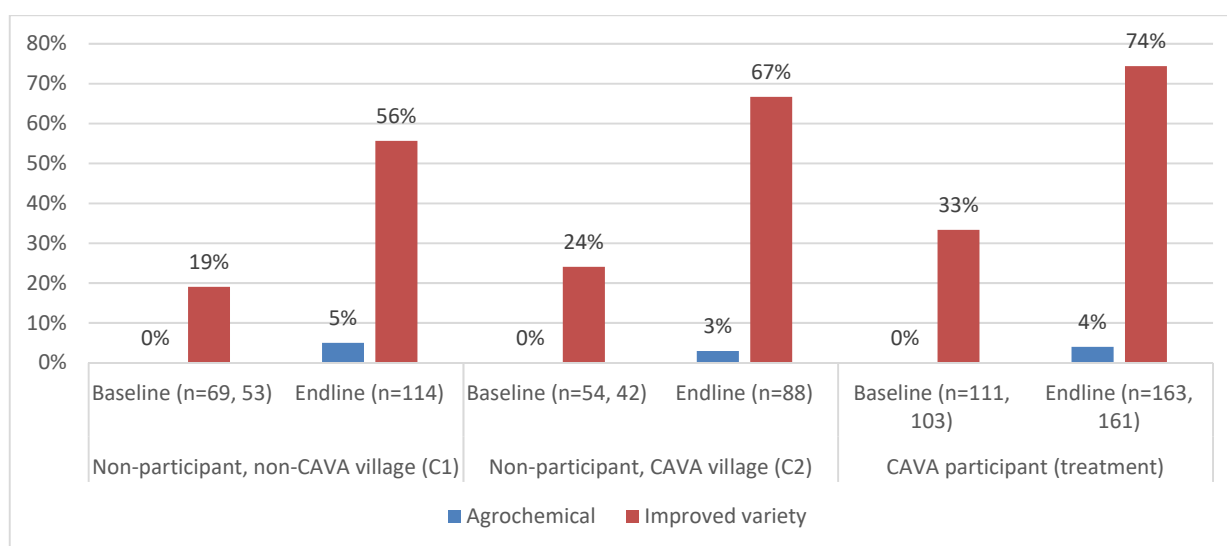
<b>Farm management</b>	<b>Commercial cassava strategies</b>	<b>Absent/few cases</b>	<b>Important Assets for commercialisation</b>	<b>Characteristics of group</b>
<b>Married Yoruba men</b> Independent plot(s)	1 Use of inputs 2 Increase cassava land area – by 2a monocropping, 2b acquiring more land 4 Change in planting/ harvesting techniques and timing to sell in bulk 5 Increased processing (depending on price)	3 Reduction in cassava consumption 8 & 9 No change or reduction in commercialisation	Land Networked with company buying	Flexibility - change cassava markets from roots to processing or change crops
<b>Married Yoruba women</b> Independent plot(s)	1 Use of inputs 2 Increase cassava land area – by 2b acquiring more land rental (still intercropping same crops) 5 Increased processing 7 Processing group professionalization 8 & 9 No change or reduction in commercialisation	2a Mono-cropping 3 Reduction in cassava consumption 4 Change in planting/ harvesting techniques and timing to sell in bulk 6 Processing different product (minimal opportunity – however some women involved)	Social capital and marital relationships to access to market, land, capital and cassava and enable women to partake in commercial activities Networked with local markets.	Risk averse, strategies involve different means of income, reliable income activities, benefits from value added in processing Gender norms require women to be responsible for day to day food management
<b>Husband and wife from minority ethnic groups</b> Shared plots	1 Use of inputs 2 Increase cassava land area – by 2b acquiring more land rental (still intercropping same crops) 5 Increased processing 7 Processing group professionalization	3 Reduction in cassava consumption 6 Processing different product (no opportunity) 8 & 9 No change or reduction in commercialisation	Social capital to access to land, capital, market Reciprocal labour arrangements through ethnic group	Access to land, finance, credit, roles and responsibilities in the household, access to assets through marital relationship

## 6.5 Commercialisation in Malawi

This section presents the commercialisation pathways in Malawi, which are: 1, increased use of inputs; 2, increase area planted; 3, reduction in household consumption of cassava; 4, change in planting and harvesting techniques to support bulk sales; 5, increased processing; 6, processing a different product. Some smallholders also choose to 9, not change their commercial participation or 8, to reduce their commercial participation. There was a lack of evidence to suggest that 7, increased membership of cassava groups, was a strategy used by smallholders in Malawi.

### 6.5.1 Increased use of inputs (pathway 1)

There was some indication of increasing investment in cassava production in Malawi. Input use for cassava slightly increased, which includes the use of high yielding varieties and agro-chemicals (fertilisers and herbicides) between 2010 and 2014 (Figure 27). The use of agro-chemicals significantly grew from 0% to 3-5% and the use of improved cassava varieties by over 30% for all groups (Chi-square:  $p \leq 0.001^*$  for each sample group for both inputs). Non-participants in C:AVA communities had the highest change in use (+43pp), which panel interviews indicated is related to distribution of new varieties from C:AVA and other initiatives.



**Figure 27 Use of inputs (agro-chemicals and new varieties) by percentage of the sample group in 2010 and 2014, Malawi**

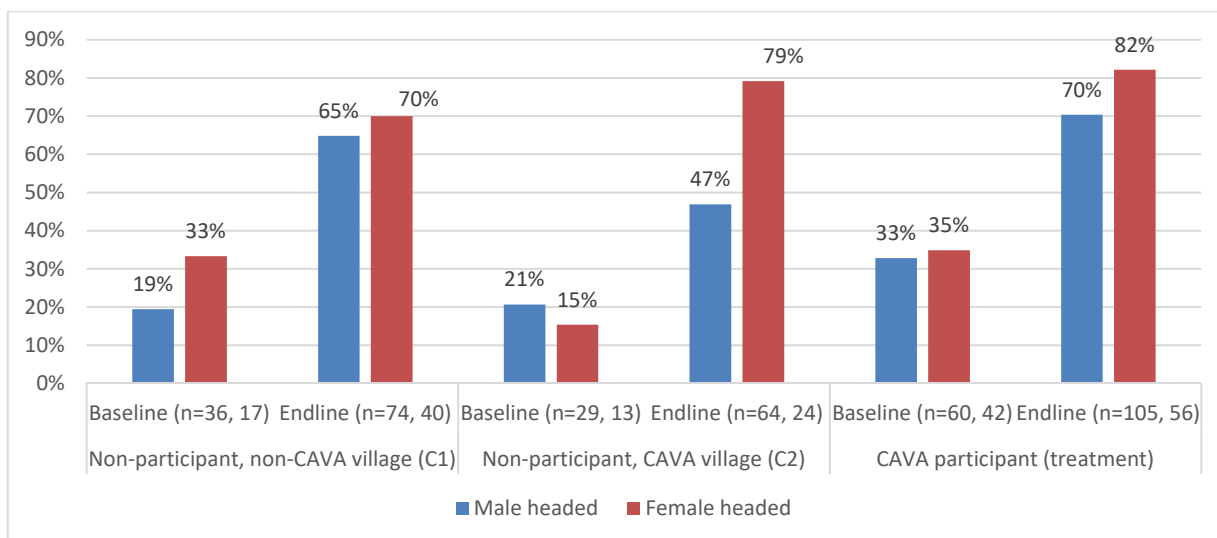
There were no significant differences in use of agro-chemicals by gender in 2010 or 2014, and both MHH and FHH experienced significant increases (Figure 28).<sup>32</sup> However, panel interviews found that many women did not use high-yielding varieties because they were uncertain about their effectiveness or did not have access to them because they did not receive them from extension agents. As the quote below demonstrates, interviews with women in the south indicated that they did not receive training for care of the new varieties, which led to germination problems. This demonstrates women's risk aversion and difficulty that extension services have in reaching women. This was verified in an interview with an extension supervisor in Mulanje who said that they usually pass new varieties to larger, successful farmers so they can multiply and share with more people.

*“We didn't receive any training when we received the new varieties. We did not know how to manage them and we haven't seen improvement in yield. They said that people would be trained but this has not happened”* (female producer, Nkhotakota district, Malawi).

---

<sup>32</sup> All sample groups in both MHH and FHH had significant change from 2010 to 2014 in use of new varieties, showing greater investment in cassava for men and women (Fisher's Exact tests:  $p \leq 0.001^*$  for male C:AVA participant and non-participants, and  $p \leq 0.01^*$  for male non-participants in C:AVA communities,  $p \leq 0.001^*$  for women C:AVA participants and C:AVA participants in the same communities, and  $p \leq 0.005^*$  for non-participants). However, in 2014, use of high-yielding varieties was reported by 79% of female, compared to 47% of male, non-participants C:AVA communities (from 15% and 21%, respectively). Despite the large increase for women, the difference was not significant, however it is likely that this is due to the small sample size of FHH among non-participants ( $n=24$ ). As the survey includes two matrilineal districts of southern Malawi and mixed system in Nkhotakota, it may influence women's involvement in land management.



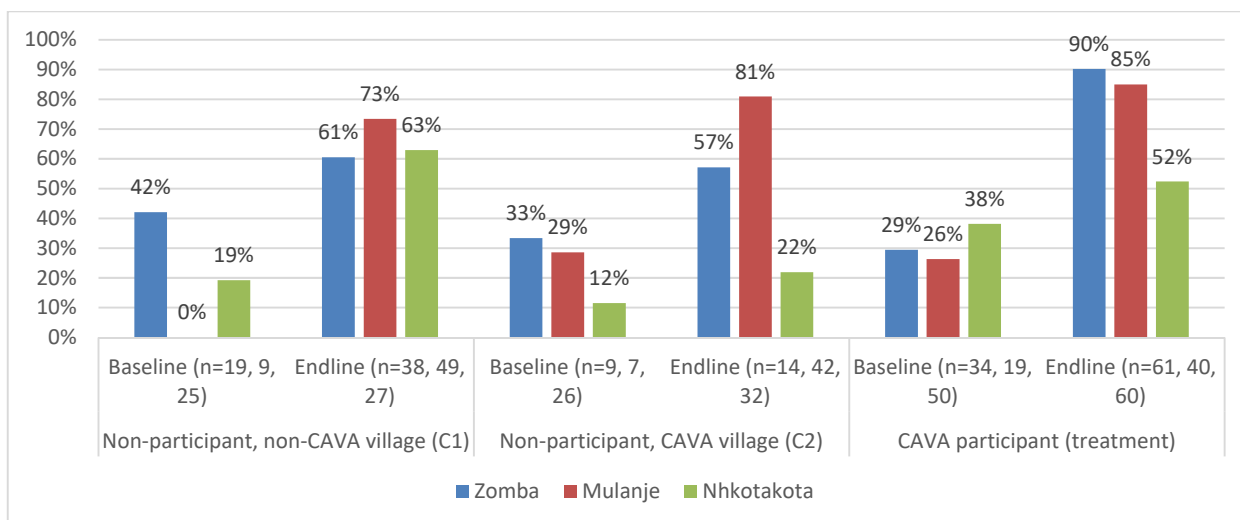


**Figure 28 Use of improved cassava varieties by percentage of the sample group and gender of the household head in 2009 and 2014, Malawi**

All districts had significant increases in the use of high-yielding varieties, however the increase was largest for Mulanje (20% to 79%, +59pp), followed by Zomba (33% to 76% +43pp), and Nkhotakota (27% to 47%, +20pp) (Fisher's Exact test  $p \leq 0.0001$  for all districts) (Figure 29).<sup>33</sup> C:AVA participants in Zomba showed the lowest baseline but the largest increase (29% to 90%, +61pp), which was statistically significant ( $p \leq 0.0001$ \*).<sup>34</sup> Qualitative evidence shows that the uptake of new varieties was influenced by local conditions. The new varieties were bitter (meaning they have to be processed before they can be eaten), which were preferred by smallholders in Zomba as the bitterness deterred people from stealing the cassava. The use of new varieties therefore improved their food security for this reason (discussed in pathway 4). Nkhotakota already grew bitter varieties as they were required for their staple food, kondowole, which can explain differences in uptake.

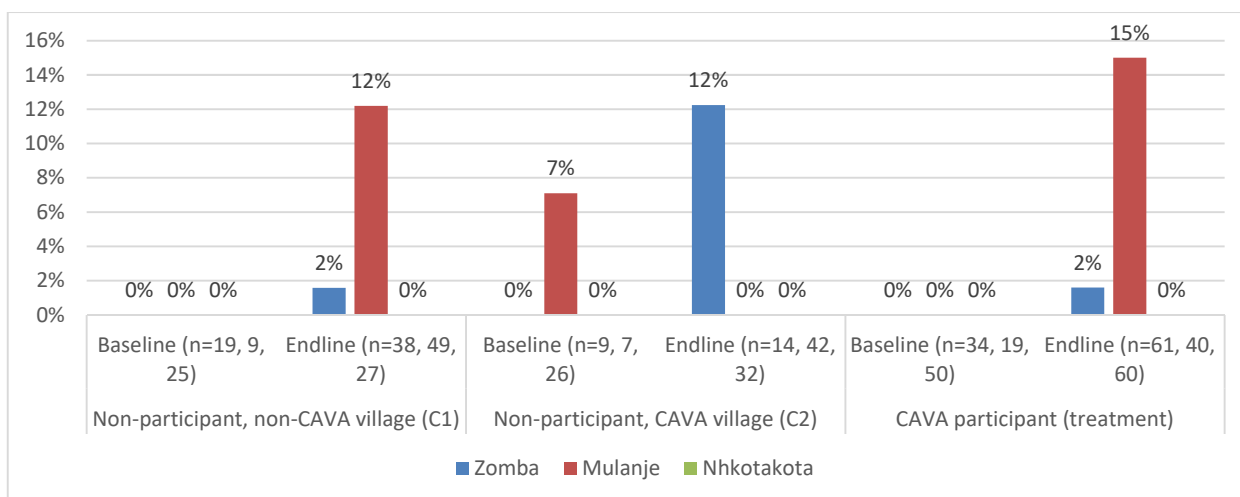
<sup>33</sup> At endline, there were greater differences between the districts: C:AVA participants non-participants in C:AVA communities and non-participants showing significant differences between districts with new varieties ( $p \leq 0.0001$ \*).

<sup>34</sup> In Mulanje all three sample groups showed significant increases in use of new varieties, showing a district-wide increase to levels of Zomba and Nkhotakota ( $p \leq 0.0001$ \* significant change for all three sample groups). C:AVA participants in Nkhotakota (38% to 52%, +14pp ( $p \leq 0.0001$ \*). C:AVA non-participants showed only a slight increase (12% to 22%) and a larger increase among non-participants (19% to 63%), of which the latter was statistically significant ( $p = < 0.0001$ ).



**Figure 29 Use of improved cassava varieties by percentage of the sample group and district in 2010 and 2014, Malawi**

In 2014 there were significant differences in use of agro-chemicals by districts ( $p \leq 0.001^*$ ) (Figure 30), with significant increases in Zomba ( $p \leq 0.0001^*$  for all sample groups), particularly among non-participants in C:AVA communities (0% to 12%) and Mulanje C:AVA communities ( $p \leq 0.05^*$  for C:AVA participants and  $p \leq 0.005^*$  non-participants), both groups increasing from 0% to 15% and 13%, respectively.



**Figure 30 Use of agro chemicals on cassava by percentage of the sample group and district in 2010 and 2014, Malawi**

### 6.5.2 Increased land area planted with cassava (pathway 2)

In Malawi smallholders aimed to increase their cassava market participation by increasing the cassava they planted. Panel interviews indicated that acquiring more land (2b) was not such a common strategy for smallholders as it was in Nigeria, particularly in the land constrained southern districts. Instead, the strategies that were more common were a reduction in crop spacing and monocropping (2a), and a decrease in other crops planted (2c).

The reduction in crop spacing and monocropping to increase the area of cassava planted was the most common strategy for smallholders and was found in all districts. In the southern region, cassava was commonly planted along plot borders to demarcate land belonging to a household. However, during the second visit to households, some had increased the number of cassava rows they planted, such as adding a middle row or two in their plot instead of focusing on the perimeter. In Nkhoswe, where cassava is the staple crop, households had increased their cassava by reducing the spacing between crops and in some instances, smallholders were monocropping cassava. While the strategy of reducing spacing and monocropping was the most viable and realistic pathway for smallholders to increase their commercial activities, it can potentially contribute to a decline in soil fertility if the land is not managed properly.

*“Sometimes I have a whole plot for cassava with one-line of cassava and the next line intercropped. A lot of people are using cassava as food and income now so they plant in this way”* (female producer, Mulanje district, Malawi).

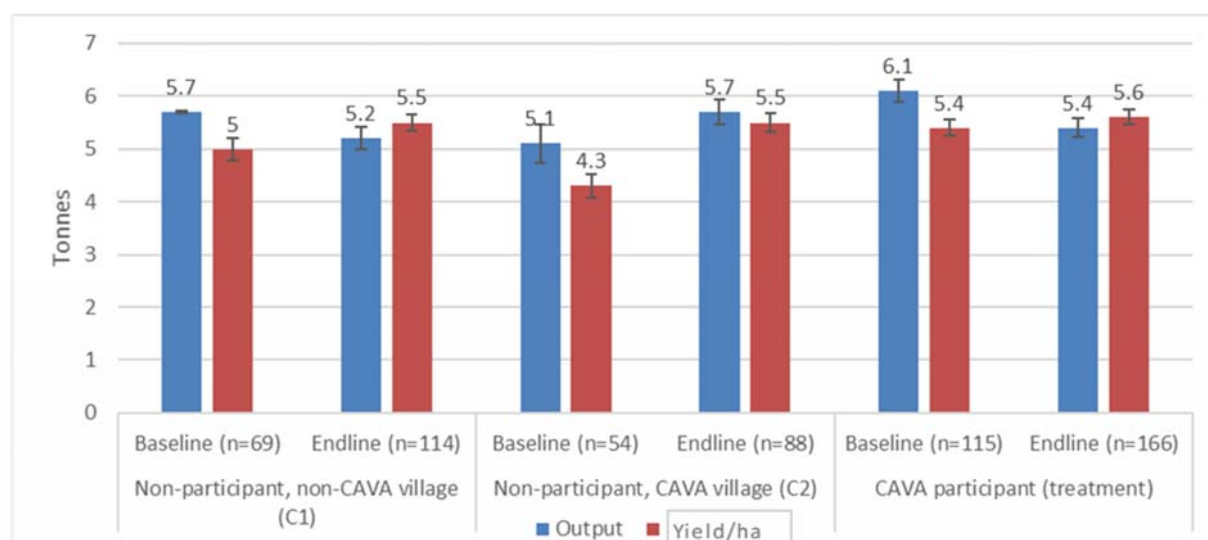
The strategy of decreasing other crops planted to increase cassava was found in Zomba and Mulanje, in the southern region, related to the limited land area available to households. Households who decreased other crops reported to plant less maize and groundnut. Some households reported that it changed their consumption of the reduced crops such as groundnut. While problems were not reported, it can be problematic for diet diversity, particularly of consumption of protein-rich crops.

### 6.5.3 Results from pathways 1&2: total output and yield/ha

The panel interviews indicated that just slightly over half of those visited during the first and second round of panel interviews (total of 30 individuals) had increased their cassava production since the first interviews (four years prior). However, in the survey, output results show minimal change from

2010 to 2014 (5.6t to 5.4t), with no significant differences between sample groups and time periods (Figure 31). Yield/ha for the entire sample increased only slightly, from 4.9t/ha to 5.5t/ha but was not significant. Non-participants in C:AVA communities showed the only significant increase in productivity, of +1.2t/ha between 2010 and 2014 ( $p \leq 0.001^*$ ). As this group had significantly lower yields than C:AVA participants in the same communities in 2009 ( $p \leq 0.001^*$ ), they essentially caught up with their community counterparts as there was no difference in 2014. This is likely related to greater investment in cassava due to indirect exposure to the C:AVA project.

Panel interviews revealed that there was a lack of substantive change in total output and yield, related to contextual factors including the problems with new varieties, drought and lack of demand, but not necessarily a lack of commercial orientation to supply (6.2 Context ).



**Figure 31 Mean total cassava output (tonnes) and yield (tonnes/ha) by sample group in 2010 and 2014, Malawi**

There were no statistically significant differences between output and gender of the household head (according to Tukey multiple comparisons following 2-way and a 3-way ANOVA). Similarly, none of the changes between 2010 and 2014 for FHH or MHH in any of the sample groups were statistically significant.

There were some significant differences for cassava yield/ha by gender of the household head. Comparing MHH and FHH (all sample groups together), there were significant differences between

MHH and FHH in 2014 ( $p \leq 0.01^*$ ) (but not 2009). MHH experienced a significant increase in productivity (+0.1t/ha) ( $p = < 0.001^*$ ), but not women (-0.2t/ha).<sup>35</sup> This is likely related to increased interest and investment among MHH in cassava, along with the ability of MHH to act on their investment compared to FHH who are likely to be resource-poor.<sup>36</sup>

There were significant differences between districts in output levels in both 2010 and 2014 (all sample groups combined).<sup>37</sup> Nkhotakota showing the highest baseline average output per household (6.1t), followed by Mulanje (5.6t), however both declined in the time frame (-0.6t and -0.9t, respectively). In contrast, Zomba increased from 5t to 6.4t (+1.4t). There were no significant differences between sample groups within the same districts, in 2009 or 2014. In terms of cassava yield/ha, there was a significant improvement in productivity for Nkhotakota ( $p \leq 0.0001^*$ ), but not the other districts. The improvement in Nkhotakota was among non-participants in C:AVA communities, increasing by 4 to 6t/ha ( $p \leq 0.0001^*$ ).<sup>38</sup>

#### 6.5.4 Reduction in cassava consumption (pathway 3)

A few interviews in the southern region found that some households had decreased their consumption of cassava to sell more, but as cassava is not the preferred staple food, this was a preferred strategy. However, smallholders in the panel interviews agreed this may put them at risk of shortages later in the year, but there were no reports of the panel experiencing this directly. Overall, smallholders were adamant that they would never sell “too much” of their cassava to put them at risk of food insecurity. As the country is prone to food insecurity, smallholders are aware of how to manage their resources. This issue will be further explored in the next chapter.

---

<sup>35</sup> The yield/ha change for women may not be significant due to variability in the data among FHH.

<sup>36</sup> There were no gender differences in productivity within the sample groups in 2009 or 2014.

<sup>37</sup> In 2009 there were significant differences in total output between Zomba and Nkhotakota ( $p \leq 0.05^*$ ), in 2014 between Nkhotakota and Mulanje ( $p \leq 0.01$ ), Zomba and Mulanje ( $p \leq 0.0001^*$ ), and Zomba and Nkhotakota ( $p \leq 0.05^*$ ), and between 2009 and 2014 in Zomba ( $p \leq 0.01^*$ ).

<sup>38</sup> Nkhotakota and Zomba both show an increase in yield/ha in 2014 (4.8 to 5.9 t/ha and 4.8 to 5.0 t/ha, respectively), while Mulanje was relatively stable (5.5 to 5.4 t/ha).

*“I would never reduce the cassava I consume. I can't afford to sell everything while we are starving. The most important thing is that we have food. I have never sold all of my cassava just to get a higher price”* (male producer, Mulanje district, Malawi)

#### **6.5.5 Change in planting/ harvesting to sell in bulk (pathway 4)**

Overall, and similar to Nigeria, household planting strategies involved maximising cassava output while maintaining crop diversification. Also similar to Nigeria, smallholders in Malawi planted, harvested and processed on a staggered and piecemeal basis to provide continual food security and income throughout the year. There was no conclusive evidence that would suggest a significant shift in these practices to support commercialisation, however, some, albeit few, smallholders reported harvesting larger quantities at any one time to supply a cassava-processing SME (Nkhotakota) or a large factory (Zomba and Mulanje). In conjunction with these changes, several smallholder farmers stated they knew people who harvested their cassava prematurely out of need for income or food (with very few admitting this themselves). If the demand for cassava increases, this problem may increase.

The development of planting and harvesting strategies are devised at a household level in Malawi due to the shared-farming practice. However, challenges could arise between men and women if there were different interests of when to plant, or when to harvest and for what purpose. It was also common for men to negotiate, or take considerable interest in, larger transactions to sell cassava to SMEs and large factories that would minimise women's involvement and benefit from the negotiations.

Commercial demand and cassava theft in southern districts also influenced decisions on planting bitter and sweet cassava. Smallholders planted bitter varieties on the outside of their plots to sell to factories, and would “hide” sweet varieties in the middle from thieves, for their own consumption. Women farmers were particularly vulnerable to theft, and therefore welcomed the demand from a large-scale factory for bitter cassava.

#### **6.5.6 Increased processing (pathway 5)**

Very few processors increased their commercial activities in the time between the panel interviews (6 out of 27 processors interviewed in the panel study, who also count as cassava producers). Four of these individuals were from a community Mulanje who started processing HQCF (discussed in the next section). The two others were in Nkhotakota and processing small amounts of kondowole for

sale. Some processors were also able to sell processed products during the hunger period but this was not common. However, the processed markets are relatively small compared to Nigeria.

#### **6.5.7 Processing different product (pathway 6)**

There were some locations in the study areas where processors were exposed to new processing opportunities for HQCF under the C:AVA project. A C:AVA targeted community processing association, Tiyamike Women's Association in Mulanje, was one of those locations. Many of the women interviewed who are part of this association reported that processing HQCF provided a new opportunity for them to earn income, which they were very happy about.

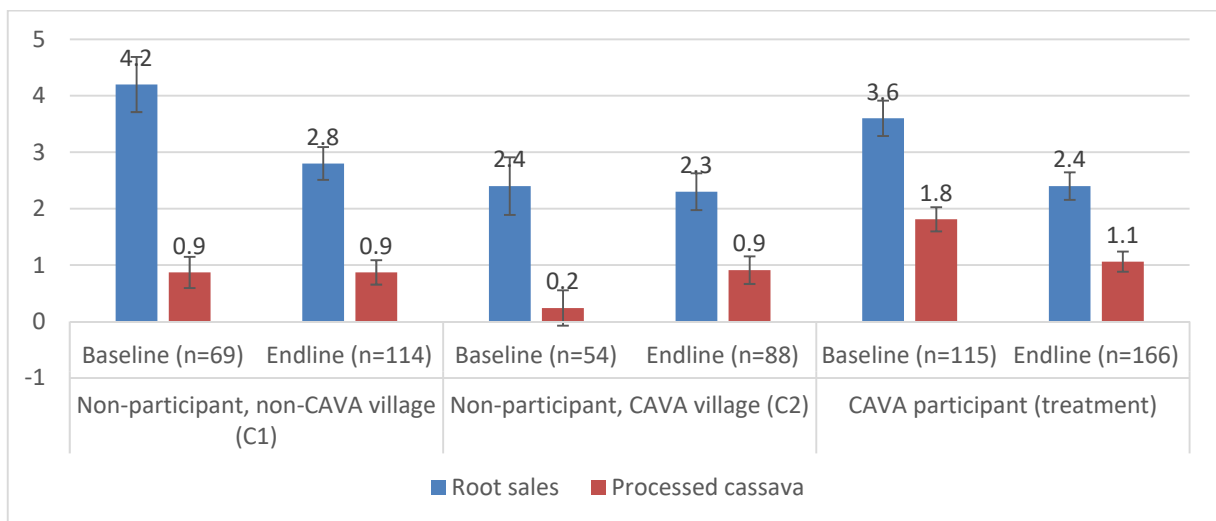
*“Cassava was always important but it has increased recently because there is a market. We do not bother making makaka now, we just process HQCF [new product] because we sell it at a higher price. This is why I am increasing cassava”* (female producer and processor, Mulanje district, Malawi).

At the start of the C:AVA project in 2010, two other CPGs were working with Tiyamike in processing HQCF. However, in the two years between visits, two of the three groups that made up Tiyamike processing association had split from the main Association and stopped processing HQCF. Key informant and panel interviews indicated that the two groups had split due to the lack of transparency in the marketing of the product. CMRTE association in Zomba was also processing HQCF, however, the arrangements were slightly different as CPGs were only involved in cassava production, and hired labourers would carry out the processing. Members were upset with the lack of benefits from the processing factory and also felt that the CMRTE managers were benefiting financially due to corruption. In both these cases, it led to mistrust among community members and members leaving the group.

#### **6.5.8 Results from strategies: selling more cassava**

Sale of fresh cassava was very low in Malawi ranging from 2.3t to 4.2t per household in the previous year, in 2010 and 2014 respectively, with no significant increases or differences between sample groups over time (Figure 32). The sale of processed cassava was also minimal, from 0.9t to 1.8t per household for any sample group in 2010 and 2014, with no significant increases for any sample group. There were significant differences in 2009 between C:AVA participants and non-participants in

C:AVA communities (1.8t compared to 0.2t) which disappeared in 2014 ( $p \leq 0.05^*$ ) as the two sample groups processed an equal amount in 2014 (1t). The low sales of cassava, and decreasing sales among C:AVA participants, are likely related to the decline in output due to challenges with the germination of new varieties, drought and lack of demand. Qualitative evidence suggests that smallholders were prioritising cassava for household food security in 2014 due to poor harvests related to the drought (6.2 Context ).



**Figure 32 Mean quantity of fresh and processed cassava sold (tonnes) by sample group in 2010 and 2014, Malawi**

Gender of the household head did not impact on quantities sold, and there were no significant differences in the average quantity of processed cassava sold by gender of the household with sample groups combined, or separately, in 2010 or 2014.

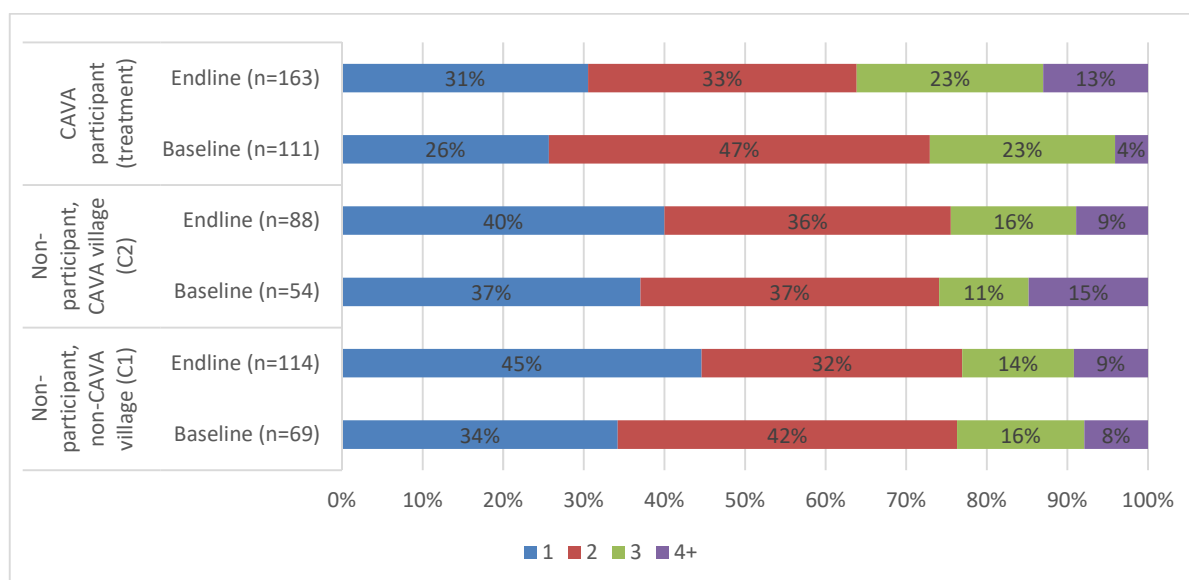
District also made minimal difference in the quantity of fresh cassava sold. There was significant decrease from 3.9t to 2.0t for Nkhotakota ( $p \leq 0.00005^*$ ) from 2010 to 2014. This is related to the significant decrease among C:AVA participants (4.5t to 1.8t,  $p \leq 0.005^*$ ), that brought them in line with non-participants within and outside C:AVA communities. Panel interviews from the district found that the decline of demand for cassava in the district may have led to this reduction, showing a lack of influence of the C:AVA project throughout the district. Mulanje decreased slightly from 3.2t



to 2.2t and Zomba increased from 2.9t to 3.3t but these changes were not significant. With processed cassava, only Mulanje showed a significant change, an increase from 0.1t to 3.7t ( $p \leq 0.001^*$ ).<sup>39</sup>

### 6.5.9 Rankings of the importance of cassava for income

Approximately 85% to 96% of the entire sample rated cassava as the first, second or third most important crop for income in 2010 and 2014 (Figure 33). Approximately one-third of those surveyed ranked cassava as the most important crop for income (1st), with slightly higher proportions in 2014. There were no significant differences between sample groups, according to Chi-square tests. There were no significant differences in rankings of cassava’s importance for income by gender of the household head and by district.



**Figure 33 Relative importance of cassava for income as a percentage of respondents ranking cassava as first, second or third in importance, by sample group in 2010 and 2014, Malawi**

Panel interviews indicate that the importance of cassava is related to it providing income throughout the year, and not necessarily the amount of income. New market opportunities were also a reason why some smallholders felt its importance was increasing.

<sup>39</sup> There were no significant differences in the quantities of processed cassava sold between 2010 and 2014 between sample groups and districts.

*“Cassava is more important than four years ago. Before we ate cassava as makaka and if we had too much it would rot. We would even use it as firewood. But now there is a market for cassava and it is getting money”* (female producer, Zomba district, Malawi).

*“Cassava has always been important in this community. We eat it with vegetables and can sell it for small income, use the stems as firewood, make makaka, from the roots, or into flour or have as a snack. In the past four years, processing HQCF has just added to its importance because of its higher price”* (female producer, Mulanje district, Malawi).

*“I strongly feel it has changed. Before it was a food security crop and a staple food. At the market, there wasn’t a lot of kondowole sold for income. Now there is some being sold. Now that cassava roots are also a source of income cassava is important”* (female producer and processor, Nkhotakota district, Malawi).

Other smallholders felt that cassava was still primarily a food security crop. This was often within the same regions where people also expressed that cassava was growing in importance. Interviews suggested that this was because the demand for fresh roots and processed products was only including a portion of farmers in the area.

*“It hasn’t changed because there are no markets for cassava. We eat it when the maize flour finishes. Cassava takes a lot of time to process, we make kondowole and people buy from around here. I keep the roots for the hunger period and will sell it to others who are hungry”* (male producer, Nkhotakota district, Malawi).

*“The importance of cassava has not changed. It was important and it is important. It has been important since my birth. It is grown as a food security crop and eaten as a snack or with pigeon pea after we finish eating the maize”* (male producer, Mulanje district, Malawi).

#### **6.5.10 Strategies not used**

A change in cassava group membership (pathway 7) was not evident in Malawi. While groups lacked the organisational capacity of groups in Nigeria, there were few groups who were functioning. As a result, there had been either a stagnation or decrease in membership. In one area of Mulanje, the Tiyamike processing group received training in HQCF processing, quality standards, group

management and marketing. However, the opportunities in HQCF brought with them problems for the processing groups as described under pathway 6, resulting in a disintegration of the processing groups rather than increased capacity. This indicates a greater need for capacity strengthening in governance and transparency.

#### **6.5.11 Reduction and no change in commercial activities (pathway 8 and 9)**

The majority of the panel interviews indicated smallholders had not changed the scale of their planting, processing or selling cassava in between 2010 and 2014 in Malawi. They related this mainly to the lack of market opportunities that were particularly to specific locations (market access). Reasons for decreasing commercial cassava activities included theft of the roots, a reduction in land (due to inheritance or lack of funds to farm the land), ill health, poor yield (drought), the prioritisation of cassava for home consumption, and poor land access and lack of demand (6.2 Context).

#### **6.5.12 Asset requirements for different strategies**

The assets required by smallholders in Malawi for participating in cassava commercialisation processes were networks to gain access to local markets, access to land, and social and human capital. Surprisingly, few respondents raised access to financial capital as a requirement for market participation, related to the lack of availability and perceptions of risk. Community-based savings and loans enabled women to meet urgent needs in the household, but these were not viewed as relevant for marketing activities.

#### **Networks to local markets**

The lack of substantial change in commercialisation strategies in Malawi is related to the lack of market opportunities that were particular to specific locations. In Nkhotakota, the SME processor was expected to purchase fresh cassava from a number of C:AVA communities; however, as the demand for HQCF did not increase to the extent expected, the SME purchased fresh roots from smallholders in the community closest to the plant and not the surrounding communities. Similarly, in Zomba, smallholders were not selling roots to the processing factory (CMRTE) nearby. CMRTE only required the cassava from the group farm, and it was also reported by community members that CMRTE staff purchased fresh roots from communities in other districts for a lower price. In both of these cases, the lack of benefits and cassava opportunities had contributed to negative feelings in some communities

between community members, the processing company, and in some cases, the C:AVA project, despite the networks to markets developed for processed products.

*“Cassava is not important. I made makaka last year and it didn’t sell well. Sometimes there is too much cassava in the market. This year there is no cassava to sell because there isn’t enough planted”* (female producer, Zomba district, Malawi).

In Mulanje, one community visited in the panel interviews said that the demand for roots had not increased, as the CGP used the roots of their own members and did not purchase from outside the group. In this case, tension developed between smallholders in other communities and Tiyamike community processing, because they felt that Tiyamike’s ‘home’ community had benefited more from HQCF demand and better prices, than those negotiated for their communities.

In contrast, other interviews conducted in other communities suggested an increase in demand for fresh cassava from a large processing company and SMEs.

*“Over the years, we have been producing cassava but now it has changed with improved (cassava) cuttings. The market is increasing but there is only one market - there is no alternative”* (female producer, Nkhotakota district, Malawi).

### **Access to land**

In Malawi, access to land is a primary factor for enabling cassava commercialisation and influencing the agricultural strategies that are used to participate in markets. However, land access differed in the districts. The southern, matrilineal, districts experienced land shortages (partly due to inheritance practices), and a smaller (to non-existent) land rental market. Women did not have problems accessing land due to matrilineal customary practices, however accessing additional land to what they inherited was problematic. This led some smallholders to decrease other crops in order to produce more cassava, and as a consequence, changing their consumption and/or selling patterns of the alternative crop. In these situations, livelihoods need to diversify from agriculture as there is limited investment that can be made on small land plots, and given the uncertainty of rainfall in the country it can be a risky strategy. In addition, despite matrilineal practices in most parts of the districts, decision-making on how to use the land is often still decided by the men in these areas. However, panel interviews found

that there were perceptions that women were becoming increasingly responsible for land management, and earning income, in the southern districts.

### **Social and human capital**

Group members membership and informal networks provided access to extension services for access to improved cassava varieties, and training in planting and care of new varieties. In addition, strategies of collective commercial activities, such as CPGs, were successfully used by women in Tiyamike association, showing this as a potential route for improving women's participation on commercial activities. However, lack of transparency in marketing and poor governance limits this potential, and could even deepen mistrust in communities.

#### **6.5.13 Section summary – Malawi**

There are indications that smallholders in Malawi were making changes towards commercialisation, although not on the scale of smallholders in Nigeria. The panel interviews indicated that just slightly over half of those visited during the first and second round of panel interviews (total of 30 individuals) had increased their cassava production and processing since the first interviews (four years prior). FGDs reported that cassava production had increased in their communities over the last ten years.

There were indications of increasing investment in cassava production (pathway 1), with significant increases in the use of high yielding varieties and agro-chemicals between 2010 and 2014, particularly in Mulanje and Zomba. C:AVA participants showed a significantly higher uptake of new varieties, and the largest percentage change, and C:AVA communities (participants and non-participants) significantly increased their use of agrochemicals, showing the influence of the C:AVA project. There were no statistically significant differences by gender of the household head; however, interviews with women showed their risk aversion to trying new methods and the institutional difficulties of extension services in reaching women.

There were also smallholders who increased the land area planted with cassava (pathway 2) by reducing crop spacing (2a), and decreasing other crops planted (2c). Acquiring more land (2b) was a not a common strategy for smallholders. There were a few smallholders who decreased the production of other crops in favour of expanding the area of cassava. The reduction was seen as a necessity due to their limited land area. While there were no reports of this affecting consumption and nutrition,

smallholders agreed that such a situation could exist particularly if protein-rich crops were reduced. Some households in Zomba decreased cassava consumption to sell more (pathway 3). However, overall, smallholders were adamant during the panel interviews that they would never sell what is considered “too much” of their cassava to put them at risk of food insecurity.

Total cassava output and yield/ha results in Malawi show minimal change from 2010 to 2014 (5.6t to 5.4t). Panel interviews revealed this is largely related to contextual factors including the problems with new varieties, drought and lack of demand, not necessarily a lack of commercial orientation. However, MHH C:AVA participants, experienced significant increases in yield/ha, related to greater investment in cassava due to exposure to the C:AVA project.

Like Nigeria, household planting strategies involved maximising cassava output while maintaining diversification; planting, harvesting and processing on a staggered, gradual and piecemeal basis, for food security and income (pathway 4). There was minimal change to these practices. However, there were some smallholders who had sold cassava in bulk within the previous five years. Several smallholder farmers stated they knew people who harvested their cassava prematurely out of need for income or food (with very few admitting this themselves). This may indicate a risk to food security if opportunities for cassava sales increase, as the income earned is not enough to purchase food at higher prices at a later date, or the income may be under the control of a household member who does not purchase food with the income.

There were some locations where processors were processing new cassava-based products as opposed to traditional products, such as HQCF, promoted under the C:AVA project (pathway 6). This involved CPGs in Mulanje and Zomba, with the former being particularly successful. However, in both cases, conflicts arose within the processing groups due to lack of transparency in business management.

The sale of fresh and processed cassava was low in Malawi, with little difference between 2010 and 2014. There were minimal differences between men and women or districts in terms of the quantity of fresh cassava sold; however, C:AVA participants in Nkhotakota significantly decreased their sales to an equal level with non-participants in and outside their communities. This change did not accompany a change in the sale of processed cassava. These trends are linked to issues around drought, problems with new varieties, and food security risks in the country according to panel and key informant interviews.

Overall, the clear majority of smallholders rated cassava as the first, second or third most important crop for income in 2010 and 2014 (Figure 33). Approximately one-third of those surveyed ranked cassava as the most important crop for income (1st), with a slight increase in the proportion in 2014, despite the lack of increase in sales. There were no significant differences by sample groups, gender of the household head, or district. Panel interviews indicate that the importance of cassava is related to it providing income throughout the year, and not necessarily the amount of income. New market opportunities were also a reason why some smallholders felt the importance of cassava was increasing. Other smallholders felt that cassava was still primarily a food security crop.

The panel interviews indicated many smallholders had not changed their planting, processing or selling cassava in between 2010 and 2014 (pathway 8 and 9). The reasons for decreasing commercial cassava activities included theft of the roots, a reduction in land (due to inheritance or lack of funds to farm the land), ill health, poor yield (drought), the prioritisation of cassava for home consumption, and poor land access and lack of demand.

Smallholders required a number of assets to participate in commercial cassava activities. These included local networks to access markets. Access to land is important, and particularly important if commercialisation is not to impact negatively on food security. In addition, as processing activities were undertaken with CPGs, transparent and effective group governance were found to be important for processors, mainly women, to participate and benefit from cassava market opportunities.

**Table 25 Smallholder, commercial access strategies and assets, Malawi**

<b>Farm management</b>	<b>Commercial cassava strategies</b>	<b>Absent/few cases</b>	<b>Important Assets for commercialisation</b>	<b>Characteristics of group</b>
<p><b>Husband and wife (wives)</b> Shared plots (with some women having separate plots in Nhkotakota, polygamous families)</p>	<p>1 Use of inputs 2 Increase cassava land area – by 2a reducing spacing, 2b acquiring more land in Nhkotakota) 3 Reduction in cassava consumption 6 Processing different product 8 &amp; 9 No change or reduction in commercialisation</p>	<p>4 Change in planting/ harvesting techniques and timing to sell in bulk (some examples but still largely piecemeal) 5 Increased processing (some examples) 7 Cassava group membership</p>	<p>Human capital: access to extension services for varieties and training Local networks to access markets Land Social capital: transparent and effective group governance</p>	<p>Networked with local processed markets</p>

### **6.6 Factors in smallholder decision-making regarding cassava commercialisation**

In adding household decision-making to the livelihoods framework (Section 3.1) and examining the role of gender relations within decision-making processes, we find a number of important factors that structure smallholder behaviour. In addition to livelihood goals (Section 5.3.1), and livelihood assets (Sections 5.6, 6.4.11 and 6.5.12), there were other factors that influenced the commercialisation strategies of smallholders. These were perceptions of risk and uncertainty, closely related to the level vulnerability and resilience to food insecurity, and women’s agency. Perceptions were influenced by broader societal trends including the demand for cassava, the frequency of purchase, type of product and price, along with socio-cultural gender norms, which influence practices such as the shared or separate farm management, and gender roles and responsibilities.



### 6.6.1 Smallholder perceptions of cassava commercialisation and risk

Smallholders generally perceive cassava commercialisation as generally a low risk activity due to the minimal inputs required other than family labour, the low risk of crop failure, and because it is already grown and sold by smallholders. However, despite these perceptions, the panel interviews found that smallholders did not significantly alter their livelihoods strategies to participate more extensively in commercial cassava activities. This is related to the broader strategy of risk reduction for the household. Cassava was risky due to its importance as a food security crop, which could be compromised if too much of the cassava stock was sold (bulk sales), if the income was not used to purchase food, or if smallholders needed to buy back cassava (often at a higher price, which smallholders try to avoid). These are greater risks when different people in the household are making different decisions on selling, expenditures and household food consumption. It is also risky if the demand for cassava and its products fluctuates, decreases, or there is a decrease in price.

Minimising the risk and uncertainty in agriculture involves balancing cassava activities with other livelihood activities. In both countries, diversification, incremental planting and harvesting was the favoured approach. For example, in Nigeria smallholders would mainly increase their cassava activities when additional land could be acquired and not reduce other livelihood activities or other crops produced in order to maintain diversification. In contrast, in Malawi where there were more significant land constraints, most smallholders choose not to commercialise. While some smallholders reduced crop spacing and other crops produced, these strategies can pose greater risks of soil depletion and change in diets or other commercial activities for food and income stability. Therefore, the relationship between commercialisation and specialisation, which is often promoted in economics, appeared unrealistic to smallholders because of the level of risk involved. It is more likely that smallholders seek to accommodate cassava commercialisation within their current livelihood strategy without major reallocations of their resources (whether land or labour) or reducing other activities that help them to minimise risk and can be incentive for changes in the amount planted.

However, in areas where there was new demand from SMEs and large-scale cassava processing factories, commercialisation strategies were found to shift towards bulk harvests, often arranged by men in both countries. This requires smallholders to anticipate the amount of cassava that will be purchased a year before in order to plant adequate quantities of cassava. At the time of selling the

cassava, it also requires that the income will cover future food security needs of the household, and that profit will not be lost from buying back cassava at higher prices.

Perceptions of risk and uncertainty with cassava activities are also gendered, and related to gender roles in food security. Women's roles in household food preparation and provisioning, give rise to a significant reluctance of women to take risks related to household food stability. For example, in Nigeria, women highly valued cassava market activities for their continuous supply of income and food throughout the year. Women also engaged with numerous other income-generating activities to manage the instability of markets (Appendix L for price differences). So while women's processing and other livelihood activities were highly commercial, they would not significantly alter their strategies due to market uncertainty. This shows that market uncertainty combined with gender roles is a major factor in commercialisation.

In both countries, women were hesitant to use credit for increasing their investment or changing crop portions that could enable them to benefit from economies of scale. The preferred strategy by women is to rely on the same cropping patterns annually and uproot cassava in small amounts gradually to provide a regular food supply and income stream throughout the year. However, this practice limits women to selling small amounts of processed products and not in bulk:

*“I don't change the crops or the amount I plant because I believe in diversification. I don't want to take the risk if something fails”* (female processor, Mulanje district, Malawi).

*“I uproot gradually. Even if there is a good price for gari I will uproot gradually for food security. Because of this my husband doesn't do this method and sells all his cassava roots to companies”* (female processor, Ogun state, Nigeria).

*“I have never sold to (SME) but I sell to vendors once in a while. As vendors buy even small amounts”* (widow, Zomba district, Malawi).

### **6.6.2 Women's agency and the social conditionality of assets**

Smallholder commercialisation strategies reflected social-cultural norms and gender dynamics, as was shown in the previous section. However, commercialisation also influences women's agency and the

social conditions placed on assets which influence access for different groups. This section explores these dynamics and the important themes that have emerged from grounded theory analysis.

Women's agency, influenced by broader gender norms, played a considerable role in cassava market activities. Women's agency refers to women's ability to command and use resources, including her own time and mobility, and to make choices about her life. This was found to be a significant factor in household decision-making and women's bargaining power as included in the modified livelihoods framework (Section 3.1). Responsibilities and obligations are also demonstrative of both individual agency and the joint decisions of the conjugal relationship.

In both countries, although there were exceptions in Nigeria, processing centres were dominated by relatively older women, in their 40-50's, due to the problems of childcare and mobility for women with young children. In Nigeria, Yoruba women have considerable autonomy and independence in commercial activities and control over income, but their strategies reflect, at the same time, their limited bargaining power in the context of patriarchal household norms. Their activities are constrained by the need for their labour on their husband's plots (unreciprocated), along with reproductive responsibilities. Some Yoruba women interviewed in Nigeria also stated that their husbands' contributions to household food security had been declining over the years, which strongly influences how much women can sell, as the quote below demonstrates.

*“Normally we [her and her husband's other wife] get cassava from our husband. But sometimes my husband sells all of his roots and doesn't bring for the home. So I only took cassava from my own farm to eat but I couldn't sell”* (female producer and processor, Ogun state, Nigeria).

In Malawi, women's agency was hidden in the shared farm management system where gender differences in choices are not as visible. In both matrilineal and patrilineal households, women's agency to participate in commercial activities was influenced by their spouses' decisions. This was related to established gender roles and norms that influenced the degree of their husband's authority and contributions to the household. Power was commonly invested with men to make these decisions, particularly those which were market-related, even in matrilineal areas. However, overall it was reported that men and women consulted each other and planned their commercial and food security needs accordingly, with food security being prioritised. This was related to the experiences of many

households with food shortages. In fact, there was only one example of an interviewee who had directly experienced her husband selling “too much” cassava so they did not have enough food.

At the same time, women demonstrate agency in other ways, which is demonstrated in their dynamic market participation despite constraints they experience in both countries. For example, Yoruba women have carved out their own spaces for market participation through demanding separate plots from their husbands and renting land. This is risk-spreading strategy common in many parts of SSA, and ‘demand’ for women’s independent land rights will increase as land becomes scarcer and acquires commercial value. Therefore, there are both constraints and opportunities for women in cassava value chains, but they are responsive to context-specific gender norms, levels of agency, in addition to broad market and environmental trends.

However, since cassava processing activities depended solely on women’s labour, women’s time constraints due to reproductive responsibilities pose a challenge for commercial activities. Labour required for some cassava products, such as HQCF, was higher than for other traditional products. Children were barred from some processing centres thus typically excluding women of reproductive age with small children. In addition, women’s individual livelihood strategies are influenced by their partner’s priorities. This is problematic in contexts where women have low bargaining power.

Despite differences in farm management systems and the cultural context of the countries, households require negotiation and bargaining to manage food security, and there are differences in the way men and women perceive risks, based on their roles. This requires household negotiation on proportions of cassava to be sold, which value chain it is sold on to, who does the work and uses the profit, and if there is poor communication in the household, anticipation of how the other person will use their cassava, for the household or to sell it.

Another factor for commercialisation is the social conditionality of resources, particularly affecting women, along with ethnic minorities. Sensitivity of resources is a common phrase in literature used when risk is discussed, particularly in literature related to climate change (Reed et al., 2013). However, grounded theory analysis pointed to its relevance in the context of market commercialisation, specifically its interaction with social norms. This finding shows the benefit of examining social relationships around assets to establishing the terms of access. For women in both countries, and ethnic minorities in Nigeria, access to assets for cassava was largely dependent on marital and family

relationships, affecting their ability to participate in markets and their strategies for doing so. These conditions make resources 'sensitive' to changes in social relationships, and thus influences the viability of activities and perceptions of risk if access is tenuous. In the breakdown of marriage, reputation or networks, assets can be revoked and commercial participation can cease, which can limit commercial activities.

In Nigeria, ethnic minorities could source capital and labour through clan groups. Ethnic minorities accessed land through their relationships with Yoruba men. This was through renting land or through a 'gifting' system. As a number of ethnic minorities interviewed were migrant labourers, they explained that they make arrangements with a Yoruba landowner to work on his farm as a bonded labourer. After two years the landlord should purchase them a motorcycle and/or provide land for them to farm and access independently. In Nigeria, as the norm is for women to access cassava roots through her husband for processing, a shift in demand for men to supply SMEs may change these dynamics and make it difficult for women to access roots. Even if women pay a higher price compared to SMEs for their cassava, which they often do, women often cannot make immediate payment or purchase in bulk. Their husbands therefore, have a trade-off between convenience, deferred payment and flow of supply versus lower price, upfront payment and market transaction costs.

In Malawi, women in the matrilineal south reported that it was common for men to leave their wives, as they were not tied to the land, which reduced women's access to labour, funds and other forms of support. In Nkhotakota, women reported that a husband taking another wife would affect their share of household assets and profits.

Reputation and character of women is particularly important in their ability to commercialise in both countries. At the community level, women depend on social networks for accessing credit, selling products and acquiring land, which requires them to have a trustworthy reputation. At the household level, women must play 'the good wife' to access resources, such as cassava roots, and even in those cases, a man may as a matter of principle, refuse his wife to show their lack of need for money.

## **6.7 Chapter conclusion**

Chapter 6 has demonstrated that smallholders are undertaking commercial strategies to engage with new and changing cassava market opportunities, particularly in Nigeria. However, the strategies vary according to market and non-market factors. The research found that the notion of commercialisation

as used in development narratives is often over-simplified by focusing mainly on changes in inputs and sales. Whereas the findings show that smallholders used additional strategies to participate in cassava markets, with different levels of risk, which is demonstrated by the decision pathways (Figure 13). These pathways provide an understanding of the rationale and decision-making of smallholder farmers.

Overall, the norm for household planting strategies was to maximise cassava output with increasing investment in cassava production, through increasing inputs (pathway 1) and land area (pathway 2), and trying new production techniques (pathway 4). This was combined with a strategy of maintaining crop diversification to reduce risks to food security and income. Smallholders also joined groups to access support for activities (pathway 7), and groups were increasing their linkages with buyers. However, there was evidence of exclusion or self-exclusion from groups of the basis of ethnicity and religious beliefs. Smallholders maintained the strategy of planting, harvesting and processing on a staggered and piecemeal basis to ensure income and food throughout the year, with a minority of smallholders adapting their strategies to sell larger volumes to buyers (pathway 4). Findings show that commercial strategies may involve greater risk for vulnerable households, as some smallholders in Malawi reduced the production of other crops (pathway 2c) or reduced the amount of cassava they consumed (pathway 3) in order to support market activities. Both of those strategies were not found in Nigeria.

In Nigeria, women and ethnic minorities were actively involved in fresh and processed cassava markets (pathway 5 and 6); however, men made more gains in the quantities sold and had higher levels of cassava market participation. This finding challenges the perception that cassava markets, particularly those for processed cassava, are under the complete ownership and control of women, a view that is often reflected in narratives involving cassava. It also poses the risk of market exclusion with increasing demand. There were different commercialisation strategies according to gender and ethnicity, relating to different socio-cultural norms and access (social conditions) to assets. Gender-based constraints in particular limit women's ability to make significant increases in investment, and therefore changes in women's market participation need to be taken incrementally to reduce risk.

Responses to new and different types of demand for cassava reflect gender and social difference dynamics in value chain participation, where men, women or a particular ethnicity are found in certain

value chains according to the product, end user and even drying technology. For example, in Nigeria, Yoruba men were found to primarily sell fresh cassava to SMEs and large factories, as they possessed the necessary size of land to harvest the quantities of cassava required by companies. The strategy was preferred by men to receive larger, and timelier, payments, which are suitable for larger investment. Whereas women and ethnic minorities continued to focus on processing in small amounts to address daily needs throughout the year.

The C:AVA intervention demonstrated contributions to commercialisation processes and had some effect in influencing the likelihood of smallholders, and certain types of smallholders, in undertaking particular commercialisation strategies, such as using new varieties, planting more cassava and cassava group membership. The C:AVA intervention had limited effect in achieving commercial results in Malawi (e.g. increases in output and sales), related to demand issues, problems with new varieties and drought. There have also been positive outcomes for people indirectly exposed to the C:AVA intervention through the transfer of information and varieties, along with some CGPs processing and marketing new cassava products in each country.

The findings also identified a number of broader processes, beyond assets and within the broad category of ‘institutions and processes’, which explain how smallholders participate and take advantage of cassava opportunities. This includes managing risk, women’s agency, and the social conditionality of resources, which were included in the modified conceptual framework (Section 3.1). Firstly, it shows that smallholders generally perceive cassava commercialisation to be low risk crop if the process is managed effectively. However, in the context of fluctuating markets, and strategies involving piecemeal harvesting and livelihood diversification, it is difficult for smallholders to accommodate more commercial strategies that involve specialisation and producing large surpluses. In addition, the resource poor had to make anticipated trade-offs between food security and commercial participation. Further, despite new opportunities in cassava markets, the lack of market stability was a disincentive for most women to increase their commercial activities. Therefore, it is not that women, and to a lesser extent, men, do not have commercial interests, but that uncertainty prevents them from acting accordingly.

Women’s agency was also found to influence the level of their independent decision-making, participation in and benefit from commercial cassava activities, which varied by socio-cultural

context. Therefore the variability of women's agency questions the propensity of all groups of women to be able to benefit from cassava commercialisation. In addition, the social conditions of assets, particularly effecting women and minority groups, affects the ability to participate in markets, as the assets are 'sensitive' to changes in social relationships. However, if differences in levels of cassava commercialisation between groups results in different livelihood outcomes will be explored in the next chapter.



## **7. What are the outcomes from cassava commercialisation?**

### **7.1 Introduction**

This chapter examines the outcomes from cassava commercialisation for smallholder farmers in Nigeria and Malawi. Following and testing the impact pathway of staple crop commercialisation (Section 2.2.4), this chapter examines changes in income from cassava at the outcome level, and four areas of impact: 1) wellbeing and vulnerability; 2) poverty (using the Progress out of Poverty Index - PPI); 3) gender relations, and 4) food security. The analysis of impact pathways provides insight into the validity of the assumptions contained in development narratives that cassava commercialisation increases income, and contributes to development outcomes such as poverty reduction, women's empowerment and improving food security. The impact pathway constructed from development narratives is discussed in Section 2.2.4 and is interrogated in the remaining sections of this chapter. The narratives make the following claims:

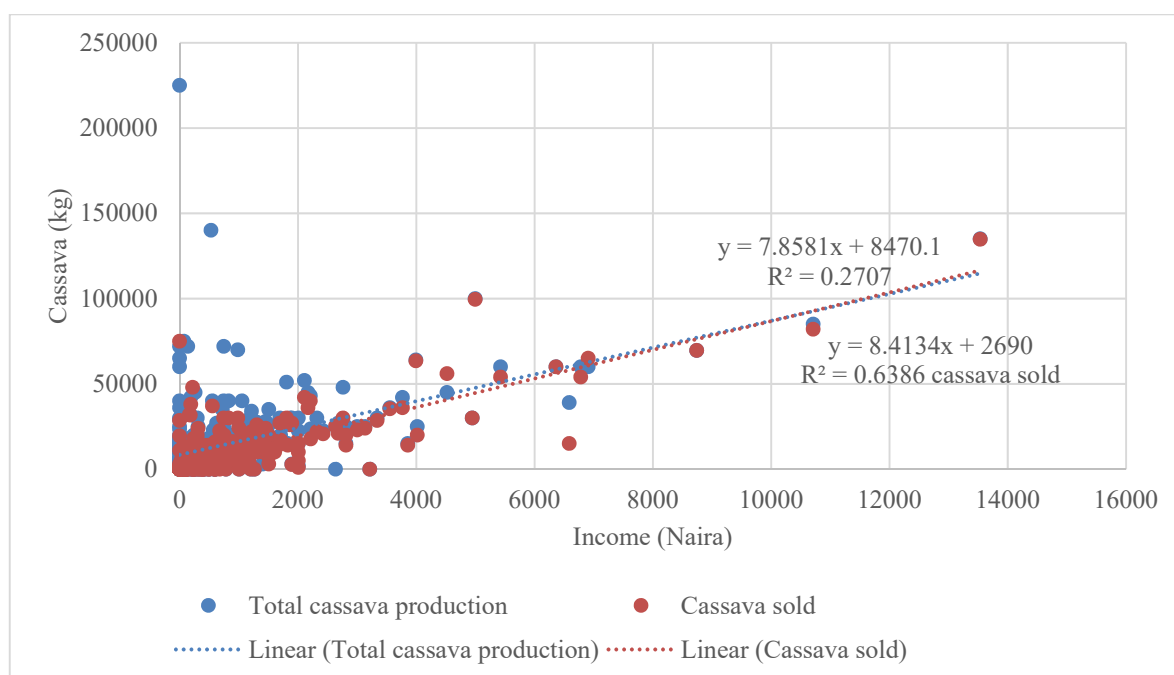
- Claim 1: Cassava commercialisation will increase income.
- Claim 2: An increase in income will be used to improve household wellbeing.
- Claim 3: An increase in household wellbeing will contribute to poverty reduction.
- Claim 4: An increase in income will support women's empowerment, as cassava is a 'woman's crop', and thus, they will have control over the income. As women are more likely to make expenditures to improve household wellbeing, it will reinforce claim 3.
- Claim 5: An increase in income will contribute to food security through more diverse food purchases.

### **7.2 Commercialisation and income**

This section examines the relationship between smallholder commercialisation and an increase in income as a result. Due to the survey design, it was not possible to associate the change in commercialisation with a change in income with the survey data (Section 3.5.5). Therefore, this section draws on the endline survey data (2014) and the panel interviews to identify the relationship between commercialisation results and income.

Analysis of the 2014 survey data found a significant relationship between the level of revenue from cassava, as a function of total cassava production and total quantities of cassava sold in Nigeria (Figure

34).<sup>40</sup> This means that cassava revenue increases when the quantity of cassava production and selling increases. This is an intuitive finding but nonetheless establishes a correlation between commercial behaviour with an increase in sales, and in turn, and increase in revenue. However, the relationship between the quantity of revenue and quantity of production is not as strongly significant compared to quantity sold. This is likely due to the role of cassava in household consumption, whereby a change in production levels may not lead to changes in the quantities sold or revenue if it is consumed at the home (Appendix O).



**Figure 34 Quantity of cassava produced and sold by cassava revenue 2014, Nigeria**

Network analysis of the panel interviews reveals nuanced dynamics between commercialisation and income pathway in Nigeria and Malawi (Figure 35 and Figure 36, respectively). The figures show four stages of the pathway at the centre of each network: commercialisation strategy (Chapter 6); volume of product ready for the market (fresh or processed); sale of the product, and income/profit. As commercialisation strategies were discussed at length in Chapter 6, this section focuses on the pathways from a change in the volume of cassava ready for market.

<sup>40</sup> Malawi data is not shown due to poor quality data of the revenue variable.

The figures show the volume of cassava harvested and the amount of cassava sold was dependent on factors outside of smallholder's control in both countries. The external factors included weather, drought, and germination problems with cassava varieties, the latter which was cited in Malawi. These issues would often result in smallholders harvesting prematurely, and affected the volume sold on the market and subsequently their income. The volume of cassava sold was also influenced by the amount of cassava required for household consumption, which was under the control of smallholders.

*“The weather has been very bad, especially last year [2013] and it caused problems with the cassava yield. My land is also small. I wish I had more but there is none available. Land size is getting smaller because of inheritance and households are larger. I am growing more but I am selling less than I used to because the yield is bad. 2011 was a much better year”* (female producer, Zomba district, Malawi).

Market dynamics also affected income. If there was a ready or unexpected demand for cassava from SMEs and large factories, smallholders may harvest prematurely as the opportunity may not arise again, which would impact on yield. If there was no buyer, smallholders would harvest late, which impacts on starch content, and thus, the price that smallholders receive from larger starch factories. In Malawi, fluctuating demand and an absence of demand was a considerable problem affecting smallholders income despite their behaviour supporting commercialisation.

However, there were positive benefits for smallholders in locations where markets were working:

*“Cassava has been important all along it's a food crop but now we are selling it. I have increased cassava by half an acre. Each year since your visit I have increased on land that used to be idle. Before I didn't see it was important to cultivate it. I have been selling to Chikonda new SME processing factory in the area] and to vendors. I have been able to increase my farming each year and I have bought one goat and now I have four. I bought fertiliser for maize last year. And now I eat breakfast. Before I didn't”* (female producer, Nkhotakota district, Malawi).

The price of cassava was another factor that was outside of the control of smallholder farmers, which was particularly problematic in Nigeria. In Nigeria, producers and processors often had to sell on credit when they were selling to local markets instead of receiving income immediately, but they

would obtain a higher price in this scenario. In Nigeria, the rising cost of production, particularly labour, was also a problem affecting profit. Some of the interviews with Yoruba men and women also indicated that ethnic minorities sold at lower prices because they had large quantities of cassava to sell.

*“I have increased my cassava farm from one to three acres in the past four years because the markets have been good, at least for the last three. I also planted new varieties and my yield improved. I sold all of this to local processors. But this year, things are bad, even for gari. The price has fallen to 800n/100kg, and in 2012 it was 1200n/100kg, and my profits decrease. But the market will get better. This always happens. Farmers will go to other business and then come back to cassava”* (male producer, Ogun state, Nigeria).

*“The fufu price has been very bad. Labour is expensive and the rains have damaged the cassava. So the price of [cassava] roots is expensive, 1000n per bag. I need to peel that and transport it for 40n each time. And I only get 1000n back! That is a loss, before (last year) we could pay 1200 or 1500. So this year is bad!”* (female processor, Ondo state, Nigeria).

Price uncertainty in turn, affects commercialisation strategies, as reflected in the quote below:

*“When I take gari to the market I use the income to pay for urgent expenses. So to process again I have to reduce the amount I process because I don’t have the money. I could use credit but I don’t want to because they will hound you to pay back on a weekly basis and I don’t want this; as prices for gari will fluctuate and I don’t know if I can pay back”* (female processor, Ogun state, Nigeria).

However in Malawi, price was negotiated between the CPG leadership and the buyer, and processors felt that the price was not adequate. There were also were examples of smallholders harvesting cassava in expectation of a buyer, but the arrangements with the buyer falling through. In these case smallholders sold their roots to other buyers quickly at a lower price to prevent deterioration.

*“The cassava stayed for a long time in my field and I got nothing. This makes me sad. The price is too low. We had to sell to vendors and this was difficult. I am too old to go around and sell”* (female producer, Nkhotakota district, Malawi).

*“I have more cassava than I did before. I have planted more and less groundnuts. I have sold my cassava and makaka to the vendors for a better price. I won’t sell to the farming group because I felt cheated by their low price. Cassava is good because if it doesn’t sell I will eat it.”* (female processor and producer, Mulanje district, Malawi).

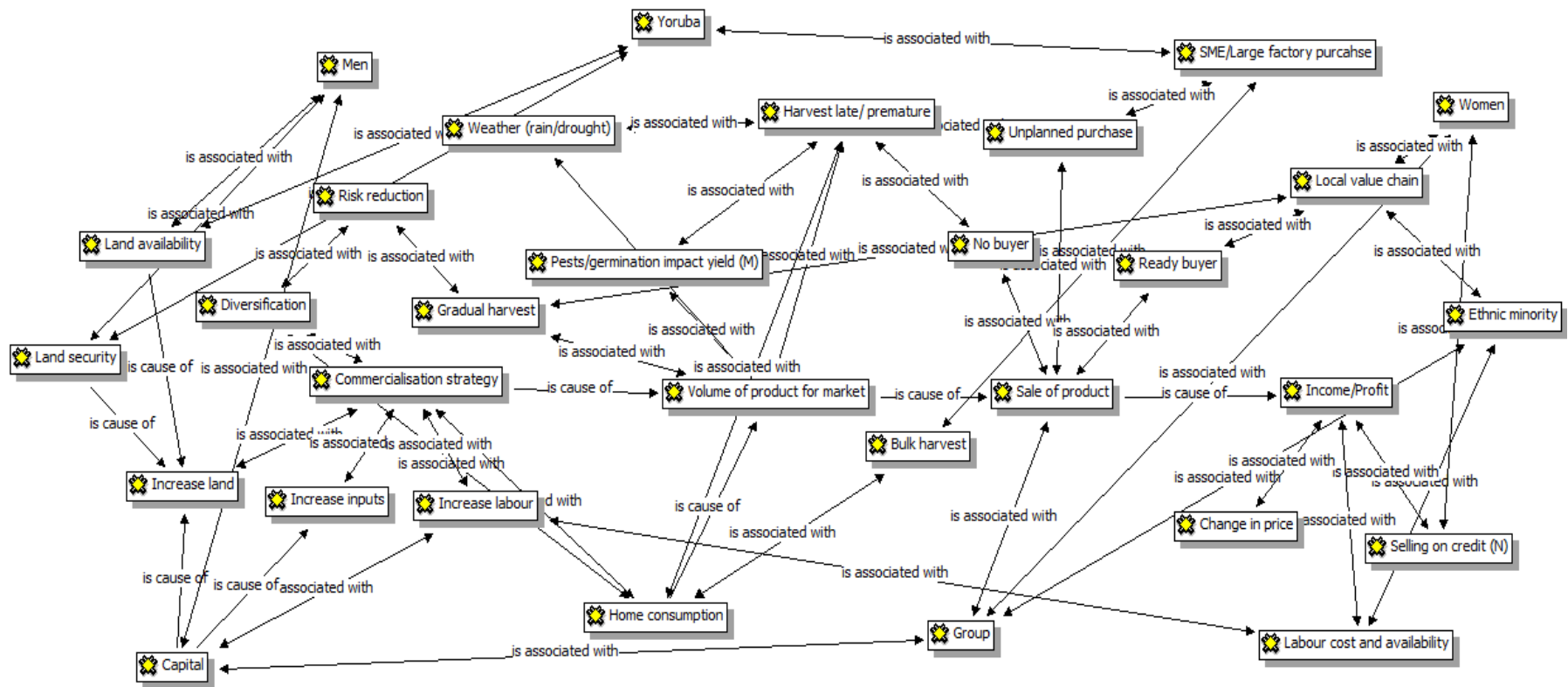
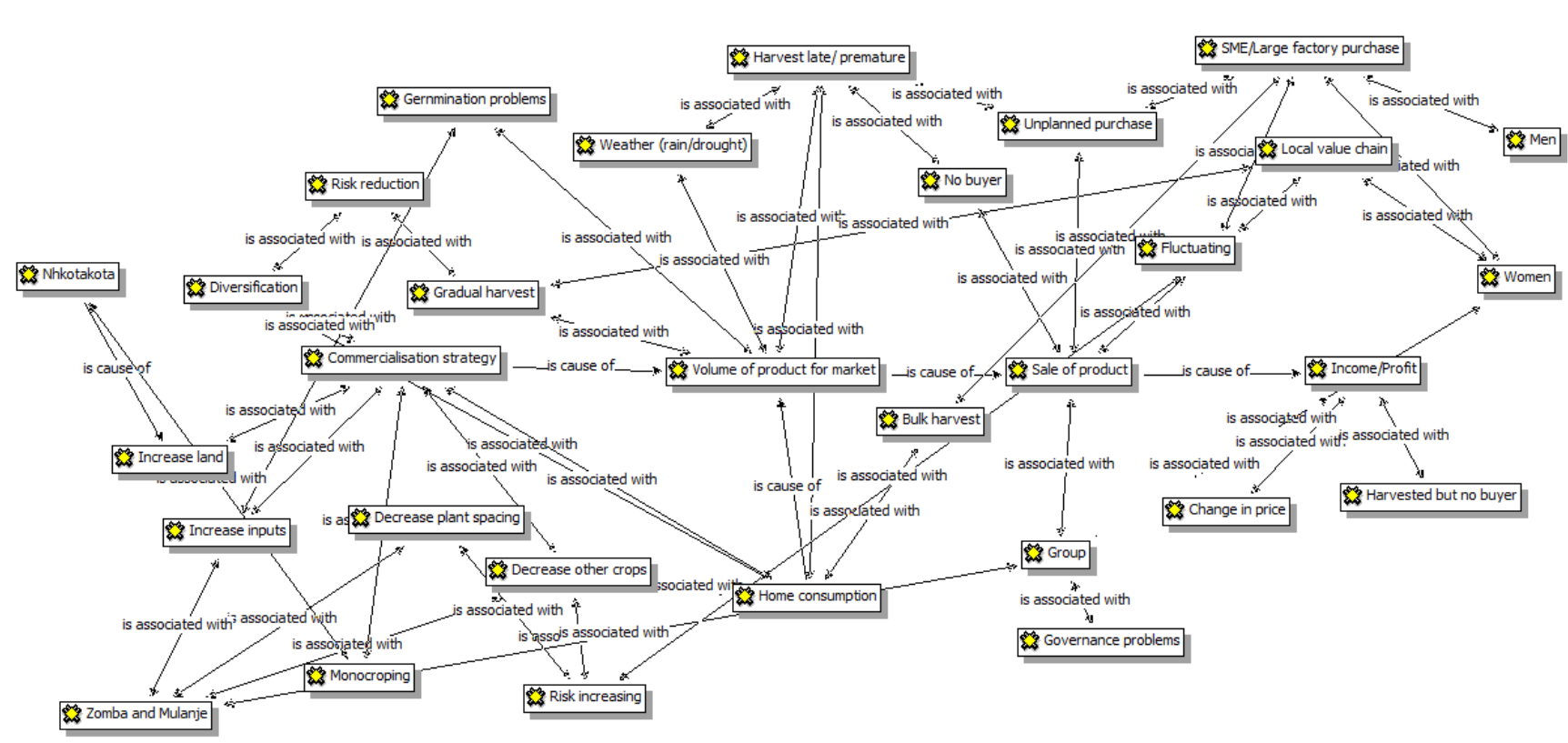


Figure 35 Network map of the link between smallholder commercialisation strategies and income, Nigeria



**Figure 36 Network map of the link between smallholder commercialisation strategies and income, Malawi**

### 7.3 Income generation from commercial cassava activities (claim 1)

This section examines the changes in cassava income for smallholders in Nigeria and Malawi between different groups as presented in Chapter 6 (sample group, gender/gender of the household head, and ethnicity/district). This is followed by an analysis of how changes in cassava income are related to cassava commercialisation. Findings are from the 2014 survey, with all sample groups combined unless there are significant differences.

#### 7.3.1 Nigeria

As discussed in Chapter 6, the panel interviews in Nigeria indicated that the majority of cassava producers and processors had increased their cassava commercialisation using a number of different strategies. Of the panel interviewees who reported an increase in commercial activities (23 out of 30 individuals), the majority described that commercialisation had improved their income despite limiting factors. Income gains were mainly achieved through an increase in the sale of fresh cassava for men and processed products for women.

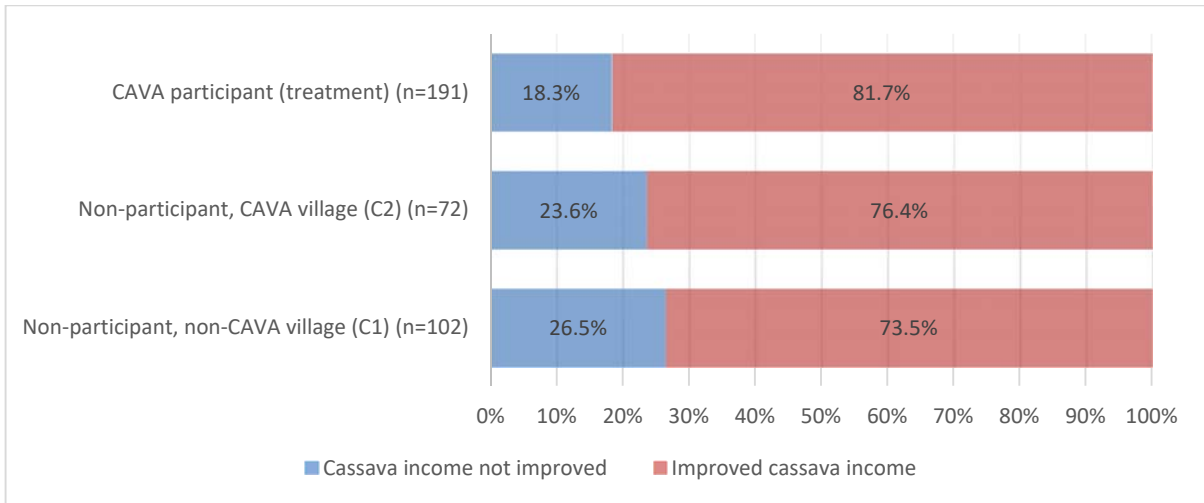
#### **Change in production income**

Approximately three-quarters of smallholders surveyed in 2014 (78% for all sample groups combined) reported an improvement in their income from fresh cassava sold between 2009 and 2014 (Figure 37). A significantly higher proportion of C:AVA participants reported an improvement in income (82%) compared with non-participants (Fisher's Exact Test  $p \leq .05^*$ )<sup>41</sup>, showing an association of perceptions of an improvement in cassava income with C:AVA participants. There were no significant differences between men and women, indicating that the women and men participating in fresh cassava markets perceived their income to improve.

---

<sup>41</sup> Fisher's Exact Tests: C1 and C2  $p \leq 0.5$ , C2 and T  $p \leq 0.5$ .

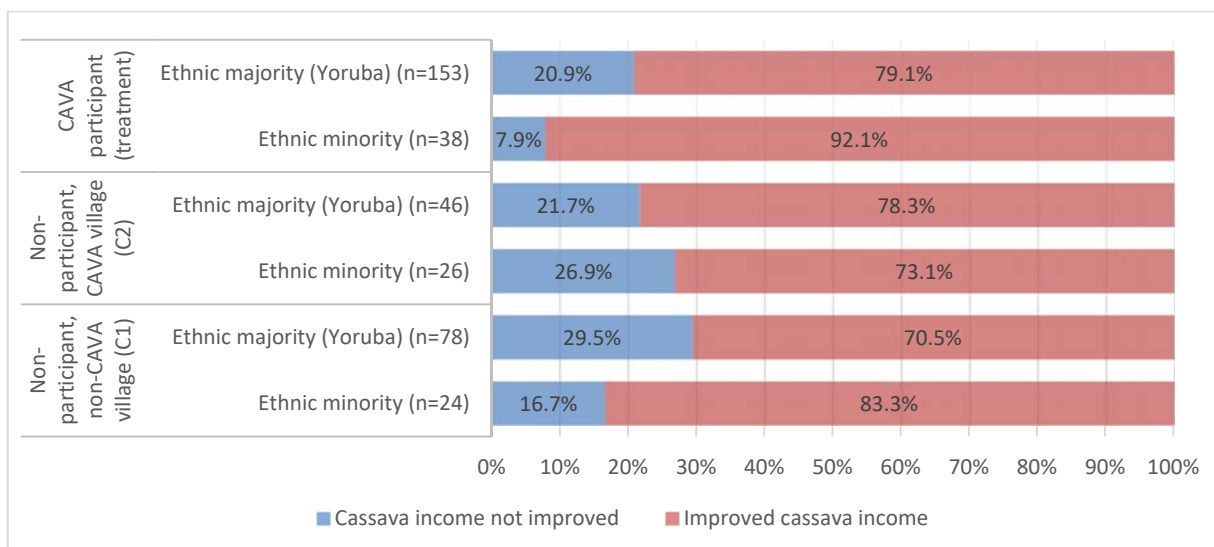




**Figure 37 Improvement in income from cassava production from 2009 to 2014, by sample group, Nigeria**

A higher proportion of ethnic minority C:AVA participants reported an increase in income from fresh cassava compared to Yoruba (92% compared to 79%, respectively, Chi-Square:  $p \leq 0.05$ ) (Figure 38). However, a significantly higher proportion of Yoruba non-participants in C:AVA communities reported better prices compared to ethnic minorities (81% and 53%, respectively, Fisher’s Exact Test:  $p \leq 0.05^*$ ). A small number of panel interviews with Yoruba men and women reported that ethnic minorities were more likely to sell at lower prices because they had larger quantities of cassava to sell, which may have impacted on this dynamic.

*“What has affected the market is the Igedes (Benue) people. They are massively into cassava, the husband and wives. They will just sell 200 bags quickly at any price to get rid of it. We will sell less at a better price”* (female processor, Ogun state, Nigeria).



**Figure 38 Percentage of smallholders reporting an improvement in income from cassava production from 2009 to 2014, by sample group and ethnicity, Nigeria**

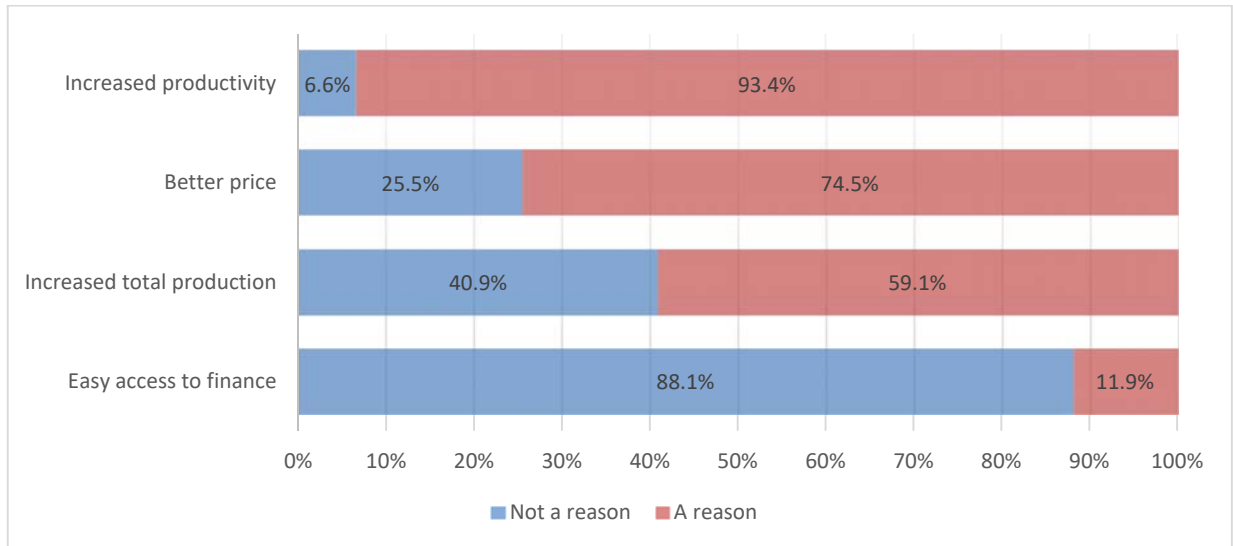
#### **Improvement in fresh cassava income and cassava commercialisation**

Among smallholders who experienced an improvement in their income from fresh cassava, the highest proportion (93%) reported that this was due to improved cassava productivity (Figure 39). This can be linked to an increase in the use of inputs for cassava (commercialisation trajectory 1). An increase in total cassava production was a reason reported by over half of those reporting an improvement in income (59%), and a significantly higher proportion of C:AVA participants (66%) cited this as a reason compared to other sample groups (which were both 51%).<sup>42</sup> This relates to the commercialisation strategies increasing the area of cassava planted (pathway 2) and improving planting techniques (pathway 4).

A significantly higher proportion of men compared to women reported that an increase of fresh cassava sales was the reason for improved income, (63% and 52%, respectively, Fisher's Exact Test  $p \leq 0.05^*$ ). This is related to men being more likely to sell fresh cassava compared to women. This is in agreement with qualitative research (also published in Forsythe et al., 2015 and 2016), which found

<sup>42</sup> Another significant difference between sample groups was the proportion of respondents who cited access to finance as a reason for more income. Non-participants in non-C:AVA communities were more likely to report this as a reason (29%), compared to C:AVA communities C:AVA participants (6%, Fisher's Exact Test  $p \leq 0.0001^*$ ) and non-participants in C:AVA communities (4%, Fisher's Exact Test  $p \leq 0.0001^*$ ).

that men were more likely than women to supply cassava to large-scale processors, as these processors preferred to buy in large quantities, which men were more likely to have due to larger land size (Section 6.4.11).

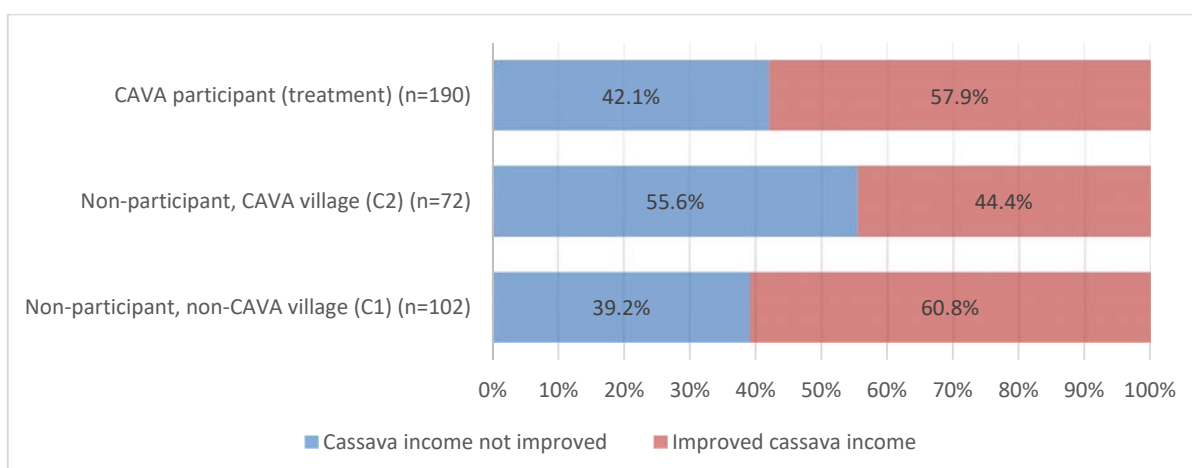


**Figure 39 Reason for increase in income from cassava production, Nigeria**  
n=286, multiple response

### Change in processing income

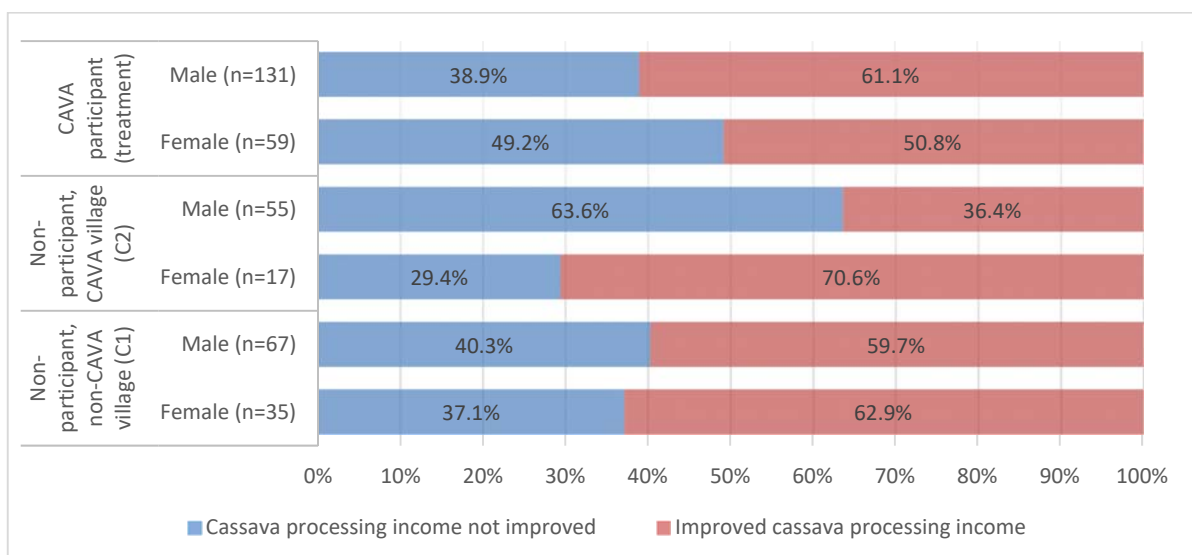
A smaller proportion of processors reported an improvement in income from processed cassava between 2009 and 2014, compared to producers selling fresh cassava. However, it was still over half (56% of all sample groups combined). As shown in Chapter 6, a smaller proportion of respondents increased their commercial activities in processed products. This is related to market factors (e.g. poor prices of gari, the destruction of a large gari market in Lagos, and the main customers of gari in Ondo, civil servants, were not receiving their government salaries), along with constraints that processors, who are mainly women, experience in commercialisation.

Figure 40 shows that non-participants in C:AVA communities were significantly less likely to report an improvement in processing income (44%) compared to the other sample groups (58% for C:AVA participants and 61% for non-participants) (Fisher's Exact Test  $p \leq 0.05^*$ ;  $p \leq 0.05^*$ , respectively). This is expected as they were not cassava group members, which reflects some limitations to accessing particular processed markets and access to processing equipment.



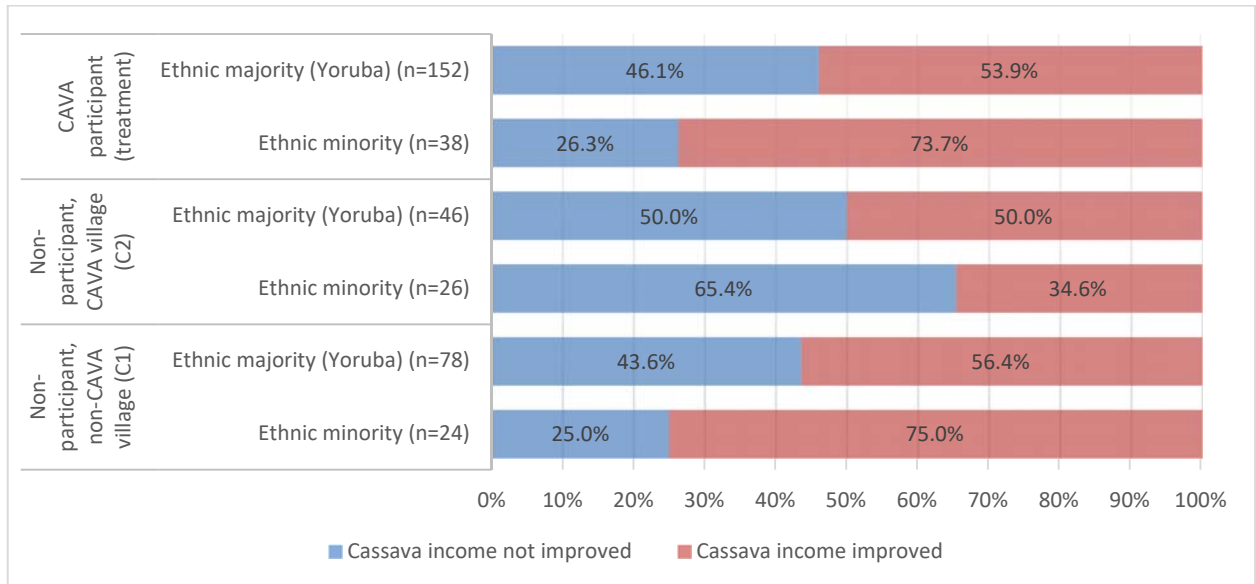
**Figure 40 Improvement in income from cassava processing from 2009 to 2014, by sample group, Nigeria**

A higher proportion of female non-participants in C:AVA communities, compared to men in the same sample group, reported improved income from processed markets (71% compared to 36%, respectively, Chi-Square  $p \leq 0.01^*$ ) (Figure 41). This may indicate that women were joining processing activities due to the influence of the C:AVA intervention in their communities.



**Figure 41 Improvement in income from cassava processing from 2009 to 2014, by sample group and gender, Nigeria**

A significantly higher proportion of ethnic minority C:AVA participants, compared to Yoruba, reported improvements to their processing income in the last five years (75% and 54%, respectively; Chi-Square:  $p \leq 0.05^*$ ) (Figure 42).



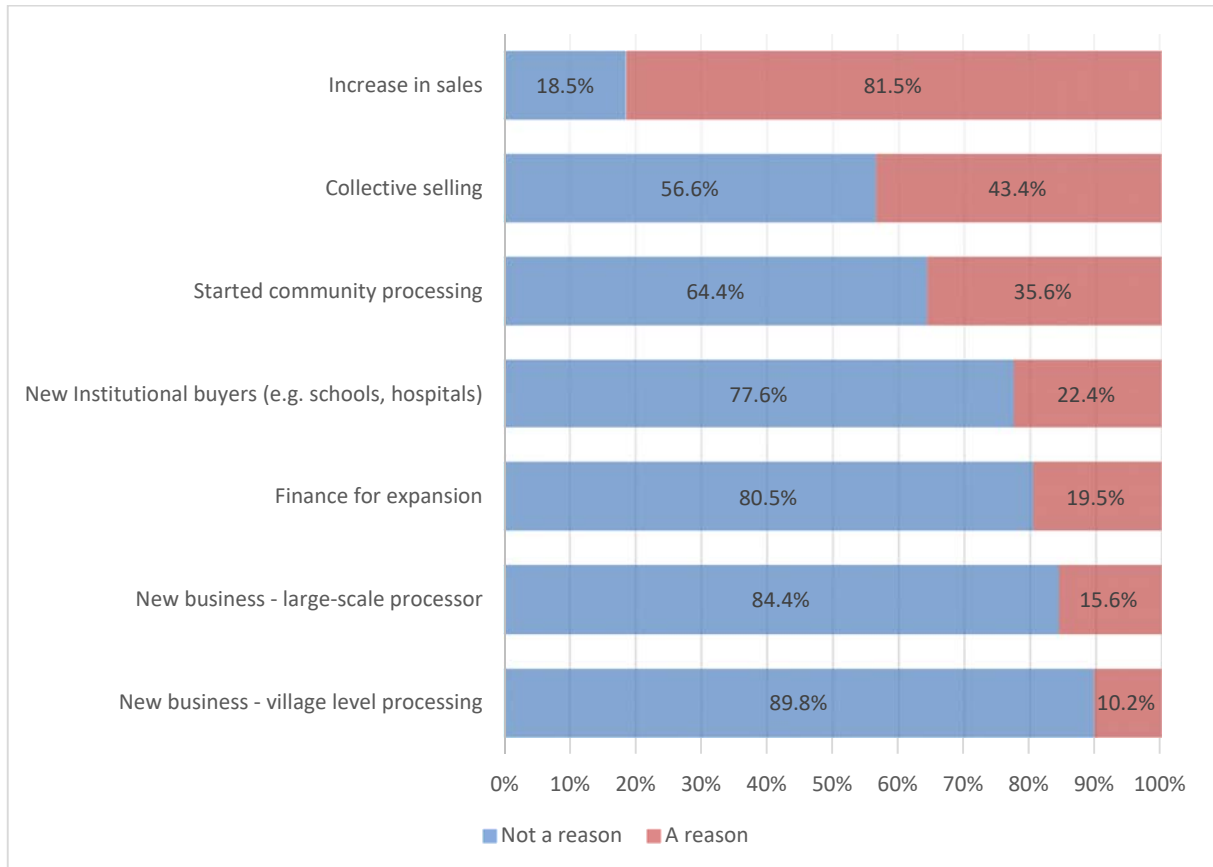
**Figure 42 Percentage of smallholders reporting an improvement in income from cassava processing, by sample group and ethnicity, Nigeria**

### Improvement in processed cassava income and cassava commercialisation

Among processors who experienced an improvement in their cassava processing income, the highest proportion related this to an increase in sales (82%) (Figure 43).<sup>43</sup> There were differences in the reason for the increase in processing income among the sample groups. In relation to the cassava value chain intervention, a significantly higher proportion of processors in C:AVA communities (participants and non-participants) stated that new demand from, and sales to, institutional buyers (e.g. schools, hospitals) was a reason for increased income (31% for participants and 28% for non-participants in the same community), compared to non-C:AVA communities (5%, Fisher's Exact Test:  $p \leq 0.001^*$

<sup>43</sup> A significantly higher proportion of non-participants stated that their improvement in income was from the expansion of the amount of products processed (94%), compared to C:AVA communities (C:AVA participants 83%, Fisher's Exact Test:  $p \leq 0.05^*$ ; non-participants in the same communities 72%,  $p \leq 0.01^*$ ). A significantly higher proportion of non-participants reported that the improvement in their income from cassava processing was due to increased sales (90%) compared to C:AVA participants (76%, Fisher's Exact Test:  $p \leq 0.01^*$ ). There was no significant difference with non-participants in C:AVA communities. The importance of finance for processing was significantly higher for non-participants compared to non-participants in C:AVA communities (Fisher's Exact test  $p \leq 0.05^*$ ) but not for C:AVA participants.

with C:AVA participants;  $p \leq 0.005^*$  with non-participants in the same communities). This finding can be directly related to the C:AVA intervention that linked these new buyers to the C:AVA communities (interview with Prof. Sanni, country manager August; confirmed by processors), (pathway 5 and 6).



**Figure 43 Reasons for increase in income from cassava processing, Nigeria**

(n=205, multiple response)

A significantly higher proportion of men, compared to women (all sample groups combined), reported that the improvement in cassava processing income was related to an increase in sales (26.4% to 13.8%, respectively, Fisher's Exact Test  $p \leq 0.05^*$ ) (pathway 5 and 6). There were also gender differences among C:AVA participants in the reasons for improvement in processing income: a significantly larger proportion of men, compared to women, related the change in income due to the demand from new institutional buyers, such as schools and university ( $p \leq 0.05^*$ ), the collective selling of products ( $p \leq 0.005^*$ ) and finance for expansion ( $p \leq 0.05^*$ ). This shows the complexity of the impact pathways and smallholder decision-making. The fact that men were more likely to cite community

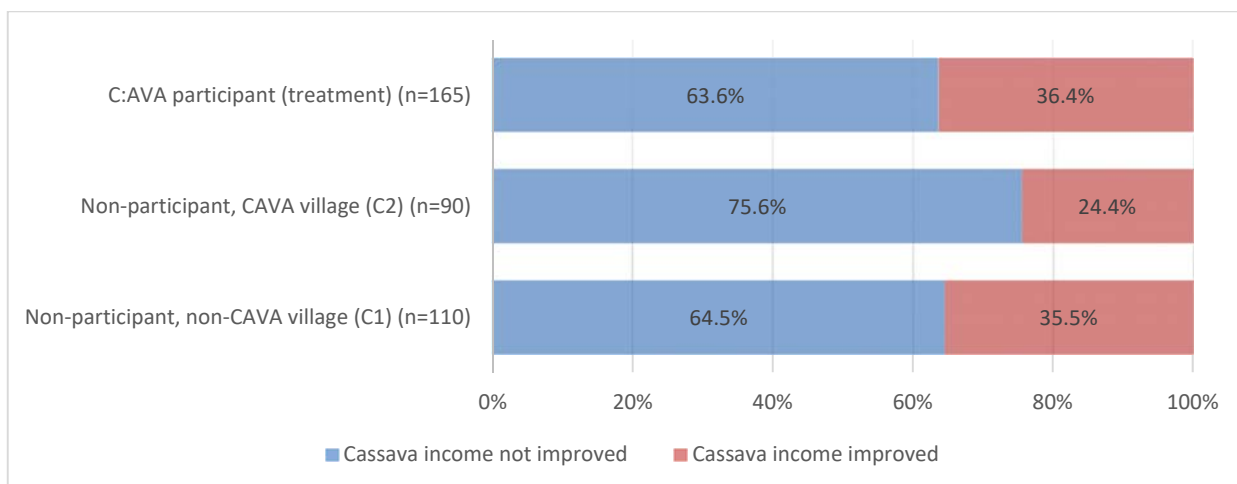
processing groups and collective selling as a reason for increased cassava processing income could suggest new entry points of men into activities that are traditionally found among women. It is likely that men are not members of CPGs themselves, but are undertaking these activities through their wives. In comparison, non-participants in non-C:AVA communities had a higher proportion of women, compared to men, who reported that membership and participation in CPGs and collective selling of products were reasons for improvement in their income (Fisher's Exact Test:  $p \leq 0.05^*$ ,  $p \leq 0.01^*$ , respectively). This finding could reveal an unintended gender bias in outcome of the C:AVA intervention as the project could have indirectly encouraged men to increase their processing activities over time.

### 7.3.2 Malawi

In Malawi, panel interviews indicated that the majority of interviewees had increased their commercial activities (22 out of 30 interviews); but there was a mixed response among them as to whether this had resulted in an increase in income, which was related to issues around market demand, weather, and problems with varieties (Section 6.2). Trends in income from fresh and processed cassava are examined to understand the link between commercialisation and income in Malawi.

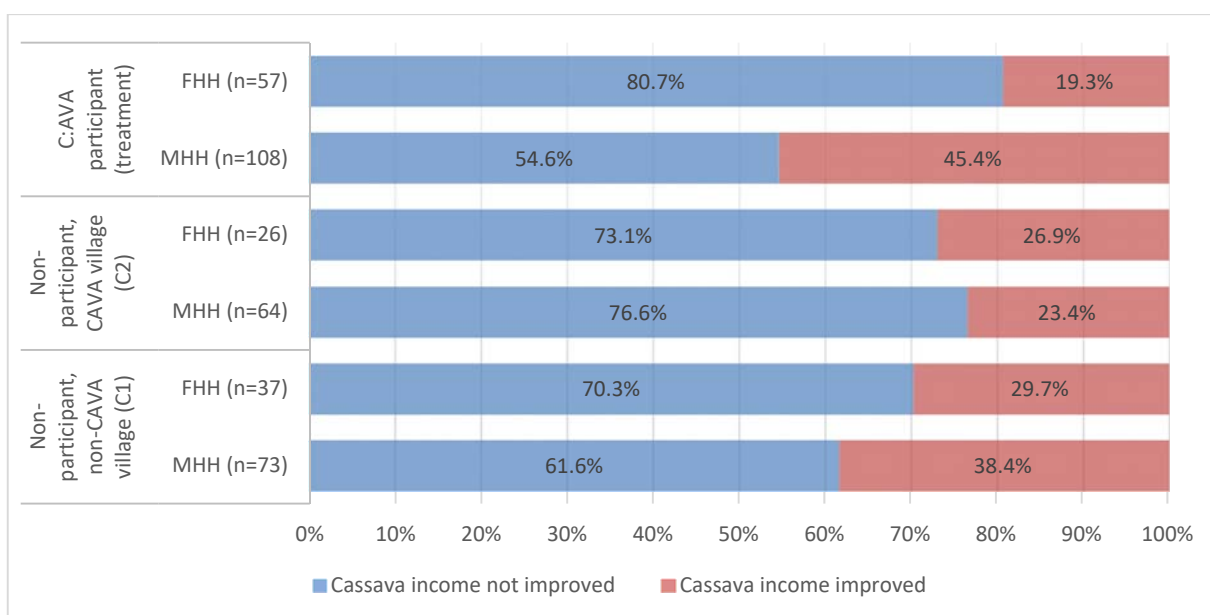
#### **Change in cassava production income**

In contrast to Nigeria, just under half of the 2014 survey respondents in Malawi (44%, all sample groups combined) experienced an improvement in their income from fresh cassava sales from 2010 to 2014. Figure 44 shows that a significantly higher proportion of C:AVA participants reported a positive change in fresh cassava income compared to their non-participating community counterparts (36% compared to 24%, Fisher's Exact Test  $p \leq 0.05^*$ ). However this is not likely to be related to the C:AVA intervention because the proportion was similar for non-C:AVA communities. FGDs with non-participants in C:AVA communities indicate that they were not likely to experience an increase in income because they were less likely to be involved in commercial cassava activities, which was the reason they were not members of cassava groups.



**Figure 44 Improvement in income from cassava production from 2010-2014, by sample group, Malawi**

A higher proportion of MHH compared to FHH (all sample groups combined) reported an improvement in income from fresh cassava over the last five years (38% to 24%) (Fisher’s Exact Test:  $p \leq 0.01^*$ ) (Figure 45). This is likely related to the lower likelihood of FHH participating in fresh cassava markets and barriers they experience in producing enough surplus to sell (Section 6.6.2).



**Figure 45 Improvement in income from cassava production from 2010-2014, by sample group and gender of head of household, Malawi**

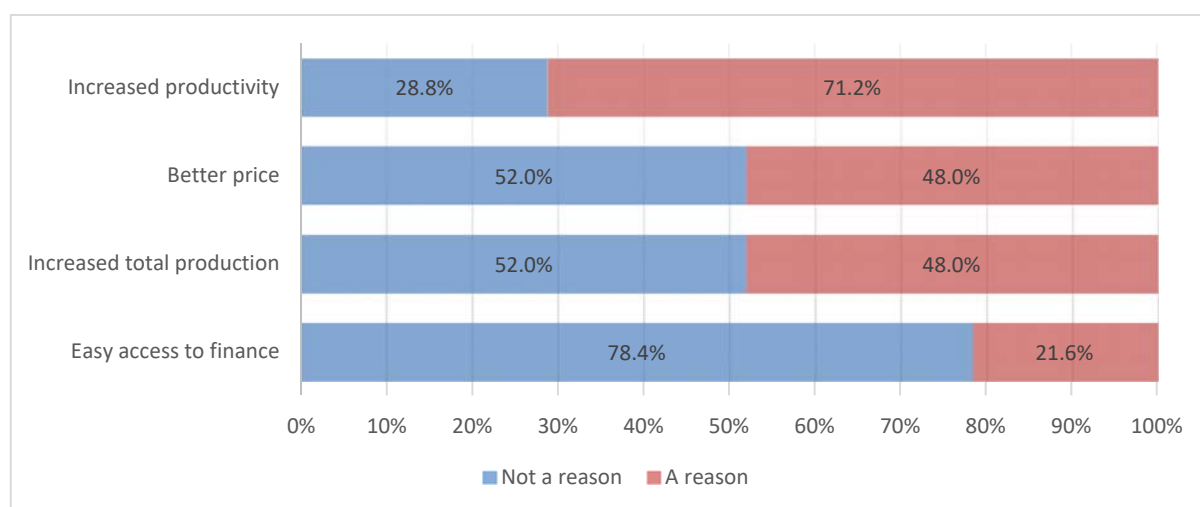
Fisher’s Exact Test: gender  $p \leq 0.01^*$ ; C:AVA participants  $p \leq 0.001^*$



There were significant differences between the districts in the proportion of respondents stating they experienced an improvement of income from selling fresh cassava ( $p \leq 0.0001^*$ ). There was also a significantly lower proportion of smallholders in Zomba reporting improvements in their income (15%), compared to Nkhotakota (43%) and Mulanje (41%), all sample groups combined. In terms of the influence of the C:AVA intervention, C:AVA participants in Mulanje showed the highest proportion reporting increased income 63% compared to 42% for Nkhotakota and 14% for Zomba (Fisher's Exact Test:  $p \leq 0.001^*$ ).<sup>44</sup>

### Improvement in fresh cassava income and cassava commercialisation

Among smallholders who experienced an increase in income, the highest proportion reported that the increase was due to improved productivity (71%) (relating to pathway 1), followed by increased total production (48%) (pathway 2), and a better price (46%) (Figure 46). There were no significant differences between sample groups.



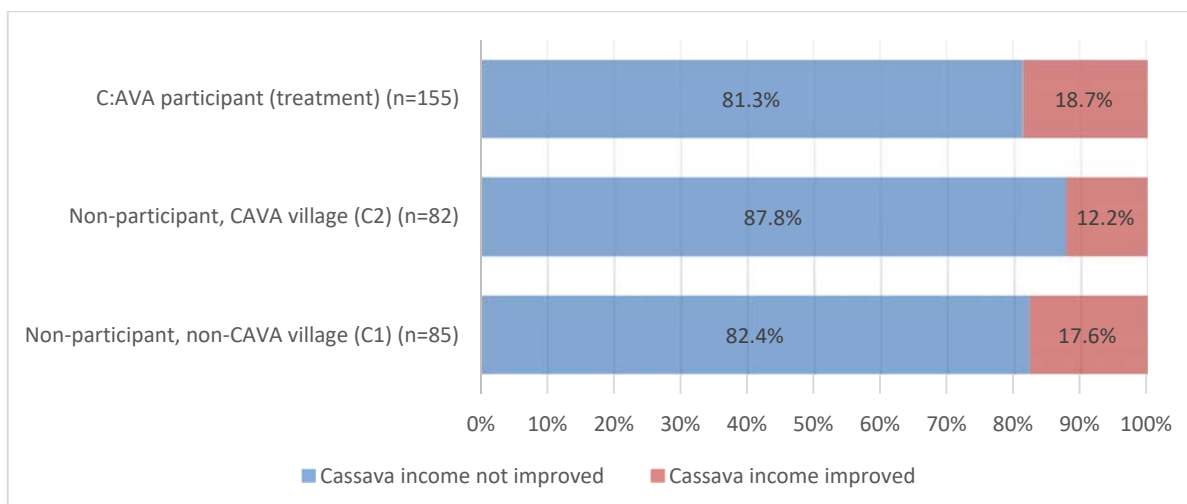
**Figure 46 Reasons for improvement in income from fresh cassava sales by sample group (2014), Malawi**  
(n=125, multiple response)

<sup>44</sup> Other significant findings by sample group were: non-participants in C:AVA communities showed smallholders from Zomba reporting 0% of increased income, compared to 33% in Nkhotakota and 28% in Mulanje ( $p \leq 0.05^*$ ). Non-participants showed different trends from other sample groups, Nkhotakota had the highest proportion of those reporting an increased income (55%) compared to Mulanje (33%) and Zomba 23% ( $p \leq 0.01^*$ ).

MHH were more likely than FHH to report an increase in total production as a reason for an increase in their income from fresh cassava, likely due to labour constraints among women (63% compared to 43.2%, respectively) (Fisher's Exact Test:  $p \leq 0.05^*$ ). There were some significant gender differences by sample group. Among non-participants in C:AVA communities, a higher proportion of FHH reported that cassava income provided due to improved yield (100%) compared to MHH (56%) (pathway 1) (Fisher's Exact Test:  $p \leq 0.05^*$ ). Similarly, among non-participants in C:AVA communities a higher proportion of FHH also reported increased volume of sales as a reason for their improved income compared to men (71% and 19%, respectively,  $p \leq 0.05^*$ ) and compared to non-participants (in non-C:AVA communities) (82% compared to 40%, respectively,  $p \leq 0.05^*$ ).

### **Change in cassava processing income**

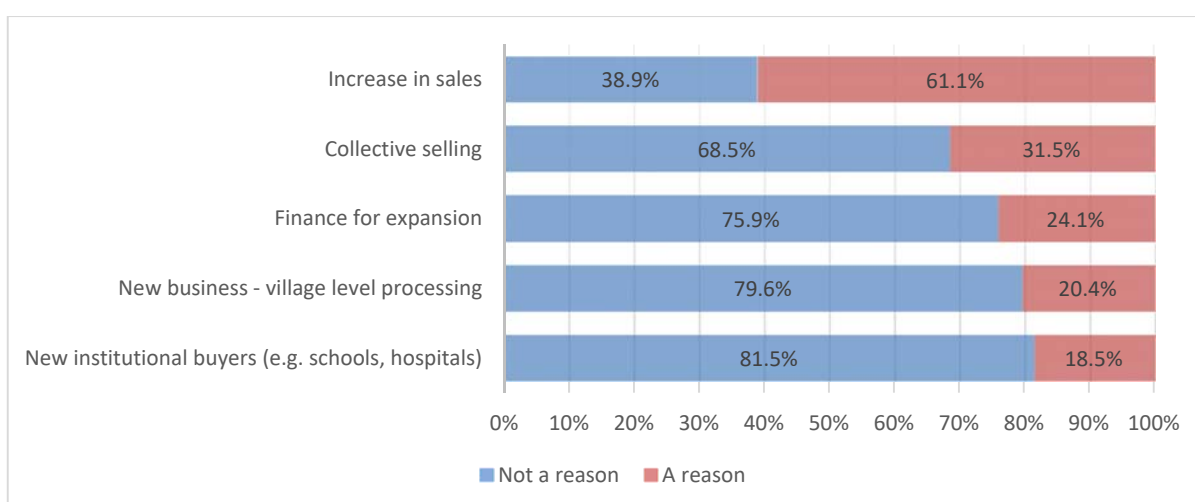
Smallholder perceptions of improvements in their income from cassava processing were poorer compared to income from fresh cassava, as was the case in Nigeria: only 18% reported improvements in their income from cassava processing. There were no statistically significant differences in the responses between sample groups (Chi-Square:  $p \leq 0.5^*$ ) (Figure 47). There were no significant differences for gender of the household head (Fisher's Exact Test:  $p \leq 0.5$ ). There were some significant differences between the districts. All sample groups combined, Mulanje had the highest proportion of processors reporting an improvement in income (29%) compared to Nkhotakota (14%) and Zomba (5%). By sample group, the most notable difference was the relatively high proportion (43%) of processors in Mulanje participating in C:AVA who reported increased income compared to the other districts, compared to non-participants in the same communities (23%) and non-participants (21%) ( $p \leq 0.05^*$ ) in Mulanje. This is related to the Tiyamike processing group in Mulanje, who have been successfully selling HQCF (pathway 5).



**Figure 47 Improvement in income from processed cassava from 2010 to 2014, by sample group (2014), Malawi**

#### Improvement in processed cassava income and cassava commercialisation

Among smallholders who experienced an improvement in income from processed cassava markets, the highest proportion felt that this was related to a general expansion in sales (61%) (pathway 5 and 6) (Figure 48). This reflects the growing demand in the country that is benefiting over half of the sample, including new products such as HQCF. However, collective selling, as reported by C:AVA was also reported by 32% of the sample.



**Figure 48 Reasons for improvement in cassava processing income, Malawi (n=45, multiple response)**

A higher proportion of C:AVA participants (35%) felt that membership and participation in CPGs was a reason for their improvement in cassava income, which was significantly different compared to non-participants (0%) (Fisher's Exact Test  $p \leq 0.01^*$ ) (pathway 7). The same trend was found between the two groups also in terms of access to finance (38% and 0%, respectively Fisher's Exact Test:  $p \leq 0.005^*$ )

### **7.3.3 Section summary**

The findings demonstrate a linkage between commercialisation and income, with a number of context-specific factors that influence income along the pathway. The 2014 survey in Nigeria found that three-quarters (78%) of smallholders perceived an increase in cassava income, relating to an increase in volumes of cassava sold. A smaller proportion of processors experienced an increase in income from cassava processing (56%), who are mainly women, compared to fresh cassava, related to increases in sales and the volume sold, with C:AVA participants more likely to report linkages with new buyers. These changes are related to the commercialisation pathways established in Chapter 6. However, there were gender differences among smallholders exposed to the C:AVA intervention that may point to unintended gender bias in outcome of the C:AVA intervention. In contrast, in Malawi, under half of smallholders reported improvements in their cassava income (44%), related to the constraints along the impact pathway, including on cassava yield and demand. Those who reported improved income stated that it was due to an increase in productivity, production and price. A higher proportion of MHH, reported increases in income compared to FHH. A low proportion of smallholders reported improvements in income from processed cassava markets (17%), with those experiencing improvements stating it was due to increases in the quantity of processing and sales, however, there are positive trends in Mulanje likely related to CPGs processing HQCF.

Overall, the results show different findings for income between the two countries, likely related to differences in commercialisation opportunities and actions in relation to the constraints encountered along the commercialisation pathway. The next section examines how cassava income has been used, and subsequently, what outcomes cassava commercialisation can link to.

## **7.4 Expenditures, household wellbeing and vulnerability (claim 2)**

This section presents the outcomes from cassava income based on the network analysis of panel interviews with men and women smallholders. It presents smallholder perceptions of the changes

brought about through increases in cassava income, including types of expenditures made, and therefore how they contribute to development outcomes. The section also presents the reasons why income from cassava is particularly important compared to other crops.

Cassava income is extremely important for smallholder households in Nigeria and Malawi, and its importance for income has grown in the last decade. Smallholders in the 2014 panel interviews who participated in commercial cassava activities, mainly in Nigeria, reported an improvement in cassava income, which in turn, brought positive changes to their livelihoods. While markets for other crops (e.g. vegetables, sweet potatoes) were also growing in importance, there were notably distinct benefits from cassava markets in terms of the frequency and reliability of cassava income over time.

The expenditures from cassava income, including the purchase of household food, particularly proteins and relish, and school fees. These expenditures coincide with livelihood goals as described in Section 5.3.1. Because cassava is typically harvested on a piecemeal basis, particularly by women, selling cassava can provide regular income over time and ensure a continuous food supply. It was viewed as an important source of income that enabled smallholders to pay expenses while waiting for income from other crops, such as maize, to occur (and ultimately bring them more money than cassava). Therefore, income from cassava specifically has a strong link with food supply that is different to other crops. While both men and women make expenditures for food and education, women in the panel interviews in both countries felt that they had more responsibilities for these purchases, particularly because they were relatively small and incremental as opposed to larger investments.

Men and women also reported, but to a lesser extent, the purchase of small assets with cassava income. The purchase of assets was particularly important to contributing to household resilience and a decrease in vulnerability. The panel interviews in Nigeria found that a portion of those with improved income, both men and women, were able to purchase assets (six men and four women, out of 30). However, the type of assets purchased differed by gender: for men this included acquiring large assets such as grating machines, land, motorcycles and construction materials for housing, most likely related to selling cassava in bulk, and for women, purchases included land rental and a mobile phone. One interviewee gave the money to her husband to buy land, which may be due to an agreed division of labour between husband and wife, or more symptomatic of unequal gender relations. In Malawi,

13 respondents (including one man) used their cassava income for purchases of a house or house improvement (i.e. iron roofing), a bicycle, a stove cooker, plates and pots, a goat, a radio and a mobile phone. Less frequently were reports of larger asset purchases such as land or vehicles by farmers who sold cassava in bulk and therefore to certain value chains such as large-scale processing factories (who were mainly the larger farmers). As women receive smaller amounts of money over longer periods of time (due to the nature of processing small harvests, or just in their interests), it is difficult for women to save and invest in assets or business expansion. In Malawi, where women are also involved in fresh cassava sales in southern districts, bulk sales have not reached the scale they have in Nigeria, and therefore still provide small, incremental income.

Therefore for the majority of smallholders, the increase in income from cassava commercialisation was not considered to be fundamentally transformative. It was not found, in either country, that from cassava income, smallholders were able to make large asset purchases (e.g. vehicles), or make substantial investments in agricultural and non-agricultural enterprises (although the income was some help in starting new businesses, such as tailoring). In both countries, the frequency of cassava income was considered more important than the amount of income, and this is how cassava was valued differently than other crops. The relatively smaller amount of income from cassava over a large period of time, made it difficult for the interviewees to separate cassava income from the broader household income pool and their expenditures using this income. Therefore cassava income is likely to contribute more to household or individual resilience, and development outcome pathways, but not be a single cause of poverty reduction.

An important point is that the income from cassava is part of a multifaceted household economic system where many different economic considerations and activities are undertaken. As shown in Chapter 6, in some strategies, increasing cassava activities can result in the decrease in other activities, which in theory, could potentially have a negative effect on household income if the market for cassava turns out to be less profitable than that of the alternative crop. It could also affect food security, and women's income and expenditures, if cassava sold in bulk. Another risk is that cassava needs to be processed within 48 hours of harvesting, so it requires agreement with a buyer prior to being harvested. There were examples in southern Malawi of a large processing factory telling smallholders to harvest, and then failing to come back to purchase the cassava. This led to the harvested cassava

rotting and being lost. In contrast, other crops like maize can be harvested and stored over months and sold as and when needed.

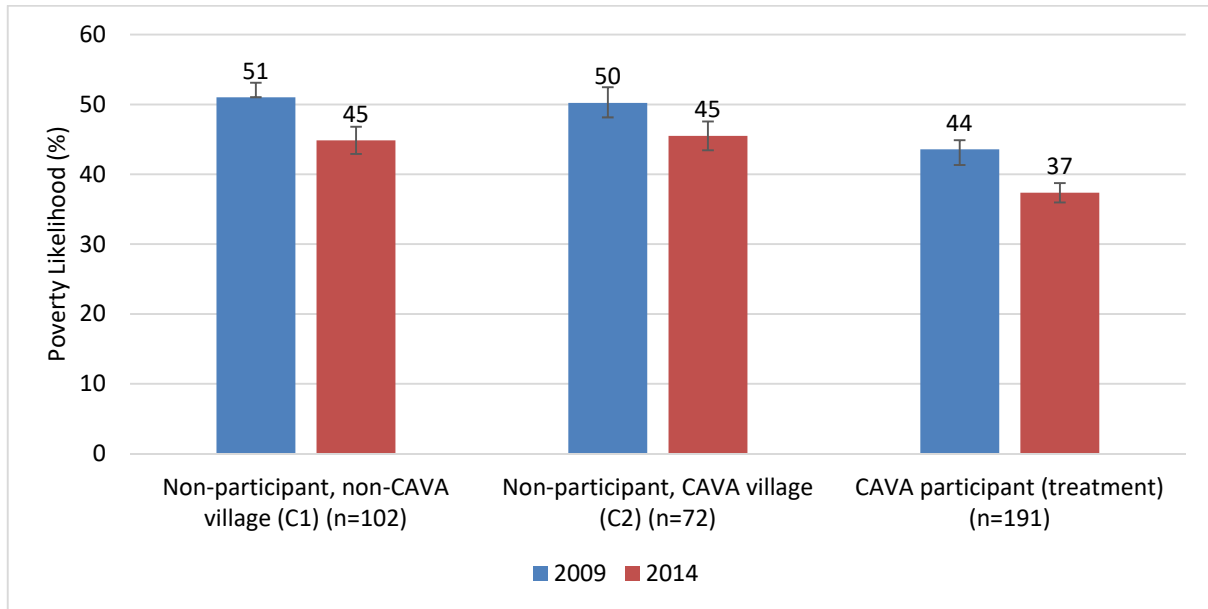
### 7.5 Poverty reduction and cassava commercialisation (claim 3)

This section examines the relationship between a change in cassava income and poverty reduction (claim 3). Due to the design of the baseline and endline surveys, it is not possible to examine a change in commercialisation related to change in poverty status (Section 3.5.5). However, given that all three sample groups in Nigeria showed evidence of commercialisation, and none in Malawi, it is expected that poverty would reduce in Nigeria and be unchanged in Malawi. However, as the previous section questioned the transformative poverty-reducing role of cassava income, the relationship between poverty reduction and cassava commercialisation may be tenuous. This section presents the results from quantitative analysis of a perceived change in cassava income and change in the PPI from 2014 and five years prior (based on retrospection). The PPI measures the likelihood of poverty at household level based on the Living Standards Surveys (LSS) for each country, and then provides a percentage of likelihood that the household or population is living in poverty. The analysis is at the household level, and therefore gender of the household head used instead of the gender variable.

#### **Nigeria**

The PPI in Nigeria shows a significant decline in poverty likelihood between 2009 and 2014 for the survey population overall, from 47% to 41% (ANOVA  $p < 0.0001^*$ ). The C:AVA intervention had an impact on poverty within its communities, as C:AVA participants have a significant decline in poverty likelihood (-7pp,  $p \leq 0.001^*$ ), but not non-participants in C:AVA communities (-5pp,  $p \leq 0.1$ ) (Figure 49). However, other communities sampled also experienced a significant decrease in poverty likelihood (-6pp,  $p \leq 0.05^*$ ), indicating that the decrease in poverty likelihood in C:AVA communities may not be related to the intervention. The reduction is larger among C:AVA participants compared to non-participants in other communities, however, C:AVA participants started from a lower poverty

likelihood in 2009 compared to the two other sample groups, which indicates that this group may have a higher level of resources to have contributed to poverty reduction, not the intervention itself.<sup>45</sup>



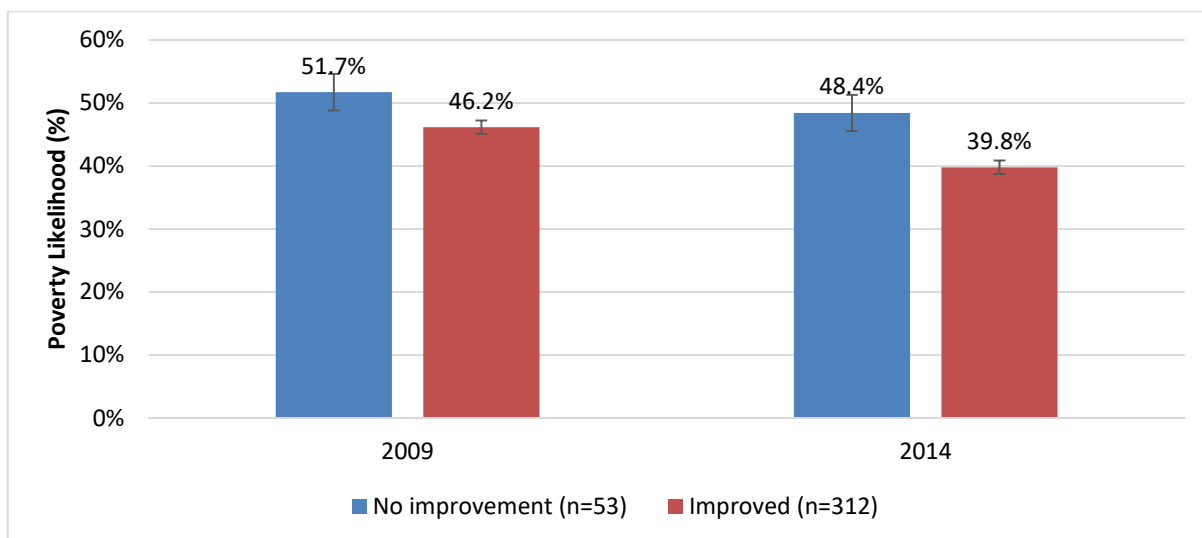
**Figure 49 Poverty likelihood in 2009 and 2014 by sample group, Nigeria**

The reduction in poverty occurred among the population with the highest level of poverty likelihood (46%), which is a positive finding. However, those who did not experience a change in poverty level also had a high level of poverty (41%). Those who had the lowest poverty score (13%) were more likely to have an increase in poverty likelihood.

Examining poverty likelihood and a change in cassava (fresh + processed) income, shows that smallholders who reported an improvement in cassava income in the past five years in 2014 had a significantly lower poverty likelihood compared to those who did not (40% to 48%). In 2009, there was no significant difference in poverty likelihood between those who experienced an increase in cassava income and those who did not (ANOVA:  $p \leq 0.1$ ), but was a significant difference in 2014 ( $p \leq 0.005^*$ ), indicating a relationship, albeit weak one, between an increase in cassava income and poverty reduction (Figure 50).

<sup>45</sup> There are no significant differences between C1 and C2 (ANOVA) 2014:  $p \leq 0.1$ , 2009:  $p \leq 0.5$ . There are significant differences between T and C1 (ANOVA) 2014:  $p \leq 0.005^*$ , 2009:  $p \leq 0.01$ . There are significant differences between T and C2 (ANOVA) 2014:  $p \leq 0.005^*$ , 2009:  $p \leq 0.005^*$ .





**Figure 50 Poverty likelihood by change in cassava income from 2009 to 2014, Nigeria**  
ANOVA: 2009  $p \leq 0.05^*$  and 2014  $p \leq 0.005^*$

Further examining the relationship between commercialisation and poverty, there was no significant relationship found between the quantity of cassava sold and poverty likelihood in 2014 ( $n=366$ ;  $r=-0.0004$ ;  $p=1$ , the result is not significant at  $p \leq 0.06$ ) (Appendix O). Panel interviews support this finding, as there was no pattern between perceived wealth of smallholders and their engagement in cassava markets. For example, a man with formal employment and a steady income unrelated to agriculture is often perceived as being wealthy, but he may not sell regularly as he has other means of income. This would indicate low commercialisation, but not reflect wealth status.

Interestingly there were no significant differences in poverty likelihood or change in poverty likelihood by gender of the household head or ethnicity. The only exception was a relationship involving ethnicity, between a change in poverty likelihood and for those who experienced an improvement in cassava income (Chi-square  $p \leq 0.0001^*$ ).<sup>46</sup> Table 26 shows that a larger proportion of ethnic minorities experienced an increase in poverty compared to Yoruba, despite the improvement in cassava income. This shows a more obvious point that there are factors beyond cassava markets that impact on poverty.

<sup>46</sup> Gender HH: no improvement  $p \leq 1$ , improvement  $p \leq 0.5$ ; ethnicity: no improvement  $p \leq 0.5$ , improvement  $p \leq 0.0001^*$ , treatment no improvement  $p \leq 1$ , improvement  $p \leq 0.1$

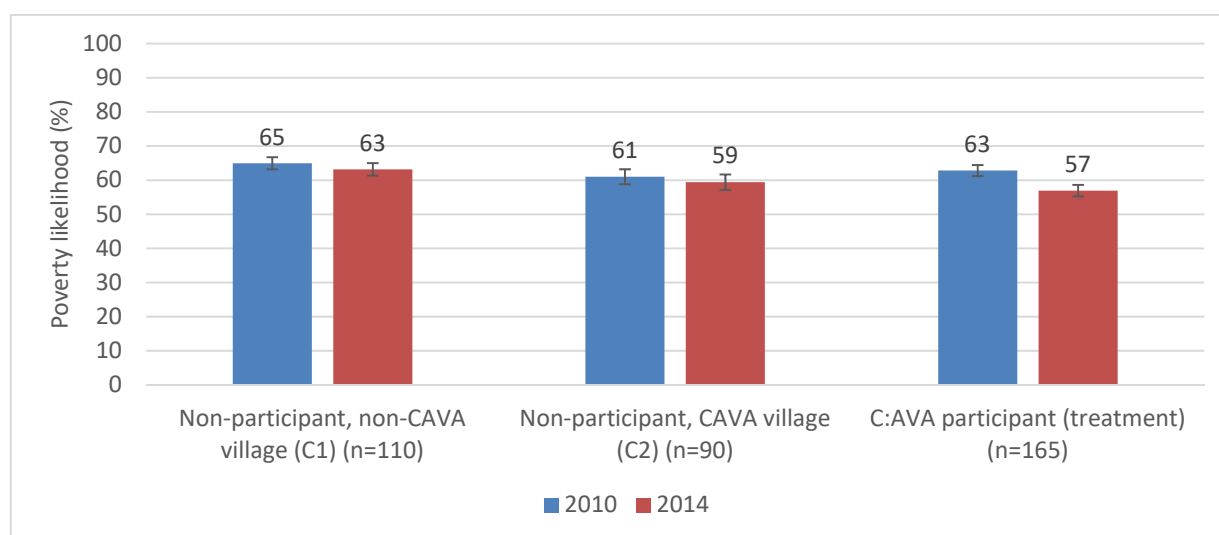
**Table 26 Change in poverty status from 2009 to 2014 among those who had an improvement in income by ethnicity, Nigeria**

	Stayed the same	Increased	Decreased
<i>Ethnic minority (n=81)</i>	21.0%	23.5%	55.6%
<i>Ethnic majority (Yoruba) (n=231)</i>	45.0%	9.5%	45.5%

Chi-Square:  $p \leq 0.0001^*$

### Malawi

In Malawi, there was limited evidence of increasing cassava commercialisation in the country. However, there was a slight, but significant, decline in poverty likelihood, and there are some indications that improvement in cassava income played a role in this process. The poverty likelihood fell from 63% to 59% (ANOVA  $p \leq 0.05^*$ ). Interestingly, the decline in poverty was significant only among C:AVA participants (-6pp,  $p \leq 0.01^*$ ). As there were no significant differences between sample groups in 2010, it is likely that C:AVA participants were more likely to experience a decrease in poverty (Figure 51)<sup>47</sup>.

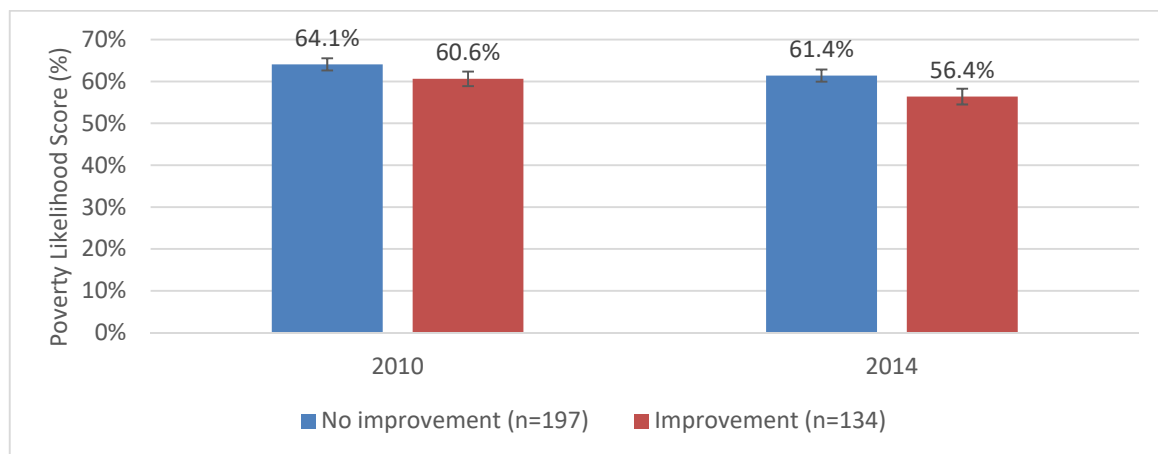


**Figure 51 Poverty likelihood in 2010 and 2014, by sample group, Malawi**

<sup>47</sup> LSS 2010  $p \leq 0.5$ , 2014  $p \leq 0.1$

Comparing the situation of households in 2010 and 2014, FFHs experienced a statistically significant decline in poverty, ( $p \leq 0.05^*$ ) but not MHHs. There were no significant differences in poverty likelihood between FHH and MHH in 2010 or in 2014. In addition, there were no significant differences in the change in poverty likelihood between 2010 and 2014 for any of the districts.<sup>48</sup>

Similar to Nigeria, smallholders who experienced an increase in cassava income had a significantly lower poverty likelihood in 2014 than those who did not (56% compared to 61%, respectively ANOVA  $p \leq 0.005^*$ ). In 2010 there was no significant difference in poverty levels between those who had an improvement in income and those who did not, although only slightly non-significant (ANOVA  $p \leq 0.05^*$ ) (Figure 52).



**Figure 52 Poverty likelihood score by change in cassava income from 2010 to 2014, Malawi**

ANOVA: 2010  $p \leq 0.05^*$  and 2014  $p \leq 0.005^*$

Further examining the relationship between commercialisation and poverty, there was no significant relationship found between the quantity of cassava sold and poverty likelihood in 2014 in Malawi ( $n=365$ ;  $r=-0.02595$ ;  $p \leq 1$ , the result is not significant at  $p \leq 0.06$ ), similar to Nigeria (Appendix O). There were no significant differences by gender of the household head or district. This again supports

<sup>48</sup> However, there were significant differences between districts in both years: Zomba  $p \leq 0.1$ , Mulanje  $p \leq 0.1$ , Nkhosokota:  $p \leq 1$ . There were significant differences between districts in 2010 and 2014. ( $p \leq 0.05^*$  and  $p \leq 0.0001^*$ ).

findings from the panel interviews in Malawi that wealth or poverty status cannot be derived simply from cassava market participation.

This section demonstrated that poverty has significantly decreased in both countries, but more so in Nigeria. Both countries also show that there were significant differences in poverty likelihood and a change in cassava income: smallholders who perceived an improvement in cassava income were more likely to have a lower poverty likelihood score in 2014. This finding shows that there is an association of poverty reduction and increased cassava commercialisation.

### **7.6 Women's decision-making and control over cassava income (claim 4)**

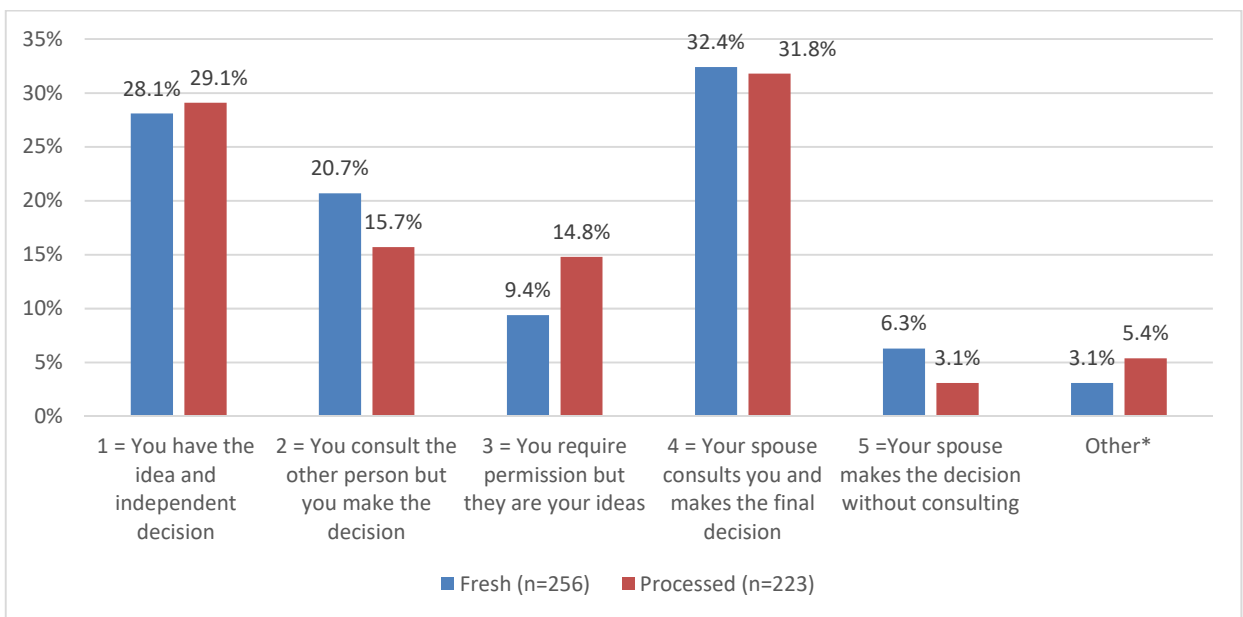
Development narratives on cassava commercialisation link women's high participation in cassava markets with development benefits, namely as women would have control over income from cassava and are more likely to spend on food, education and healthcare (claim 4). However, this pathway assumes that women have independence in decision-making on selling cassava and income from cassava, in addition to being able to capture additional market opportunities. Household decision-making plays a significant role in these dynamics, and are highly influenced by socio-cultural norms and gender relations (Section 2.4.1). These assumptions are discussed in three sub-sections below in relation to the study findings.

The first two sub-sections examine 2014 survey data on the level of women's independence in decision-making on selling cassava and income using the decision-making scale presented in Section 5.10. The section also examines changes in women's control over income and is disaggregated by income from fresh or processed cassava. The final sub-section examines how changes in cassava commercialisation influence gender norms, including roles and responsibilities, labour patterns and women's agency, and the fourth sub-section discusses changes in gender relations and women's ability to take advantage of new market opportunities.

#### **7.6.1 Women's independence in decision-making regarding cassava marketing**

Cassava marketing decisions, including when, how much and to whom, to sell, influence the amount of and control over income from cassava commercialisation. In Nigeria, the largest proportions of women in the sample reported that their level of independence on decisions regarding fresh and processed cassava marketing are 1 = 'you have the idea and independent decision' (28% and 29% in

fresh and processed) and 4 = ‘your spouse consults you and makes the final decisions’ (32% and 29%), therefore establishing two very different sets of norms (Figure 53). Interestingly, despite women’s high involvement in processing and their reports of having significant control over profits from these activities, there were only slight differences in their level of independence in decision-making between fresh and processed markets. There were no significant differences between sample groups or ethnicity/district.



**Figure 53 Level of women’s independence in decision-making with selling fresh cassava and processed cassava 2014, Nigeria**

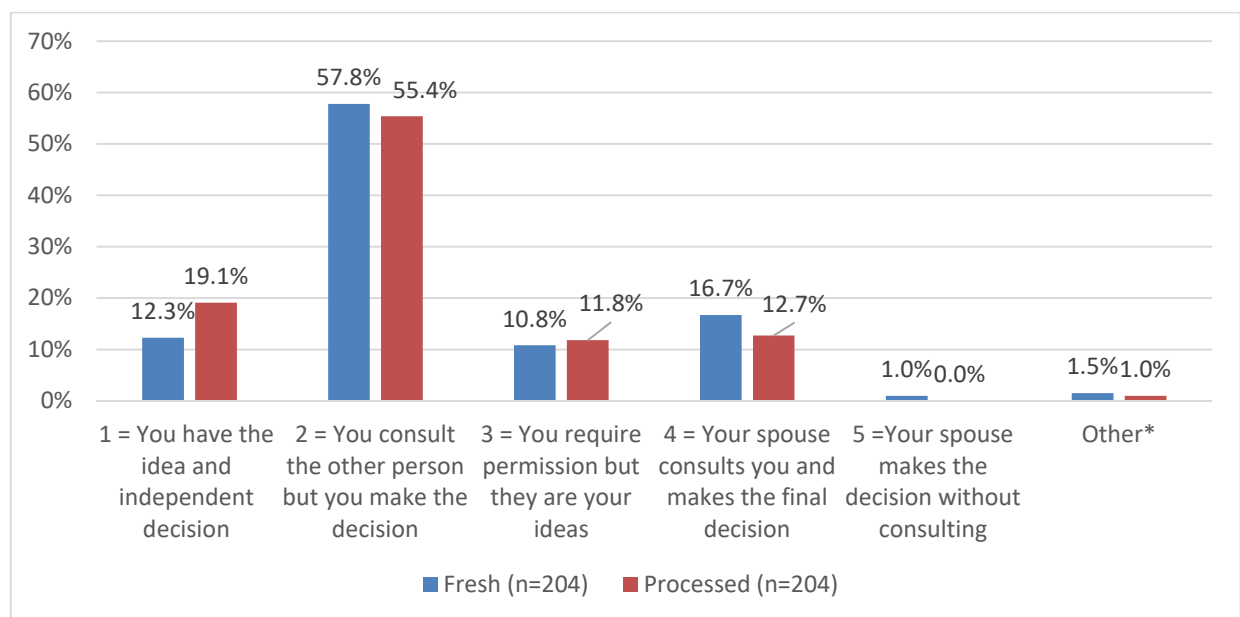
Chi-Square: Fresh: sample group  $p \leq 0.1$ , ethnicity  $p \leq 0.5$ . Processed markets: sample group:  $p \leq 0.1$ , ethnicity  $p \leq 0.1$ .

\*Only process what the husband produces” (2) and ‘both make decision’ (4)

Panel interviews show that decision-making norms are more polarised when related to ethnicity. Yoruba women often described their complete independence in decision-making for their farm plots. In contrast, ethnic minority households, typically migrants, were more likely to undertake joint decision-making, with the male head of household as the leader on shared farms. Younger, newly married women were also found to have less independence in decision-making regardless of ethnicity. However, neither age nor ethnicity were statistically significant. Although not significant Chi-square:

$p \leq 0.1$ ), ethnic minority households had a higher proportion of reports of 4= ‘your spouse consults you but makes the final decision’ (38%) compared to Yoruba households (30%).<sup>49</sup>

In contrast, in Malawi most smallholders who sold fresh and processed cassava reported 2, ‘You consult the other person but you make the decision’ (58% and 55%, respectively) (Figure 54). Therefore, in Malawi, most women had authority in decision-making but consulted with their partner about the marketing of both cassava products. This is likely related to the matrilineal system in Mulanje and Zomba districts, and mixed patrilineal/matrilineal system in Nkhotakota.



**Figure 54 Level of women’s independence in decision-making with selling fresh cassava and processed cassava 2014, Malawi**

Chi-Square: Fresh markets: sample group  $p \leq 0.7$ , district  $p \leq 0.5$ . Processed:  $p \leq 0.7$ ; district:  $p \leq 0.2$ .

There are also indications that women’s independence in decision-making is changing in Nigeria (Table 27). Over half of women reported that their involvement in decisions about selling fresh and

<sup>49</sup> Another reason is that women were feeling more or less intimidated by either research method (e.g. unable to tell an (mostly likely male) enumerator that they are independent in their decisions for fear of disrespecting their husband, or keen to tell a (female) interviewer that they have greater independence than they do. Alternatively, the larger sample size could identify more differences

processed cassava had increased over the past four years (52% and 59%).<sup>50</sup> In Malawi, two-thirds (76% for both fresh and processed markets) stated that their involvement in decisions had not changed in the last five years.<sup>51</sup> However, noticeably in Malawi there was also limited commercialisation taking place, or changes in income.

**Table 27 Change in level of women’s independence in decision-making on selling fresh and processed cassava from 2009/10 to 2014**

		Increased	Decreased	Stayed the same
<b>Nigeria</b> %	Fresh (n=256)	52.2%	4.4%	43.4%
	Processed (n=220)	59.1%	4.1%	36.8%
<b>Malawi</b> %	Fresh (n=204)	13.2%	10.8%	76.0%
	Processed (n=204)	11.3%	13.2%	75.5%

Chi-Square: Nigeria: Fresh: sample group  $p \leq 0.5$ , ethnicity  $p \leq 0.6$ ; Malawi: sample group  $p \leq 0.8$ , district:  $p \leq 0.1$ . Processed: Chi-square: Nigeria: sample group  $p \leq 0.7$ , ethnicity  $p \leq 0.5$ ; Malawi sample group  $p \leq 0.5$ , district  $p \leq 0.5$

**For Nigeria, there is a significant relationship between a change in the level of independence in decision-making and improvement in income from processed cassava markets (Chi-Square:  $p \leq 0.0001^*$ ) (Table 28**

Table 28).<sup>52</sup> A notable difference is the proportion of processors with increased income, who reported that their decision-making had increased (70%) compared to those whose income did not change (40%). This may indicate a trend of increasing independence with increasing income from cassava processing markets in Nigeria.

<sup>50</sup> There were no significant differences between sample groups (Chi-Square:  $p=0.1$ ), Yoruba and ethnic minority in decisions ( $p=0.1$ ) or change in decision-making ( $p=0.5$ ).

<sup>51</sup> There are no significant differences between sample groups or ethnicity/district.

<sup>52</sup> There are no significant relationship between a change in the level of independence in decision-making and change in income from *fresh* cassava markets in the past five years for Nigeria or Malawi ( $p \leq 0.1$ ,  $p \leq 1$ ), or for processed markets in Malawi (Chi-square  $p \leq 0.5$ ).

**Table 28 Change in women’s independence in decision-making and change in income from selling processed cassava from 2009/10 to 2014, Nigeria**

	<b>Increased</b>	<b>Decreased</b>	<b>Stayed the same</b>
Income has not changed (n=126)	40.3%	7.5%	52.2%
Improved Income (n=154)	69.9%	2.9%	27.2%

Chi-square:  $p \leq 0.0001^*$

Despite the few statistically significant differences by gender and ethnicity, panel interviews and FGDs found them to play important roles. Yoruba women were known for having significant independence from their husbands in their cassava production and processing decisions, along with their income, which was supported through the division of plot responsibility.<sup>53</sup> This had increased over the years as women gained their independent sources of income. However, as some households did not practice consultation, women experienced uncertainty on their husband’s decisions and therefore what benefits there would be for the household. Therefore, despite a high level of independence in decision-making, women’s agency is constrained by the need to anticipate what their husbands will do with their cassava, sell or to reserve it for household consumption. This may become more of a challenge if households cannot coordinate their cassava budgeting.

### **7.6.2 Women’s control over income from cassava sales**

This section examines the link between income from cassava and women’s control over it. As shown in Section 5.10, initial interviews showed the income streams and decisions on expenditures were separate between men and women in Nigeria. Consultation with the spouse varied according to how income was to be used. In Malawi, women were also found to have control over income from cassava, but there was greater consultation, and in some cases, husband and wife pooled their income into a common fund, with relatively equal access for both partners. This section examines survey data and the second round of panel interviews to confirm the initial findings and identify changes in the control over cassava income as a result of commercialisation. Similar to the previous section, a four-point scale was used to encourage respondents to reflect on their answer rather than automatically indicate

---

<sup>53</sup> However, women often sought their husbands’ input when using new varieties or herbicides and hiring labourers, and in making major purchases.



complete joint decision-making, which in-depth panel discussions reveal seldom occurs in reality but is often reported.

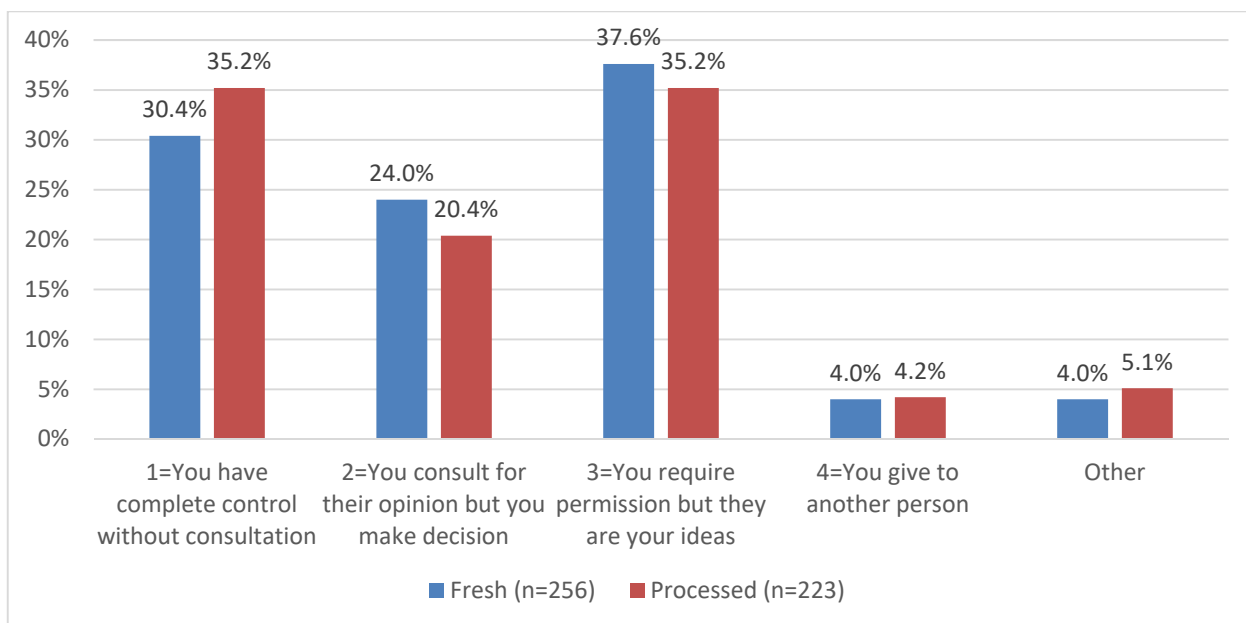
### **Women's control over income from fresh and processed cassava marketing**

In terms of women's control over income from cassava marketing in Nigeria, there was a high proportion of women reporting 1= 'You have complete control without consultation' for fresh and processed markets, (30% and 35%), and 3= 'You require permission but they are your ideas' (38% and 35%), followed by 2 = 'You consult for their opinion but you make the final decision' (24% and 20%) (Figure 55).<sup>54</sup> This reaffirms that there are different gender norms in Nigeria. However, these findings need to be put in the context of separate the farm management system in Nigeria among the Yoruba. Interviewees emphasised that control over income was dependent on whose plot the cassava originated from, or who purchased the cassava to be processed. As men normally sell fresh cassava, it was more likely that it was their income to decide on expenditures.

There are significant differences between sample groups in control over income from processing ( $p \leq 0.005^*$ ): a higher proportion of C:AVA participants reported that they had complete independence on their cassava processing income (43%) and non-participants the least likely (24%). But non-participants in C:AVA communities were the most likely to require permission on the use of their income made from processing. This could indicate more restrictions on women who are not members of a cassava processing group, which is perhaps reason that they are not group members. FGDs with non-participants support this hypothesis as many non-members were younger, newly married women, who are not often encouraged by their husbands to join groups (Section 6.4.6).

---

<sup>54</sup> There were no significant differences by sample group or ethnicity for fresh cassava ( $p=0.1$ ,  $p=0.5$ ).



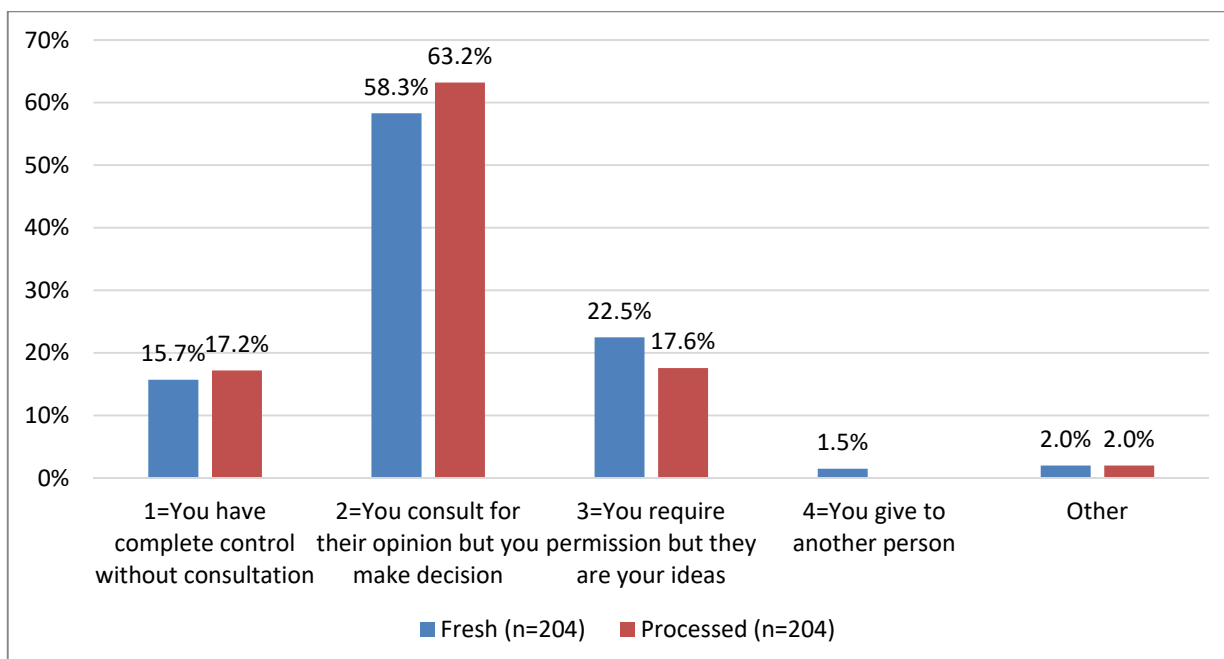
**Figure 55 Women’s level of control over income from fresh cassava and processed cassava from 2009 to 2014, Nigeria**

Chi-Square: Fresh: sample group  $p \leq 0.1$ , ethnicity  $p \leq 0.5$ ; Processed:  $p \leq 0.01^*$ ;  $p \leq 0.5$ .

Malawi also had similar patterns as Nigeria (Figure 56). The largest proportion of women reported 2= ‘You consult for their opinion but you make the decision’ (58%). There were no significant differences between sample groups or by district ( $p \leq 0.5$ , for both). Patterns are the same for income from cassava processing. The majority of women consulted their partner, but made the final decision on how to use income from cassava production (63%). This was followed by ‘You require permission but they are your ideas’ (18%), and having complete control (17%).<sup>55</sup>

*“I show the income to my husband and we decide how to use it”* (female producer and processor, Mulanje district, Malawi).

<sup>55</sup> There were no significant differences between sample group or by district ( $p \leq 0.1$ ,  $p \leq 0.1$ ).



**Figure 56 Women’s level of control over income from fresh cassava and processed cassava from 2010 to 2014, Malawi**

Chi-Square: Fresh:  $p \leq 0.5$ , district:  $p \leq 0.5$ ; Processed:  $p \leq 0.1$  district  $p \leq 0.1$ .

Table 29 shows the proportion of women who experienced changes in the level of control over income from fresh and processed cassava in Nigeria and in Malawi. In Nigeria, over half of women reported that their level of control over their income from fresh and processed cassava had increased (53% and 57%, respectively). In contrast, over two-thirds of women in Malawi reported that there had not been a change in their level of control over fresh and processed cassava income (79% and 83%, respectively).<sup>56</sup> However, it is notable that the level of control for Malawi is already quite high for the majority of smallholders sampled.

<sup>56</sup> In Nigeria, were no significant differences by sample group or ethnicity ( $p \leq 1$ ,  $p \leq 0.5$ ) or by sample group or district in Malawi ( $p \leq 0.1$ ,  $p \leq 1$ ).

**Table 29 Change in women’s level of control over income from fresh and processed cassava from 2009/10 to 2014**

		Increased	Decreased	Stayed the same
<b>Nigeria (%)</b>	Fresh (n=251)	53.4%	3.2%	43.4%
	Processed (n=251)	56.9%	1.9%	41.2%
<b>Malawi (%)</b>	Fresh (n=204)	13.7%	6.9%	79.4%
	Processed (n=204)	10.8%	5.9%	83.3%

Fresh: Chi-Square: Nigeria:  $p \leq 1$ , ethnicity  $p \leq 0.5$ ; Malawi  $p \leq 0.5$ , district  $p \leq 1$ ; processed: Nigeria:  $p \leq 0.5$ , ethnicity  $p \leq 0.5$ ; Malawi  $p \leq 0.5$ , district  $p \leq 1$

In Nigeria, there is a significant relationship between a change in the level of women’s control over income and the change in income from fresh and processed cassava markets (Chi-Square:  $p \leq 0.0001^*$  for both).<sup>57</sup> Table 30 shows that a higher proportion of women whose fresh cassava income had improved also reported increased control over the income (60%) compared to those whose income had not improved (36%). There were similar significant patterns for processing. This may indicate a trend of increasing independence with increasing income in cassava processing markets in Nigeria. In Malawi, the relationship with fresh cassava was not significant but it was for processing: a larger proportion of processors reported improved income who stated that their control over income had increased compared to no improvement (29% and 8%) ( $p \leq 0.01^*$ ).

---

<sup>57</sup> There was no significant relationship between a change in the level of independence in decision-making and change in income from fresh cassava markets in the past five years for Nigeria or Malawi ( $p \leq 0.1$ ,  $p \leq 0.9$ ), or for processed markets in Malawi ( $p \leq 0.5$ ).

**Table 30 Change in income from fresh and processed cassava and change in women’s level of control over income from 2009/10 to 2014**

			Increased	Decreased	Stayed the same
<b>Nigeria</b>	Fresh	Income has not changed (n=64)	35.6%	13.3%	51.1%
		Improved Income (n=215)	59.9%	1.1%	39.0%
	Processed	Income has not changed (n=64)	35.4%	6.2%	58.5%
		Improved Income (n=215)	68.7%	0.0%	31.3%
<b>Malawi</b>	Fresh	Income has not changed (n=130)	13.1%	4.6%	82.3%
		Improved Income (n=72)	13.9%	9.7%	76.4%
	Processed	Income has not changed (n= 132)	8.0%	5.3%	86.7%
		Improved Income (n=72)	28.6%	3.6%	67.9%

Fresh: Chi-square: Nigeria:  $p \leq 0.0001^*$ ; Malawi  $p \leq 0.5$ ; processed: Nigeria:  $p \leq 0.0001^*$ ; Malawi:  $p \leq 0.01^*$ )

The findings show that the majority of women surveyed have some level of control over the income made from cassava markets, which is slightly higher with processed markets. Qualitative evidence suggests that Yoruba women and women in the matrilineal region of Malawi have greater control over their income, related to farm management practices that enable women to have considerable authority over farm decisions. Importantly, there are also indications that women’s control over income from cassava is increasing, which is a positive trend in the context of growth in cassava markets. However, women’s control over cassava income may be related to the income being small and incremental. If indeed, prices were to increase, it is doubtful whether they would still maintain authority given prevailing gender norms in both contexts. This is illustrated by a quote from Malawi below.

*“I make decisions on kondowole and so I can use the income from this. But my husband makes the big decisions about farming, the household and the big money”* (female processor, Nkhotakota district, Malawi).

### 7.6.3 Change in gender relations: gender norms, roles, and agency

Having already established that women can benefit from improved cassava income, the analysis continues to examine changes in gender relations between men and women with cassava commercialisation. The literature review (Chapter 2) and the initial fieldwork (Chapter 5) found that there were risks cassava market opportunities increasing women's work burden due to the gender diversion of labour, and that women may be excluded from opportunities. These issues will be explored in this section.

#### **Roles and responsibilities**

As discussed in 5.8 and 6.6.2, women in both countries have responsibility for daily food management and provision in their households, in addition to having responsibility over food production for their households. This establishes that responsibility of women for food security that is not shared by men. The inequality and extra burden of women limits their agency in having free choice on the use of income, as their choice is constrained by food security obligations that are not equal to men. Additionally, in Nigeria, women also need to anticipate if and how men will portion their cassava for sale or home consumption. This raises questions about women's real agency when there are inequalities in roles and responsibilities.

In both countries, women described a decline in male responsibility for the household that was worsening over time. There were complaints that men were becoming less dedicated, and contributing less, to their families compared to men of previous generations. In Nigeria, women were increasingly responsible for household expenditures such as food and school fees. In southern Malawi, men were reported to be increasingly leaving their partners. As men were not owners of land, they were not responsible for it, and therefore obligations to wives were easily broken. It is not clear whether the changes in men's roles were a cause or an effect of women's activity and income from commercial activities; it is likely a mix of both.

*“A different type of man will pay for the school fees, not every man. More women take this cassava here and pay for school fees”* (female processor, Ogun state, Nigeria).

## **Labour**

Overall, there were few reports of a shift in men and women's roles in cassava-related tasks that would coincide with commercialisation. In Nigeria, there were very few examples of Yoruba men breaking labour taboos to meet increasing market demand as hiring labourers was common practice. Labour availability and affordability make this possible. There was one observation of a young Yoruba man frying gari, however, because his wife was pregnant and could not be exposed to the smoke. However, men in ethnic minority communities would often perform 'women's' tasks, such as frying gari, as cassava activities required total family labour to sell the quantities they wanted to sell and keep costs low. In Malawi, there were some cases in Zomba district (matrilineal) where men would assist their wives in processing activities to meet market demand, as demonstrated in the quote below. However, in either country, there was not widespread indication of changing gender norms with regard to labour.

*“For peeling cassava, I will join my wife in doing this. I didn't do this four years ago but then I saw that when I left things to my wife it would take a long time. I also help transport the cassava from the field to the house”* (male producer and processor, Zomba district, Malawi).

*“I do the peeling but my husband will do the makaka and kondowole. Before he wouldn't do this. It's because it is getting a better market and I need the help”* (female processor, Zomba district, Malawi).

## **Women's agency in new value chain opportunities**

Section 6.6.2 demonstrated that women experience a number of gender-based constraints to increasing their commercialisation, including the social conditionality of resources, time constraints, along with greater likelihood of living in poverty and lower asset ownership. While the panel interviews were not conclusive on if women were able to take advantage of new market opportunities, the constraints place women in a less advantageous position compared to men.

However, a significant area of growth in cassava markets has been in fresh cassava value chains to supply SMEs and large-scale factories in industrial manufacturing, which have been shown to be exclusive to women, which is primarily related to the requirement of large quantities of cassava required. In Mulanje and Zomba, where women had more control over fresh cassava sales compared to other contracts, interviews with women indicated that the increasing demand from a large-scale

factory had peaked men's interest and involvement in cassava activities. Therefore, increasing demand and benefits in this value chain in particular, is likely to benefit men. This has consequences for food security but may also impact on the price and availability of cassava for local processing, which is an important source of income for women. Women's access to affordable raw material is not guaranteed and can change, it largely depends on bargaining over the use of roots for food/sale at planting /harvest times.

In local processed cassava markets there were some indications of increasing male involvement in both countries, particularly when selling prices were favourable and demand was high, compared to women who remained consistently processing. However, their roles typically involved "management" of activities, without necessarily undertaking the labour, and thus working within traditional gender roles.

#### **7.6.4 Section summary**

The section demonstrated different gender norms in decision-making. While there are differences between the two countries, there are indications that increasing income from cassava corresponds with increases in women's independence in decision-making and control over income, particularly in processed cassava markets, two key indicators of women's increasing agency at a household level. However, contextual factors and gender norms that govern and regulate behaviours, such as gender roles and responsibilities, indicate that constraints to women's agency and resource access can prevent women from seizing growing market opportunities. Furthermore, in the context in Nigeria and southern Malawi, where women's responsibility for providing income for the household is increasing, therefore the actual benefit for women from possessing control over income is called into question.

#### **7.7 Changes in food security (claim 5)**

This section discusses the changes in smallholder perceptions of their food security and its links to cassava commercialisation. Participation in commercial markets is often associated with improved food security, particularly improvements in diet diversity due to increased income (claim 5). However, as cassava is an important staple crop, an increase in commercial activity may increase household vulnerability to food insecurity. Furthermore, the gender dynamics of men and women's participation in, and benefit from, cassava markets, may change with increasing commercial opportunities, and who has power and control over expenditures, including food. This section presents the 2009/10 and 2014



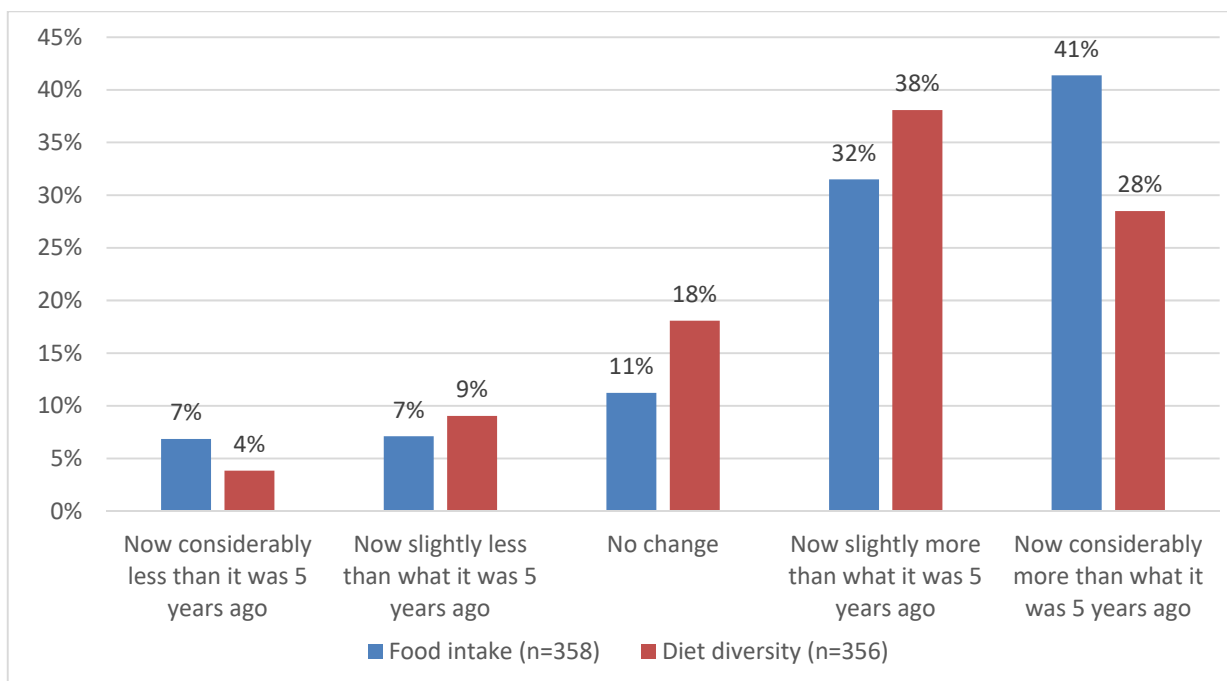
survey data to show changes in food intake and diet diversity, and draws on the panel interviews to establish if the changes are related to cassava commercialisation. The section draws on the FAO food security framework (2001), namely food availability, access, utilisation, and stability.

### **7.7.1 Changes in food intake and diet diversity**

This section examines the trends of smallholder perceptions in changes in household food intake and diet diversity, based on self-reflection. The changes are then explored in relation to changes in cassava commercialisation drawing on the panel interviews.

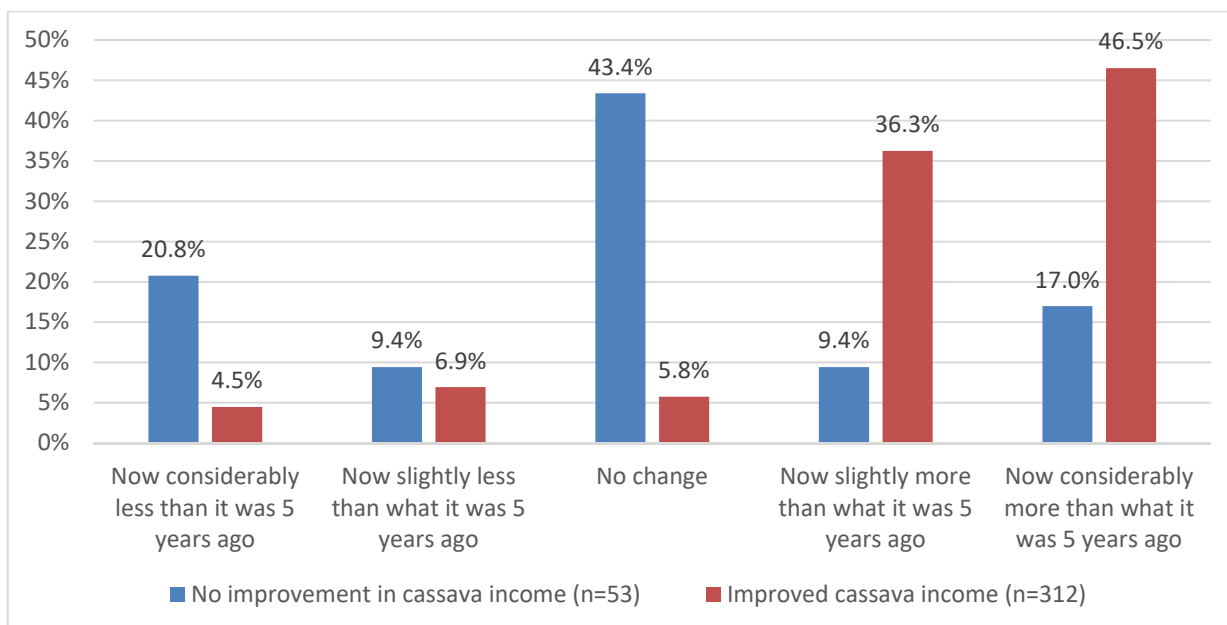
#### **Nigeria**

The 2014 survey shows positive trends for most smallholders in food intake and diet diversity since 2009 (Figure 57). The survey shows that 74% of smallholder reported improvements in food intake: 41.1% ‘considerably more than it was five years ago’ and 32% ‘slightly more’. Trends for smallholder perceptions of changes in diet diversity were also positive, with 67% reporting improvements: 29% ‘considerably more than it was five years ago’ and 38% stated it was ‘slightly more’. There were no significant differences between sample group, gender or ethnicity. As 98% of the sample were selling cassava in Nigeria in 2014, it can be asserted that almost all smallholders were commercially engaged with cassava (Chapter 6). Furthermore, 86% of the sample experienced an improvement in cassava income (earlier in this chapter). Therefore, the positive trends in food intake and diet diversity may be related to cassava commercialisation, which is examined in the remainder of the section.



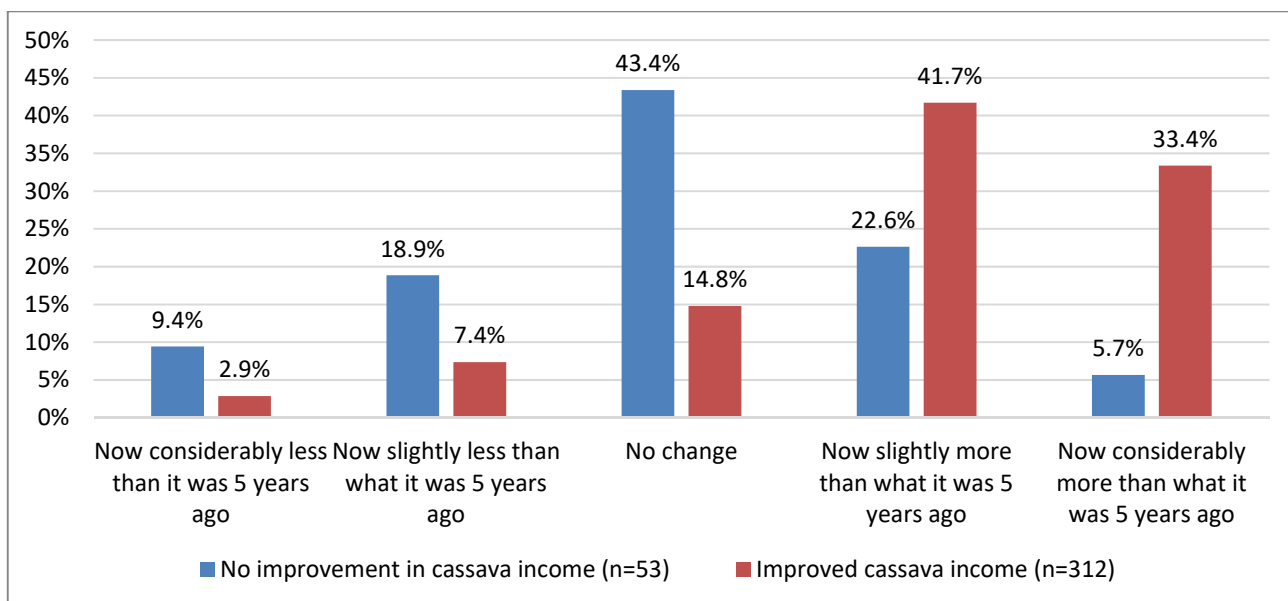
**Figure 57 Change in food intake and diet diversity from 2009-2014, Nigeria**

There is a statistically significant relationship between food intake and diet diversity, and a perceived increase in income from cassava markets (Chi-Square:  $p \leq 0.001^*$  for both). Smallholders who experienced an increase in cassava income were more likely to report slightly or considerably better food intake and diet diversity, compared to those who did not have an increase in cassava income. With regard to food intake, 83% of smallholders with an improvement in cassava income also experienced improvement in food intake, compared to 26% of smallholders without an improvement in income. The largest proportion of smallholders with no improvement in cassava income reported that there was ‘no change’ in their food intake in the previous five years (43%, compared to 6% of those with an improvement in cassava income) (Figure 58).



**Figure 58 Change in food intake by improvement in cassava income from 2009 to 2014, Nigeria**

In terms of diet diversity, 75% of smallholders with an improvement in cassava income also experienced improvement in diet diversity, compared to 28% of those without an improvement in income (Figure 59). The largest proportion of smallholders with no improvement in cassava income reported that there was ‘no change’ in their food intake in the previous five years (43%, compared to 15% of those with an improvement in cassava income).



**Figure 59 Change in diet diversity by improvement in cassava income from 2009 to 2014, Nigeria**

Over half of the respondents in the panel interviews reported dietary improvements (16 out of 30). However this was not related to the quantity of food but diet diversity. There was already a high level of food security and diet satisfaction among the sample – smallholders in Nigeria have food surpluses on their farm. These trends reflect improvements in food access in Nigeria by the FAO (2001) definition. By and large, smallholders felt that their food intake and food availability was adequate, with few individuals experiencing an occasional food shortage in the five years prior to the 2014 survey. This was related to improvements in income not once related to food production.

*“It isn’t that people have a problem with food security. They have a problem with income”*  
(key informant, agricultural extension, Ondo state, Nigeria).

Panel interviewees agreed that their diet diversity fluctuated with changes in income, and cassava income, showing instability in diets over the year. The smallholders who described that their income improved with cassava, also said their diets improved: they would purchase protein-rich food such as beans, small fish and bush meat. And also the reverse: when there was drop in the fall of gari price in 2013, a number of processors said they had to stop buying beans and meats.

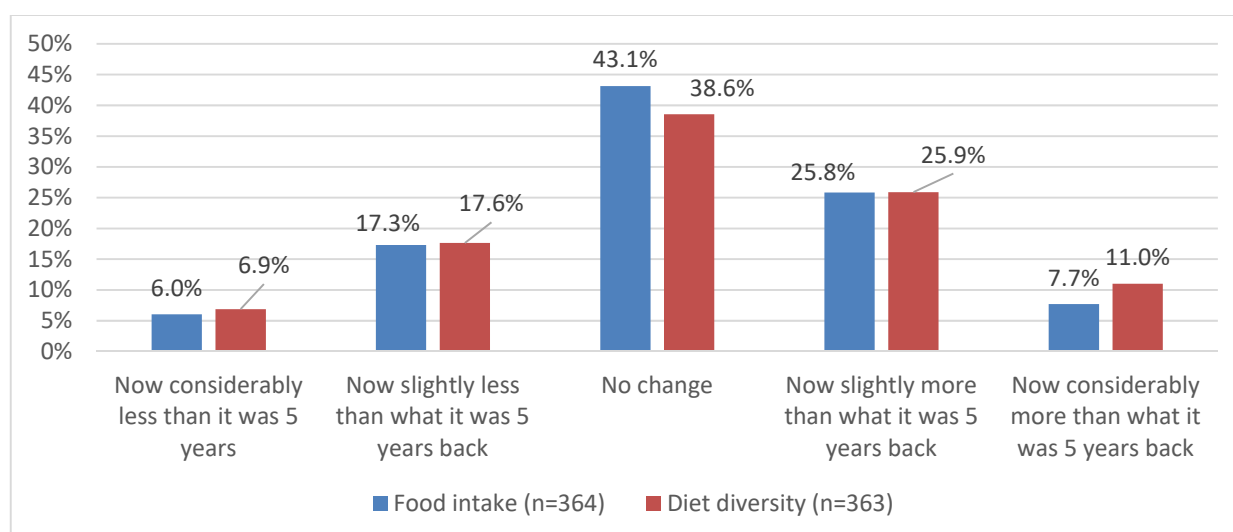
*“When the price of gari is good, my regular shopping is rice, beans, soup, pounded yam, small fish we consume daily and bushmeat once and a while. Three times a month I will have pineapple and I have tea with sugar twice a week”* (female processor, Ondo state, Nigeria).

*“Feeding and clothing have improved over the past five years. This is because of gari. Before I couldn’t afford to eat certain things but now I can have beans and rice more often”* (female processor, Ogun state, Nigeria).

There were also people (8 out of 30) who felt that their diets had worsened over the past five years. Reasons for this were related to illness in the family or the inability to work due to ill health.

## Malawi

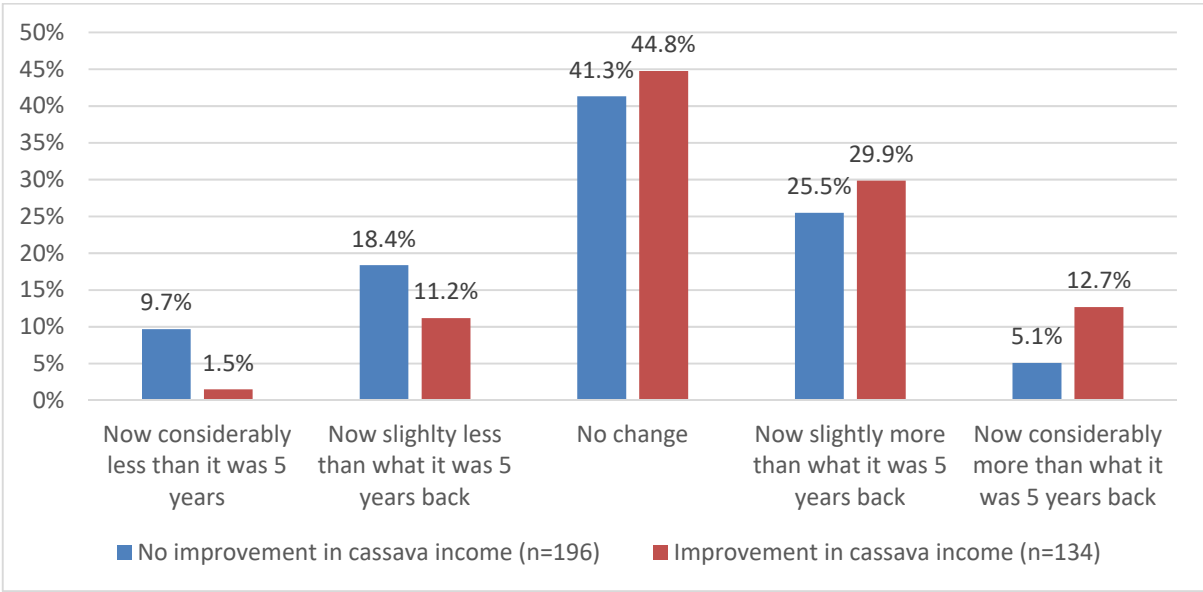
The 2014 survey shows a different pattern from Nigeria for Malawi. In Malawi, 34% and 37% of smallholders reported improvements in food intake and diet diversity, respectively. The largest proportion of those surveyed stated that there was no change in their food intake (43%) or dietary diversity (39%) from 2011 (Figure 60). There was a significant relationship between gender of the household head, food intake and dietary diversity, where MHH were more likely than FHH to report improvements in both ( $p \leq 0.0001^*$  for both). Zomba was also more likely to report a decline in food intake and diet diversity compared to the other districts ( $p \leq 0.05^*$  and  $p \leq 0.01^*$ ).



**Figure 60 Change in food intake and diet diversity from 2010 to 2014, Malawi**

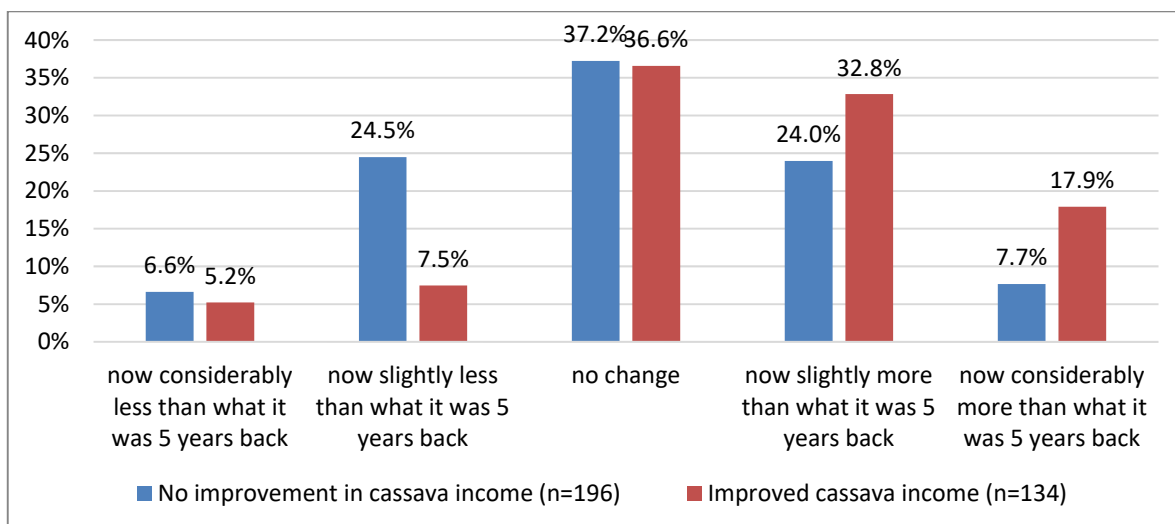
In Malawi, slightly over half of the population sold cassava in 2014 (51%), with more MHH and smallholders in Zomba and Nkhotakota selling compared to FHH and smallholders in Mulanje district. Therefore, differences between those who sold and did not sell are examined in the remainder of this section, followed by change in cassava income. Panel interviews are used to establish if there is a link between changes in intake and diet diversity and cassava commercialisation.

There is no relationship between improvements in food intake and diet diversity, and whether smallholders were selling cassava or not (Chi-square:  $p \leq 0.5$  and  $p \leq 0.05^*$ ). However, there is a relationship between cassava income and food intake (Chi-square:  $p \leq 0.005^*$ ) and diet diversity ( $p \leq 0.0001$ ). Overall, smallholders who experienced an increase in cassava income were slightly more likely to report improvements in food intake and dietary diversity. In terms of food intake, 43% of those who experienced an increase in cassava income also reported an improvement in food intake, compared to 31% of those who did not experience an increase (Figure 61).



**Figure 61 Change in food intake by improvement in cassava income from 2010 to 2014, Malawi**

In terms of diet diversity, there is a similar relationship to food intake. Of those who experienced an improvement in cassava income, 51% reported improvements in diet diversity, compared to 32% of those who did not have an improvement in income (Figure 62).



**Figure 62 Change in diet diversity by improvement in cassava income from 2010 to 2014, Malawi**

The panel interviews reflect these trends. Half of the respondents (15) felt that their food security had improved in the past four years (6 respondents reported ‘no change’, 4 ‘decreased’). For those who reported an improvement, the contribution of cassava to providing income for food purchases was clearly stated. Sales of cassava contributed to dietary diversity of households by enabling the purchase of foods such as cooking oil, meat, fish, sugar products and sweet potatoes for example. However, despite cassava income the far majority of those interviewed still experienced occasional food shortages.

*“We buy good food. Before we ate a lot of pigeon pea, cowpeas and okra. But now that we sell cassava, we buy fish, meat and even fresh Chambo (type of fish in Malawi). We buy cooking oil which we didn’t use before”* (female producer, Zomba district, Malawi).

A number of smallholders reported no change or a decrease in food security. Many of these same people were also unable to participate in cassava markets due to food insecurity concerns, along with lack of market opportunities. Those who reported decreases in food security stated that they were related to illness of the respondent or a family member.

*“10-20% (pointing to a portion of a circle drawn in dirt) of people in our community don’t sell their cassava as their land is less than one acre”* (women producer, Mulanje district, Malawi).

### 7.7.2 Buy back cassava

The year-round nature of cassava production and marketing, combined with the seasonal hunger period in both countries, presents a situation for smallholders where they may sell their cassava but need to buy it back later for household consumption during the hunger period, often at a higher price, related to scarce supply. These incidences can reveal difficulty in management of cassava food stocks along with potential negative impact from cassava commercialisation.

#### **Nigeria**

In Nigeria, panel interviews indicated that smallholders typically sell more cassava than their household consumes and that they do not experience food insecurity. As an extension agent from Ondo stated:

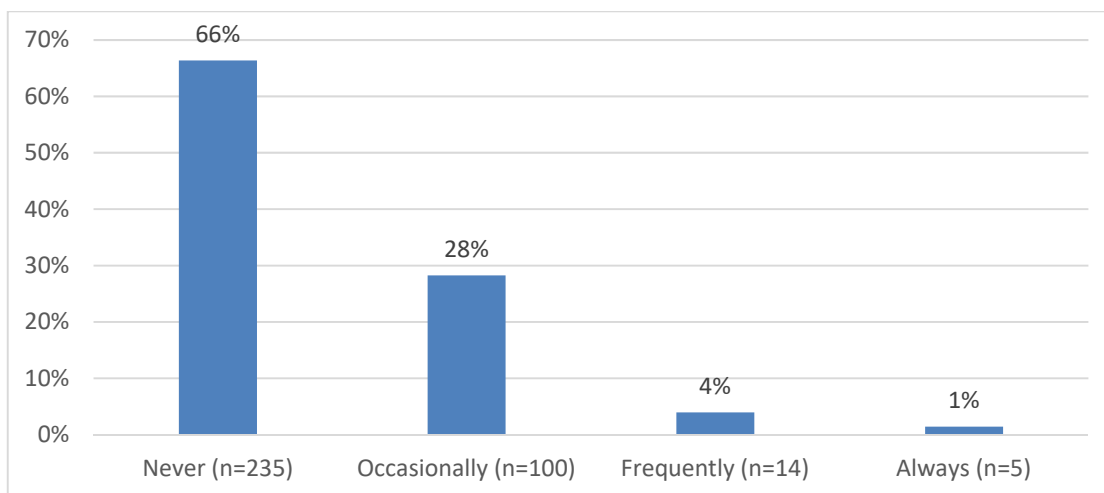
*“It isn’t that people here have a problem with food security. They have a problem with income in times of low demand. Most farmers always reserve food by leaving a small part of their land separate for food security. You can’t eat money. It is not possible [for] a farmer to not consider home consumption”* (extension agent, Ondo state, Nigeria).

However, the 2014 survey found that 33% of smallholders had sold their cassava stock at one time during the year, and had to buy cassava back later in the year. While this is not the majority of smallholders, it is a substantial portion. The highest proportion (28%) doing so occasionally (Figure 63). This leads to the question whether they benefited from the improved income, and by how much, and whether they are buying it back at another time during the year.<sup>58</sup>

---

<sup>58</sup> There was no significant difference between smallholders who bought back cassava at a later date by change in income from cassava (Chi-square  $p \leq 0.5$ ).

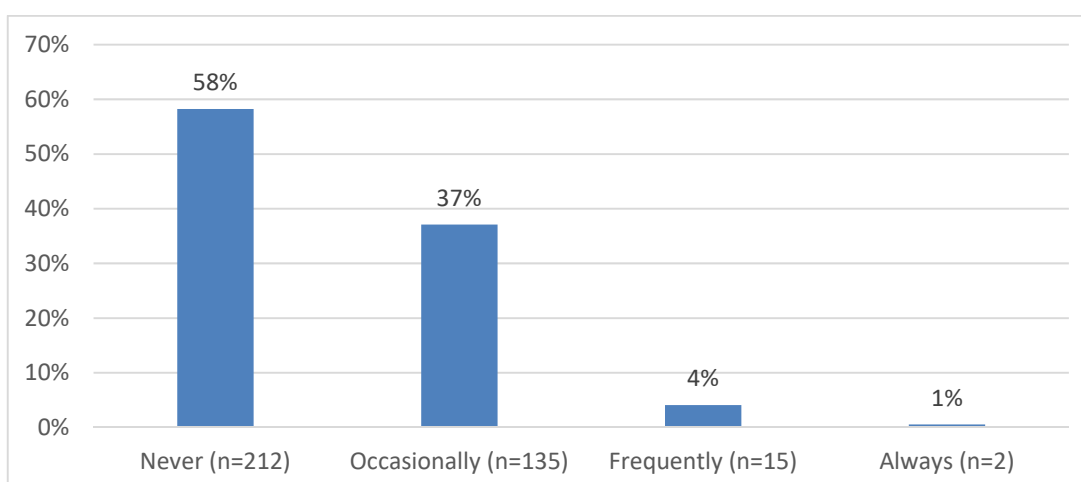




**Figure 63 Frequency of smallholders buying cassava due to selling too much earlier in the season 2014, Nigeria**

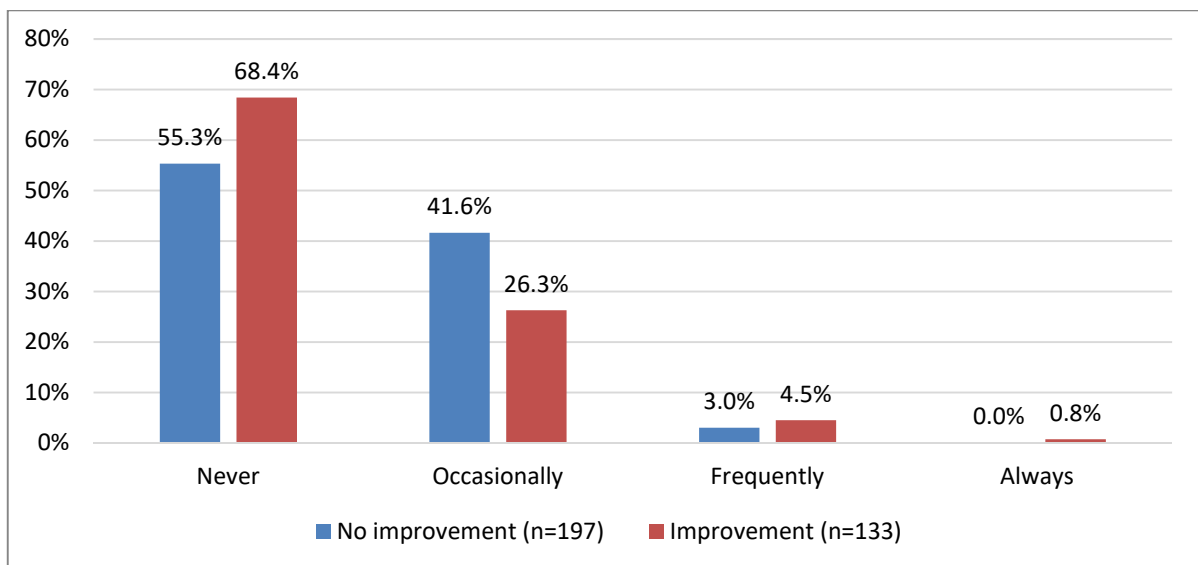
### Malawi

In Malawi, figures of smallholders buying back cassava in the hunger period were slightly higher than Nigeria. The 2014 survey found that 42% of smallholders had sold their cassava stocks at one time during the year, and had to buy it back later in the year. The highest proportion (37%) doing so occasionally (Figure 64). Zomba district also had a higher proportion of smallholders reporting the need to buy back cassava and those with higher likelihood of poverty (Chi-square:  $p \leq .0001$  \* for both). Similar to Nigeria, it leads to the question whether they benefited from the improved income, and by how much, and whether they are buying it back at another time during the year.



**Figure 64 Frequency of smallholders buying cassava due to selling too much earlier in the season 2014, Malawi**

Interestingly there is a significant relationship between a change in cassava income and the frequency of smallholders buying back cassava (Chi-square  $p \leq 0.05^*$ ). Figure 65 shows that smallholders who experienced an increase in cassava income were significantly less likely to buy cassava back in the hunger period. This negates that assumption that given the food insecure context of Malawi, that smallholders who engage with commercial markets and make an improvement in their income would also lose out on profit by purchasing cassava later in the year. The relationship between increasing cassava income and the lower likelihood of buying back cassava is not found in Nigeria.



**Figure 65 Frequency of smallholders buying back cassava due to selling too much earlier in the season by change in cassava income 2014, Malawi**

Chi Square:  $p \leq 0.05^*$

Panel interviews and FGD in Malawi found that the majority of smallholders expressed that growing market for cassava improved their diets through consumption of a greater diversity of purchased foods. However, their priority for cassava remained with food security and budgeting enough for household consumption over selling. At the same time there were admissions that the scenario of some community members “selling too much” existed in their communities. However, only one woman interview admitted to having experienced this situation themselves, likely related to the shame involved in admitting this. Participants related this to poverty and the need for people to buy food or pay for school fees. The quote below demonstrates this scenario.

*“People do sell too much. They even sell prematurely. It is because of poverty. Hunger is getting worse and land is getting smaller and infertile”* (female member of microcredit group, Nkhotakota district, Malawi).

There were no reports in female or male FGDs or interviews that stated there were disagreements between marital couples about the proportion of cassava sold or kept for household consumption on their shared plots and different priorities. However, this may be related to the sensitivity of the question, as participants agreed that the scenario is likely.

In terms of the changes brought about through new demand from large processing factories, there were different opinions on its impacts on food security as being positive or negative, as the quotes below demonstrate. They emphasise the need for planning and management of cassava.

*“The [processing] factory is not affecting food security. We have one plot for the household with cassava and one plot for selling. Men selling roots does not affect food security. They do not take from the food security plot. They stick to their farms for income and it’s their money”* (female member of microcredit group, Nkhotakota district, Malawi).

*“Some people sell all of their cassava and get into problems during the hunger period. These are people that don’t have a lot of land. When people are selling, they don’t think and they don’t plan, so this could be a problem with the factory. But these are decisions for an individual to make. They will fall into problems regardless”* (male producer, Mulanje district, Malawi).

This can point to difficulty in planning and managing new commercial opportunities with food security goals. As the quote illustrates below, smallholders are also, at times, given limited notice of a potential sale. While this means that smallholders can only sell what they can harvest in that short time period, it also means that they are unable to plan appropriately and it may disrupt planting and harvesting strategies that ensure food security and income goals.

*“We are usually only given one day notice so we cannot supply large quantities as we cannot harvest a lot in that time”* (male producer, Mulanje district, Malawi).

### 7.7.3 Section summary

Overall, this section shows positive trends in smallholder perceptions of their food security, with some links to cassava commercialisation. In Nigeria where cassava commercialisation is more advanced and more smallholders are undertaking commercial activities, smallholders had a higher level of food security status in 2009 and 2014 compared to Malawi. Diet diversity was a greater issue for smallholders compared to food intake, and therefore income from cassava plays an important role in this area. Smallholders who experienced an increase in cassava income were significantly more likely to report improvements in food intake and diet diversity. In Malawi, just over a third of the sample reported improvements in food intake and diet diversity, and MHH were also more likely than FHH to report improvements. However, those who experienced an increase in cassava income, were also significantly more likely to report improvements in food intake and diet diversity. Panel interviews also found that the income enabled purchases during the hunger periods. However, income from cassava was not sufficient to eliminate the food deficit for households, but added to their ability to cope. At the same time, almost half of the sample reported buying cassava during the hunger season, at a higher price, which negates profits made earlier in the season. The consequences for the two countries are different. Given that smallholders in Nigeria grow more cassava than they consume, and that purchasing cassava for processing is a common practice among women to earn additional income, it does not support the conclusion that there is a risk of food insecurity among this population, but that rather it is a symptom of their market integration. In contrast, in Malawi where food shortages are common, commercial participation may contribute to household vulnerability, particularly in the case of a shock or stress.

## 7.8 Chapter conclusion

This chapter tested the impact pathway of cassava commercialisation among smallholder farmers in Nigeria and Malawi that is reflected development narratives. Qualitative and quantitative data was used to present the linkages between commercialisation and income, wellbeing and vulnerability, poverty, gender relations, and food security. The revised impact pathways based on the findings is presented in Section 8.4.

In Nigeria, there was widespread participation among smallholders in commercialisation, and over three-quarters of those surveyed experienced an increase in cassava income, particularly in C:AVA

communities and in fresh cassava markets, which were linked with commercialisation strategies used by smallholders (e.g. increases in volumes sold, use of new varieties).<sup>59</sup> However, despite the commercial efforts of smallholders, profits were limited by price and cost fluctuations, particularly among processors. There were indications of gender differences, as few processors experienced an increase in income from cassava compared to fresh markets, with higher reports of increases among men. There was also indication that some the C:AVA intervention unintentionally benefited men and created incentives for men to participate in areas that have been traditionally dominated by women. In contrast, under half of the population in Malawi increased their commercial participation with cassava, related to constraints in commercialisation, constraints on the volume harvested or processed, fluctuating demand and the conditions of sale. This coincides with less than half of the survey population reporting an increase in fresh cassava income and under one-quarter experiencing increases in processed cassava income. A higher proportion of MHH, and smallholders in Mulanje, reported increases in fresh cassava income compared to FHH, and other districts, respectively.<sup>60</sup> The reasons reported for improvements in income were most frequently attributed to improvements in the quantity of production and processing and sales, both which related to commercialisation pathways, in addition to price. In both countries, however, new processed products offered benefits for women but opportunities were limited in scale.

Income from cassava was very important to smallholder farmers. Its importance has developed over time, and not solely within the previous five years or because of the C:AVA project. The importance of the staple crop is that it offers the opportunity for households to balance market participation with food requirements and diet diversity. This is in contrast to other cash crops that cannot be eaten and may take up valuable land and exclude women due to their monetary value. Income from cassava was usually spent on daily food and education expenses, which reflects the way women participate in cassava markets: they sold in relatively small proportions over time, and could harvest any time, which provided income throughout the year, including in the hunger season. Therefore, income is not sufficient to be transformative per se, but it contributes to household wellbeing and livelihood improvements that decrease vulnerability. At the same time, the survey results demonstrate that smallholders with improved income from cassava markets had lower poverty likelihood scores in

---

<sup>59</sup> It is notable that C:AVA participants had higher levels of literacy and were less poor in Nigeria.

<sup>60</sup> The sample in Malawi had a significantly higher proportion of FHH compared to MHH.

2014 compared to 2009, particularly in Nigeria. However, there are many contributing factors to poverty levels, and the panel interviews found that cassava is one, but important, part of household income but has not appeared as a pathway out of poverty.

The chapter then examined women's agency and gender relations, and changes brought about through cassava commercialisation. There were different norms regarding decision-making and control over income within and between the two countries, but overall there is a considerable level of independence (but with consultation) of women in cassava markets. There was also a significant relationship between an increase in cassava income and the level of women's independence in decision-making and control over income, which indicated an association between cassava income and improvements in women's agency. However, the constraints that women experience in access to resources, high labour requirements, household food security obligations, in addition to limited agency, pose challenges for women to respond to cassava market opportunities. This is particularly the case for involvement in fresh cassava value chains, a current growth area, where women's participation has been minimal, with some exceptions in southern Malawi.

The chapter showed positive trends in smallholder perceptions of their food security, particularly diet diversity, and its links to cassava commercialisation. This was more pronounced in Nigeria compared to Malawi, where the former showed more significant commercialisation along with improvements in food intake and diet diversity than the latter, related to food insecurity along with limited commercial opportunities. However, in both countries, income from cassava was an important means for households to purchase foods they could not grow, especially protein rich meats and fish, which a particularly important finding, given the levels of malnutrition. In addition, while the majority of smallholders reported that cassava markets provided income to help purchase foods in the hunger season, almost half of the sample reported that they bought cassava back, which mean that they lose their profits from selling earlier in the year. These findings highlight some of the different experiences of smallholder farmers and their outcomes from commercialisation that are not all positive or inclusive of farmers.

## **8. Conclusions**

### **8.1 Introduction**

This final chapter provides an overview and critical discussion of the key findings, conclusions and implications of the research. The chapter is structured as follows: Section 8.2 revisits the background and rationale for the study to provide the broader context of the research. Section 8.3 provides a summary of the main findings from each of the three result chapters, and the answers to the research questions with critical discussion. Section 8.4 presents the answer to the overall research question, and Section 8.5, the implications of the findings for theory. This is followed by implications for policy and practice (Section 8.6), limitations of the research (Section 8.7), contributions of the research to new knowledge (Section 8.8) and recommendations for future research (Sections 8.9). The chapter and the thesis close with the final remarks from the author in Section 8.10.

### **8.2 Background and rational for the study**

In the past decade, international development narratives have focused on smallholder farming and agricultural market development as means to promote economic growth and to contribute to development outcomes. As shown in Section 2.2, the focus of development agencies implementing the agriculture-led development agenda has been to reduce market barriers and transaction costs, and to support smallholder involvement in agricultural commercialisation. Commercialisation is broadly understood by development actors as being achieved when smallholders 1) increase their investment in agriculture, 2) sell more new/existing products, and 3) change their mindset or attitude towards the importance of the commercial actions for income (von Braun, 1995; von Braun and Kennedy, 1994; Pingali and Rosegrant, 1995). Further, commercial actions are then assumed to lead to increased income, and contribute to poverty reduction and food security. Cassava has received considerable attention in development policy and projects in SSA due to its accessibility for smallholder farmers.

Chapter 2 demonstrated how development narratives involving cassava are gendered. Cassava is often referred to as a ‘women’s crop’ as women play important roles in cassava production and post-harvest activities. However, the ‘cassava as a women’s crop’ image can lead to expectations of specific outcomes; for example, that women participate in commercialisation, and an increase in income as a result, will contribute to food security, education and healthcare. Overall, there is a lack of rigorous

evidence on who can participate in cassava markets, in addition to what types of impacts results from these activities.

This research has attempted to fill the gap in knowledge by asking the following research questions: what is the impact of cassava commercialisation on smallholder livelihoods? This question is broken-down into three sub-questions: a) what is the role of cassava in smallholder livelihoods? (Chapter 5); b) do smallholders respond to commercial cassava opportunities and how? (Chapter 6), and finally, c) what are the outcomes from cassava commercialisation, specifically for income, gender relations and food security (Chapter 7). Gender and social difference analysis was applied throughout the thesis to identify any differences in experiences and outcomes for men, women and other social groups.

As Section 2.4 demonstrated, a livelihoods approach to understanding market participation and its outcomes can address the gap in knowledge of how and why smallholders engage in cassava markets, from the perspective of smallholder farmers. Essentially this goes beyond overly simplistic, classical economic understandings of market behaviour. However, the livelihoods approach is also limited in its analytical depth in relation to household decision-making, gender and markets. Due to these limitations, a modified the livelihoods framework was developed to include these important aspects (Section 3.1). The framework was operationalised in the fieldwork and data analysis to identify the impact pathways from cassava commercialisation. The modifications added value particularly from a gender and social difference perspective, which are often hidden within the ‘black box’ of the household.

The research presented findings from south-west Nigeria and three districts in Malawi, including locations that have been exposed to a project supporting the development of cassava value chains (C:AVA). The study areas provided a range of contexts allowing for greater understanding of cassava commercialisation dynamics in various cultural, geographical, and socio-economic settings, including different value chains and scales of cassava industry. The core of the methodology was in-depth panel interviews with the same individuals at two points in time, and the C:AVA baseline and endline surveys. Other methods were key informant interviews and FGDs conducted throughout the fieldwork.



### 8.3 Summary of empirical findings and critical discussion

In order to understand the impact of cassava commercialisation, it is necessary to also understand the role of cassava in smallholder livelihoods (Chapter 5), and the strategies employed to participate in commercial cassava activities (Chapter 6), and how this differs between gender and social difference. This broader analysis enables a more complete appreciation of impact than an analysis based solely on income. It is not a straightforward process. There are differences between households and how people are placed within the household, the market and society,

Chapter 5 provided a baseline understanding of the roles of cassava in smallholder livelihoods by examining individual and household livelihoods goals, strategies and assets. Cassava was one, but important, part of smallholder livelihoods, and combined with other farm and off-farm activities in intricate ways to complement the seasonality of food and income. In both countries, cassava ranked as the first or second most important crop for food security and income, compared to other crops. Not only is cassava a staple food in most of the study areas, but its agronomic qualities have given it an important food security role even in areas where it is not the preferred staple. At the same time, the importance of cassava for income has been increasing over the past decade.

The dual roles of cassava for food and market were considered by smallholders to be complementary, particularly as cassava can be left unharvested until there is a market for it or a need for food (or a need to replant). Staggered planting and harvesting strategies are also used by smallholders to ensure food and income throughout the year. Therefore, decision-making, planning and management of cassava are of vital importance for smallholders. These decisions need to be in anticipation of market demand, and even the type of buyer or value chain they will supply as it determines the quantity sold. These findings challenge perceptions in development narratives that classify cassava as a ‘low value’ crop; as indeed, it is highly valued.

Chapter 5 demonstrated that the coordinated household economy and the collaboration boundaries between household members are important factors to understanding household decision-making, and highlighted the need for the modification of the livelihoods framework. The household economy was found to differ by gender and ethnicity for Nigeria and by gender of the household head, in matrilineal or patrilineal areas, in Malawi. Different farm management arrangements, whether men and women

farmed on separate plots or shared plots, also played a role. This practice was influenced by historic gender roles in land management and inheritance, and showed adaptation over time.

Women's agency, the extent of influence and/or independence, was important in decision-making processes regarding cassava, particularly how cassava was proportioned for household consumption and sale. Different levels of women's agency were also reflected in farm management practices of the household. In the context of separate farms between spouses, Yoruba men and women negotiated whose cassava would be used for the home or for sale. In some circumstances, men would not follow household plans and women were required to anticipate what their spouse would do to ensure they had food for the home. As was often the case among Yoruba households in Nigeria, men selling cassava in bulk from their plots would also require women to harvest piecemeal and gradually for processing on their own plots to ensure an income and food supply over the year, as she may not have access to her husbands' profits or cassava. In Malawi, where shared farms between married couples were the norm, customary traditions of matrilineal or patrilineal farm management systems influenced women's agency in farming decisions and marketing. While matrilineal areas were characterised by a strong role of women over the farm, there was still a high degree of male involvement in decisions and marketing, which can influence women's participation and benefit in markets. In addition, as there are situations where the spousal couple do not agree, or have contrasting priorities based on their different gender roles or interests, it can present a problem for food security and access to income if one partner acts independently.

Yoruba men could also take advantage of favourable processed cassava markets 'invisibly', as they enlist their wives or hired labourers to process on their behalf, which was a new phenomenon due to favourable market conditions, attention to new markets and the introduction of machinery. The findings challenge the notion of cassava as a 'woman's crop', but also the understanding of what value chain participation and benefit entails. The findings also show that interventions to promote cassava commercialisation draws the interest from men, and that men and women use the crop for slightly different purposes and markets.

Cassava market engagement also varied by socio-cultural groups. For example, in Nigeria, women and ethnic minorities, and women in Malawi, were highly involved in cassava processing, which has

been the case traditionally, influenced by limited access to land and the need to benefit from added value through processing.

Chapter 6 examined whether smallholders would respond to an increase in commercial opportunities, and if so, whether they do so on an equal basis. The findings demonstrated that smallholders, both men and women, were generally responding to new and changing commercial opportunities with cassava; however, this was dependent on external factors such as localised market and environmental trends, in addition to smallholders' decisions to commercialise. The research found that the concept of commercialisation as used in development narratives is often over-simplified, as indeed, smallholders used a number of different strategies, represented in a variety of decision-making pathways, to participate in cassava markets. These pathways provide an understanding of the rationale of smallholders and how they balance multiple livelihood goals. Factors such as social networks, women's agency, and perceptions of market trends, were also found to be influential on household decision-making.

Household cassava strategies reflected an increase in commercial behaviour, such as investment in inputs including land, trying new planting techniques, joining groups, and selling more product. However, farmers in areas with land constraints followed commercialisation pathways to decrease the amount of cassava they consumed, increase the amount of cassava harvested to meet market demand, or reduce other crops to accommodate an increase in cassava production, which was found in Malawi. This demonstrates that commercial decisions do not always mean that farmers are investing financially and that food security risks with cassava commercialisation exist. Thus, vulnerable households would often choose to opt out of market participation, and women often prioritise food and income security over market participation or greater investment.

The C:AVA development strategy achieved contributions to commercialisation processes through supporting linkages of smallholders to markets and had some effect in influencing the likelihood of smallholders, and certain types of smallholders, in undertaking particular commercialisation strategies, such as the use of new varieties. However, value chain initiatives lack recognition of the multiple ways smallholders commercialise, including pathways that may involve risk to food security (e.g. decreasing the production of other crops, selling in bulk without the necessarily surplus) or can exclude groups of people.

The research found that different cassava value chains have their own sets of constraints and opportunities for socio-economic and cultural groups. New and different types of demand for cassava were taken up by certain groups of people with access to resources and social networks (particularly for women), particularly for men in fresh cassava markets in both countries and women processors in Nigeria. However, as stated previously, strategies of smallholders, particularly women, focus on gradual harvesting and processing in small quantities to support regular food and monetary supply in addition to having greater control over income. This strategy, however, does not coincide with supplying in bulk, which other value chains require.

The findings also identified commercialisation pathways that show far more complexity than one about the level of household assets. Risk and uncertainty was an important factor in smallholder decision-making, despite perceptions of cassava being a low-risk crop. The social conditionality of resources was another factor in decision-making, as access to required assets such as land was dependent on changing social relationships, such as marriage and kinship networks and often could not be entirely relied on. Women's agency was also important in women's market participation, and highlights both opportunities and constraints for women, depending on local context and gender norms. For example, Yoruba women are increasingly accessing land independently from their husband for greater control over farming and income. Female processing groups in Malawi are working together to process a new product (HQCF) to meet new demand. At the same time, women's activities are limited due to responsibilities over household food security and childcare, in addition to a lack of independent ownership and access to assets. These constraints, along with the opportunities that women have seized, demonstrate the importance of social networks for women's agency, which cannot be underestimated.

The outcomes from cassava commercialisation (Chapter 7), reinforce some of the positive outcomes reflected in development narratives, such as improvements in income, wellbeing, poverty reduction, gender relations and food security. However, the outcome pathways were not as straightforward as development narratives imply, as they overlook the risks and less positive results for vulnerable smallholders. In terms of income, the research shows a relationship between improvement in cassava income, cassava commercialisation (in fresh and processed cassava markets), and the C:AVA project. This was only for Nigeria and not Malawi, as the former demonstrated more significant cassava commercialisation, particularly in C:AVA communities.

There were gender differences in perceptions of income improvements in Malawi, where MHH were more likely to report improvements in income than FHH. In Nigeria, female C:AVA participants were less likely to report that their income had improved from C:AVA related activities. This may indicate an unintentional bias in outcome. In addition, there were fewer reports among smallholders that their cassava processing income improved, compared to fresh cassava income. Due to the gendering of these different markets, it can be assumed that a greater number of men would benefit from the change in income. This finding exemplifies how men and women are positioned differently in cassava markets.

There is a relationship between an increase in cassava income and poverty reduction in both countries, but particularly in Nigeria. Smallholders who reported that their cassava income increased, were more likely to have decline in poverty likelihood between 2009/10 and 2014. However, it is also recognised there are a number of other factors that influence changes in poverty status and that trends differ by social difference. For example, a large proportion of ethnic minorities in Nigeria increased their commercial cassava participation, experienced an increase in cassava income, but there was an increase in poverty likelihood. Therefore the chain of impact is not always straightforward; livelihoods are complex.

Furthermore, smallholders did not perceive profits from cassava to be sufficient to transform their livelihoods, but rather as an important contributor to household wellbeing through expenditures on daily food and education expenses. However, most smallholders, particularly those who were more vulnerable, valued the income in part because it was incremental as opposed to seasonal income. Therefore, it is not the absolute monetary value, but the frequency and type of income from cassava that is important, as it provides households with stability among the seasons. However, this perception was increasingly challenged as demand from SME and large factory demand increased, and smallholders had the opportunity to sell larger amounts of cassava and receive greater funds (at one point in time) that could be used for reinvestment.

The research also found that there were different gender norms in the two countries that had an impact on decision-making regarding cassava sales and control over its proceeds. The survey showed that a significant proportion of women have a high level of independence in decisions and control over profits in cassava markets, and slightly more in processed cassava markets, showing that there is a link, albeit tenuous, between control over income and women's labour and marketing contributions

to cassava. At the same time there is a substantial proportion of the sample (one-third) in Nigeria who have less independence and control over income from fresh or processed cassava, showing different norms among households within the same areas. Survey evidence also shows a significant relationship between an improvement in cassava income and an increase in women's independence in decision-making and control over income from cassava.

While it is not possible to determine if cassava commercialisation causes greater independence among women or vice versa, panel interviews indicate that is likely that greater agency among women contributes to more involvement in commercial activities. The claim that cassava income benefits women in particular, or women can maintain control over income with increasing opportunities is tenuous. In addition, there are only a few examples of men taking-up the additional labour requirements that are a result of commercialisation. Women's strategy of piecemeal harvesting and processing also limits their ability to participate in new value chain opportunities. Therefore, the likelihood of women having true ownership of entrepreneurial activities to take advantage of new opportunities is constrained. Therefore, the role of gendered power relations, which give rise to these constraints, question women's direct benefit from cassava activities despite their significant resourcefulness and ingenuity in cassava markets.

The research findings present positive outcomes for smallholders in terms of food security, as smallholders perceived improvements in their food intake and diet diversity, which was strongly associated with smallholders reporting an improvement in cassava income. This trend was more pronounced in Nigeria where there was greater cassava commercialisation. However, the growth in demand from SMEs and factories, and the requirement to sell in bulk, can threaten food security for households if too much cassava is sold or money is not managed well. In addition, there were scenarios where food security was compromised by smallholders in Malawi, particularly from selling too much fresh cassava which resulted in greater hunger in the lean season. It is also a concern that almost half of survey respondents had to buy cassava during the hunger period, which may be linked to selling too much of their stocks for income.

#### **8.4 Answer to the main research question: what are the impacts of staple crop commercialisation?**

The question ‘what are the impacts of staple crop commercialisation’, implicitly tests the accuracy of narratives linking staple crop commercialisation to poverty reduction. The research found evidence that partially supports the narrative: among smallholders who increase their commercial participation, outcomes were largely positive. Outcomes broadly confirm the impact pathway set out in development narratives of increased income, and expenditures on food, education, healthcare and small assets. However, the implication that there is one, singular, impact pathway is inaccurate, and provides an overly simplistic view of smallholder livelihoods and their interaction with markets. There is a considerable gap in the literature on this subject, therefore the findings provide an important contribution.

There are two characteristics of cassava commercialisation that require highlighting before impact is considered. Firstly, cassava commercialisation involves different processes that reflect various sets of livelihood decisions that are influenced by socio-cultural and gender norms, in addition to access to assets, perceptions of risk and livelihood goals as argued by scholars such as Scoones (2009) and Kabere (1999, 2005). Household members may represent different priorities, based on gender roles, (food consumption versus selling), and therefore members must negotiate how cassava is managed. Each of the decisions taken by different individuals, in turn, can result in different outcomes and impact pathways. This produces multiple, non-linear trajectories that may or may not result in positive development outcomes. Secondly, cassava is already grown and sold by the majority of smallholders in the study areas, by virtue of its ‘accessibility’. Cassava commercialisation has been taking place with growth in local/traditional markets that has led to subtle changes and impacts over time. These markets, while different in scale and characteristics, have developed in response to local market demand and preferences, to which smallholders have made gradual adjustment over time. However, new demand for fresh cassava from SMEs and large factories is influencing these dynamics.

With these points in mind, the diversity of impacts from cassava commercialisation can be appreciated. Overall, the accessibility of the crop and its agronomic characteristics enables smallholder farmers to access income and food throughout the year. Among those who increased their cassava commercialisation through the different pathways, there were reported improvements in income, particularly in Nigeria. This was seen as providing stability to the household in terms of food

and meeting daily and unexpected expenses, and funding education. This was highly valued by smallholders. New increasing demand for fresh cassava in some areas from SMEs and large-scale processing factories often provided smallholders with larger sums of money that could be used for investment and larger assets. Therefore, cassava commercialisation can contribute to household resilience and poverty reduction, which supports the claims of international donors such as DFID and SDC (2008), FAO and World Bank, and the research findings of von Braun, (1995), Leavy and Poulton (2007) and Coles and Mitchell (2011). However, smallholders perceived that the transformative power of cassava commercialisation to reduce poverty was limited. This was due to the unstable nature of cassava markets, along with supply-related factors such as smallholders prioritising food security and livelihood diversification.

Positive and negative outcomes from cassava commercialisation are demonstrated with the growing demand from SMEs and large-scale factories for fresh cassava. These factories require smallholders to supply large quantities of cassava, or to sell in bulk, often at short notice. However, it also has the potential to disrupt planting and harvesting strategies that are carried out on an incremental basis to ensure security. It can also provide an opportunity for 'risky' behaviour, such as selling large quantities but running out of food (or income) later in the year. It also has negative consequences for women's control over income as men were found to mainly be involved in these value chains.

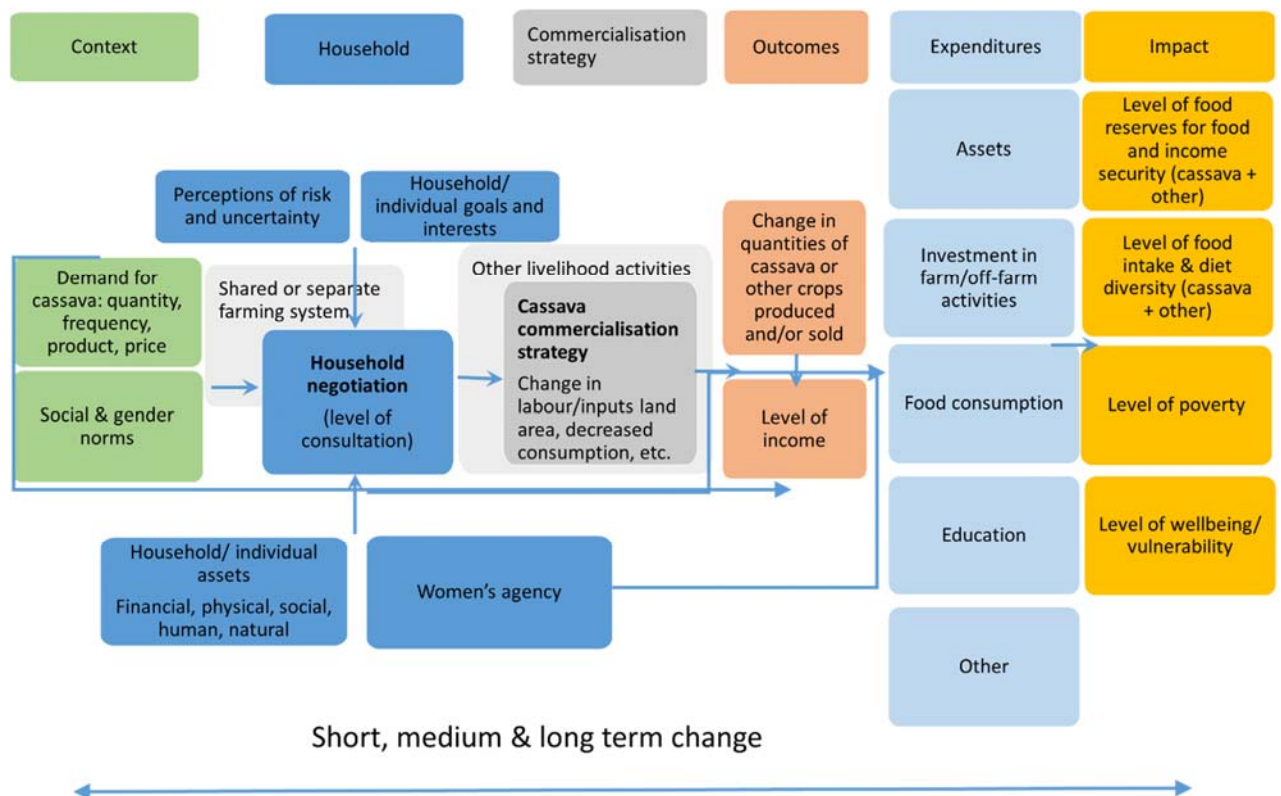
For women, the findings show complex interactions between gender, farm management systems, and markets that provide both opportunity and constraints for women's participation in cassava markets. In some areas, women's limited agency means they are less able to take advantage of market opportunities, which is compounded by factors such as social conditions of resources, labour requirements and responsibilities of household care. This supports findings from a number of gender theorists including Kabeer (1999 and 2005), Doss (1999) and Meinzen-Dick et al., (2011); along with findings specifically on cassava commercialisation in Nigeria (Odebode, 2008; Adebayo et al., 2003; Nweke et al., 2001). There is also the potential for intra-household conflict regarding cassava sales, which can arise in situations where household members have different interests and women have limited bargaining power over 'shared' resources as argued by Doss (1999). This creates the risk that interventions that do not target women or address gender-based constraints, may result in indirectly benefiting men. However, there are also spaces of opportunity for women, particularly through community-level processing. These markets provide women with income that they were more likely



to control and operate in a piecemeal fashion that enables women to control their time and resources. Social capital is particularly vital for women; having strong, transparent processing groups is essential to market access.

There are also certain commercialisation strategies that produce less positive, or risky impacts, such as excluding certain smallholders from commercialisation (such as farmers with very small land from selling fresh cassava to factories), or food insecurity among those who sell ‘too much’ cassava. Moreover, at the level of the market, supply to certain value chains can influence prices and availability of fresh cassava for other chains.

Using the revised livelihoods framework (Section 3.1), the impact pathways for cassava commercialisation(s) were developed (Figure 66).



**Figure 66 Impact pathways of cassava commercialisation**

The first part of the diagram shows the influence of *context* on the impact pathway, specifically the market and social conditions, and gender norms, due to their importance in structuring the overall

livelihood environment and livelihood responses. Market demand is broken down into the quantity of product demanded, frequency of demand and type of value chain, as differences in these factors influence outcomes. Social and gender norms further influence all aspects of the impact pathways, such as household negotiations, access to assets, and the ability to make or influence household livelihood strategies.

The *household negotiation* component reflects the importance of the household for smallholder farming, as a site of accessing and negotiating roles, resources and benefits for commercialisation. The central feature is that the household is non-unitary and represents different gendered interests and goals (Doss, 2012, Kabeer 1999, 1994). These interests are influenced by socio-cultural context and gender norms, such as type of farm management system (shared or separate plots), or type of land inheritance system. Other considerations in household negotiations are: *perceptions of risk and uncertainty* of activities and the consequences and benefits for different household members; the *assets* one has access to, and the *social conditions* of that access, and *women's agency*, which draws Kabeer's (1999) concept. Women's agency is specified here to highlight the influence of women's specific interests and strategies, arising from their gender roles.

The *commercialisation strategy* reflects the different pathways smallholders can use to commercialise their agricultural activities, or not. This includes decisions on issues such as planting, harvesting, processing and selling. These pathways are embedded within other livelihood activities in the household, which can influence one another.

The main *outcomes* expected from cassava commercialisation is a change in the *level of income*. This is linked back to contextual factors, particularly the market which can determine profitability for farmers. Outcomes also link with women's agency to reflect the link with women's control over income and the achievement of certain outcomes. Another outcome resulting from cassava commercialisation is a change in the amount of cassava or other crops produced, to reflect the interaction of cassava decisions with other crops, which in turn, links to food intake and diet diversity.

The *expenditures* component reflects the different types of purchases commonly made with cassava income, such as school fees, food purchases, small assets, along with a category 'other' to capture unnamed activities that may or may not contribute to household wellbeing. Expenditures are also

linked to women's agency (as it links to control over income). This is to highlight that certain types of expenditures may be more likely to happen with greater (or less) women's agency.

The *impacts* from the revised impact pathway reflect the diversity of experiences and positive or negative impacts of commercialisation. The impact pathway of cassava commercialisation also includes a time dynamic, to reflect that the pathways is not linear, and has a feedback loop whereby market participation and experience at one time can influence future behaviour.

Overall, the modified livelihoods framework provides insight into the dynamics of smallholder participation in cassava commercialisation, centring on smallholder agency, gender dynamics and markets that have several implications for theory, as discussed in the next section.

### **8.5 Implications of the findings for theory**

This section discusses the implications of the findings for development theory. It presents the limitations of economic theory (namely, neoliberal economics), which supports development narratives, and how the modified livelihoods framework addresses these limitations. Neoliberal theory, which is reflected in development narratives today, reflects earlier classical economic theory: that smallholders are a class, have a distinct logic, and their behaviour is generalisable. Using the social construct of the 'smallholder farmer', the theory is premised on an assumption that smallholder farmers, as the largest population base in developing countries, represents both the problem and the answer to underdevelopment. The theory defines the problematic of underdevelopment as inefficient economies that are in part the result of a lack of smallholder integration with markets, due to high transaction costs, and lack of assets and profit-maximising behaviour among smallholders, which sustain poverty and stifle economic growth.

However, the modified livelihoods framework, using the case study of cassava, shows the fault lines in the neoliberal framing of 'the problem of smallholder agriculture', and the findings join the large body of literature that argues against the over-simplistic account of smallholder engagement with markets. The livelihoods framework overcomes the limitation of the narrow focus of neoliberal economics on efficiency by centring on smallholder agency and decision-making, which confirms the approach of Scoones (2009), and provides what Gudeman (1986) argues for - an understanding of how local people themselves understand their livelihoods. Vorley et al., (2012) also argue for the need to account for smallholder agency, the ability of smallholders to choose and make rational decisions

based on their reality. Smallholder agency is indeed fundamental to understanding the existing market participation of smallholders, which is largely informal, flexible and involves considerable activity in local or 'traditional' value chains. It also reveals a high level of existing 'commercial' behaviour that is often thought to be lacking among smallholders and part of the 'problem' of underdevelopment, contrary to notions of smallholders being stuck in a poverty trap with limited participation in commercial agriculture as argued by scholars such as Azariadis and Stachurski (2005). As a result, this approach has developed a more nuanced impact pathway of cassava commercialisation in the context of smallholder decision making, compared to development narratives (Figure 66).

From this starting point, examining smallholder decision-making processes is fundamental to understanding commercial engagement. This is also overlooked in the original livelihoods framework, which when operationalised, can become too preoccupied with assets, and reinforce the limitations of neoliberal theory. By drawing on the non-unitary concept of the household, a significant contribution of feminist economics that highlights the importance of gender relations in livelihoods, it provides greater explanatory power of the negotiation and bargaining process that underlies market behaviour by dispelling the notion that household members (women and men) have similar interests, access to resources, and outcomes from commercialisation processes.

By focusing on smallholder agency, as presented in the modified framework, the research identified a number of impact pathways from commercialisation processes, which contrast to the singular and linear logic of the one presented in narratives (Figure 66). These pathways were based on different strategies that are influenced by factors such as perceptions of risk and uncertainty, social conditionality of resources and women's agency, in the broader social and market context. The overlay of social and market contexts supports Granovetter's concept of 'embeddedness' and Polanyi's (1944) 'substantivist' new economics approach, which emphasise the importance of institutions (such norms, values), in influencing behaviour and choice, and the social embeddedness of markets, without privileging one above the other.

The modified livelihoods framework also provides greater understanding of commercialisation processes, which are often poorly defined and operationalised in theory and literature. This is often to the detriment of understanding smallholder diversity, where broad typologies are used to describe differences between smallholders (such as categories based on quantities of crops sold, or level of

profit maximising behaviour) at the expense of meaningful descriptive power to further the understanding of underdevelopment and poverty. As a consequence, the effects of commercialisation are over-generalised and unrelated to context, as argued by Strasberg et al., (1999). However, by examining commercialisation processes through the modified livelihoods framework, the results show that commercialisation involves much more than issues around assets, transaction costs, and profit maximisation, and thus, provides room for a broader range of outcomes and understanding of the ‘winners and losers’ from commercialisation.

The modified livelihood framework and the resulting impact pathway of cassava commercialisation developed through this research also demonstrates that commercialisation is not static and cannot be understood in isolation in relation to one market or one crop (as reflected in the commercialisation strategy and outcomes columns in Figure 66). Cassava in particular is used in livelihoods strategies for several different goals, including food and income security, which is ensured through balancing cassava activities between the market and household consumption, and other livelihood activities. The balancing act changes over time with experience, new risks and constraints, which result in new and changing behaviour among smallholders. It shows that smallholders do not lack commercial orientation, but rather address uncertainty at the core of their livelihoods. This means it is difficult to assess changes in commercial behaviour using purely market-based concepts of specialisation, transaction costs and ‘rational’ behaviour. As a result, the impact pathway, or commercialisation itself, is not singular, linear or binary; there are many ‘types’ of ‘commercialisations’, reaffirming Leavy and Poulton’s (2007) and Ellis’ (1993) arguments, and as such, produces a diversity of outcomes and impacts that vary for different socio-economic and cultural groups.

The findings suggest that neoliberal theory, and its use in development narratives, can over-promise the benefits of commercialisation, particularly for women and food security. Whereas the modified livelihoods approach and the resulting impact pathway assumes neither benefits nor negative impacts to account for different experiences (as reflected in the outcomes and impacts columns in Figure 66). The findings show there both ‘winners and losers’ from commercialisation, the latter which is often ignored (Poole et al., 2013). There are a proportion of smallholder farmers who are socially and economically marginalised, and have difficulty in increasing their commercial activities, particularly with formal chains such as industrial processing factories. In this light, cassava commercialisation could result in greater polarisation between a rural entrepreneurial class and smallholders who are

unable to make greater commercial investments (Vorley et al., 2012), instead of a ‘disappearance’ of the peasantry as argued in the Marxist school of development thought (Gledhill, 1998). Therefore, instead of cassava market development providing opportunities for farmers to supply markets, they can be pushed further into informality, and therefore explain the persistence of the smallholder ‘class’ over time. It could also mean that smallholders who are less able to withstand risk, but nonetheless take the risk to supply these chains, may experience negative impacts.

The findings also demonstrate the necessity of using a gender lens to the study of markets and the benefit of adding gender explicitly in the livelihoods framework. Development narratives around cassava, supported by gender-blind economic rationale, argue that by virtue of cassava’s accessibility and significant labour contributions of women, cassava commercialisation can contribute to women’s benefit and even empowerment. Neoliberal measures of commercial behaviour, such as acting in the interests of profit maximisation, is divorced from the reality of women and privileges the ‘productive’ over the ‘reproductive’ in economics. This is related to the development of what Cornwall et al. (2008) argue are gender “myths”, which reinforce technocratic and bias analysis and solutions to market barriers instead of addressing the more complicated area of power relations. The modified livelihoods framework used in the research and the resulting impact pathway addresses the lack of gender in both neoliberal theory and the traditional framework, and thus helps to challenge unhelpful and stereotypical gendered binaries (e.g. women/s crop/men’s crop) that lack a basis in reality (as reflected in the household column, particularly through the addition of ‘women’s agency’ in Figure 66). In particular, incorporating women’s agency to the framework removes the chance for one to assume that households are unitary, and that women’s participation or benefit is guaranteed.

### **8.6 Implications for development policy and practice**

This section presents the implications of the findings for policy and practice: namely, whether and how staple crop commercialisation policy should be encouraged. The section describes key lessons for policy and practice if staple crop commercialisation is to be promoted, and concludes with a critique of the larger goal of commercialisation and value chain development initiatives.

Firstly, policy and practice need to invest in understanding the contexts in which they are working, including the challenging subject of power relations and gender and social difference. The findings show a complex picture of the role of cassava and cassava markets in men and women’s livelihoods

that differs by location. There are risks with commercialisation, even with a staple crop, which has been a neglected area of research in the past. The impact pathway is complex, less linear, and depends on socio-economic and cultural status and context. Smallholders diversify their livelihood strategies to mitigate against risks; therefore, the value of crops like cassava lies in its role in providing households with income stability over time. The constraint for smallholders is how to increase their commercialisation while managing risks, particularly among women and vulnerable groups, which is challenging given market fluctuations with cassava. Therefore, the priority should be to focus on supporting greater certainty in markets with regard to demand and price, in contrast to promoting behaviours that may risk food security. Support could be through strengthening relationships of companies in out-grower schemes (which C:AVA was involved with) and ensuring social responsibility requirements of national and small companies.

Secondly, value chain initiatives should focus on multiple value chains to support agricultural diversification and inclusivity. While the value chain approach of focusing on a singular crop provides an important rallying point for multidisciplinary efforts, it may not complement smallholder realities that focus on livelihood diversification. Certain value chains may also exclude particular groups of people, or depend more on women's labour without their direct benefit, which could be reinforced by an initiative. Exclusive support to one value chain may also negatively affect other value chains (e.g. increased demand for cassava from large scale factories could affect availability and prices of fresh cassava for processors). Therefore, while cassava is considered more accessible for smallholders, markets should not be assumed to be inclusive, of minimal risk, or lead to positive outcomes for all. Using a livelihoods approach is particularly helpful in identifying the spectrum of commercialisation strategies and complementary livelihood activities that could be supported.

Thirdly, adding gender and social difference to the modified livelihoods framework provided insight into the complexity of the participation and benefit of women and vulnerable groups in commercialisation processes. These dynamics are often overlooked in narratives that tend to use gendered binaries (e.g. women's crop/men's crop; cash/staple crop) to support certain value chain initiatives. While this can bring positive attention towards addressing the needs of women in market initiatives, it can assume that market growth will de facto benefit women. These assumptions distort the reality of male authority and privilege, and women's occupation of low-status and poor remuneration in certain value chain by virtue of their own low-status. Further, women's agency,

workload and voice may be undermined in commercialisation processes and reinforce power inequalities. Gender-based constraints in particular limit women's ability to make significant increases in investment, and therefore changes in women's market participation will need to be undertaken incrementally to reduce risk. This is an important point for development initiatives which have a particular conceptualisation of 'successful' market integration, as there is potential to increase their impact for vulnerable smallholders by working with the spectrum of commercialisation strategies, particularly for female processors.

Policy and practice will also need to challenge gender inequalities and strengthen women's agency if the objective is really to contribute to transformative change for women, which is claimed in narratives. Strengthening women's existing agency and social capital, such as through group-based cassava processing initiatives, would be one avenue. In addition, by conducting a gender analysis, development agencies can direct efforts to areas where women can benefit (e.g. such as programmes to assist women in bulking produce in a group to supply fresh cassava markets, or increasing support to group processing initiatives). Instead of relying on stereotypes and over-simplistic binaries, investment is needed in understanding how gender objectives and value chain interventions can be mutually supportive, how women's professional capacity can be strengthened, and ways in which women can carve out space in markets.

Fourthly, in terms of food security, the implications of the findings for policy and practice show again that there are no straightforward answers, and that impacts vary according to the type of demand, dynamics of household decision-making, and the broader context. The majority of smallholders participating in cassava markets felt that their food intake and diet diversity had improved with more income from cassava. Smallholders have considerable experience, spanning generations, of managing food stocks with selling and trading. However, findings from Malawi show that there are vulnerable areas, and households within communities, where food insecurity could become a problem with growing demand for cassava, particularly from SMEs and large-scale factories, which may disrupt planting and harvesting strategies that ensure security. This becomes more complex when there is disagreement between household members on how to achieve food security and income-related goals. Ongoing and careful monitoring of change and impact in these areas is required, particularly in high-poverty, drought-prone areas which lack market diversification.



The final issue for policy and practice is to question the end-game of commercialisation and value chain development initiatives, and ask if it should be promoted at all. Section 2.2.2 presented Dorward's (2009) argument, which was reflected in DFID's (2015) conceptual framework on agriculture, that commercialisation can provide a way for smallholders to reduce poverty for some ('step up'), help resilience for others ('hang in') and the potential for some to leave agriculture ('step out'), reflecting typical neoclassical economics. However, the problem with this framework is assumes that the 'losers' of commercialisation, those who are negatively affected or excluded from market participation, can 'step out' of the market and become part of the class of (cheap) labourers (Poole et al., 2013). This category could be applicable to the farmers with small landholdings and few market networks, along with, perhaps, some female processors, who are excluded from industrial value chains. However, this is an unfeasible strategy and points to a flaw in Dorward's (2009) framework and thus, DFID's policy foundation. There are few opportunities for employment that would absorb the labour of those who may commercialise but cannot 'step up' significantly. In addition, the reorientation of fresh cassava supply away from local value chains may limit the availability or affect price of cassava for female processors who depend on local cassava for their businesses. Working with local value chains in development initiatives may circumvent this, but it would present a departure from the current focus of some governments and organisations on formal, industrial cassava value chains, despite their stated commitment to poverty reduction.

This raises the question of if commercialisation should be promoted if it reinforces or exacerbates inequality, or presents negative consequences for some farmers. There have been arguments that to prevent the risks among food insecure farmers in particular, that markets should be segregated (e.g. larger and wealthier farmers supply large cassava processing factories). However, the result of this would be to reinforce inequality and shut smallholders out from growing industry. If the goal is simply economic growth than this may be an answer, but not for poverty reduction, as the promises of employment are few compared to the scale that is needed. Indeed, if a value chain initiatives and policy do not do the difficult work of challenging inequality and supporting the resilience of smallholders in their market participation, then there is little point of it. While inaction is also not recommended, development initiatives must take time to understand the context they are working in and work with local communities to reduce inequality, in addition to broader work on encouraging growth in demand and market stabilisation.

### **8.7 Limitations of the research**

The research has provided a more nuanced understanding of the pathways of impact from cassava commercialisation. However, because livelihood strategies are multifaceted and diverse, and change over time due, identifying change and attribution of change is difficult. In addition, the lack of market demand for cassava in some areas, particularly in Malawi, which is a finding in itself, meant that the population from which to sample was selected may not have experienced a change in cassava demand for which to study the influence it has on commercial behaviour. There are also limitations with quantitative research that attempts to address intersectionality. Disaggregating the data by several factors, including exposure to a development initiative, gender and ethnicity, resulted in sample sizes that were not feasible for rigorous statistical testing.

Furthermore, data variability, due to the diversity among smallholder farmers and their level of participation in cassava markets, was an important factor that affected the identification of trends in the data. While these limitations are significant, the study provides useful quantitative findings to highlight the scale of cassava market participation, combined with qualitative findings reflecting smallholder experiences, which do not exist elsewhere.

The measurement of commercial behaviour, particularly with regard to cassava, was also challenging for a number of reasons (e.g. market participation is flexible and ad hoc, due to the nature of production systems and the market, lack of smallholder measurement of sales, production techniques mean estimation is difficult). This challenge is difficult for policy makers and donors to appreciate. These limitations lead to an important conclusion from the research, which is the necessity of using mixed-methods and understanding the context of the research. The research also provides some indication about the possible trade-offs between types of cassava value chains, and implications of supporting different types of value chains. However, it is clear that more in-depth research into these dynamics is required over time as cassava markets develop further; a longer-term approach to studying change is needed.

### **8.8 Contributions of the research to new knowledge**

This research provides several contributions to literature on the subject of staple crop commercialisation, smallholder farming and development outcomes. The research provides in-depth understanding and new empirical primary data on the processes of staple crop commercialisation,

through the case study of cassava, and its outcomes and impacts for smallholder farmers, on which there is sparse literature. This has ‘tested’ whether ‘meta-narratives’ of staple crop development and poverty alleviation are indeed accurate, an issue on which Poole et. al., (2013) confirm there has been a lack of rigorous evidence.

The study also contributes to a new understanding of smallholder interaction with agricultural commercialisation, as the study provides a new framework for undertaking a more nuanced livelihoods analysis. It challenges traditional frameworks found in classical economics along with the traditional livelihoods framework itself to deepen its analytical power to address market and household dynamics, and gender and social difference. Gender analysis, which can be used to interrogate gender myths of women’s value chain participation, is a particularly important contribution to the study of market value chains with staple crops such as cassava. In addition, the research provides insights on cassava commercialisation from Nigeria and Malawi at different points in time, which have previously not been available.

Despite the challenges with quantification, using mixed-methods has also enabled greater understanding of the scale of trends of cassava commercialisation, while also providing explanation as to why and how these trends are occurring. The findings show that more traditional quantitative commercialisation indicators, such as the quantity of product sold, or the amount of profit made, do not tell the whole story. Indeed, there are other ways smallholders participate in commercial markets that may not be considered ‘commercial’ but have an influence on commercial participation and its outcomes, such as reducing other crops grown, or using new planting techniques. Furthermore, quantitative indicators do not provide detail on the strategies of the most vulnerable, which could be the focus of support. Using qualitative and quantitative methods to complement and address the limitations of each, is an effective way to provide a more holistic understanding of markets and smallholder livelihoods. In particular, panel interviews conducted at two points in time with the same individuals, enabled the research to reflect the dynamism in trends and market participation that is not offered with studies undertaking fieldwork at one point in time.

The methodology and grounded theory approach also enabled smallholder perceptions, experiences and their own achievements to take precedence over what are often considered ‘objective’ indicators. This has enabled a more powerful reflection on people’s experiences and lived realities, providing

new insights into smallholder decision making from the point of view of smallholders themselves and taking into consideration the entire scope of livelihoods rather than a narrow focus on their interaction with a single crop.

The research also provides valuable insights into smallholder participation and benefit from cassava commercialisation, and how the complexity of gender dynamics makes universal statements about women or men very difficult. This research also provides an example of how the broader narratives in agricultural and international development are based on a patchy or misrepresented evidence base. As a result, this research challenges current policy approaches of many donors, governments and organisations.

### **8.9 Future research**

There are a number of areas for further research. Firstly, it is important to examine trends in cassava demand and food security status over a longer period of time, given the rapidly changing contexts. As the author is writing, south west Nigeria faces shortage of fresh cassava supply to SMEs and factories given the increasing demand for gari due to food insecurity in the north of the country, while there has been an improvement in harvests and growing demand for cassava throughout Malawi. Further research is needed on the interaction between different value chains, and on how market dynamics change the constraints and opportunities for different groups of people over time. Examination of the impact of cassava commercialisation on nutrition security, and future trends for agro-ecology and sustainability are also lacking. Finally, much more work is needed on understanding changes in gender norms and women's agency with commercialisation in staple crop markets, and how these adapt and contradict. Specifically, there has been little research on the how domestic value chains can be brought to scale and leveraged to increase women's benefit and professional capacity. Action in this regard, would focus on the more challenging and complex issues of women's empowerment in agricultural markets. However, it will also contribute more broadly to challenging the use of myths and stereotypes of women in international development, and provide a more rigorous and context-specific evidence base that can indeed contribute to transformative change towards gender equality.

### **8.10 Closing remarks**

The subject of the thesis is a contemporary topic with implications for international development thinking and practice, specifically whether staple crop commercialisation can work for the poor.

However, the origins of the debate are rooted in much older ideologies of classical economics with new neoliberal presentations. While these ideologies have been challenged from a range of academic disciplines, the dominate narrative of market-based solutions for poverty and development still remains. This research takes its place among the challengers, to question the validity of assumptions and the rationale of the current development paradigm. The approach taken throughout the research, was to be people-centred and contextual, and to provide a rich and abundant source of information to inform development praxis. It is with the privilege of meeting and speaking with farmers in great depth, that one realises the incongruity and even insurmountably between these narratives and reality. However, with continuous efforts and openness to learning and consultation, in partnership with smallholder farmers, there is the possibility of overcoming the apparently insurmountable.

## References

- ActionAid (2006) *Climate change and smallholder farmers in Malawi: understanding poor people's experiences in climate change adaptation*. London: ActionAid. URL: [https://www.actionaid.org.uk/sites/default/files/doc\\_lib/malawi\\_climate\\_change\\_report.pdf](https://www.actionaid.org.uk/sites/default/files/doc_lib/malawi_climate_change_report.pdf)
- Adebayo, K., Abayomi, L., Abass, A., Dzedzoave, N.T., Forsythe, L., Hillocks, R.J., Gensi, R., Gibson, R.W., Graffham, A.J., Ilona, P., Kleih, U.K., Lamboll, R.I., Mahende, G., Martin, A.M., Onumah, G.E., Orr, A.W., Posthumus, H., Sanni, L.O., Sandifolo, V. and Westby, A. (2010) Sustainable inclusion of smallholders in the emerging high quality cassava flour value chains in Africa: challenges for agricultural extension services. *Journal of Agricultural Extension*, 14(1), pp. 1-10.
- Adebayo, K., White, J. L., Morris, M. J., Dipeolu, A. O., Ayinde, I. A., Wandschneider, T. S., Sanni, L. O., Oyewole, O. B., Tomlins, K., and Westby, A. (2003) Innovativeness and stakeholderism in the fufu processing systems in southwest Nigeria. *Agriculture, Social Science, Environment and Technology Series A*, 3(4), pp. 15-27.
- Adetunji Oni, B. (2014) Discriminatory property inheritance rights under the Yoruba and Igbo customary law in Nigeria: The need for reforms. *IOSR Journal of Humanities and Social Sciences*, 19(2), pp. 30-43.
- Afolami C.A. and Ajani O.I. (1995) Gender participation, group formation and adoption of cassava processing technologies in Ogun State. In the *Proceedings of the Eight Annual Conference of the Nigerian Rural Sociological Association*. Ogun State, Ago Iwoye. 13- 17 March 1994, pp. 88-96.
- Agarwal, B. (1997) 'Bargaining' and gender relations: Within and beyond the household. *Feminist Economics*, 3(1), pp. 1-51.
- Albu, M. (2008) *Making Markets Work for Poor. International development cooperation: seeking common principles that underpin a coherent approach to poverty reduction*. Bern: Swiss Agency for Development and Cooperation (SDC).

- Anderman, T.,L., Remans, R., Wood., S.A., De Rosa, K., and R.S. DeFries (2014) Synergies and trade-offs between cash crop production and food security: a case study in rural Ghana. *Food Security*, 6(4), pp. 541–554
- Ashley, C., Start, D. and Slater, R. (2003) Understanding livelihoods in rural India: diversity, change and exclusion. *ODI Livelihood Options Guidance Sheets*. London: Overseas Development Institute.
- Attwood, D.W. (1992) *Raising cane: the political economy of sugar in Western India*. Colorado: Westview Press.
- Azariadis, C. and Stachurski, J. (2005) Chapter 5: Poverty traps. In: P. Aghion and S.N. Durlauf (eds) *Handbook of Economic Growth*, 1 (part A). CA, USA: Elsevier.
- Barrett, C.B., (2008) Smallholder market participation: concepts and evidence from eastern and southern Africa. *Food Policy*, 33, pp. 299-317.
- Barrientos, S., Dolan, C., and Tallontire, A. (2003) A gendered value chain approach to codes of conduct in African horticulture. *World Development*, 3(9), pp. 1511-1526.
- Bebbington, A. (1999) Capitals and Capabilities: a framework for analysing peasant viability, rural livelihoods and poverty. *World Development*, 27(12), pp. 2021-2044.
- Benson, T. (2004) *Africa's food and nutrition security situation*. Washington: IFPRI.
- Berge, E., Kambewa, D., Munthali, A. and Wiig, H. (2014) Lineage and land reforms in Malawi: Do matrilineal and patrilineal landholding systems represent a problem for land reforms in Malawi? *Land Use Policy*, 41, pp. 61-69.
- Block, F. (1990). *Postindustrial possibilities: a critique of economic discourse*. Berkeley, CA: University of California Press.
- Bolwig, S., Ponte, S., du Toit, A., Riisgaard, L., and Halberg, N. (2008) Integrating poverty, gender and environmental concerns into value chain analysis: A conceptual framework and lessons for action research. *DIIS Working Paper, 17*. Copenhagen: Danish Institute for International Studies.

- Boserup, E. (1970) *Women's role in economic development*. New York: St Martin's Press.
- Bouis, H.E. and Haddad, L.J. (1990) Chapter 2: Research design, conceptual framework and sample selection. In D. Carney, ed., 1998. *Sustainable rural livelihoods: What contributions can we make?* London: DFID.
- Brohman, J. (2000) *Popular development: Rethinking the theory and practice of development*. Oxford: Blackwell publishers.
- Brown, S. and Kennedy, G. (2005). A case study of cash cropping in Nepal: Poverty alleviation or inequity? *Agriculture and Human Values*, 22(1), pp. 105-116.
- British Broadcasting Corporation (BBC) (2014) Nigeria country profile. URL: <http://www.bbc.co.uk/news/business-26913497>
- Bryceson, D.F. (2000) Peasant theories and smallholder policies: Past and present in *Disappearing peasantries: rural labour in Africa, Asia and Latin America*, Bryceson, D.F., C. Kay & J.Mooij (eds) London, IT Publications, pp. 1-36.
- Bryman A. (2008) *Social research methods*. 3rd edition. Oxford University Press.
- Burns, J. and Keswell, M. (2006) Intra-household decision-making and resource allocation, social networks and social cohesion: an input document in *Preparation of the National Income Dynamics Study*. URL: <http://www.nids.uct.ac.za/nids-data/program-library>
- C:AVA (2008) Scoping Study Nigeria. Internal C:AVA project document. (*Unpublished*).
- C:AVA Malawi Value Chain Study (2009). Confidential C:AVA project document. (*Unpublished*).
- Carney, D. (ed) (1998) *Sustainable rural livelihoods: What contributions can we make?* London: DFID.
- Chayanov (1925) *Peasant farm organisation* (originally published in Russian in 1925).
- Chayanov (1966) *On the theory of non-capitalist economic systems* (English Translation).



Cervantes-Godoy, D., J. Dewbre (2010) Economic importance of agriculture for poverty Reduction, *OECD Food, Agriculture and Fisheries Working Papers*, No. 23, OECD Publishing.

Consultative Group to Assist the Poor (CGAP) (2010) Does microfinance really help poor people? *Focus Note 59*, January.

Cornwall, A., Harrison, E., and A. Whitehead (2008) Introduction. In *Gender Myths and Feminist Fables*. Cornwall, A., Harrison, Whitehead (eds). Oxford: Blackwell Publishing.

Chambers, R. (2006) What is poverty? Who asks? Who answers? In: *Poverty in focus: What is poverty? Concepts and Measures*. UNDP, International Poverty Centre.

Chambers, R. and Conway, G.R. (1991) Sustainable Rural Livelihoods: Practical concepts for the 21st Century. *IDS Discussion Paper 296*. Brighton, UK: Institute of Development Studies.

Chambers, R. (1986) Putting the last first. In P. Ekins (ed) *The Living Economy: A New Economics in the Making*. London and New York: Routledge and Kegan Paul, pp. 306–22.

Chambers, R. (1994) Participatory Rural Appraisal (PRA): Analysis of experience. *World Development*, 22(9), pp. 1253–1268.

Chambers, R. (1994b) The origins and practice of participatory rural appraisal. *World Development*, 22(7), pp. 953–969.

Chapman, R., Slaymaker, T. and Young, J. (2003) *Livelihoods approaches to information communication in support of rural poverty elimination and food security*. London: Overseas Development Institute.

Coles, C. and Mitchell, J. (2011) Gender and agricultural value chains: A review of current knowledge and practice and their policy implications. *ESA Working Paper No. 11-05*. Rome: FAO.

Davies, S. (1996) *Adaptable Livelihoods. Coping with food insecurity in the Malian Sahel*. New York: St. Martin's Press.

Davis, K. (2008). Extension in Sub-Saharan Africa: Overview and assessment of past and current models and future prospects. *Journal of International Agricultural and Extension Education*, 15(3), pp. 15-28.

Deere, C. D. and de Janvry, A. (1979) A conceptual framework for the empirical analysis of peasants. *American Journal of Agricultural Economics*, 61(4), pp. 601-611.

Department for International Development (DFID) and Swiss Agency for Development and Cooperation (SDC) (2008) *A synthesis of the making markets work for the poor (M4P) approach*. Bern, Switzerland: SDC.

DFID (2014) Agriculture and poverty. *Agriculture and growth evidence paper series*. June. London: DFID.

DFID (2015) *DFID's Conceptual Framework on Agriculture*. London: DFID.

DFID (2000) *Sustainable Livelihoods Guidance Sheets*. London: DFID.

Demographic and Health Survey (DHS) (Malawi) (2010) National Statistical Office, Zomba, Malawi and ICF Macro, Calverton, Maryland, USA, September 2011.

Dixon, A., Bandyopadhyay, R., Coyne, D., Ferguson, M., Shaun, R., Ferris, B., Hanna, R., Hughes, J., Ingelbrecht, I., Gent, U., Legg, J., and Mahungu, N. (2003) Cassava: From poor farmer's crop to pace-setter of African rural development. *Chronica Horticulturae*, 43(4), pp. 8-15.

Dolan, C.S. (2001) Gender asymmetries in intra-household resources allocation in sub-Saharan Africa: Policy Implications for Land and Labor Productivity. In *Understanding how resources are allocated within households*. Policy Brief: 8. Washington: IFPRI and the World Bank.

Donovan, J. and Poole, N.D. (2013). Asset building in response to value chain development: lessons from taro producers in Nicaragua. *International Journal of Agricultural Sustainability* 11(1), pp. 23-37.

Dorward, A. (2009). Integrating contested aspirations, processes and policy: Development as hanging in, stepping up and stepping out. *Development Policy Review*, 27 (2009), pp. 131–146.

- Dorward, A., Poole, N., Morrisson, J., Kydd, J. and I. Urey (2003). Markets, Institutions and Technology: Missing links in livelihoods analysis. *Development Policy Review*, 21(3), pp. 319-332.
- Dorward, A., and J. Kydd (2005) Making agricultural markets work for the poor: promoting effective, efficient and accessible coordination and exchange. London: Imperial College London.
- Doss, C. (1999) Twenty-five years of research on women farmers in Africa: lessons and implications for agricultural research institutions. CIMMYT. *Economics Program Paper*, pp. 99-02.
- Doss, C. (2002) Men's Crops? Women's Crops? The gender patterns of cropping in Ghana. *World Development*, 30(11), pp. 1987–2000.
- Doss, C. (2011) Intrahousehold bargaining and resource allocation in developing countries. *World Development Report 2012*. Washington: World Bank.
- Doss, C. (2013) Intrahousehold bargaining and resource allocation in developing countries. *The World Bank Research Observer*, 28 (1), pp. 52–78.
- Duncan, B. and Brants, C. (2004) *Access to and control over land from a gender perspective: A Study conducted in the Volta Region of Ghana*. Accra: FAO.
- Economic Commission for Africa (ECA) (2008) Economic report on Africa 2009: Developing African agriculture through regional value chains. Addis Ababa, Ethiopia: *United Nations Economic Commission for Africa*.
- Ellis, F. (1993) *Peasant Economics: Farm households and agrarian development*. Cambridge: Cambridge University Press.
- El-Sharkawy, M. (2012) Stress-Tolerant Cassava: The role of integrative ecophysiology-breeding research in crop improvement. *Open Journal of Soil Science*, 2(2), pp. 162-186
- Elson, D. (1999) Labour markets as gendered institutions: equality, efficiency and empowerment issues. *World Development*, 27(3), pp. 611-627.
- Enete, A., Nweke, F. and Tollens, E. (2002) Contributions of men and women to food crop production labour in Africa: information from COSCA. *Outlook on Agriculture*, 31(4) pp. 259–265.

- Evans, A. (2014) Theorizing asymmetric flexibility in gender divisions of labour: a Zambian case study. *LSE working paper*. London: London School of Economics.
- FAO (1990) *Roots, tubers, plantains and bananas in human nutrition*. Rome: FAO.
- FAO (2001) *Gender and food security, module one*. Rome: FAO.
- FAO (2005) A review of cassava in Africa with country case studies on Nigeria, Ghana, the United Republic of Tanzania, Uganda and Benin. Proceedings of the validation forum on *the Global Cassava Development Strategy* Vol. 2. Rome: IFAD and FAO.
- FAO (2009) (2009) *Declaration of the World Food Summit on Food Security*. Rome: FAO.
- FAO (2011) *The State of Food and Agriculture 2010-2011: Women in Agriculture*. Rome: FAO.
- FAO (2012) *The State of Food insecurity in the World*. Rome: FAO, IFAD and WFP.
- FAO (2012b) Factsheet: Smallholder and family farmers. *Sustainable Pathways*. Rome: FAO.
- FAOSTAT *statistical database*. URL: [www.faostat.fao.org](http://www.faostat.fao.org)
- Ferber, M. and J. Nelson (1993) *Beyond Economic Man: Feminist theory and economics*. Chicago: University of Chicago Press.
- Ferris, S. and Seville, D. (2010) Food security, sustainable development and the role of business. Presentation at the 3<sup>rd</sup> conference on sustainable agriculture 'The art of farming', Brussels, May 11-12, 2010.
- Finnis, E. (2006) Why grow cash crops? Subsistence farming and crop commercialisation in the Kolli Hills, South India. *American Anthropologist*, 108(2), pp. 363-336.
- Folbre, N. (1994) *Who Pays for the Kids: Gender and the structures of constraint*. New York: Routledge Press.
- Forsythe, L., Posthumus, H. and Martin, A. (2016) A crop of one's own? Women's experiences of cassava commercialization in Nigeria and Malawi. *Journal of Gender, Agriculture and Food Security*, 1 (2):2. pp. 110-128.

- Forsythe, L., A.M. Martin, and H. Posthumus (2015) Cassava market development: a path to women's empowerment or business as usual? *Food Chain*, 5(1-2). pp. 11-27
- Forsythe, L., Manda, M. N., Mwangwela, A.M. and Bennett, B. (2015b) Beliefs, taboos and minor crop value chains: the case of Bambara Groundnut in Malawi. *Food, Culture and Society*, 18(3), pp. 501-517.
- Forsythe, L., Morton, J., Nelson, V., Quan, J., Martin, A. and M. Hartog (2015c) *Strengthening dryland women's land rights: local contexts, global change*. Natural Resources Institute, University of Greenwich, Chatham, UK.
- Garner, E. and de la O Campos, A. (2012). Identifying the "family farm": An informal discussion on the concepts and definitions. *ESW Seminar*. Unpublished.
- Gledhill, J. (1998) *Peasant Social Worlds and their Transformation*. Manchester: University of Manchester Department of Social Anthropology and the ERA Consortium.
- Goody, J. (ed) (1958) The Developmental Cycle in Domestic Groups. *Cambridge Papers in Social Anthropology*, No. 1. New York: Cambridge University Press.
- Granovetter, M. (1985). Economic action and social structure: the problem of embeddedness. *The American Journal of Sociology*, 91(3) pp 481-510.
- Griffiths, M. (1998) *Educational Research for Social Justice: Getting off the Fence*. Milton Keynes: Open University Press.
- Gudeman, S. (1986) *Economics as culture: models and metaphors of livelihood*. London: Routledge.
- Haddad, L., Hoddinott, J. and Alderman, H. 1997 (eds.) Intra-household resource allocation In *developing countries: Models, Methods, and Policy*. Maryland: Johns Hopkins University Press.
- Handschoch, C. & M. Wollni (2015) Traditional food crop marketing in sub-Saharan Africa: Does gender matter? *The Journal of Development Studies*, 52(3), pp. 343-359.

- Haraway, D. (1988) Situated Knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), pp. 575-599.
- Hwalla, N., Labban, S.E. and R. A. Bahn (2016). Nutrition security is an integral component of food security. *Frontiers in Life Science*. 9(3), pp 167-172.
- Heltberg, R. and Tarp, F. (2002) Agricultural supply response and poverty in Mozambique. *Food Policy*, 27(2), pp. 103-124.
- Helmsing, A.H.J. and S. Vellema (eds) (2011) *Value chains, Social Inclusion and Economic Development: Contrasting theories and realities*. New York: Routledge.
- Henning, C., Henningsen, G., Henningsen, A. (2011) Networks and Transaction Costs. Paper prepared for presentation at the EAAE 2011 Congress, *Change and Uncertainty Challenges for Agriculture, Food and Natural Resources*, August 30 to September 2, 2011. ETH Zurich, Zurich, Switzerland.
- Hinrichs, C.C. (2000) Embeddedness of local food systems: notes on two types of direct agricultural market. *Journal of Rural Studies*, 16, pp. 295-303.
- Holland, J. and Campbell, J. (2006) *Methods in development research*. Michigan: University of Michigan.
- Hyden, G. (1980) *Beyond Ujamaa in Tanzania: underdevelopment and an uncaptured peasantry*. Berkley: University of California Press.
- IFAD and FAO (2000). *The world cassava economy*. Rome: FAO and IFAD.
- Integrated Household Survey (IHS3) 2010-2011 (2012). Lilongwe: Malawi National Statistics Office.
- Jackson, C. (2008) Resolving Risk? Marriage and Creative Conjuality. In *Gender Myths and Feminist Fables*. Cornwall, A., Harrison, Whitehead (eds). Oxford: Blackwell Publishing.

- Jaleta, M., Gebremedhin B. and Hoekstra D. (2009) Smallholder commercialization: Processes, determinants and impact. Discussion Paper No. 18. *Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project*. Nairobi: International Livestock Research Institute (ILRI).
- Jarvis A, Ramirez-Villegas J, Herrera-Campo BV & Navarro-Racines C. (2012) Is cassava the answer to African climate change adaptation? *Tropical Plant Biology*, 5(1): pp. 9-29.
- Jayne, T.S., T. Yamano, M.T. Weber, D. Tschirley, R. Benfica, A. Chapoto, B. Zulu (2003) Smallholder income and land distribution in Africa: implications for poverty reduction strategies. *Food Policy*, 28(3), pp. 253-275.
- Kabeer, N. (1999) Resources, Agency, Achievements: Reflections on the measurement of women's empowerment. *Development and Change*, 30(3), pp. 435–464.
- Kabeer, N. (2002) *The power to choose: Bangladeshi women and labor market decisions in London and Dhaka*. London: Verso.
- Kabeer, N. (2005) Gender equality and women's empowerment: A critical analysis of the third Millennium Development Goal 1. *Gender & Development*, 13(1), pp. 13-24.
- Kabeer, N. (2010) *Can the MDGs provide a pathway to social justice? The challenge of intersecting inequalities*. Brighton: IDS.
- Kanji, N., MacGregor J. and Tacoli, C. (2005) *Understanding market-based livelihoods in a globalising world: combining approaches and methods*. London.: International Institute for Environment and Development (IIED).
- Kaplinsky, R. (2000) Globalisation and Unequalisation: What Can be Learned from Value Chain Analysis. *Journal of Development Studies*, 73(2):117-146.
- Kaitano, V. (2009) Gender and diversity issues relating to cassava production and processing in Malawi. C:AVA project document. Internal Document. (*Unpublished*).
- Katz, C.K. (1992) Marx on the peasantry: Class in itself of class in struggle? *The Review of Politics*, 54 (1), pp. 50-71.

- Kautsky, K. (1988) *The Agrarian Question, Vol I*. London: Swan Publications.
- Kay, C. (2009) Development strategies and rural development: Exploring synergies, eradicating poverty, *Journal of Peasant Studies* 36(1): 103-137.
- Kindon, S. L., Pain, R. and Kesby, M. (2007) *Participatory action research approaches and methods: connecting people, participation, and place*. New York: Routledge.
- Kiriti, T.W.; Tisdell, C. (2003) Commercialisation of agriculture in Kenya: case study of policy bias and food purchases by farm households. *Quarterly Journal of International Agriculture*, 42(4), pp. 439–457.
- Kleih, U., Sanni, L., Dipeolu, A., Abass, A., Abdulsalam-Saghir, P., Butterworth, R., Siwoku, B. (2008) Value Chain Analysis for Nigeria. Internal Document. (*Unpublished*).
- Koopman, J. (1993) The hidden roots of the African food problem: looking within the rural household in N. Folbre, B. Bergmann. B. Agarwal, and M. Floro (eds.) *Women's work in the world economy*. New York: New York University Press, pp. 82-103.
- Krueger, R.A. and Casey, M.A. (2000) *Focus groups: A Practical Guide for Applied Research*. 3rd Edition. London: Sage.
- Lamboll, R., Nelson, V., Posthumus, H. and Martin, A. (2013) *C:AVA Scaling Up Study: Learning from collective project experience to inform future action. Preliminary findings and implications*. Internal Document. (*Unpublished*).
- Lamboll, R. (*forthcoming*) Shaping, Adapting and Reserving the Right to Play: Responding to Uncertainty in High Quality Cassava Flour Value Chains in Nigeria. *Journal of Agribusiness in Developing and Emerging Economies*.
- Lamboll, R., Nelson, V., Posthumus, H., Martin, A.M., Adebayo, K., Alacho, F., Dziedzoave, N., Mahende, G., Sandifolo, V., Sanni, L., Abayomi, L., Graffham, A., Hillocks, R. and A. Westby (2015) Practical lessons on scaling up smallholder-inclusive and sustainable cassava value chains in Africa. *Food Chain*, 5(1-2): pp. 28-52.



- Leavy, J. and Poulton, C. (2007) *Commercialisations in Agriculture*. Working Paper. Future Agricultures Consortium.
- Mannon S. (2005) Risk takers, risk makers: small farmers and non-traditional agro-exports in Kenya and Costa Rica. *Human organisation*, 64(1), pp. 16–27.
- Manzanera-Ruiz, R., Lizárraga, C. and Mwaipopo, R. (2016) Gender inequality, processes of adaptation, and female local initiatives in cash crop production in Northern Tanzania. *Rural Sociology*, 81, pp. 143–171.
- McSweeney, C., New, M., Lizcano, G. and Lu, X. (2010) The UNDP Climate Change Country Profiles Improving the Accessibility of Observed and Projected Climate Information for Studies of Climate Change in Developing Countries. *Bulletin of the American Meteorological Society*, 91, pp.157-166.
- Meinzen-Dick, R., N Johnson, A. Quisumbing, J. Njuki, J. Behrman, D. Rubin, A. Peterman, and E. Waithanji (2011) Gender, Assets, and Agricultural Development Programs: A Conceptual Framework: *CAPRI Working Paper No. 99*. Washington: IFPRI.
- Messer, N. and Townsley, P. (2003) *Local Institutions and Livelihoods: Guidelines for analysis*. FAO Rome.
- MHRC - Malawi Human Rights Commission (2005) *Cultural practices and their impact on the enjoyment of human rights, particularly the rights of women and children in Malawi*. Lilongwe: Malawi Human Rights Commission.
- Montagnac, J.A., Davis, C.R., Tanumihardjo, S.A. (2009) Processing techniques to reduce toxicity and antinutrients of cassava for use as a staple food. *Comprehensive Reviews. Food Science and Technology*, 8(1), pp. 17-27.
- Moore, H. and Vaughan, M. (1987) Cutting down trees: women, nutrition and agricultural change in the Northern Province of Zambia, 1920-1986. *African Affairs*, 86, pp. 523-540.

Morton, J. (2007) The impact of climate change on smallholder and subsistence agriculture. *Proceedings of the National Academy of Sciences of the United States of America*, PNAS, *Proceedings of the National Academy of Sciences*, 104(50). Washington: National Academy of the Sciences.

Morton, J. and Meadows, N. (2000) *Pastoralism and Sustainable Livelihoods: An emerging agenda, Policy Series 11*. Chatham: Natural Resource Institute, University of Greenwich.

Moser, S. (2008) Personality: a new positionality? *Area*, 40 (3), pp. 383-392.

Moyo, A. (2004) Religion in Africa. In April A. Gordon and Donald L. Gordon (eds.) *Understanding Contemporary Africa*, 4th edition. Pp. 317-350. London: Lynne Rienner Publishers.

Muñoz Boutdet, A.M., Pettesch, P. & Turk, C., with Thumala, A. (2012) *On norms and agency. Conversations with women and men about gender equality in 20 countries*. Washington: World Bank.

Murphy, S. (2010) Changing perspectives: Small-scale farmers, markets and globalization. *Hivos Knowledge Programme Report*. The Hague.

Napier, M., Melamed, C., Taylor, G. and Jaeggi, T. (2013) *Promoting women's financial inclusion: A toolkit*. Department for International Development (DFID) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

National Bureau of statistics (NBS) (2013) LSMS- integrated surveys on agriculture. General Household Survey Panel 2010/11. The Federal Republic of Nigeria.

National Demographic and Health Survey 2013 (2014). National Population Commission. Abuja: ICF International.

NEPAD (2004) NEPAD targets cassava as Africa's top fighter against poverty. NEPAD Dialogue: Focus on Africa.

New Agriculturalist (2012) Country profile – Malawi.

Nigeria National Population Commission URL: <http://www.population.gov.ng/>

Njuki, J., Kaaria, S., Chamunorwa, A., and W. Chiuri (2011) Linking smallholder farmers to markets, gender and intra-household dynamics: Does the choice of commodity matter? *The European Journal of Development Research*, 23 (426).

Nkonya, E., Kovarik, C., and Markelova, H. (2005) Who shall inherit the land? Exploring gendered patterns of land inheritance in Nigeria. Paper prepared for presentation at the 2014 World Bank *Conference on Land Poverty*, March 24-27 2014. Washington: The World Bank.

North, D. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

National Population Commission (NPC) (Nigeria) and ICF International (2014). Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International.

National Population Commission (NPC) (Nigeria) (2010) Ondo State Government. URL: <http://www.ondostategovernment.com/ondo.html>

National Statistics Office (NSO) (2008) Population and housing census Malawi. Zomba: National Statistic Office.

Nweke, F. I., Spencer, D. and Lynam, K.J. (2001) *The cassava transformation: Africa's best kept secret*. Michigan: Michigan State University Press.

Nweke, F.I., Lynam, J.K., Dunstan, S. and Spencer, C. (2002) *The Cassava Transformation: Africa's best-kept secret*. East Lansing, Michigan: Michigan State University Press.

Nweke, F.I. (1994) *Processing potential for cassava production growth in sub-Saharan Africa*. Ibadan, Nigeria: IITA.

Nweke, F.I. (2005) The cassava transformation in Africa. In: A review of cassava in Africa with country case studies on Nigeria, Ghana, the United Republic of Tanzania, Uganda and Benin. Proceedings of the validation forum on the *Global Cassava Development Strategy*, Vol. 2. Rome: IFAD and FAO.

- O’Laughlin, B. (2008) A bigger piece of a very small pie: intrahousehold resource allocation and poverty reduction in Africa. In *Gender Myths and Feminist Fables*. Cornwall, A., Harrison, Whitehead (eds). Oxford: Blackwell Publishing.
- Ochiegn, J., Afari-Sefa, V., Karangja, D., Rajendran, S., Silvest, S., and R. Kessy (2016) Promoting consumption of traditional African vegetables and its effect on food and nutrition security in Tanzania. Invited paper presented at the *5th International Conference of the African Association of Agricultural Economists*, September 23-26, 2016, Addis Ababa, Ethiopia.
- Odebode, S.O. (2008) Appropriate technology for cassava processing in Nigeria: A user’s point of view. *Journal of International Women’s Studies*, 9(3), pp. 269-283.
- Oladeji, M.O. (2009) Dimensions of domestic violence against women In Nigeria, in Kehinde, A. (ed.). *Gender and Development: Essential Readings*. Ibadan: Hope Publications Ltd.
- Ogun State Government Webpages. URL: <http://www.ogunstate.gov.ng/>
- Ondo State Government Webpages. URL: <https://www.ondostate.gov.ng/new/>
- Overseas Development Institute (ODI) (2015) *Social norms, gender norms and adolescent girls: a brief guide*. London: Overseas Development Institute.
- Otsuka, K. and Yamano, T. (2006) Introduction to the special issue on the role of nonfarm income in poverty reduction: evidence from Asia and East Africa. *Agricultural Economics*, 35(3), pp. 393-397.
- Pauw, K., Thurlow, J. and van Seventer, D. (2010) Droughts and floods in Malawi: assessing the economy wide effects. *IFPRI Discussion Paper 00962*. Washington: IFPRI.
- Pearse, R. & Connell, R. (2016) Gender norms and the economy: Insights from social research. *Feminist Economics*, 22(1), pp. 30-53.
- Pingali, P.L. (1997) From subsistence to commercial production systems: the transformation of Asian agriculture. *American Journal of Agricultural Economics*, 79(2), pp. 628–634.
- Pingali, P. L. and Rosegrant, M.W. (1995) Agricultural commercialization and diversification: processes and policies. *Food Policy*, 20(3), pp. 171-185.

Polanyi, K. (1944). *The Great Transformation: The political and economic origins of our time*. Beacon Press.

Poole, N.D., Chitundu, M. and Msoni, R. (2013) Commercialisation: a meta-approach for agricultural development among smallholder farmers in Africa? *Food Policy*, 41, pp. 155-16.

Putnam, R. (2000) *Bowling Alone: The collapse and revival of American community*. Simon and Schuster.

Quisumbing, A. (1996) Male-Female differences in agriculture productivity: methodological issues and empirical evidence. *World Development*, 24(10), pp. 1579–95.

Quisumbing, A. (2003) (ed). *Household decisions, gender, and development: A synthesis of recent research*. Washington: IFPRI.

Reed, M.S., G. Podesta, I. Fazey, N. Geeson, R. Hessel, L. Hubacek, D. Letson, D. Nainggolan, C. Prell, M.G. Rickenback, C. Ritsema, G. Schwilch, L.C. Stringer, A.D. Thomas (2013) Combining analytical frameworks to assess livelihood vulnerability to climate change and analyse adaptation options. *Ecological Economics*, 94, pp. 66-77.

Renewable Natural Resources and Agriculture Team (RNRAT), DFID Policy Division (2004) Making agricultural markets work for the poor. *Working paper*. London: DFID.

Riisgaard, L., S. Bolwig, F. Matose, S. Ponte, A. du Toit & N. Halberg (2008) A strategic framework and toolbox for action research with small producers in value chains, *DIIS Working Paper 2008:17*.

Rogers, B.L. and N.P. Schlossman (eds) (1990) *Intra-household resource allocation: Issues and methods for development policy and planning*. The United Nations University.

Rossing-Feldman, T. and Assaf, S. (1999) Social Capital: Conceptual frameworks and empirical evidence, an annotated bibliography. *Working Paper No. 5*. Washington: World Bank.

Sandifolo, V., Kaitano, V. and Abayomi, L. (2014) C:AVA Malawi Phase I final technical report. March 2014. Confidential C:AVA project document. *Unpublished*.

- Scoones, I. (1998) Sustainable rural livelihoods: A framework for analysis. *IDS Working Paper, 72*. Brighton: IDS.
- Scoones, I. (2009) Livelihoods perspectives and rural development. *The Journal of Peasant Studies* Volume 36, 2009.
- Scott, J.C. (1977) *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. Yale.
- Sen, A. (1985) *Commodities and Capabilities*. Amsterdam: North-Holland.
- Sen, A. (1993) Capability and well-being in *The Quality of Life*, M. Nussbaum and A. Sen. (eds Oxford: Clarendon Press.
- Sergeant, A. (2009) Market and financial observations for HQCF in Malawi, September 2009. Confidential C:AVA project document. *Unpublished*.
- Serrat, O. (2008) The Sustainable Livelihoods Approach. Asian Development Bank.
- Seville, D., Buxton, A. and Vorley, B. (2011) Under what conditions are value chains effective tools for pro-poor development? International Institute for Environment and Development/Sustainable Food Lab. Washington: IIED.
- SFINX FILM (1994) *Mama Benz: An African Market Woman*. Film.
- Shanin, T. (1971) Peasantry: delineation of a sociological concept and a field of study. *European Journal of Sociology*, 12(02), pp. 289-300.
- Slater, R. and Wiggins, S. (2005) *Responding to HIV/AIDS in agriculture and related activities*. London: Overseas Development Institute.
- SOFA Team & C. Doss (2011) The role of women in agriculture. *ESA Working Paper No. 11-02*. Rome: FAO.
- Sorensen, C. (2000) Social capital and rural development: discussion of issues. *Social Capital Initiative Working Paper*. World Bank.

- Spivak, G. C. (1988) *In other worlds: essays in cultural politics*. New York: Routledge.
- Stephens, E C. and Barrett, C.B. (2006) Missing credit markets and commodity marketing behaviour, 2006 Annual meeting, July 23-26, Long Beach, CA, *American Agricultural Economics Association*, (new name 2008: Agricultural and Applied Economics Association).
- Strasberg P.J., Jayne, T.S., Yamano, T., Nyoro, J., Karanja, D., and Strauss, J. (1999) Effects of agricultural commercialization on food crop input use and productivity in Kenya. *Michigan State University International Development Working Papers No. 71*. Michigan, USA.
- Strauss, A.L. and Corbin, J. (1998) *Basics of qualitative research: Grounded theory Procedures and Techniques*. 2nd edition. London: Sage.
- Swindell, K. (1985) *Farm labour: African society today*. London: Cambridge University Press.
- Swinnen, J., L. Colen, and M. Maertens (2013) Constraints to smallholder participation in high-value agriculture in West Africa, In: *Rebuilding West Africa's Food Potential*, A. Elbehri (ed.), FAO/IFAD.
- Tallontire, A., Barrientos, S., Dolan C., and Smith, S. (2005) Reaching the marginalized? Gender value chains and ethical trade in African horticulture. *Development in Practice*, 15(3/4), pp. 559-571.
- Thirtle, C., Lin, L. and Piesse, J. (2003) The impact of research led agricultural productivity growth on poverty reduction in Africa, Asia and Latin America. *Conference Paper for the 25th conference of the International Association of Agricultural Economists*.
- Timothy, A.T. and Adeoti, A. I. (2006) Gender inequalities and economic efficiency: new evidence from cassava-based farm holdings in rural south -western Nigeria. *African Development Review*, 18(3), pp. 428-443.
- Toner, A. (2003) Exploring sustainable livelihoods approaches in relation to two interventions in Tanzania. *Journal of International Development*, 15(6), pp. 771-781.
- UNAIDS (2013) Report on the global AIDS epidemic. Geneva: UNAIDS.

UNDP (2013) Human Development Report 2013: Nigeria. New York: United Nations.

Udry, C. (1996) Gender, agricultural productivity and the theory of the household. *Journal of Political Economy*, 104(5), pp. 1010-1046.

von Braun, J. and E. Kennedy (eds.) (1994) *Agricultural commercialisation, economic development and nutrition*. London: John Hopkins University Press.

USAID (2005) Enhancing women's access to market: an overview of donor programs and best practices. Washington: USAID.

von Braun, J. (1995). Agricultural commercialisation: Impacts on income and nutrition and implications for policy. *Food Policy*, 20 (3), pp. 187-202.

Vorley, B. (2002) *Sustaining Agriculture: Policy, governance, and the future of family-based Farming*. London: IIED.

Wasserman, S., and Faust K. (1994) Social Network Analysis in the Social and Behavioural Sciences. In: *Social Network Analysis: Methods and Applications*. Cambridge University Press. pp. 1–27.

Weber, M. (1964) *Basic concepts in Sociology*. New York: Citadel Press.

Wenham, J.E. (1995) Postharvest deterioration of cassava: A biotechnology perspective. *Plant Production and Protection Paper No 130*. Rome: FAO

Wiggins, S., Argwings-Kodhek, G., Leavy, J. and Poulton, C. (2011) Small farm commercialisation in Africa: Reviewing the issues. *Future Agricultures*.

World Bank Group (2006) Gender equality as smart economics: A World Bank Group Gender Action Plan (Fiscal years 2007–10). Washington: World Bank.

World Bank (2008) *World Development Report 2008: Agriculture for Development*. Washington: World Bank.

World Bank Open Data. URL: <http://data.worldbank.org/>



World Bank (2010). Gini Index. URL: <http://data.worldbank.org/indicator/SI.POV.GINI>

World Bank (2012). *World Development Report: Gender Equality and Development*. Washington: World Bank.

World Bank (2013). Data country profile Malawi.

World Bank (2014a) Overview Nigeria.

World Bank (2014 b) Nigeria Economic Report, No 2 July 2014. Washington: World Bank.

World Bank (2014c). Malawi Country Profile.

World Bank, FAO and IFAD (2009) *Gender in Agriculture Sourcebook*. Washington: IBRD and World Bank.

## Appendix A: Focus group discussion guide

### IMPACT OF CROP COMMERCIALISATION ON SMALL FARMERS

Focus groups of 6-10 people in C:AVA participating communities. Three separate focus groups: men, women and youth.

#### Introduction

*Introduce yourself and explain the purpose of the study:*

*“The purpose of the study is to examine the impact of the C:AVA project, which aims to help create a new market for a cassava product (HQCF) to support small farmers and improve their livelihoods. This study is the start to understanding what challenges and opportunities you are facing with regards to entering new markets.*

*We would like the discussions to be open and honest. Everything is confidential and nothing will be attributed to yourself in this discussion. We would also ask for the group to respect the opinions of others. You have the right to withdraw your participation at any time. Do I have your content to participating in this discussion?*

*We really appreciate your time and views. We hope that you will benefit from the activities and the outputs from the study.”*

*Once receiving consent, ask participants to introduce themselves and collect names of participants or their location in the community if it is possible to follow-up with them at a later date.*

#### **Note:**

Date		type of group / activities	
Location		language of discussion	
name of group		relevant service provider	
gender composition		buyer and distance of buyer	

#### Livelihoods

1. What are the main activities of the family unit/household (e.g. agriculture, livestock, off-farm employment – distinguish if migrate to work or not)?

- How has this changed over the last ten years (e.g. agriculture is more or less important, livestock is less important because of disease, more migration)? (What vulnerability *trends* are there impacting livelihoods)?

*Probe:*

- Trends: Declining resources, government policy, new technology, health problems, conflict, crop/livestock health, Better/worse crop prices, employment opportunities
  - Shocks: unpredictable events affecting livelihoods such as war, natural disasters
  - Seasonality: recurrent changes throughout the year that influence people's access to assets and livelihood outcomes (e.g. weather)
- Would you say that things are better or worse for your household in the last ten years? Why? What about for other groups in your community (e.g. men, women, youth, ethnic groups, migrants etc)

Household production

*We are now going to discuss the crops you grow in order to get a better understanding of how you make decisions of buying, selling and growing crops.*

- Which are the most important crops for the home and for selling?

Household food	Selling

- Is this different for some groups in the community (e.g. poor households, people with HIV/AIDS, migrants, women-headed households)? Which groups are more or less dependent on selling certain crops for food?
- Have the type of crops you used for food and the crops you sell changed within the last ten years? How? Why?
- What influences your decision on which crops to plant?
  - Incentives: government subsidies?
  - Assets: Training? Loans?
  - Information: from what sources? Friends? Extension agents?
- What factors are considered, or what strategy is used, when making a decision on which crops to plant (e.g. food security, secure source of cash, labour-saving, crop diversification)? Are any crops or investments more or less risky for different social groups? Why?

9. What influences your decisions in the choice of product to process?
10. What about if circumstances changed, like there was a drought, or fertiliser became very expensive, what choices would you make differently?
11. Have you ever felt that the ‘wrong’ choice was made in the choice of crop? What was the cause of this (e.g. inadequate prices, contract not enforced, poor information, lack of knowledge with other crops)? What was the impact? (e.g. why continue to plant maize when it fails?)

#### Household consumption and food security

12. How many meals do you eat per day?
13. List the you’re a) main staples, b) main proteins, and c) fruit and veg
14. How satisfied are you with the quantity of food available to you?
15. How satisfied are you with the quality of food available to you?
16. How does this vary between:
  - Men and women
  - Groups in the community
  - Past ten years
17. How much or what proportion of your income is spent on food? Which foods are purchased for the household? By seasons. *Note which goods are traded and untraded goods.*
18. How has your food purchases changed in the past ten years (e.g. purchase more or less)? Why?
19. How do you decide what food is kept in the house and how much is sold? What factors are considered? Who is involved? Do you receive information or advice from anyone?
20. Have you had an experience where a crop you mainly used for food became more valuable in the market? Please describe. How did this impact on the food available in the household?
21. Have you ever had difficulty in meeting food needs in your household? How did you manage the situation? How were different people in the household affected? How are different people in the community affected?
22. Do you think you are more or less food secure than ten years ago? Why?

Market integration and food security

- 23. How do you market your produce (group, individual, cooperative, bulking agents) for each crop (emphasis on cassava)? Have these arrangements changed in the last ten years (*e.g. less cooperatives, more private traders*)?
- 24. What would improve marketing for your crops e.g. road, transportation, fairer contracts, fairer prices)? What would improve marketing for cassava products?
- 25. Are you involved in processing activities? Why or why not? Where? How beneficial has processing been to your household income?

C:AVA specific questions (group level)

- 26. What activities does your group do? Does this include HQCF products? If no, why and what products?
- 27. Group transactions:
  - sources of cassava roots
  - prices paid
  - products sold, quantity, price and to who, profits.
- 28. Benefits of these products compared to other products (decision making between the different value chains)?

Product			
Garri			
Fufu			

External interaction

- 29. What support have you received with agriculture from people outside the community (e.g. government, private sector, NGOs? Please describe. What was good or bad about it?
- 30. Are there any agricultural or marketing laws or policies that have been enacted that are beneficial or a hindrance to your or your family’s wellbeing?

Conclusion

- 31. Where do you want your family to be in the next ten years in terms of market activities and food security?

*Thank participants for their contributions.*

## Appendix B: 1st round panel interview discussion guide

Household questionnaire– individual producer interview

- Note the activities that the person is currently doing upon arrival to the household
- Interviewee doesn't have to be the household head
- Number of responses (e.g. household income) will need to be verified by other members

Date of interview:	Village:
Questionnaire code:	District:

### Interviewee and household details

Interviewee (1)

Name interviewee		Group name and length of membership	
Gender		Ethnicity	
Age		Religion	
Relationship to head of household		Maximum education level	
Marital status		Literacy (Y/N)	
Disability		Producing cassava Y/N	
Residency		Processing cassava Y/N	

Household: tell me about your household (e.g. extended family, polygamous, nuclear)

Household members by Relationship to head of household	Gender M/F	Age (years)	Literacy (Y/N)	If school age	Regularly attend (Y/N)
				In school Y/N	
2					
3					
4					
5					
6					
7					

## 1. Household livelihood dynamics

1.1 Tell me about the different activities that you do (on and off farm), and other members of your household. *On and off-farm activities, including processing activities.*

	<u>Income generating</u> (e.g. <i>mechanic, agriculture, processing, small shop, crafts, trees</i> )	<u>Food-production</u> (e.g. <i>livestock, agriculture</i> )	<u>Care-giving, social and cultural</u> (e.g. <i>care for elderly, hospital visits, initiation ceremonies</i> )
Interviewee			
2			
3			
4			
5			

1.2 Tell me about how your agriculture tasks and activities are divided. *E.g. What crops are growing on which plots of land? Are these joint or individual plots? What inputs are used? Is fertiliser from livestock or chemical?*

Crops	Land plot owned (customary or titled) or rented or borrowed	Inputs ( <i>pesticides, organic fertiliser, non-organic fertiliser, pesticides, equipment</i> )	Land plot responsibility (household / individual/ both)	Decision making /management	Labour (person in family or hired)

1.3 Why are livelihood assets allocated in the way they are? *Probe each of the answers with WHY. What are you expected outcomes from these activities? E.g. we are trying to explore their rationale and decision pathway leading to expected changes and outcomes.*

1.4 Why do different household members have different responsibilities ( crops, land plots and particular tasks). Why is there this arrangement? *E.g. why do women do more food production? Why do only men grow cassava? Why do only women do weeding?*

## 2. Household food security

- 2.1 Are you able to self-provision food for the household? (asked in Nigeria only)
- 2.2 How much is self-provided and how much is purchased?
- 2.3 How satisfied are you with the food available in your household? (asked in Nigeria only)
- Quality? Quantity?
  - When does this occur? (every dry season, only in a bad year, all year)
  - Why? (*we are looking specifically for impacts of staple crops becoming commercialized*)
- 2.4 What constitutes an ideal, average or poor diet? (added for Malawi)
- 2.5 What type of diet do you have? Is this different for other household members? (added for Malawi)
- 2.6 Has there been a trend in your diet (improvement or worsening) or does it fluctuate during the year and in good/bad years?
- 2.7 Has food purchasing increased/decreased/stayed the same in the last 5? Why?
- 2.8 How do you budget food in an average year? In a bad year? *E.g. responsibilities of members - one-third of wife's crops kept in home versus selling.*
- 2.9 Who makes decisions in what is sold and kept in the household? How does one decide on purchases of food? What happens if you and your spouse disagree about what is sold and kept in the household?
- 2.10 How do changes in the market affect home consumption? Can you provide an example?

## 3. Household income

- 4.5 What are your three most important crops for income?

3 most important crops for income-generation	How are these sold (raw, processed)	Where are they sold (local market, traders)	Frequency (once after harvest, weekly)
Crop 1:			
Crop 2:			
Crop 3:			



- 4.6 Who makes decisions in what is sold, to who and how often? What are the influences or factors that are considered in making these decisions?
- 4.7 Has these activities changed in the last five years and why? Or have your production/processing leaves increased/decreased of a certain crop changed in the last five years? (price increase or decrease)
- 4.8 What has been your experience with staple crops in the market? Have they always been sold? Has it changed? (only asked Nigeria)
- What changes did you make for the new opportunity? (grew more, more labour, male took over, joined an association)
  - What were the changes that occurred? (more regular income, income is more volatile)
  - How did it affect household consumption? (*e.g it varies more sometimes good and sometimes bad, before we had more reliable income now it fluctuates, OR because of the market is consistent we have been able to have constant income to purchase a greater variety of food*)
  - How did it affect men and women's roles in the household?
- 4.9 How is the income used and by who? Who decides and who influences? (added for Malawi)
- 4.10 Does selling more produce to the market change home consumption? Can you provide an example? (added for Malawi)

#### **4. Cassava (production)**

- 4.2 Has the importance of cassava changed over the past 5-10 years? How? Note the criteria given for assessing importance (income, yield, labour cost, food preferences etc. etc.) Relate to other crops, income sources, opportunities.
- 4.3 What markets are you selling fresh cassava roots to? *E.g. local market, regional market, traders.*
- 4.4 Are you involved in HQCF? What activities?
- 4.5 How stable has the fresh cassava market been local market, regional market, traders?

4.6 Changes in fresh cassava production and selling in the last five years.

<b>What changes have you experienced in cassava production over the last five years?</b>	<b>What were the reasons for the changes?</b>
Are you growing more/less/same of fresh cassava then five years ago? How much and how often? Who decides?	
Have you changed the proportion of other crops grown relative to cassava? Why?	
What changes to levels of home consumption of cassava? What changes to income? For whom? By how much? Do these change together (e.g. income levels/consumption)	
Changes in use of livelihood assets for cassava production e.g land, labour, inputs	
Changes to payment methods for cassava	
Change in men and women's activities with cassava	

4.7 In difficult times, during the lean season, or in times of shortages or shocks, do you make any changes to cassava production activities to ensure food security? Who decides?

4.8 What are the differences with selling fresh cassava compared to other potential income sources? E.g. advantages and disadvantages.

**5. Traditional and HQCF markets**

5.1 Are you involved in HQCF? What activities?

5.2 What cassava processing do you do? (Collect information for each product, e.g. makaka, chips, grits, HQCF, group and individual levels)

Product (indicated if group activity)	How often	Most important for income	Who is the income important for	Processing more/less/same than 5 years ago

5.3 Changes in fresh cassava production and selling in the last five years.

<b>What changes have you experienced in cassava processing over the last five years?</b>	<b>What were the reasons for the changes?</b>
How is the labour of you and other members of the household, divided with the different processing activities? How was this changed in the last 5 years? Who decides?	
How has HQCF affected other cassava processing and production activities?	
What changes to levels of home consumption of cassava? What changes to income? For whom? By how much? Do these change together (e.g. income levels/consumption)	
Changes to payment methods for cassava processing	
Change in men and women's activities with cassava processing	

5.4 What are the differences with HQCF processing compared to other activities? E.g. advantages and disadvantages.

5.5 How has the processing of HQCF affected other livelihood activities like reproduction and income?

5.6 In difficult times, during the lean season, or in times of shortages or shocks, do you make any changes to cassava processing activities to ensure food security? Who decides?

5.7 If you are working in a processing group, how has it been?

**Wrap up**

If you are working in a production/processing group, how has it been?

Thank you and close.

## Appendix C: 2nd round panel interview discussion guide

### INDIVIDUAL PRODUCER/PROCESSOR DISCUSSION GUIDE

Introduce yourself and explain the purpose of the study:

*“The purpose of the study is to examine the impact of the C:AVA project, which aims to help create a new markets for a cassava product – High Quality Cassava Flour (HQCF), Cassava Grits (HQCG) and Cassava Chips (CC) to support small farmers and improve their livelihoods. We would like the discussions to be open and honest. Everything you say is confidential, will not be attributed to yourself, and not used for taxation purposes. You have the right to withdraw your participation at any time. Do I have your consent to participating in this discussion? We really appreciate your time and views. We hope that your information will help us to improve our understanding of the challenges and opportunities you have been facing, so we can use this for future projects.*

Once receiving consent, ask participant(s) to introduce themselves.

Date of interview:	Village:
Questionnaire code:	District:
Observations on activities conducting on arrival:	Housing and roofing material:

Consent to participate: Y/N (if No terminate the interview).

#### 1. Demographic information

1.1. Individual interviewed (*some information should only be verified if they have been interviewed previously*)

Name		Number of household members under 5	
Gender		Number of household members, 5-15	
Age		Number of adults (16-59)	
Compound or extended family (Y/N)		Number of adults 60+	
Relationship to head of household		C:AVA group member (Y/N) and name	
Marital status If wife, status (1 <sup>st</sup> , 2 <sup>nd</sup> etc)		Years of group membership	
Number of wives		Group leader (Y/N)	
Religion and ethnicity			

## 2. Household farming system

2.1 Overall, would you say that there has been an improvement or worsening of your wellbeing over the past 4 years? Would this be ‘large’ or ‘small’ change?

2.2 Discuss land access and management of the plots of all household members over the past year.

2.1.1 How many plots do you have?	2.1.2 What crops do you grow on that plot (note if intercropped)?	2.1.3 What is the type of ownership for that plot (rented, owned, borrowed)?	2.1.4 Who is the plot manager/ decision maker for that plot (by HH member)?
1			
2			
3			
4			
5			
6			

2.3 Has the importance of cassava for you changed over the past 4 years? How? *Note the criteria given for assessing importance (income, yield, labour cost, food preferences etc. and relate to other crops, income sources, opportunities.*

2.4 Thinking about the different activities that you and your spouse do with cassava, such as women weeding, peeling, processing and men clearing land and selling, are either or both of you doing different activities than 4 years ago? Have you noticed this in the community? If so, which and why?

2.5 I’ve heard that cassava is a women’s crop, that they do the labour for it and get to keep all the income and spend it as they want. Is this true?

2.6 What do you mainly do: produce or process cassava? Or both?

## 3. Changes to cassava production *(if the interviewee is ‘mainly’ a processor, leave this section until the end as it can be missed if there is a time shortage)*

3.1 Have you planted more, less or the same amount of cassava than 4 years ago?

3.1.1 How many cassava plots 4 years ago?

3.1.2 If more, was this the result of acquiring more land and/or decreasing the production of another crop (indicate which crop)

3.1.3 If less, was this the result of losing land or increasing the production of another crop (indicate which crop)

- 3.2 Have you started using improved planting material in the last 4 years?
- 3.2.1 Has this affected labour? Whose? (*e.g. new variety could increase weeds, and weeding could be done by specific household members, women, men or both*)
- 3.3 Do you use fertiliser with cassava? If so, since when? What type (organic/non-organic)?
- 3.3.1 Has this affected labour? Whose? (*e.g. more yield increased need for paid labour, or labour of specific household members, women, men or both*)
- 3.4 What are the reasons for changing the amount of cassava grown/variety planted/use of fertiliser? (*Note reasons behind the specific changes*).
- 3.5 What are your constraints in cassava production (land, labour, capital)? Are these constraints different for you compared to your spouse/other community members etc.?
- 3.6 Do you use credit for cassava production? What source?
- 3.7 Are you (your household) selling more, less or the same amount of cassava fresh roots you in the last 4 years?
- 4. Changes in cassava marketing as fresh roots (*for individuals who are selling fresh roots. if the interviewee is 'mainly' a processor, leave this section until the end as it can be missed if there is a time shortage*)**

4.1 Comparison of buyers and quantities sold last year and 4 years ago

4.2.1 Who are the buyers you have sold to for the last 4 years, even those you have stopped – including family?	4.2.2. Last year, how much did you sell to them?	4.2.3 4 years ago, how much did you sell to them?

- 4.2 Who makes decisions on cassava production and the amount of cassava sell and to whom? (If the response is 'both' probe around who presented the idea, if there consultation, and who makes final decision, ensure distinction between production and marketing).
- 4.3 How much fresh cassava roots did you keep for home consumption last year? Was this more or less than 4 years ago?
- 4.4 Do you harvest all at once and sell or gradually?

4.5 Do you sell your roots to family members, or give roots to anyone? On what terms?

4.6 If you are selling more or less cassava roots, has this affected the availability of roots to other member(s) of the household? For household cassava processing? Why or why not?

5 In the past four years have you ever had to harvest prematurely or harvest late? Why?

**5. Women and cassava production (*all female respondents*)**

5.1 Women only: Thinking about decisions with cassava production (such as the variety, use of fertiliser, hiring labour), what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

- You have the ideas and make a decision independently
- You consult other person (spouse) for ideas but you make the decision
- You require permission but they are your ideas
- Your spouse consults you with ideas and makes the final decision
- Your spouse makes the decision without consulting you
- Other: \_\_\_\_\_

5.2 Women only: Thinking about decisions with selling cassava roots (how much and to who to sell to) what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

- You have the idea and make a decision independently
- You consult other person (spouse) for their opinion but you make the decision
- You require permission but they are your ideas
- Your spouse consults you for your opinion and makes the final decision
- Your spouse makes the decision without consulting you
- Other: \_\_\_\_\_

5.3 Women only: In the past 4 years, do you think your involvement in these decisions about cassava production and selling fresh roots has increased, decreased or stayed the same in the?

**6. Changes to cassava processing and selling**

**[Only ask to those who are directly involved in cassava processing – skip section if they are not processing]**

**[Refer to household and group – be clear about differences]**

## 6.1 Cassava processing activities

6.1.1 What cassava products do you process?	6.1.2 What year did you start processing?	6.1.3 Do you process in a group, individually or both (G, I, B)? <i>Probe what this may mean to them.</i>	6.1.4 Where do you sell it?

6.2 What are your sources for roots (if household, specify who's plots if different ownership, obtain proportion) for household processing? For group processing?

6.3 Has the sale of cassava roots by other people in your household affected the availability of roots for your processing?

6.4 Do you have to pay fees and/or commission for your processed cassava products? Which products? What is this for?

6.5 In the last three years, would you say you have increased or decreased the amount of cassava you process (all products) for household processing? For group processing? What was the reason for this?

6.6 If you are processing more cassava, where are these additional roots from (more sold through buying more roots/producing ore roots/reducing consumption or combination)? *Household and group.*

6.7 Have you changed anything about the way you process (quality standards) in the last three years for household processing? For group processing? What and how?

6.1 Women only: What assets do you own in your own right used for cassava production/ processing/ marketing land, equipment, storage)?

6.2 Do you use credit for any of your processing activities?

6.3 Do you hire labour for any of your processing activities?

## 7. Changes to selling processed cassava

7.1 Are you selling more, less or the same amount of processed cassava in the last three years?



7.2 Quantities of cassava processing. *Note if individual or group selling.*

<i>Cassava product as listed in previous question</i>	Quantities processed specify time frame/ months of year	Amount or % sold	Quantities processed 3 years ago	Amount or % sold

7.3 What are the reasons for changing the amount of cassava processed/change in the process? (*Note reasons behind the specific changes*).

7.4 Did this affect the amount of labour required for certain tasks? Who does it affect? What activities (e.g. reproduction) change as a result? *Household and group*.

7.5 What constraints do you experience in cassava processing (labour, capital)? Are these constraints different for you compared to your spouse/other community members etc.?

7.6 Who is involved in making these decisions cassava processing (how, how much etc.)? (Probe around who presented the idea, if there consultation, and who makes final decision). Household and group.

7.7 Women only: Thinking about decisions with cassava processing, such as how much to process and the way it is processed, what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

- You have the ideas and make a decision independently
- You consult other person (spouse) for ideas but you make the decision
- You require permission but they are your ideas
- Your spouse consults you with ideas and makes the final decision
- Your spouse makes the decision without consulting you
- Other: \_\_\_\_\_

7.8 Women only: Thinking about decisions with selling processed cassava (how much and to who to sell to) what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

- You have the idea and make a decision independently
- You consult other person (spouse) for their opinion but you make the decision
- You require permission but they are your ideas
- Your spouse consults you for your opinion and makes the final decision
- Your spouse makes the decision without consulting you
- Other: \_\_\_\_\_

7.9 Women only: In the past 4 years, do you think your involvement in these decisions about cassava processing and selling has increased, decreased or stayed the same in the?

7.10 If you are selling more or less processed cassava, has this affected food consumption in the household (of cassava and otherwise)? How?

7.11 What are the differences with processing the different products compared to other activities (e.g. advantages and disadvantages)?

7.12 Are HQ activities are more, less or the same in exertion and hours of work compared to other activities?

7.13 What is the most significant change that the HQCF/CG opportunity has created (*opened*)?

**8. Outcomes from cassava production and processing**

8.1 Rate the following changes in past 3-5 years. Probe reasons for differences, drawing out any impacts raised from C:AVA

	<b>Large increase</b>	<b>Small increase</b>	<b>No change</b>	<b>Small decrease</b>	<b>Large decrease</b>	<b>Related to C:AVA (large extent, to some extent, not at all)</b>
Level of income						
Food security and diet						
Your status in the community						

8.2 Do you know your spouse's income?

8.3 Do you know how your spouse spends his/her money?

8.4 Women only: What is your level of control over the income made from cassava production?

- You have complete control on how and when it is spent without consultation
- You consult other person (spouse) for their opinion but you make the decision
- You require permission on spending the money but they are your ideas
- You give the money to another person for their use
- Other: \_\_\_\_\_

8.5 Women only: What is your level control over the income made from cassava processing?

- You have complete control on how and when it is spent without consultation
- You consult other person (spouse) for their opinion but you make the decision
- You require permission on spending the money but they are your ideas
- You give the money to another person for their use
- Other: \_\_\_\_\_

8.6 Women only: Has the level of control over income from cassava production or processing changed in the last 4 years? Why? If so, what has this impacted?

8.7 What expenditures have been made with this income from cassava production (school fees, livestock, technology, agricultural production, processing, food, health, housing etc.)?

- Any assets, who owns them?

**9. Food security**

9.1 If you are selling more or less cassava roots or processed cassava, has this affected food consumption in the household (of cassava and otherwise)? How?

9.2 Has too much ever been sold? What happened? How did you manage?

9.3 Do you buy cassava to consume? More or less than 4 years ago?

9.4 What are the roles of you and your spouse in food security for the home (e.g. man responsible for staple food provision and budgeting, women responsible for luxury or condiment purchases)? Have these changed in the last 4 years? Has there ever been disagreement with house members? What would be your level of independence on each of these decisions?

9.5 How satisfied are you with your diet? With your household? Probe around quality and quantity.

9.6 In an average week, how often do you eat “0” (Never), “1” (Hardly at all; <1 time/week), “2” (Once in a while; 1–2 times/week), “3” (Pretty often; 3–6 times/week), and “4” (Always; daily).

	<b>This year</b>		<b>This year</b>
Cassava		Lamb	
Cassava leaves		Bush meat and other meat	
Pulses (beans, lentils, peas)		Any dairy products—milk, cheese, yogurt	
Vegetables		Sugar	
Fruit		Oil or fat	
Fish		Processed/manufactured foods/snacks	
Egg and chicken		Soft drinks	
Beef			

9.7 What was different about your diet five years ago, with these foods?

9.8 Taking into consideration ALL your food sources (own food production + food purchase + help from different sources + food hunted from forest and lakes, indigenous fruits and vegetables, etc), how would you define your family's food consumption?

	Last year	5 years ago
Food shortage throughout the year		
Occasional food shortage		
No food shortage but no surplus		
Food surplus		

9.9 If you experience food shortages, how do you cope? (E.g. Rely on less preferred or less expensive food, borrow food, buy food on credit, harvest early, skip meals?) Is this the same as it was four years ago?

#### **10. If time allows**

10.1 Women only: are you confident to speak in public or before a group? How frequent do you do this?

10.2 Women only: What is the amount of leisure time you have per week?

Thank you and close.

## Appendix D: C:AVA baseline household survey questionnaire, Malawi

### CASSAVA: ADDING VALUE FOR AFRICA PROJECT (C:AVA) – MALAWI BASELINE SURVEY HOUSEHOLDS

Date of interview:	Name enumerator:		
Village:	Traditional Authority:		
Household code:	Extension Planning Area:		
Name head of household:	Gender: M / F	District:	
Name of respondent if not head of household:	Gender respondent: M / F		

#### A. BACKGROUND DETAILS OF HOUSEHOLD

##### A1: Socio-economic/Demographic Details

Household member (name)	Gender	Age	Relationship to head of household (select from list)	Tribe (select from list)	Religion (select from list)	Maximum education level (select from list)	Literate	Disability status (select from list)	Residency: permanent (Per) or temporary (Tem)
1	M / F						Y / N		Per / Tem
2	M / F						Y / N		Per / Tem
3	M / F						Y / N		Per / Tem
4	M / F						Y / N		Per / Tem
5	M / F						Y / N		Per / Tem
6	M / F						Y / N		Per / Tem
7	M / F						Y / N		Per / Tem
8	M / F						Y / N		Per / Tem
9	M / F						Y / N		Per / Tem
10	M / F						Y / N		Per / Tem

11	M / F						Y / N		Per / Tem
12	M / F						Y / N		Per / Tem
13	M / F						Y / N		Per / Tem
14	M / F						Y / N		Per / Tem
15	M / F						Y / N		Per / Tem
16	M / F						Y / N		Per / Tem
17	M / F						Y / N		Per / Tem
18	M / F						Y / N		Per / Tem
19	M / F						Y / N		Per / Tem
20	M / F						Y / N		Per / Tem

Relationship type	Ethnicity	Religion	Education	Disability status
1 Is head of household	1 Chewa	0 No religion	0 Never attended school	0 Not applicable, is able
2 Spouse of head	2 Yao	1 Christianity	1 Nursery	1 Partially blind
3 Child of head	3 Tumbuka	2 Islam	2 Primary school (incomplete)	2 Totally blind
4 Parent of head	4 Sena	3 Traditional	3 Primary school (complete)	3 Deaf
5 Grandparent of head	5 Senga	4 Other	4 Secondary school (incomplete)	4 Physically disabled
6 Grandchild of head	6 Tonga		5 Secondary school (complete)	5 Mentally disabled
7 Sibling of head	7 Gonde		6 University / college (incomplete)	6 Chronic illness
8 In-law of head			7 University / college (complete)	
9 Nephew / niece			8 Quoranic	
10 Adopted / fostered child			9	

**A2: Income activities household members** (ask multiple household members if necessary)

Household member (name)	Major occupation / source of income (select from list)	How many days per year do you commit to this activity?	Amount of income major occupation / source of income <b>(Please note whether income is per year, month, week or day)</b>		Minor occupation / source of income (select from list)	How many days per year do you commit to this activity?	Amount of income minor occupation / source of income <b>(Please note whether income is per year, month, or week)</b>	
			Amount (MK)	Period			Amount (MK)	Period
1								
2								
3								
4								
5								
6								
7								
8								

Major / minor source of income / occupation			
1 Farming	6 Employed by government	11 Pensions, remittances	
2 Artisans	7 Employed by private sector	12	
3 Trading / retail	8 Labourer – farming	13	
4 Hunting	9 Labourer – processing	14	
5 Food processing	1 Labourer – other (e.g. construction)	15	

**A3: How has your household income changed since a year ago? Tick as appropriate:**

Now considerably less than last year ( ); now slightly less than last year ( ); no change ( ); now slightly more than last year ( ); now considerably more than last year ( )

If there was a considerable change, can you indicate how much?

.....

If there was a considerable change, why has this changed?

.....

**Household assets and well-being**

Please describe your house according to the options below:

**A4: Roof:** thatched ( ); corrugated iron ( ); other ( ) specify: .....

**A5: Walls:** mud ( ); cemented ( ); bricks ( ); other ( ) specify: .....

**A6: Floor:** mud ( ); cemented ( ); other ( ) specify: .....

**A7:** What is your water source? River / streams ( ), well ( ), borehole ( ), piped water ( ), rainwater ( )

**A8:** What is your power supply, if any? None ( ), mains electricity ( ), generator ( ), kerosene lanterns ( ), other ( )

**A9:** How many (mobile) phones do you have in the household? .....

**A10:** How many TVs do you have in the household? .....

**A11:** Do you have livestock? What type and how many? (answer for entire household)

Type	Cattle	Sheep	Goats	Pigs	Chicken	Duck	Guinea fowls		
Quantity									

**A12: Food consumption in the past week** (ask multiple household members if necessary)

Food item name	Total quantity of consumption	Unit of measure	Conversion rate to liters or kilograms (if known)	Estimated value of quantity consumed (MK)	Was food item produced on own farm?	If food item was bought, what was the unit price?	Which period of year do you consume most of this food item?
Maize					Yes / No / Partly		
Cassava					Yes / No / Partly		
Rice					Yes / No / Partly		
Beans					Yes / No / Partly		
Vegetables					Yes / No / Partly		
Pigeon peas					Yes / No / Partly		
Groundnut					Yes / No / Partly		
Sorghum					Yes / No / Partly		
Banana / plantain					Yes / No / Partly		
Meat					Yes / No / Partly		
Fish					Yes / No / Partly		
Eggs					Yes / No / Partly		
					Yes / No / Partly		



**A13:** Was this week different from other weeks in terms of purchase and consumption patterns? If yes, explain how:

.....

**A14:** How many main meals do you normally consume per day in the dry season? .....

How many main meals do you normally consume per day in the rainy season? .....

**A15:** How has your food consumption changed since a year ago? Now considerable less than last year ( ); now slightly less than last year ( ); no change ( ); now slightly more than last year ( ); now considerable more than last year ( )

**A16:** If there was a considerable change in consumption, what is the main reason for it?

Change in household size ( ); change in income ( ); change in farm output ( ); other ( ):.....

**A17:** Do you have difficulty satisfying the food needs of yourself and your dependents? *Tick as appropriate*

Never ( ), only in years of crop failure ( ), pre-harvest period ( ), only when sick ( ), always ( ), other (specify): .....

**A18:** Which months do you normally run out of food stock (ask separately for maize, rice, and cassava)?

<b>Food item:</b>	<b>Maize</b>	<b>Rice</b>	<b>Cassava</b>
<b>Months:</b>			

**A19:** How satisfied are you that the amount of food you eat is adequate for the nutritional needs of your household?

Very satisfied ( ), satisfied ( ), neither satisfied nor dissatisfied ( ), dissatisfied ( ), very dissatisfied ( )

**A20:** How satisfied are you with the variety of the food you eat?

Very satisfied ( ), satisfied ( ), neither satisfied nor dissatisfied ( ), dissatisfied ( ), very dissatisfied ( )

**B. BACKGROUND DETAILS OF FARM**

**B1:** Name of farmer (household member): .....

**B3:** Are you member of a farmer group or club? Yes ( ), No ( ) *if no go to B4*

If yes, what is the name of the group? .....

If yes, since when have you been a member of the group? .....

If yes, what benefits do you obtain from being a member? Agricultural extension ( ), training on specific subjects ( ), subsidized agricultural inputs ( ), other ( ) specify:

.....

If yes, how well is the group functioning? Very well ( ), organisation / management can be improved ( ), there are often disagreements between group members ( ), group is not active ( ), other ( ) \_\_

If yes, is the group involved in the C:AVA project? Yes ( ), No ( ), don't know ( )

**B4:** If you are not a member, why not? .....

**Farm details**

**B5:** What is the total size of your household farm? ..... acres

**B6:** Please rank the crops in order of importance (1 being most important):

Food crops (for home consumption)	Importance	Crops for sale	Importance
Cassava		Cassava	
Yam		Yam	
Maize		Maize	
Rice		Rice	
Banana / Plantains		Banana / Plantains	
Vegetables		Vegetables	
Pepper		Pepper	
Groundnut		Groundnut	
Tobacco		Tobacco	
Others (specify)		Others (specify)	

**B7:** Which of the following farm equipment do you own or have free access to (i.e. you can borrow it from someone else)?

Equipment	Own (no.)	Free access (no.)	Year of procurement (answer for newest tool)	Functional state of equipment*	Price at purchase
Transporting vehicle (lorry / pick-up)					
Tractor					
Plough					
Harrow					
Cutlass					
Hoes					
Wheelbarrow					
Others (specify)					

\* [1] operational, [2] needs repairs, [3] state of disrepair

**B8:** Who controls the use of the farm equipment and tools? HH ( ), Spouse ( ), other ( ) specify: ...

**B9 Farm Details: production inputs last year (two growing seasons if applicable)** (only record the fields that the respondent is responsible for)

	Field (location)	Size (acres)	Distance from the house (miles)	Land tenure (select from list)	Crops grown (select from list) Indicate major crop first, minor crop second	Actual cash expenditure				Total output from field		Use of produce (tick box)	
						Cost of land preparation (MK)	Cost of planting material for field (MK)	Cost of fertilizer for field (MK)	Cost of herbicides for field (MK)	Quantity	Unit	Consumption	Sale
1					Major crop: Minor crop:								
2					Major crop: Minor crop:								
3					Major crop: Minor crop:								
4					Major crop: Minor crop:								
5					Major crop: Minor crop:								
6					Major crop: Minor crop:								

Land tenure				Crops grown			
1	Owned	6	Rented out (for payment)	1	Cassava	6	Pepper
2	Borrowed (no payment)	7	Rented out (sharecropping)	2	Rice	7	Groundnut
3	Lent out (no payment)	8	Communal land	3	Maize	8	Beans
4	Rented in (for payment)			4	Plantains	9	Yam
5	Rented in (sharecropping)			5	Vegetables	10	Sorghum

**B10:** Was the farm production (output) of last year different from the year before? *Tick appropriate response.* Last year considerable less than year before ( ); last year slightly less than year before ( ); no change ( ); last year slightly more than year before ( ); last year considerable more than year before ( )

If there was a considerable change, please identify the major changes (e.g. introduction of new crop, increase in fertilizer use, new crop variety, etc).....

.....

If yes, what caused the change?:

.....

**B11:** Who decides on:

<i>(tick appropriate box)</i>	Head of household	Spouse	Joint household decision
Which fields to cultivate			
Which crop to cultivate			
Crop rotation			
Allocation of tasks / labour for field operations			
Choice of farming technology (tillage methods, agro-chemicals)			

**B12: Farm Details: labour input for each plot (last year)**

Field	Labour input tillage (land preparation) (tick boxes)						If hired labour for tillage, what is the total cost? (MK)	Labour for planting (tick boxes)						If hired labour for planting, what is the total cost? (MK)	Labour for application agro-chemicals (tick boxes)						If hired labour for application agro-chemicals, what is the total cost? (MK)	Labour for weeding (tick boxes)						If hired labour for weeding, what is the total cost? (MK)	Labour for harvesting (tick boxes)						If hired labour for harvesting, what is the total cost? (MK)					
	Farmer self	Head of household	Spouse(s)	Children	Hired labour	Other farmers		Farmer self	Head of household	Spouse(s)	Children	Hired labour	Other farmers		Other	Farmer self	Head of household	Spouse(s)	Children	Hired labour		Other farmers	Other	Farmer self	Head of household	Spouse(s)	Children		Hired labour	Other farmers	Other									
1																																								
2																																								
3																																								
4																																								

**B13** Of the crops you produced last year, what quantities do you use for the following purposes?

Crop	Total output (quantity / year)	Unit of measurement	Conversion rate to kilograms (if known)	Quantity used for household consumption	Quantity sold	Quantity stored for seed next season	Who decides on the use or sale of the produce?*
Cassava							
Fresh Maize							
Dry Maize							
Pigeon pea							
Groundnut							
Beans							
Rice							
Sorghum							

\* please indicate: [1] head of household, [2] spouse, [3] joint household decision, [4] other (specify)

**B14:** Of the crops you sold last year, what are the market outlets and the prices?

Crop	Sale as fresh produce at local market			Sale as fresh produce to traders			Sale as fresh produce to group / association			Sale as processed product at local market			Total transport costs (MK)	Total marketing costs (fees) (MK)
	Quantity	Price (MK/kg)	Total value (MK)	Quantity	Price (MK/kg)	Total value (MK)	Quantity	Price (MK/kg)	Total value (MK)	Quantity	Price (MK/kg)	Total value (MK)		
Cassava														
Fresh Maize														
Dry Maize														
Pigeon pea														
Groundnut														
Beans														
Rice														
Sorghum														

**B15:** Was the quantity of crops sold of last year different from the year before? *Tick appropriate response.* Last year considerable less than year before ( ); last year slightly less than year before ( ); no change ( ); last year slightly more than year before ( ); last year considerable more than year before ( )

If there was a considerable change, please identify the major changes (e.g. different market, change in price, etc) .....

If yes, what caused the change?:

.....  
.....

**B16:** Who controls the cash proceeds from sales of the produce? Head of household ( ); spouse ( ); joint household decision ( ); other ( ) *specify:* .....

**Cassava production**

**B17:** For how long have you been cultivating cassava? ..... years

**B18:** From what sources did you get your cassava planting materials last year? Fellow farmers ( ), extension agents ( ), research institutes ( ), C:AVA project ( ), from own fields ( ), other sources ( ) *specify:* .....

**B19:** What cassava varieties do you cultivate? What are your perceptions of their characteristics as listed in the table?

Score: 1 = very good, 2 = good, 3 = neutral, 4 = bad, 5 = very bad

Variety (name)	Local / improved	Area cultivated (acre)	Cost planting material (MK /bundle)	Plant density (bundles / acre)	Yield (ton/ acre)	Disease resistance (score)	Drought resistance (score)	Consumption		Suitability for processing (score)
								Taste (score)	Texture (score)	
	Loc / Imp									
	Loc / Imp									
	Loc / Imp									
	Loc / Imp									
	Loc / Imp									

**B20:** What market strategy do you use to sell your cassava roots? *Tick as appropriate*

Where: locally – same or neighbouring village ( ); towns within region ( ); other ( ) *specify:*

.....

To whom: directly to consumers ( ); traders/bulking agents ( ); local processors ( ); retailers ( ); other ( ):

.....

When: immediate after harvest ( ); when prices are high ( ); when in need of cash ( ); when there is a surplus ( ); when there is a buyer ( ); other ( ):

.....

How: ad hoc transactions through bargaining ( ); contracts ( ); collectively through farmer group ( ); other ( ):

**B21:** What, if any, are the major problems you face in marketing your cassava roots?

.....

**B22:** Have you received any training related to cassava cultivation? Yes ( ) No ( ) *if yes please fill in table below*

Training topic	Year of training	Provider of training	Satisfaction with training *	Do you apply the knowledge of techniques you were trained in?	If not applying knowledge, why not?
				Yes / No	
				Yes / No	
				Yes / No	
				Yes / No	

\* [1] very satisfied; [2] little satisfied; [3] neither good or bad; [4] little dissatisfied; [5] very dissatisfied

**B27:** Are there specific topics on Cassava cultivation on which you wish to receive further training in the future, if any?

.....

**B28:** Which of the following problems and challenges listed below do you face as a farmer in the production of Cassava?

*Score as applicable: 1-Very serious, 2-Serious, 3-No problem, 4-Not applicable*

S/N	Problems /Challenges in Production	Score
1.	Lack of sufficient land to farm	
2.	Lack of sufficient labour	
3.	Inadequate planting materials and other inputs	
4.	Not enough mechanization equipment available	
5.	Mechanization where available is too expensive and unaffordable	
6.	Lack of capital and funds to run farm	
7.	Improved technologies are not appropriate to existing farmer's situation	
8.	Problems of recalling the main features of technologies introduced to you	
9.	Problems of getting adequate follow-up and advice from the extension /community development officers	
10.	Lateness in supplying technology packages	
11.	Distance of the extension /community development workers offices to the village	
12.	Problems of securing loans/credits for farming	
13.	Problems associated with land tenure	
14.	Problems associated with marketing of produce	
15.	Other problems (specify)	



**B29:** What, if any, are your sources of credit? *Only ask follow-up questions for types of credit respondent has access to*

Source s/Terms of credits	Deferred payment for			Cash from				Others (Specify)
	Purchase of cassava stem cuttings	Labour for farming	Services (transport, agricultural inputs, etc)	Relatives and friends	Money lender	Cooperatives	Bank	
Access to credit types (Yes/No)	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Terms and conditions (Yes/No)	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Interest rates (specify %)								
Maximum sum available (if any)								
Minimum sum available (if any)								
Range of length of repayment								
Collateral required? (Yes/No)	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
Easy to access? (Yes/No)	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No

**B30:** In which of the following ways do extension workers make you (as an individual farmer) aware of agricultural technologies or involve you in any development projects? *Tick appropriate boxes*

Service provider:	DADO	NASFAM	MEDI	DAS	Church / Mosque
During visits to homes within the community					
During visits to farms within the community					
During farmers group meetings					
By demonstration on small farm plots					
Through Radio broadcast					
Through Television broadcasts					
Through the use of posters and print outs					
Through community Heads					
Through agro-services centres (including EPA)					

**C. CASSAVA PROCESSING**

**C1:** Name household member doing processing:.....

**C3:** Do you process cassava as part of a group (for example farmer club)? Yes ( ), No ( )

If yes, what is the name of the group?

.....

If yes, since when are you a member? .....

If yes, since when have you been processing cassava as a group?

.....

If yes, how well is the group functioning? Very well ( ), organisation / management can be improved ( ), there are often disagreements between group members ( ), group is not active at the moment ( ); other ( ): .....

**ALL QUESTIONS BELOW REFER TO PROCESSING AND MARKETING OF CASSAVA PRODUCTS MANAGED BY THE INDIVIDUAL, NOT PROCESSING ACTIVITIES DONE AS A GROUP**

**C4:** At what location do you process your cassava? *Tick all that apply* By family house ( ), separate location from family house ( ), community processing unit ( ), other ( ) specify:

.....

**C5:** What cassava products do you process within the household?

Cassava products	Frequency of processing		Quantity of product processed per cycle (specify unit of measurement!)	Actual cash expenditure for processing activities, per cycle (MK)				Quantity of product used for household consumption
	Cycles / month	Months / year		Fuel	Materials	Fees for labour or milling	Transport	
Kondowole (fermented flour)								
Makaka / chips								
Flour made from makaka								
High quality cassava flour								
Others (specify)								

**C6:** What processing equipment do you own or have free access to?

Equipment	Ownership / free access *	Number	Capacity (kg /hour)	Year of procurement	Price at purchase (MK)	Functional state of equipment**
Pressers			(tons)			
Graters						
Roasting trays			N/A			
Water storage tank			litres			
Processing pots (mphika)			litres			
Mill						
Others (specify)						

\*please indicate whether: [1] own equipment, [2] owned by household member, [3] access through processing group

\*\* [1] operational, [2] in need of repair, [3] in state of disrepair

**C7:** How do you share the labour tasks of processing?

Processing activities	Labour input (tick boxes)								What was the actual expenditure, if any? (MK per cycle)	
	Processor self	Household head	Spouse(s)	Children / siblings		Done at community processing	Done by local processor	Neighbours	Other:	
				M	F					
Peeling										
Washing										
Grating										
Pressing										
Drying										
Milling										
Other: (specify)										

**C8:** What is the source of cassava you use for processing? Specify unit of measurement!

	Average quantities purchased per cycle (unit)		Price of fresh roots (MK/unit)	
	Dry season	Wet season	Dry season	Wet season
Own household farm				
Purchase from farmers in community				
Other (specify):				

**C9:** What is the average distance between the cassava fields and the processing location? .....miles

**C10:** What is the transport cost, if any, of the cassava roots? ..... (Note unit of measurement!)

**C11:** What is the distance between the source of water and the processing location? .....miles

**C12:** What is the (transport) cost, if any, of water? ..... (Note unit of measurement!)

**C13:** To which market outlets do you sell your cassava products as individual processor?

Cassava products	Total produce per cycle - quantity	Sale at local market			Sale to traders / bulking agents			Transport costs to market (MK/ year)	Marketing costs (MK/year)
		Quantity per year	Price (MK/kg)	Total value (MK)	Quantity per year	Price (MK/kg)	Total value (MK)		
Kondowole (fermented flour)									
Makaka / chips									
Flour made from makaka									
High quality cassava flour									
Others (specify)									

**C14:** Have there been any changes in the amount and sales of cassava products *since a year ago*? Yes ( ), No ( ). *If yes, indicate changes in table below*

Cassava products	Change in amount of produce *	Sale at local market		Sale to traders	
		Quantity	Price (MK/kg)	Quantity	Price (MK/kg)
Kondowole (fermented flour)					
Makaka / chips					
Flour made from makaka					
High quality cassava flour					
Others (specify)					

\* [1] now considerable less than last year; [2] now slightly less than last year; [3] no change; [4] now slightly more than last year; [5] now considerable more than last year

**C15:** What market strategy do you use to sell your processed cassava products?

Where: locally – same or neighbouring village ( ); towns within region ( ); other ( ) specify:

.....

To whom: consumers ( ); traders/bulking agents ( ); local processors ( ); wholesale or intermediaries ( );

other ( ): .....

When: immediate after harvest ( ); when prices are high ( ); when in need of cash ( ); when there is a surplus ( ); when there is a buyer ( ); throughout the dry season ( ); other ( ):

.....

How: ad hoc transactions through bargaining ( ); contracts ( ); collectively through processor group ( ); other ( ): .....

**C16:** What, if any, are the major problems you face in marketing your cassava products?.....

**C17:** Who decides on: (*tick as appropriate*)

	Processor self	Head of household	Joint household decision
Finance for the processing			
Who is in charge for the processing of products			
Where or to whom to sell			
Type of products to be processed			
Sales and marketing of cassava products			
The use of the proceeds from the sold produce			

**C18:** Did you have any training in cassava processing? Yes ( ) No ( ) *if yes, please fill in table below:*

Training topic	Year of training	Provider of training	Satisfaction with training *	Are you using the knowledge from the training?	If not applying knowledge, why not?
				Yes / No	
				Yes / No	

\* [1] very satisfied; [2] little satisfied; [3] neither good or bad; [4] little dissatisfied; [5] very dissatisfied

**C19:** What, if any, (additional) training do you wish to follow in the future? Processing of gari ( ); Processing of sun-dried high quality cassava flour ( ); Processing of wet cake ( ); Processing of fufu ( ); Business management ( ); Record and Book keeping ( ); Others (specify): .....

**C20:** What specific challenges do you face in the processing of Cassava?

(Mark where applicable) 1-Very serious, 2-Serious, 3-Not serious, 4-Not applicable

	Problems /Challenges in Processing	Rank
1.	Lack of sufficient processing equipment	
2.	Lack of sufficient labour	
3.	Lack of raw materials / cassava roots	
4.	Lack of clean water	
5.	Lack of capital and funds to run processing unit	
6.	Improved technologies are not appropriate to existing processors situation	
7.	Problems of processors recalling the main features of technologies introduced to them	
8	Problems of getting adequate follow-up and advice from the extension /community development officers	
9	Lateness in supplying technology packages	
10	Distance of the extension /community development workers offices to the village	
11	Problems of securing loans/credits for processing	
12	Problems associated with marketing of produce	
13	Unstable product prices	
	Other problems (specify)	

**C21:** Are there other comments relevant to this study that you wish to make?

**Thank you for your cooperation; C:AVA Malawi– M&E Team**

## Appendix E: C:AVA endline household survey questionnaire, Nigeria

### CASSAVA: ADDING VALUE FOR AFRICA PROJECT (C:AVA) – NIGERIA ID No. \_\_\_\_\_ HOUSEHOLD SURVEY INSTRUMENT – EVALUATION ROUND

I am representing Federal University of Agriculture, Abeokuta (FUNAAB), working with the Natural Resources Institute of the University of Greenwich in UK. We are studying the impact of the C:AVA project which aims to enhance incomes for cassava farmers. We would very much like you to participate in the discussions, but your participation is entirely voluntary. The information from this conversation is completely confidential. This information will be used for research and analysis purposes. The interview will be about 1 hour. Are you happy to participate? Yes ( ) No ( )

Date of interview:	Name enumerator:		
Village:	TA:		
Household code:	EPA:		
Name Head of household:	Gender: M / F	District:	
Name of Respondent, if not head HH:			Gender respondent: M / F
C:AVA Group member: Yes/No	C:AVA Village : Yes/No		

#### **A. BACKGROUND DETAILS OF HOUSEHOLD**

##### **A1: Household Type:**

[ \_ \_ ]

- 01 = Male headed, with a single wife  
 02 = Male headed with multiple wives,  
 03 = Male headed, divorced, single or widowed,  
 04 = Female headed, divorced, single or widowed,  
 05 = Female headed, husband away  
 06 = Child headed (age 16 or under)/Orphan  
 96 = Other, specify \_\_\_\_\_

##### **A2: Socio-economic/Demographic Details** (start with HH Head)

Household member (name)	Gender	Age (years)	Relationship to Head of household (select from list)	Ethnicity (select from list)	Religion (select from list)	Maximum education level (select from list)	Literate	Disability status (select from list)	Residency: permanent (Per) or temporary (Tem)	Does HH member have his / her own field?	Does HH member process cassava?
1	M / F						Y / N		Per / Tem	Y / N	Y / N
2	M / F						Y / N		Per / Tem	Y / N	Y / N
3	M / F						Y / N		Per / Tem	Y / N	Y / N
4	M / F						Y / N		Per / Tem	Y / N	Y / N
5	M / F						Y / N		Per / Tem	Y / N	Y / N
6	M / F						Y / N		Per / Tem	Y / N	Y / N
7	M / F						Y / N		Per / Tem	Y / N	Y / N

8	M / F					Y / N		Per / Tem	Y / N	Y / N
9	M / F					Y / N		Per / Tem	Y / N	Y / N
10	M / F					Y / N		Per / Tem	Y / N	Y / N

Relationship type	Ethnicity	Religion	Education	Disability status
1 Is head of household	1 Yoruba	0 No religion	0 Never attended school	0 Not applicable (able)
2 Spouse of head	2 Igede	1 Christianity	1 Nursery	1 Partially blind
3 Child of head	3 Hausas	2 Islam	2 Primary school (incomplete)	2 Totally blind
4 Parent of head	4 Fulani	3 Traditional	3 Primary school (complete)	3 Deaf
5 Grandparent of head	5 Ibo	4 Other	4 Secondary school (incomplete)	4 Physically disabled
6 Grandchild of head	6 Egun		5 Secondary school (complete)	5 Mentally disabled
7 Brother/suster of head	7 Other		6 University / college (incomplete)	6 Chronic illness
8 In-law of head	8		7 University / college (complete)	7 Other (specify
9 Nephew / niece	9		8 Madrassa	
10 Adopted / step child	10		9 Adult education	
10 Other	10		10 Other	

### 3: Asset Status – Poverty Index

ID No. \_\_\_\_\_

Read the following question as an introduction to the questioning. Once in the table, go row by row.

#### Asset Poverty Index - Indicators:

Indicator	Code	Write Code	
		2014	2009
a) How many members does the household have? <i>(Please fill based on information obtained in table A2)</i>	1. Eight or More 2. Six or Seven 3. Five 4. Four 5. Three 6. Two 7. One	[ ____ ]	[ ____ ]
b) Are all children aged 6 to 14 in school?	0. No 1. No member aged 6 to 14 2. Yes	[ ____ ]	[ ____ ]
c) What is the highest grade completed by female head /spouse?	1. No female head /spouse 2. None or incomplete primary 3. Primary 4. Secondary or higher	[ ____ ]	[ ____ ]
c2) What is the highest grade completed by second wife?	1. No second spouse 2. None or incomplete primary 3. Primary 4. Secondary or higher	[ ____ ]	[ ____ ]

<b>Asset Poverty Index - Indicators:</b>			
<b>Indicator</b>	<b>Code</b>	<b>Write Code</b>	
		<b>2014</b>	<b>2009</b>
d) What is the main flooring material of the house?	1. Earth /mud/straw 2. Wood /tile/cement or other	[ ____ ]	[ ____ ]
e) What is the main construction material used for the roof?	1. Palm leaves /thatch 2. Corrugated iron sheets, asbestos/slate, roofing tiles	[ ____ ]	[ ____ ]
f) What is the main source of lighting for the dwelling?	1. Electricity (mains) 2. Generator 3. Solar lamps/battery torches 4. Parrafin lamps/candle 5. Firewood/straw etc	[ ____ ]	[ ____ ]
g) What is the main source of drinking water for the household?	1. Unprotected well /rain water, River/stream dugout/pond/lake/dam 2. Borehole/ protected well 3. Communal standpipe/tap outside (public or private) 4. Indoor plumbing, inside standpipe, treated pipe water 5. Sachet/bottled water	[ ____ ]	[ ____ ]
h. Does the household own television /fridge?	0. No 1. Yes (one) 2. Yes. (More than 1)	[ ____ ]	[ ____ ]
i. What type of toilet is used by the household?	1. No toilet, 2. Pail bucket, covered or uncovered pit latrine, 3. Ventilated/Improved pit latrines (VIP), 4. Toilet on water or flush to sewer or septic tank	[ ____ ]	[ ____ ]
j. Does the household own any means of transport? (give highest form of transport)	0. No 1. Bicycle 2. Motorbike 3. Car or truck	[ ____ ]	[ ____ ]

**3k** How many cell phones do household members own? :

	2014	2009
Household Head - male		
Household head - female		
First spouse		
Second spouse		
Children - all		

**A4: Income activities by household members in 2013** (ask multiple household members if necessary)

<b>INCOME GENERATING ACTIVITIES &amp; SOURCES</b>						
<b>Household member ID</b>	<b>Primary occupation/ income source- (see code box )</b>	<b>Primary Occupation</b>		<b>Secondary occupation/ income source (see code box )</b>	<b>Secondary Occupation</b>	
		<b>Frequency of income (see code box )</b>	<b>Income in last year</b>		<b>Frequency of income (see code box )</b>	<b>Income in last year</b>
			NN			NN



	[__]	[__]		[__]	[__]	
	[__]	[__]		[__]	[__]	
	[__]	[__]		[__]	[__]	

<i>Code Box– Frequency of income</i>	<i>Major / minor source of income / employment</i>	
1=Regular (daily)	1 Farming/livestock keeping	7 Employed by private sector
2=Regular (weekly)	2 Artisan	8 Labourer – farming
3=Regular (monthly)	3 Trading	9 Pensions, remittances
4=Seasonal	4 Hunting	10 Labourer – processing
5=Irregular	5 Food processing	11 Labourer – other (e.g. construction)
	6 Employed by government	96 other

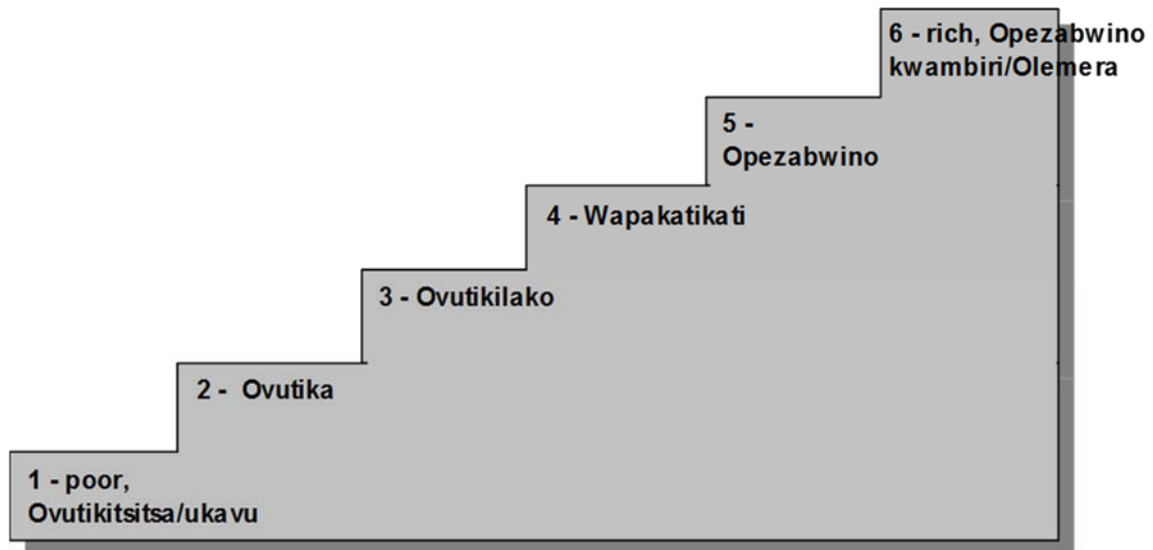
A5: How has your household income changed since 5 years ago? [ \_\_ ]

1. Now considerably less than what it was 5 years back
2. Now slightly less than what it was 5 years back
3. No change
4. Now slightly more than what it was 5 years ago
5. Now considerably more than what it was 5 years ago

A6: Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich IN THIS COMMUNITY. On which step did/does your household stand:

A6a In 2009 [ ]

A6b Today [ ]



A7a: If there was a **positive** change in HH income, what factors have contributed to the change? (prompt if related to cassava – changes in type/number of activities, profitability, scale of production, ganyu from processing etc.)

1. ....
2. ....
3. ....

**A7b:** If there was a negative change in HH income, what factors have contributed to the change?

1. ....
2. ....
3. ....

**A8:** Does your household own livestock? What type and total number? (Total for household)

Type	Quantity	Type	Quantity	Type	Quantity	Type	Quantity
Cattle		Goats		Chickens		Ducks	
Sheep		Pigs		Turkeys		Other _____	

**A8a.** Do you use cassava or cassava by products to feed livestock? Last year \_\_\_\_\_ 5 Years Ago \_\_\_\_\_ (0=No, 1=yes)

**A9: Food Security April 2013 - March 2014**

**A9a** Which months did you consume (staples) mainly from your own farm, and which months did you buy/receive food from other sources from April 2013 up to March 2014?

	AP	MA			AU		OC	NO	DE		MA	
	R	Y	JUN	JUL	G	SEP	T	V	C	JAN	FEB	R
a. Source of staple food	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

*Codes for a: 1=Mainly from own farm, 2=Mainly from off farm (purchase/aid/other)*

**A9b** Which months did you experience shortages/struggle to feed the family?

	AP	MA			AU		OC	NO	DE		MA	
	R	Y	JUN	JUL	G	SEP	T	V	C	JAN	FEB	R
b. Shortage / struggle to feed the family	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

*Codes for b: 1=Shortage, 0=No shortage*

**A10:** Has there been any change in food intake overall for your family over the last 5 years? [ \_\_\_\_ ]

1. Now considerably less than what it was 5 years back
2. Now slightly less than what is was 5 years back
3. No change
4. Now slightly more than what it was 5 years back
5. Now considerably more than what it was 5 years back

**A10b** If there has been a considerable change in food consumption, what are the main reasons for it?

- [ \_\_\_\_ ]
- 1= Change in household size; 2= change in income; 3=change in farm output  
 4= other (specify) :..... 5=Not applicable

**A12:** Food consumed in the household in the past 7 days

	<b>Food Category</b>	<b>Tick - yes</b>	<b>No. of days on which food eaten in past 7 days</b>
A. Carbohydrates	1. Cassava		
	2. Sweet Potato/yam/cocoyam		
	3. Irish potatoes		
	4. Bananas/plantain		
	5. Maize		
	6. Millet/Sorghum		
	7. Rice		
	8. Honey/sugarcane/sugar		
	9. Pumpkins		
B. Proteins	10. Beans		
	11. Soya, pigeonpea, cowpea, other pulses		
	12. Fish		
	13. Chicken/goats/beef/pork/wild meat		
	14. Liver/blood/offal (Iron)		
	15. Milk/Yoghurt/Other dairy product		
C. Vitamins	16. Eggs		
	17. Onion		
	18. Fruits		
	19. Tomatoes		
D. Fats	20. Green vegetables		
	21. Groundnuts		
	22. Sunflower		
	23. Margarine/butter		
E. Other	24. Cooking oil		
	25. Soft drinks		

**A11:** Has there been any change in dietary diversity for your family over the last 5 years?

1. Now considerably less than what it was 5 years back
2. Now slightly less than what it was 5 years back
3. No change [ \_\_\_ ]
4. Now slightly more than what it was 5 years back
5. Now considerably more than what it was 5 years back

**A13:** Do you have to buy back cassava to consume for your household?

1 = Never 2 = Occasionally 3 = Frequently 4 = Always [ ]

**B. BACKGROUND DETAILS OF FARM**

**B1:** Number and name of farmer (household members ID (A2/A4)):

.....

**B2:** Are you member of a **farmer group or club**? 0. No 1. Yes [ \_\_\_ ] (*if No, skip to B8*)

**B7:** Is the group involved in the C:AVA project? 0. No 1. Yes 2. Don't know [ \_\_\_ ]

**B3:** If yes, what is the name of the group?

.....

**B4:** Since when have you been a member of the group? .....

**B5:** What benefits do you obtain from being a member? (Tick those which apply)

1. Agricultural extension /advisory [ \_\_\_\_ ]
2. Training on specific subjects [ \_\_\_\_ ]
3. Subsidized agricultural inputs [ \_\_\_\_ ]
4. Access to improved cassava planting material [ \_\_\_\_ ]
5. Economic benefit from being member of group farm [ \_\_\_\_ ]
6. Other benefit *specify* \_\_\_\_\_

**B6:** What is your opinion on how well the group is functioning? [ \_\_\_\_ ]

1. Functioning well, 2. Functioning not so well - organisation / management can be improved 3. Not functioning well - frequent disagreements between members 4. Group is not active at the moment 5. Don't know

**Farm details**

**B8:** What is the total size of your farm? ..... Acres

**B9:** Please mention the crops you grew last year, and rank them in order of importance (1 = most important, 2 = 2<sup>nd</sup> etc; 99 = N/A):

	<b>Crops (for home consumption)</b>	<b>Grown (tick)</b>	<b>Importance (1-5)</b>	<b>Crops for sale</b>	<b>Grown (tick)</b>	<b>Importance (1-5)</b>
1	Cassava			Cassava		
2	Maize			Maize		
3	Rice			Rice		
4	Banana / Plantains			Banana/Plantains		
5	Vegetables			Vegetables		
6	Beans			Beans		
7	Groundnut			Groundnut		
8	Tobacco			Tobacco		
9	Pigeonpea			Pigeonpea		
10	Others (specify)			Others (specify)		

**B10: Farm Details: production 2013/14**

Plot No.	HH members cultivating A2	Size (ac)	Land tenure	Crops grown (Codes in B9)	Total output from field			Price (NN)	Estimated Value NN
					Local unit	No. units	Kg		
1				1 <sup>st</sup> crop					
				2 <sup>nd</sup> crop					
				3rd crop:					
2				1 <sup>st</sup> crop					
				2 <sup>nd</sup> crop					
				3rd crop:					
3				1 <sup>st</sup> crop					
				2 <sup>nd</sup> crop					
				3rd crop:					

Land tenure		Crops grown			Local unit-cassava	Kg - cassava
1	Owned (private or customary)	1	Cassava	7	Groundnut	50 kg bag
2	Borrowed (no payment)	2	Rice	8	Beans	
3	Rented in (for payment)	3	Maize	9	Yam	
4	Rented in (sharecropping)	4	Plantains	10	Sorghum	
5	Group/shared	5	Vegetables	11	Pigeonpea	
6	Other _____	6	Pepper	12	Other	

**B11: Cassava production practices – last season**

Which varieties of cassava are you growing? (specify)

Local \_\_\_\_\_

Improved \_\_\_\_\_

Area of local cassava grown (acres) \_\_\_\_\_ Area of Improved cassava grown (acres) \_\_\_\_\_

Cassava Production Practices:		
Indicator	Code	Write Code or number
1. What are the main sources of your planting material last season?	1. Fellow farmer 2. Government Extension agent 3. Research institute 4. C:AVA project 5. Own farm 6. Other	a. Main source [ ___ ] b. Second source [ ___ ]
2. How much improved planting material did you plant last season?	a. Number of bundles or	
	b. Number of sticks	
3. How much local planting material did you plant last season?	a. Number of bundles or	
	b. Number of sticks	
4. Do you use fertiliser with Cassava	0. No 1. Yes, Organic 2. Yes, Inorganic	[ ___ ]
5. Use of herbicide	0. No    1. Yes	[ ___ ]
6. Use of pesticide	0. No    1. Yes	[ ___ ]
7. Plant spacing used	0. No    1. Yes	[ ___ ]
8. Have you shared improved cassava variety with other farmers /neighbour	0. No Sharing 1. Sold 2. Given 3. Sold + given	[ ___ ]
9. If yes, what quantity was shared last season?	a. Number of bundles or	
	b. Number of sticks	

**B12: –For farming activities, who decides and takes control on:**

(tick 1 box per row)	HH head is sole decision maker	Spouse is sole decision maker	Decisions taken jointly	Other decision-maker
Which fields to cultivate				
Which crop to cultivate				
Crop rotation				
Use of inputs				

Allocation of tasks / labour for field operations				
Choice of farming technology (tillage methods, agro-chemicals)				
Use or sale of produce				
Control of cash proceeds from the sale				

**B 13: Of the Fresh Cassava** that you produced last year, what quantities have you used for the following purposes?

	Total cassava production	Quantity used for home consumption	Quantity sold	Quantity used for own processing
(Local measure)				
Kg				

**B14: For the Fresh Cassava** that you sold last year, what were the market outlets and the prices?

	Sale as fresh produce at local market			Sale as fresh produce to traders			Sale as fresh produce to processor 1. HH member 2.group/association 3.SME 4.other			
	Quantity	Price (NN/unit)	Total value (NN)	Quantity	Price (NN/unit)	Total value (NN)	Processor (code)	Quantity	Price (NN/unit)	Total value (NN)
(Local measure)										
Kg										

**B15:** When did you sell your fresh cassava last year? *Mark in the box, as appropriate* [ \_\_\_ ]

1. During main cassava harvesting season , 2. When prices were high, 3. When in need of cash,  
4. When there was a buyer, 5. Other *specify* ☒ \_\_\_\_\_

**B16:** How did you sell your fresh cassava last year: [ \_\_\_ ]

1. ad hoc transactions through bargaining, 2. Sale contracts or buy back arrangement /out-grower scheme,  
3. Collectively through farmer group, 4. Other *specify* ☒ \_\_\_\_\_

**B17:** Have you received any **training** related to cassava cultivation? 0= No, 1 = Yes [ \_\_\_ ] (if no skip to B19)

**B18: Training Received in Cassava Cultivation**

Training topic*	HH ID member trained	Year of training	Provider of training	Satisfaction with training**	Applied the knowledge? yes=1, No=0	If not applying knowledge, why not?

<b>*Training code:</b>	<b>Satisfaction Code**</b>
0 no training 1. Fertilizer application 2. Weed Control 3. Plant Spacing 4. Planting material multiplication 5. Farm Management 6. Book keeping	1. Highly satisfactory 2. Satisfactory 3. Neither Satisfactory, nor unsatisfactory 4. Not satisfactory 5. Highly unsatisfactory

**B19:** What problems and challenges do you face in the production of Cassava?

S/N	Problems /Challenges in Production	Score (Now)	Change over last 5 years	Reason for change
1.	Lack of land			
2.	Lack of labour			
3.	Inadequate planting materials, other inputs			
4.	Not enough tractor services available			
5.	Tractor services unaffordable			
6.	Lack of capital and access to credit			
7.	Lack of extension advice			
8.	Late delivery of improved planting material			
9.	Distance of extension workers to the village			
10.	Land tenure			
11.	Marketing			
12.	Disease (specify)			
13.	Other problems (specify _____ )			

<b>Code for Score</b>	<b>Code change over last 5 yrs</b>	<b>Reasons for change</b>
1 very serious 2 serious 3 not perceived as problem	0 No change 1 Yes, positive 2 Yes, negative change	1 Received support from C:AVA service provider (NGO/M 2 Own efforts 3 Other specify _____

**B20: Agricultural Credit**

Did you take credit for agriculture inputs or other agricultural purpose last season (If yes, answer Q.20.2, or skip to Q.B2)

Source of credit	Amount	Purpose	Interest rate (percent per year)
Banks			
Co-operative Societies			
Moneylender			
Relative			
Village savings and loans			
Microfinance			
Other specify _____			
<b>Purpose</b> 1=Purchase of cassava cutting, 2=labour for farming, 3=agriculture input, 4=agriculture services, 96= other _____			

**B21:** In the past year which extension providers have you interacted with, and in what ways?

Service provider: <i>(Tick appropriate boxes)</i>	Gov't extension team	C:AVA/NGO service provider	Private sector extn.	other _____	None
During visits to homes or farms within the community					
During farmers group meetings					
By demonstration on small farm plots					
Through Radio /TV broadcasts					
Through the use of posters and print outs					
Through community Heads /group heads					
Through agro-services centers (including EPA)					
Village night documentary shows					

**B23:** Overall, have there been any improvements in your cassava income over the last 5 years:

Yes/ No [ \_\_\_\_ ]

B23b: If yes, what are the contributory factors for your additional cassava production and incomes over last 5 years?

	Query	Answer (Yes - 1; No - 0)
1	Higher yield of cassava	
2	Better price realization from cassava roots	
3	Easy access to finance for expansion of farm production	
	Increased volume of cassava sales	
4	Other (specify _____ )	

**B22:** What are the major investments that you have undertaken in the last 5 years:

	Query	Answer (yes -1; no - 0)	If yes, are investments from cassava income? (yes -1; no - 0)
1	House improvements		
2	Children Education		
3	Farm land expansion		
4	Processing initiation		
5	Processing expansion		
6	Asset purchase - motorcycle /TV/Fridge/mobiles/other		
7	Paying off loans		
8	Other (specify _____ )		

**C. CASSAVA PROCESSING** *(interview each processor in household separately using additional Part C sheet)* ID \_\_\_\_

**C1:** Household member(s) doing processing (HH ID) .....

**C2:** Are you member of a Cassava community processors groups? No = 0, Yes = 1 [ \_\_\_\_ ]

*(if No, skip to C8)*

**C3:** If yes, what is the name of the group? .....

**C4:** In which year did you join the group? .....



**C5:** What benefits do you obtain from being a member? (Yes=1, No=0)

1. Processing knowledge /advisory [ \_\_\_ ]
2. Training on specific subjects [ \_\_\_ ]
3. Subsidized rent for using processing equipment [ \_\_\_ ]
4. Economic benefit from being member of group [ \_\_\_ ]
5. Other benefit *specify* \_\_\_\_\_

**C6:** What is your opinion on how well is the group functioning? [ \_\_\_ ]

1. Functioning well
2. Functioning not so well - organisation / management can be improved
3. Not functioning well - there are often disagreements between group members
4. Group is not active at the moment

**C7:** Is the group involved in the C:AVA project? No = 0, Yes = 1, Don't know = 2 [ \_ ]

**QUESTIONS BELOW REFER TO PROCESSING AND MARKETING OF CASSAVA PRODUCTS MANAGED BY THE INDIVIDUAL (NOT GROUP PROCESSING)**

**C8:** What location do you process your cassava? *Mark yes, if multiple locations of processing*

Q.No.	Query	Answer (Yes-1; No-0)
1	At family house	
2	Separate location from family house	
3	Community processing unit /processing centre	
4	Other (specify _____)	

**C9:** What were the sources of your Cassava roots for processing last year?

Units	Own production		Fellow farmers /group			Others		
	Quantity	Proportion (%)	Quantity	Proportion (%)	Unit cost (NN)	Quantity	Proportion (%)	Unit cost (NN)
Local								
Kg								

**C10:** What cassava products do you produce?

Cassava products	Quantity of product produced last year		Actual cash expenditure for processing activities, per year (NN)					Quantity used for household consumption per year
	Local unit	Kg	Fuel	Root stock	Labour, services	Transport	Marketing /Other	
HQCF								
Wet cake								
Gari								
Fufu paste								
Fermented cassava flour (Lafun)								
Wet starch								
Sun-dry starch								
Others (_____)								

**C11:** What processing equipment do you own or have access to:

Equipment	Ownership / access *	Functional state of equipment**
Peeling machines/tool		
Pressers		
Graters		
Roasting trays		
Water storage tank		
Processing tank		
Mill		
Drying platform		
Others (specify _____)		

\***Ownership /access code:** [1] own equipment, [2] owned by HH head, [3] Owned by Spouse, [4] Owned by other HH member [5] access through processing group, [6] rented from others [7] Pay for services [8] Other (specify)\_\_\_\_\_

\*\* **Functionality code:** [1] operational, [2] in need of repair, [3] in state of disrepair

**C12: How do you share the labour tasks of processing?**

Processing activities	Labour input (tick boxes)									
	Processor self	Household head	Spouse(s)	Children / family member		Done by farmer processor	Done by local processor	Other farmer/	Other:	
				M	F					
Peeling										
Washing										
Grating										
Pressing										
Drying										
Milling										
Other: (specify)										

**C13: To which market outlets do you sell your cassava products as an individual processor?**

Cassava products	Total produce per year – quantity (take from C10 above)	Sale at local market /institutions (schools, prisons, hotels)			Sale to traders / bulking agents		
		Quantity per year	Price (NN/kg)	Total value (NN)	Quantity per year	Price (NN/kg)	Total value (NN)
HQCF							
Wet cake							
Gari							
Fufu paste							
Fermented cassava flour (Lafun)							
Wet starch							
Sun-dry starch							
Others (_____)							

**C14: When do you normally sell your processed cassava products? Mark in the box, as appropriate**

1. Immediately after processing (after cassava season)
2. When prices are high
3. When in need of cash [ \_\_\_\_ ]
4. When there is a buyer
5. Other *specify* ☞ \_\_\_\_\_

**C15: What are the selling arrangements? (Yes=1, No=0):**

1. ad hoc transactions negotiated with buyers [ \_\_\_\_ ]
2. Sale contracts or buy-back arrangement /out-grower scheme [ \_\_\_\_ ]
3. Collectively through community processor group [ \_\_\_\_ ]
4. Other *specify* ☞ \_\_\_\_\_

**C16: For your processing activities, who decides on: (tick as appropriate)**

Who makes decisions on	Head of HH is sole decision maker	Spouse is sole decision maker	Joint household decision	Other
Finance for the processing				
The amount to process				
Type of products to be processed				
Who is in charge of the actual processing of products				
When to store or sell processed products				
Where or to whom to sell				
Sales and marketing of cassava products				
The use of the proceeds from the sold produce				

**C17: Have you received any training related to cassava processing? No= 0, Yes = 1 [ \_\_\_\_ ] if no skip to C19**

**C18: Training Received in Cassava Processing**

Training topic*	HH member trained (A2)	Year of training	Provider of training	Satisfaction with training**	Have you applied the knowledge*** from training?	Reasons, If not applying knowledge, why not****?

\***Training code:** Processing techniques =1, Quality management practices =2, Group dynamics =3, Record keeping =4, Other *specify* ☞ \_\_\_\_\_ =96

\*\***Satisfaction code:** Highly satisfactory =1, Satisfactory =2, Neither satisfactory, nor unsatisfactory =3, Not satisfactory =4, Highly unsatisfactory =5

\*\*\***Application code:** Yes = 1, No = 2

**C19: Which of the following problems and challenges listed below do you face as a processor of Cassava?**

S/N	Problems /Challenges in Processing	Score*	Change over last 5 years**	Reason for change***
1.	Lack of processing equipment			
2.	Lack of labour			
3.	Lack of raw materials / cassava roots			
4.	High cost of raw material /roots			
5	Quality of roots			
6.	Lack of clean water			
7.	Lack of capital and funds to undertake processing operations			
8.	Technologies not appropriate to processors situation			
9.	Lack of training / skills			
10.	Problems of securing loans/credits for processing			
11.	Problems associated with marketing of produce			
12.	Unstable product prices			
13.	Other problems (specify _____ )			

\*Code for Score: Very Serious =1, Serious=2, Not perceived as problem =3, Minor problem =4

\*\*Code for Change over last 5 years: Yes, positive change =1, Yes, negative change =0, No change =3

\*\*\*Reasons for Change: Farmer received support from C:AVA service provider (NGO /MoFA) =1, Farmer received support from other agencies in the area =2, Own efforts in problem resolution =3, No support or guidance received from anyone in resolving the problem =4, farmer need finance for resolving the problem which is not available /affordable =5, Other specify \_\_\_\_\_ =96

#### C20: Credit for processing enterprise

Did you receive any credit for cassava processing last year?

Source of credit	Amount NN	Purpose	Interest rate (percent per year)
Banks			
Co-operative Societies			
Moneylender			
Relative			
Village savings and loans			
Microfinance			
Other specify _____			
<b>Purpose</b> 1=Purchase of cassava cutting, 2=labour for farming, 3=agriculture input, 4=agriculture services, 96= other _____			

C21 Overall, have there been any improvements in your cassava processing income over the last 5 years: Yes = 1; No = 0 [ \_\_\_\_ ]

**C22 : If yes, what are the contributory factors to improvements in cassava processing incomes over the last 5 years:**

Q.No.	Query	Response (Yes – 1; No - 0)
1	Expansion in amount of products processed	
	Expansion in sales of products processed	
2	New opportunity to sell – linked with flash dryer enterprises	
3	New opportunity to sell – linked with sun dryer enterprises	
4	New opportunity to sell – linked with community processing groups	
5	New opportunity to sell – linked with institutional buyers eg schools, hotels, prisons	
6	Participation in collective selling of processed products	
7	Ease of access to finance for expanding processing enterprise	
8	Other (specify _____)	

**C23: Mention three (3) things you would like to achieve or see changed within the next three years as a processor?**

- i. ....
- ii. ....
- iii. ....

**Part-D: Questionnaire for women respondents ONLY (producers or processors) ID \_\_\_\_\_**

**D-1: What is your involvement in decisions regarding how much fresh cassava to sell? [ ]**

1. You have the idea and make a decision independently
2. You consult other person (spouse) for their opinion but you make the decision
3. You require permission but they are your ideas
4. Your spouse consults you for your opinion and makes the final decision
5. Your spouse makes the decision without consulting you
6. Other: \_\_\_\_\_

**D-2: In the past 4 years, do you think your involvement in decisions about selling fresh cassava has**

- [ ]  
 1. Increased      2. Decreased      3. stayed the same

**D-3: What is your involvement in decisions regarding how much processed cassava products to sell? [ ]**

1. You have the idea and make a decision independently
2. You consult other person (spouse) for their opinion but you make the decision
3. You require permission but they are your ideas
4. Your spouse consults you for your opinion and makes the final decision
5. Your spouse makes the decision without consulting you
6. Other: \_\_\_\_\_

**D-4: In the past 4 years, do you think your involvement in decisions about selling processed cassava products has [ ]**

1. increased,      2. Decreased      3. stayed the same

**D-5: What is your level of control over the income made from cassava production? [ ]**

1. You have complete control on how and when it is spent without consultation
2. You consult other person (spouse) for their opinion but you make the decision
3. You require permission on spending the money but they are your ideas
4. You give the money to another person for their use
5. Other: \_\_\_\_\_

**D-6: Has the level of control over income from cassava production changed in the last 4 years?**  
Increased (1) Decreased (2) Stayed the same (3) [ ]

**D-7: What is your level of control over the income made from cassava processing? [ ]**

1. You have complete control on how and when it is spent without consultation
2. You consult other person (spouse) for their opinion but you make the decision
3. You require permission on spending the money but they are your ideas
4. You give the money to another person for their use
5. Other: \_\_\_\_\_

**D-8: Has the level of control over income from cassava processing changed in the last 4 years?**  
[ ]

1. Increased, 2. Decreased 3. stayed the same.

**D-9: Have you spoken in public or in a group? *Yes = 1; No = 0***  
*4 years ago* [ ] **This year** [ ]

**D-10: Do you hold any leadership positions? *Yes = 1; No = 0***  
*4 years ago* [ ] **This year** [ ]

**D-11: What is your level of independence in making decisions about the sale/acquisition of assets?**  
[ ]

1. You have the idea and make a decision independently
2. You consult other person (spouse) for their opinion but you make the decision
3. You require permission but they are your ideas
4. Your spouse consults you for your opinion and makes the final decision
5. Your spouse makes the decision without consulting you
6. Other: \_\_\_\_\_

## Appendix F: List of the focus group discussion sample locations

**Table 31 List of focus group discussions (2010), Nigeria**

Date	Location	Group/activity	Men	Women	Total
13.10.10	Olorulekan, Ilaro, Ogun state	Gari and fufu processors	-	8	8
14.10.10	Awow town, Ogun state	Obalagbe Fufu Processing Association	6	6	12
	Fagbesola, Ogun state	Fagbesola Cassava association	5	-	5
15.10.10	Illaro, Ogun state	Otolemi Abbe Farmers group	5	2	7
	Odoela, Ilaro, Ogun state	Owolowo Fufu Processors	-	5	5
19.10.10	Ananomi Adofure, Ondo state	Akure Owode farmers group	8	1	9
	Shagari Village, Ondo state	Ibukun Oluwa Garri Processors	-	7	7
20.10.10	Obaile, Ondo state	Ogooluwa Gari Industry	-	7	7
	Obaile, Ondo state	Igbelowowa Farmers Union	-	6	6
<b>Total participants Nigeria</b>			<b>24</b>	<b>42</b>	<b>66</b>

**Table 32 List of focus group discussions (2010), Malawi**

Date	Location	Groups	Men	Women	Total
19.05.10	Domasi community, Zomba district	CMRTE farmers and processing group x2	6	14	
20.05.10	Mathiya community, Mulanje district	Tiyamike farmers and processing group x2	11	20	
23.05.10	Nkhotakota district	Zidyana, Damba farmers group x2	10	12	
28.05.10	Nkhotakota district	Zidyana farmers group x2	13	13	

## Appendix G: List of the panel interview locations

**Table 33 Nigeria Panel interview communities**

State	Local Government Area	Communities	Cassava value chain
<b>Ogun</b>	Yewa North	Iwoye	Fufu
	Ewekoro	Ashipa-Ilaho	Gari
	Abeokuta-North	Olorunda	Gari
	Odogbolu	Aiyepe	Roots - HQCF flash dryer*
<b>Ekiti</b>	Ijero	Ayedi	Roots - HQCF flash dryer*
<b>Ondo</b>	Ifedore	Igbara-Oke	Gari
	Akure North	Oba-Ile	Gari
	Owo	Eyin-Ogbe	Gari

**Table 34 Malawi Panel interview communities**

District	Communities and groups	Cassava value chain
<b>Zomba</b>	Mphesi (Mkwanda club)	HQCF (sundry)
	Mkwanda (Mkwanda club)	HQCF (sundry)
	Manja (Madalitso group)	HQCF (sundry)
	Govala	HQCF flash dryer*
<b>Mulanje</b>	Makalakala (Chinqazi group)	HQCF (sundry)
	Lisule Tafika (Malota group)	HQCF (sundry)
	Mathiya (Tiyamike group)	HQCF (sundry)
	Mangani	HQCF flash dryer*
<b>Nhokotakota</b>	Zidyana (Chikondi group)	Roots to SME (sundry)
	Mvalamanja (Nthetsanjala group)	Roots to SME (sundry)
	Kandula (Kandula group)	Roots to SME (sundry)*

\*only one phase of interviews not panel interview, based on impact pathways methodology



## Appendix H: List of communities in the C:AVA baseline and impact surveys sample

**Table 35 Nigeria baseline and impact communities**

State	Local Government Area	Communities
<b>Ogun</b>	Yewa North	Iwoye
	Ado-Odo/Ota	Ajogbo-Zebbe
	Ewekoro	Ashipa-Ilaho
	Ifo	Alapako-Sogunje
	Odeda	Kemta-Apakila
	Abeokuta-North	Olorunda
<b>Ondo</b>	Ifedore	Igbara-Oke
	Ose	Idoani
	Akure North	Oba-Ile
	Akure North	Araromi
	Owo	Eyin-Ogbe(Owo)
	Akure-South	Oda

**Table 36 Malawi baseline and impact communities**

District	Traditional authority	Community group
<b>Zomba</b>	Malemia	Manja
	Malemia	Mkwanda
	Mulumbe	Chilumpha
	Mulumbe	Chikwekwe
<b>Mulanje</b>	Mthiranjira	Matipwili
	Chikumbu	Malota
<b>Nkhotakota</b>	Mwadzama	Chibowa
	Mwadzama	Chitanje
	Mwadzama	Chitheka
	Malengachanzi	Kalusa
	Malengachanzi	Mapulanga
	Mwadzama	Khocho

## Appendix I: Sample description for the C:AVA baseline and endline surveys

The individuals in the baseline and endline surveys were randomly selected based on exposure to the C:AVA project. C:AVA targeted farmer groups, and therefore the treatment category reflects group members. Non-C:AVA members, who were not members of farmer groups but may have been indirectly exposed to the project, were randomly selected as a control group (C2), along with neighbouring community who were not involved directly with the C:AVA project (C1). This section presents the results of significance testing between the baseline and endline surveys to determine different characteristics that may influence commercialisation at either point in time. Chi Square (for nominal variables) and Mann-Whitney (for ordinal variables) significance tests were done to examine differences between baseline and endline samples on the basis of important demographic characteristics, including: gender of the respondent, gender of the household head, ethnicity, literacy and size of land holding. Household type could not be analysed because the baseline and impact surveys did not ask the same question. Data for the baseline included male or female household head but the impact survey included more detailed data (polygamous, divorced etc.) Ethnicity could not be analysed as data is incorrect.

### Nigeria

**Table 37 Results of significance testing, Nigeria**

Variable	Test Between survey/between sample groups	Difference between baseline and endline	Difference between sample groups	
			Baseline	Endline
Gender	Fisher's Exact Test/Chi-square	0.101	<b>0.000*</b>	0.445
Age	Fisher's Exact Test/Chi-square	<b>0.050*</b>	0.056	<b>0.024*</b>
Ethnicity	Fisher's Exact Test/Chi-square	0.178	<b>0.025*</b>	<b>0.014*</b>
Literacy	Fisher's Exact Test/Chi-square	<b>0.001*</b>	0.097	0.063
Land	Mann-Whitney/ANOVA	<b>0.001*</b>	0.428	0.866

Baseline=416, Endline=361

## Gender

There were no statistically significant differences in proportion of men and women sampled between the 2009 and 2014 surveys; however there were differences between sample groups at both baseline. As the table below shows that a much higher proportion of men were interviewed as non-participants in non-C:AVA villages compared to the other sample groups.

**Table 38 Gender of structure of survey respondents by sample group, Nigeria**

		<b>Non-participant, non-CAVA village (C1)</b>	<b>Non-participant, CAVA village (C2)</b>	<b>CAVA participant (treatment)</b>	<b>Total</b>
Baseline	Men	141	36	98	275
	Women	41	26	74	141
	Total	182	62	172	416
Endline	Men	69	55	131	255
	Women	33	17	56	106
	Total	102	72	187	361

## Age

The age structure of the respondents reflects a population characterised by individuals who are in the mid to later life. This is related to high levels of young adults migrating to urban areas who strongly associate farming with poverty and drudgery, according to interviews. However, there is also evidence that runs contrary to this trend. For example, a group of young men we met during a community visit (Ekiti) explained that the combination of the poor employment opportunities in Lagos and the increasingly positive rumours of agriculture (and some crops more specifically, cocoa as one example) as a profitable business had enticed them to return to their village of origin, which was in a location where a medium-scale cassava processing factory had recently been established.

**Table 39 Age of structure of survey respondents sample group, Nigeria**

		<b>Non-participant, non-CAVA village (C1)</b>	<b>Non-participant, CAVA village (C2)</b>	<b>CAVA participant (treatment)</b>	<b>Total</b>
Baseline	10-20 years	8	5	14	27
	21 - 35 years	19	5	21	45
	36-50 years	57	18	64	139
	51 - 60 years	9	4	16	29
	61-75 years	53	15	25	93
	Above 75 years	5	0	8	13
	Total	151	47	148	346
Endline	10-20 years	3	5	9	17
	21 - 35 years	10	15	17	42
	36-50 years	44	22	77	143
	51 - 60 years	17	5	28	50
	61-75 years	11	20	44	75
	Above 75 years	1	2	5	8
	Total	86	69	180	335

**Ethnicity**

The survey sample was divided into Yoruba, the dominant ethnicity, and minority ethnic groups. There were no statistically significant differences in the sample between 2009 and 2014; however there were differences between sample groups at both baseline and endline. As the table below shows, C:AVA participants had a high proportion of Yoruba compared to minority ethnic participants. As Chapter 6 demonstrated, C:AVA participants are group farmer and processing members. There are ethnic dimensions to membership, as described in Chapter 6, as some of the ethnic minority men and women interviewed were excluded or self-excluded from these groups because they were dominated by Yoruba.

**Table 40 Ethnicity of the survey respondents by sample group and ethnicity, Nigeria**

		<b>Non-participant, non-CAVA village (C1)</b>	<b>Non-participant, CAVA village (C2)</b>	<b>CAVA participant (treatment)</b>	<b>Total</b>
Baseline	Yoruba	118	40	134	292
	Minority ethnic	52	22	34	108
	Total	170	62	168	400
Endline	Yoruba	71	45	150	266
	Minority ethnic	24	25	34	83
	Total	95	70	184	349

**Literacy**

Despite the high education levels in Ogun and Ondo states compared to national levels<sup>61</sup>, illiteracy is high among the rural and farming population in south-west Nigeria. There were a slightly higher proportion of literate smallholders in the endline survey compared to baseline survey; however, there were no significant differences by sample groups at either point in time.

**Table 41 Literacy of survey respondents, Nigeria**

	<b>No</b>	<b>Yes</b>	<b>Total</b>
Baseline	190	215	405
Endline	126	226	352
Total	316	441	757

There were statistically significant differences between literacy levels among men and women in all sample groups. Women had lower levels of literacy compared to men, averaging 37% compared to 60. for women and men, respectively, at baseline, and 60% and 74%, respectively, at endline. Women in the C:AVA sample (treatment) show considerably higher literacy levels compared to their village counterparts (C2) (49% compared to 23% in baseline and 60% and 41.2% at endline).

<sup>61</sup> In Ogun state, 75.3 percent of men are literate and 74.9 percent of women. Literacy rates are higher in Ondo at 87.7 for men and 78.9 percent for women.

These differences were statistically significant at baseline ( $p \leq 0.01^*$ ) (3 way ANOVA and Tukey tests).

**Table 42 Literacy of survey respondents by sample group and gender, Nigeria**

		Men (%)	Women (%)	Total (% of sample group)	Total (n)
<b>Baseline</b>  Gender $p \leq 0.001^*$ Women in C2 to treatment $p \leq 0.01^*$	Non-participant, non-C:AVA village (C1)	57.6%	25.0%	50.0%	172
	Non-participant, C:AVA village (C2)	61.1%	23.1%	45.2%	62
	C:AVA participant (treatment)	67.0%	48.6%	59.1%	171
	Total	61.5%	37.1%	53.1%	405
<b>Endline</b>	Non-participant, non-C:AVA village (C1)	60.3%	59.4%	60.0%	95
	Non-participant, C:AVA village (C2)	60.0%	41.2%	55.6%	72
	C:AVA participant (treatment)	74.4%	60.0%	69.7%	185
	Total	64.9%	53.4%	64.2%	352

### **Land**

There was a significant difference between the average size of land between the baseline and endline surveys, from 1.7ha to 3.6ha; however, there were no significant differences by sample groups at either point in time. This could be due to a range of factors, including the growing commercial interest smallholder had in cassava, as described in Chapter 6.

**Table 43 Average total land size (ha) of survey respondents, Nigeria**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Baseline	405	1.6968	2.16235	0.10745
Endline	364	3.5765	5.94336	0.31152

**Malawi****Table 44 Results of significance testing, Malawi**

<b>Variable</b>	<b>Test Between survey/between sample groups</b>	<b>Difference between baseline and endline</b>	<b>Difference between sample groups</b>	
			<b>Baseline</b>	<b>Endline</b>
Gender of the HH	Fisher's Exact Test/Chi-square	0.227	0.263	0.123
Age	Mann-Whitney/ANOVA	0.003*	0.190	0.220
District	Fisher's Exact Test/Chi-square	0.000*	0.254	0.405
Literacy	Fisher's Exact Test/Chi-square	0.473	0.435	0.094
Land	Mann-Whitney/ANOVA	0.262	0.670	0.056

Baseline=234, Endline=365

**Gender of the household head**

There were no significant differences between the proportion of MHH and FHH interviewed between the baseline and endline surveys. There were also no significant differences between sample group in the proportion of MHH or FHH for either survey.

**Table 45 Gender of the household head of survey respondents, Malawi**

	<b>Baseline</b>	<b>Endline</b>	
MHH	148	244	392
FHH	85	121	206
Total	233	365	598

## Age

The table below shows the mean age of survey respondents, which is 42 years at the baseline and 46 years at the endline (which represents the four-year gap between surveys. This was a statistically significant difference. There were no statistically significant differences between sample groups for the baseline or endline.

**Table 46 Mean age of survey respondents, Malawi**

	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Baseline	234	42.41	15.651	1.023
Endline	365	46.24	15.192	0.795

With regard to age demographics among the sample groups, there is a slightly younger age-range than with the groups in Nigeria, perhaps revealing that younger people are remaining in rural areas (either because of the opportunities there, or the lack of opportunities in urban areas). However, the table below shows that agriculture may not be their interest, as for example a higher proportion of 21-35 years are not in C:AVA or farmer groups: 53.7% compared to the 31.0% who are in C:AVA groups in the same village. This group also consisted of the highest proportion of all age groups within the different samples, except for the C:AVA groups.

**Table 47 Age structure of respondents by sample group, Malawi**

		<b>Age</b>						<b>Total (n)</b>
		<b>10-20 years</b>	<b>21-35 years</b>	<b>36-50 years</b>	<b>51-60 years</b>	<b>61-75 years</b>	<b>76+ years</b>	
<b>Baseline</b>	Non-participant, non-C:AVA village (C1)	2.9%	47.1%	18.6%	12.9%	17.1%	1.4%	70
	Non-participant, C:AVA village (C2)	0.0%	53.7%	22.2%	7.4%	13.0%	3.7%	54
	C:AVA participant (treatment)	0.9%	31.0%	33.6%	22.4%	9.5%	2.6%	116
<b>Endline</b>	Non-participant, non-C:AVA village (C1)	.9%	33.3%	30.7%	20.2%	14.0%	.9%	114
	Non-participant, C:AVA village (C2)	0.0%	37.5%	25.0%	19.3%	12.5%	5.7%	88
	C:AVA participant (treatment)	0.0%	17.5%	42.8%	16.9%	18.7%	4.2%	166



## District

There were significant differences in the district of respondents at baseline, and at endline. There were also significant differences between the sample groups in the proportion of respondents from the different districts at baseline and endline.

**Table 48 District of survey respondents by sample group, Malawi**

		Control 1 (non-CAVA village)	Control 2 (CAVA village, non-CAVA member)	Treatment (CAVA village & CAVA member)	
<b>Baseline</b>					
Zomba	Count	30	13	37	80
	% within District	37.5%	16.3%	46.3%	100.0%
Mulanje	Count	10	10	20	40
	% within District	25.0%	25.0%	50.0%	100.0%
Nhkotakota	Count	29	31	54	114
	% within District	25.4%	27.2%	47.4%	100.0%
Total	Count	69	54	111	234
	% within District	29.5%	23.1%	47.4%	100.0%
<b>Endline</b>					
Zomba	Count	38	14	63	115
	% within District	33.0%	12.2%	54.8%	100.0%
Mulanje	Count	49	42	40	131
	% within District	37.4%	32.1%	30.5%	100.0%
Nhkotakota	Count	27	32	60	119
	% within District	22.7%	26.9%	50.4%	100.0%
Total	Count	114	88	163	365
	% within District	31.2%	24.1%	44.7%	100.0%

## Literacy

Literacy rates in Malawi are at higher levels compared to the sample groups in Nigeria as discussed in Chapter 4<sup>62</sup>. In the baseline, 75.9% of the survey respondents overall were literate and slightly higher at the endline at 80.6%, with no significant differences between the three sample groups (Table 11). The table also shows high levels of literacy among women and in some cases, this was higher than the men (C:AVA treatment group, baseline 75.9% compared to 69.4%, respectively). Higher levels were found in Zomba and Nkotakota compared to Mulanje overall.

**Table 49 Literacy of survey respondents by sample groups, Malawi**

		Men (%)	Women (%)	Total (% of sample group)	Total (n)
Baseline	Non-participant, non-C:AVA village (C1)	68.8%	73.7%	71.4%	70
	Non-participant, C:AVA village (C2)	89.5%	74.3%	79.6%	54
	C:AVA participant (treatment)	69.4%	78.8%	75.9%	116
	Total	73.6%	76.5%	75.4%	240
Endline	Non-participant, non-C:AVA village (C1)	85.7%	67.1%	72.5%	114
	Non-participant, C:AVA village (C2)	81.3%	64.3%	70.5%	88
	C:AVA participant (treatment)	86.5%	79.8%	81.3%	166
	Total	84.6%	76.1%	80.6%	282

## Land

The average land size among survey respondents was 2.2ha at the baseline and 2.4 at the endline. However the difference was not significant. There were no significant differences between sample groups at baseline or endline.

**Table 50 Average land size of survey respondents, Malawi**

	N	Mean	Std. Deviation	Std. Error Mean
Baseline	234	2.1548	1.71518	0.11212
Endline	365	2.3519	2.31050	0.12094

<sup>62</sup> The national adult literacy rate is 65.4 percent; 74.4 percent for men and 57.2 percent for women. The highest literacy rates are in the northern region, followed by the central region and southern region (HIS3 2010/11).

## Appendix J: List of codes for the panel interviews in Atlas.ti

### Nigeria Panel interview codes

Amount sold	Dec Proc - independent
Area planted	Dec proc permission
Buy cassava to consume	Dec proc spouse consult
Cassava equipment	Dec proc spouse decisions
Cassava for home consumption	Dec process - consult
Cassava markets	Dec sell proc consult
Cassava women's group	Dec sell proc indep
Change Dairy	Dec sell proc permission
Change in cassava importance	Dec sell proc spouse consults
Change in cassava processing	Dec sell proc spouse dec
Change in cassava production	Decision making on cassava roots
Change in Fruits and veg	Decisions on processing
Change in grains	Differences in processed products
Change in income control cassava	Ethnic characteristics of groups
Change in meat	Ethnicity
Change in processed foods	Expenditures cassava
Change in pulses	Fees for processing
Change in roots and tubers	Fertiliser
Change in selling cassava fresh roots	Five years ago no shortage
Change in selling processed cassava	Five years ago occasional shortage
Change in soft drinks	Five years ago shortage
Change in way process	Five years ago surplus
Change in wellbeing	Food consumption and cassava selling
Change in women's involvement with decisions	Food security
Change in women involvement decisions processing	Free land
Change sugar	FS large decrease
Changes in cassava marketing as fresh roots	FS Large increase
Constraints in cassava production labour	FS no change
Constraints in cassava production land	FS small decrease
Constraints in cassava production money constraints in processing	FS small increase
Control income prod - complete	Gender change in cassava activities
Control income prod - consult	Group leadership
Control income prod - give	Group makeup
Control income prod - permission	Harvest late/harvest prematurely
Control income prod	Harvesting methods
Control income process	Income
Control income process - complete	Income diversification
Control income process - consult	Income large decrease
Control income process - give	Income large increase
Control income process - permission	Income no change
Coping food shortages	Income small decrease
credit for processing	Income small increase
Crops grown	Individual selling
Customers	Knowledge of spouse income
	labour for processing
	Land access
	Last year food shortage year

Last year food surplus  
 Last year no shortage  
 Last year occasional food shortage  
 Leisure time  
 Market demand  
 Men's land access  
 Nomination  
 Number of plots  
 Ownership of plot  
 Patrilocal  
 Pay land  
 Planting material  
 Plot decision making  
 Polygmany  
 Preference for processed products  
 Price  
 Probe changes land allocation  
 Process of civilisation  
 Processing group  
 Production dec You consult other person  
 (spouse) for ideas but you make the decision  
 Production dec You have the ideas and  
 make a decision independently  
 Production dec you require permission  
 Production dec Your spouse consults  
 Production dec Your spouse makes decision  
 Public speaking  
 Reasons for changing cassava production

## Malawi

age  
 Amount processing -change  
 Amount produced - change  
 Area planted  
 Asset change  
 Borrow funds from husband  
 Buy cassava to consume  
 Buyers of fresh roots  
 Buyers of processed product  
 Cassava equipment  
 Cassava for home consumption  
 Cassava markets  
 Change in dairy  
 Change in Fruits and veg  
 Change in grains  
 Change in meat  
 Change in processed foods  
 Change in pulses  
 Change in roots and tubers  
 Change in soft drinks

Regional food availability  
 Regional markets  
 Roles of spouse in FS  
 Root availability  
 Roots to family members  
 Satisfaction with diet  
 Selling on credit  
 Selling roots dec - consult but yr dec  
 Selling roots dec - Independent  
 Selling roots dec - spouse make dec  
 Selling roots dec permission  
 Selling roots dec spouse consults and takes  
 dec  
 Separate farming  
 Sources of roots for processing  
 Status large decrease  
 Status large increase  
 status no change  
 Status small decrease  
 Status small increase  
 Traditional farming  
 Use of credit for cassava  
 Village elder  
 Vulnerability  
 Women's land access  
 Women's responsibilities

Change in sugar  
 Competition  
 Constraints in cassava production  
 Constraints in processing  
 Control income prod - consult  
 Control income prod - give  
 Control income prod - permission  
 Control income general  
 Control income process - complete  
 Control income process - consult  
 Control income process - give  
 Control income process - permission  
 Control income prod - complete  
 Coping food shortages  
 Credit  
 Crop change  
 Crop choice  
 Dec making change in women's involvement  
 Dec making expenditures  
 Dec making farming  
 Dec making FS  
 Dec making general

Dec making on cassava roots	Gender activities
Dec making on processing	Gender change in cassava activities
Dec making prod - complete indep	Group leadership
Dec making prod - permission	Group membership
Dec making prod - spouse consult	Harvest late/harvest prematurely
Dec making prod - spouse decides	Harvesting methods grad or bulk
Dec making prod - you consult	hired labour
Dec making sell process - complete indep	Home consumption cassava no change
Dec making sell process - permission	Importance cassava - change
Dec making sell process - spouse consult	Income
Dec making sell process - spouse decides	Income diversification
Dec making sell process - you consult	Income large decrease
Dec making sell prod - spouse consult	Income large increase
Dec Proc - complete	Income no change
Dec proc - consult	Income pooled or separated
Dec proc - permission	Income small decrease
Dec proc - spouse consult	Income small increase
Dec proc - spouse dec	Individual selling
Dec sell prod - complete	Inheritance
Dec sell prod - consult	Knowledge of expenditures
Dec sell prod - spouse consults	Knowledge of spouse income
Dec sell prod - spouse dec	Labour conditions
dec sole widow	labour for processing
Differences in processed products	Labour production
Ethnicity	Land access
Expenditures	Land fertility
Expenditures cassava	Land price
Fallow	Last year food shortage year
Family changes	Last year food surplus
farm monitoring	Last year no shortage
Fees	Last year occasional food shortage
Fertiliser	Leisure time
Five years ago no shortage	livelihood reasons
Five years ago occasional shortage	Livelihood wellbeing change
Five years ago shortage	Market demand
Five years ago surplus	Market fluctuation
Flash drier	Men's land access
Food consumption and cassava selling	Men's responsibilities
Food purchases	Migrant person
Food security	Moving land
food shortage	No change diet
Food surplus no change	No change occasional food shortage
FS gender roles	No processing
FS large decrease	Nomination
FS Large increase	non members
FS no change	Number of plots
FS small decrease	other
FS small increase	Other crops
Gender	
Ownership of plot	

Patrilocal  
Planting material  
Plot decision making  
Polygmany  
Preference for processed products  
Price  
Probe changes land allocation  
Process of civilisation  
Processing Groups  
Processing method - change  
Profit  
Public speaking  
Reasons for changing cassava production  
Reciprocal labour  
Regional food availability  
Regional markets  
rental  
risk  
Root availability  
Roots to family members  
Satisfaction with diet  
School fees  
Sell too much  
Selling fresh roots - change  
Selling on credit  
Selling processed cassava - change  
Selling roots - participating in fresh root  
markets  
Separate farming  
shop owners  
Social capital  
Sources of roots for processing  
start processing  
Status large decrease  
Status large increase  
status no change  
Status small decrease  
Status small increase  
Tenure security  
Traditional farming  
Village elder  
Vulnerability  
Weather  
Wife processes  
Women's land access  
Women's responsibilities  
women assets  
Yield  
Yield change

## Appendix K: Example of notes from a panel interview

### FIRST INTERVIEW

Date of interview: 30.09.2011	Village: Malota
Questionnaire code: 020	District: Mulanje

#### Interviewee and household details

Name interviewee	xxxx	Group name and length of membership	xxxx
Gender	F	Ethnicity	Lomwe
Age	39	Religion	Christian
Relationship to head of household	Married to hh	Maximum education level	Class 8
Marital status	Married (only wife)	Literacy (Y/N)	Y, class 8
Disability	N	Producing cassava Y/N	Y
Residency	Y, matrilineal	Processing cassava Y/N	Y

#### Household

Household members by Relationship to head of household	Gender M/F	Age (years)	Literacy (Y/N)	If school age	
				In school Y/N	Regularly attend (Y/N)
2 husband	M	44	Y	Completed secondary	
3 son	M	3	n/a	n/a	n/a
4 daughter	F	17	Y	Form 4 boarding school	Y

#### 2. Household livelihood dynamics

2.1 Tell me about the different activities that you do (on and off farm), and other members of your household. On and off-farm activities, including processing activities.

	<u>Income generating</u> (e.g. mechanic, agriculture, processing, small shop, crafts, trees)	<u>Food-production</u> (e.g. livestock, agriculture)	<u>Care-giving, social and cultural</u> (e.g. care for elderly, hospital visits, initiation ceremonies)
Interviewee	Small shop owner, helps with agriculture	Agriculture	Helping orphans through donations
Husband	Small shop owner, agriculture and livestock	Agriculture, goats, chicken	

2.2 Tell me about how your agriculture tasks and activities are divided. E.g. What crops are growing on which plots of land? Are these joint or individual plots? What inputs are used? Is fertiliser from livestock or chemical?

Owns plot 1, rents 2,3 and 4

Rented three other plots, owns one

Crops	Land plot owned (customary or titled) or rented or borrowed	Inputs ( <i>pesticides, organic fertiliser, non-organic fertiliser, pesticides, equipment</i> )	Land plot responsibility (household / individual/ both)	Decision making /management	Labour (person in family or hired)
Plot 1 1.5ac	Owned Maize, cassava, sweet potato (after maize) Millet Intercropped	Chemical fertiliser and manure	Husband and her	Husband and her but mainly her husband	Hired labours on all activities she can't do it. Husband closes the store and they go together
Plot 2 .5ac	Rented Pigeon Pea Cassava boundaries				
Plot 3 .5ac	Rented Groundnut Cassava boundaries				
Plot 4 .5ac	Rented Pigeon Pea Groundnut Cassava boundaries				

2.3 Why are livelihood assets allocated in the way they are? Probe each of the answers with WHY. What are you expected outcomes from these activities? E.g. we are trying to explore their rationale and decision pathway leading to expected changes and outcomes.

We (husband and her) discussed what to grow on our plots. On the rented plots we can't grow cassava because there is not enough money. The rent for a plot is 8000 kw per year and I need to hire labourers for 12000kw so we just puts crops that give us money like groundnuts, pigeon peas and maize because they make a lot of money. I won't plant cassava or millet there.



2.4 Why do different household members have different responsibilities ( crops, land plots and particular tasks). Why is there this arrangement? E.g. why do women do more food production? Why do only men grow cassava? Why do only women do weeding?

Husband does the manure from the goats and compost and we hire labour to work on fields. I am always at the store and husband is always going out. But we share the field activities when there is a lot of work.

With maize, we plant early with the first rains so in jan – feb the maize is mature so they can sell at peak time and when people are hungry than we plant sweet potato. Other people don't plant at this time in case the maize doesn't come up but we do (she is able to risk by planting early, benefiting from first sales).

What happens if the crop fails? I never have experienced this. If I lose the seed I can get more seed in the field, other people can't.

We rent land every year. One or two, or three plots. When three are avail we gets all, but it depends on when the land is available.

### 3. Household food security

#### 3.1 What constitutes an ideal, average or poor diet?

We always have 3 meals throughout the year but sometimes when I am busy I can't cook and we use things from the store or at the market. In the morning porridge or tea with sugar and maybe bread. For lunch we have nsima with meat or vegetables, what we want, and in the evening we have nsima with vegetables.

#### 3.2 What type of diet do you have? Is this different for other household members?

It is a good diet. I am happy with the food we have and we are never at a loss.

#### 3.2 Has there been a trend in your diet (improvement or worsening) or does it fluctuate during the year and in good/bad years?

It is always the same. It is good.

#### 3.3 How do you budget food in an average year? In a bad year? *E.g. responsibilities of members - one-third of wife's crops kept in home versus selling.*

We keep some of all the food we grow. For cassava and maize we keep a portion of this for home. (with alternative income of the small shop it helps the family to make food purchases during lean periods). Between the makaka and HQCF I just decide. Makaka is a food for my children but I also sell the flour.

#### 3.4 Has food purchasing increased/decreased/stayed the same in the last 5? Why?

Are decreasing because the currency has problems so business isn't going well. In the past when the business and currency was okay we made a lot of money from maize and bought a car with just this money.

#### 3.5 What types of food purchases are you making? *E.g. accompaniments, staple foods?*

Mainly sugar, relish, by even from their store.

#### 4. Household income

##### 4.1 What are your three most important crops for income?

3 most important crops for income-generation	How are these sold (raw, processed)	Where are they sold (local market, traders)	Frequency (once after harvest, weekly)
Crop 1: GN		Local market and some at our store	2 year, at harvest and as seeds during planting
Crop 2: SP		Traders, split with home and selling	1
Crop 3: PP		split with home and selling, sell in the store in small amounts	1 90,000
Crop 4: Mz			2 a year
Crop 5: cass	Makaka		1, don't like keeping them because need pesticides. 1 kg 10 kw, 10000 in total a year
	HQCF	Store	Not much, thinks she make 5000 that year, 45kw/kg

##### 4.2 Who makes decisions in what is sold, to who and how often? What are the influences or factors that are considered in making these decisions?

We make these decisions together. My husband will discuss with me and I will discuss with him if we need money we will decide together on what to sell. I look at situation and think maybe I should sell or make flour. Had to use a lot of cassava in flour because they said it was a good price.

##### 4.3 How is the income used and by who? Who decides and who influences?

We both use the income but my husband manages the money. The money from store is used back in the store. In agriculture we use it to reinvest into the next year.

#### 5. Cassava (production)

##### 5.1 Has the importance of cassava changed over the past 5-10 years? *How? Note the criteria given for assessing importance (income, yield, labour cost, food preferences etc. etc.) Relate to other crops, income sources, opportunities.*

I can make flour and food but before we would have a lot of makaka and cassava but no one would buy it and we had to use it on the field as manure. If there is no market for cassava we will use it in a charcoal iron to iron clothes. Even poor people will do this if market is bad!

5.2 What markets are you selling fresh cassava roots to? *E.g. local market, regional market, traders.*

Makaka, fresh cassava, but we didn't sell fresh cassava this year or HQCF. I didn't sell fresh cassava yet because I want to make sure the pigeon pea comes out first because I am afraid people will steel them.

5.3 Are you involved in HQCF? What activities?

We bring our roots to the centre and process. The money from HQCF depends on how much cassava you bring. I use my own roots. The money wasn't what she expected. Before said 80 kw per kilo but it was 45 kilo. Next year I will bring less cassava for HQCF.

5.4 How stable has the fresh cassava market been local market, regional market, traders?

Not sure about makaka and fresh market of cassava, fresh market fluctuates. When there is more sweet potato cassava will get less people buying

5.5 Changes in fresh cassava production and selling in the last five years.

<b>What changes have you experienced in cassava production over the last five years?</b>	<b>What were the reasons for the changes?</b>
Are you growing more/less/same of fresh cassava then five years ago?	The same
Have you changed the proportion of other crops grown relative to cassava? Why?	The same
What changes to levels of home consumption of cassava? What changes to income? For whom? By how much? Do these change together (e.g. income levels/consumption)	The same, we like nshima with maize
Changes in use of livelihood assets for cassava production e.g land, labour, inputs	The same
Changes to payment methods for cassava	The same, paid in cash
Change in men and women's activities with cassava	No

5.6 In difficult times, during the lean season, or in times of shortages or shocks, do you make any changes to cassava production activities to ensure food security? Who decides?

No we don't change many things. We will won't buy or use certain foods.

5.7 What are the differences with selling fresh cassava compared to other potential income sources? *E.g. advantages and disadvantages.*

Fresh cassava makes more money. Makaka takes more labour. With traders they give you little money and if you want to make money you have to bring to the market. Have to hire a car. It is tiresome. The shop brings in money in little amounts over the year.

## SECOND INTERVIEW

### INDIVIDUAL PRODUCER/PROCESSOR DISCUSSION GUIDE

Date of interview: 16 07 14	Village: Malota
Questionnaire code: 22 (previous 20.30.9.11)	District: Mulanje
Observations on activities conducting on arrival: at the shop by her home waiting	Housing and roofing material: corrugated

Consent to participate: Y/N (if No terminate the interview).

#### 1. Demographic information

1.1. Individual interviewed (*some information should only be verified if they have been interviewed previously*)

Name	xxx	Number of household members under 5	1 (daughters child)
Gender	F	Number of household members, 5-15	1 (son)
Age	42	Number of adults (16-59)	4 (with daughter, 5 husband, her husband and her)
Compound or extended family (Y/N)	Extended (with daughter and husband)	Number of adults 60+	0
Relationship to head of household	Wife	C:AVA group member (Y/N) and name	Lusule Tafika
Marital status If wife, status (1 <sup>st</sup> , 2 <sup>nd</sup> )	Married	Years of group membership	5
Number of wives	Only her	Group leader (Y/N)	N
Ethnicity	Lomwe	Respondent have chronic illness or disability which impede normal activities	N (had shingles last year)
Religion	Christian	Did your household (both spouse and wife) migrate to the area	N
Maximum education level of respondent: illiterate, primary, secondary, college, university	Class 8		

## 2. Household farming system

We are still doing the shop but it is not doing well as people don't have the money to buy things Peoples incomes are going down we know that out there the economy is getting worse.

In the village people depend on agriculture, planting different crops but they don't get a good price. For a big bag of potatoes they sell at 1200 only and the value of kw is low and they can't buy household items. They are getting poorer and vulnerable so they can't buy from shops.

2.1 Overall, would you say that there has been an improvement or worsening of your wellbeing over the past 4 years? Would this be 'large' or 'small' change?

It is declining a little, little by little it is gradually declining. Because our family size has increased with my son in law and the child of my daughter who lives with me. We are in difficult time. We used to eat well but with all these issues there is a small decline. Last year I had shingles and my energy levels were low and I am getting older so I have less energy.

2.2 Discuss land access and management of the plots of all household members over the year.

2.2.1 How many plots do you have?	2.2.2 What crops do you grow on that plot (note if intercropped)?	2.2.3 What is the type of ownership for that plot (rented, owned, borrowed)?	2.2.4 Who is the plot manager/ decision maker for that plot (by HH member)?
1	1 .5ac : groundnut, pigeon pea, cassava on the boundaries	owned	Husband
2	.5 ac: maize, and after the harvest sweet potato cassava boundaries	Was rented and then bought paid a lot of money as land was cheap	Husband

Open discussion:

### *What happened to the rented plots you had before?*

I had 4 plots and gave two to my daughter to rent (total of 1 acre). I won't give to my son (matrilineal area, not changing over time - she not giving land to boys)

### *Why no groundnuts?*

They aren't growing well.

### *No cassava?* (not mentioned at first)

We haven't stopped but because of not enough land we grow cassava in boxes to demarcate plots. It is difficult to grow cassava on its own as the land isn't enough.

### **Most important crops**

Income: Maize, groundnut and pigeon pea. Consumption: maize, cassava, potatoes

### **Risk taking/different crops**

I heard rumours about crops when things are doing well. So in these four years I planted cotton and made a loss. Then I heard about soya. So now i have gone back to the crops i grow normally and just do these crops that my parents did.

### ***Inheritance/ gender***

I got land from my mother. She was the only girl child, and I have only one sister so we split it. Now I only have one girl and even my sister has only one daughter.

### ***Does inheritance give a bad feeling towards having girls?***

Actually it's the most important thing to have a girl child you know your village will grow, there will be houses here and they will care for you. Boys will be children to other villages. So it's very important as if there are no girls it would be the end of your clan.

### **Inheritance/ gender/education**

*(Eunice – in the north this is opposite where boys are favoured, if there is money it will be given to boys education and if there is some leftover then girls, is that the same here?)*

There is more favouritism for a girl child. I didn't notice in my family when I was younger because it was only me and my sister we had no brothers. But for other families there is favouritism of the girl child because they will keep their clan. It depends on the household but parents will try to be equal with fees for school for girls and boys. This is with democracy. But this depends on the household. If you have a son you want to make sure he is educated so you are seen to have done a good job. But girl child says here. But girls spoiled. Like they don't discipline girls. If she gets pregnant she will not be chased away for example while we train boys not to do this.

### **Education/gender**

### ***Is there a certain sex favoured for school?***

Mostly it is the girl child if she is well to do she remains an asset to the house. However if a boy if he is educated he will help where he is married, in that village, not here.

***Is this changing from when she was younger?*** With democracy things have changed. They try to send both to school and it's up to the parents. Difficult to keep one in the home and send the other to school.

(Eunice – education isn't prioritised in the south it is more about business. Now there is no responsibility among children, there is now land pressure, land degradation and chemical use. Whereas in the north bride price depends on your capabilities and education).

### **Elderly/gender/care**

Young women aren't as responsible as before. It is a sad situation and it is this generation. It is because it is the end times. Taboos and abominations are happening. In this community I have seen a lot of women take care of children where before the girls were responsible. People are becoming so independent. They are even becoming dependent, make children and leave the children at home and they don't follow the advice of old people because they have turned away from them and responsibility. They think that this is development. They go out and get diseases. But cultures are changing because of democracy and they are stubborn. They take their rights without responsible. (democracy viewed both positive and negative)

### **Gender expectations/uncle/brother/burial**

**Expectations of girls and boys?** They are different and each are critical on their own. Boy child just go to a different village and we won't know where he is. However, when the parents are dead the boy has to get a hoe to dig the grave of parents. Girls don't do this. Wherever the boy is, his sisters will search for him. And some boys contribute to the parents' home but this depends on how they are raised.

***What about when you get married?*** The husband is the manager here. When you get married the husband should come to the house as a donor or helper. My husband is helping me a lot and I see the benefits of him, more than they would in his village. Women have the mind to bring up the girl child well because the man leaves. Culturally the man is the helper. This is why he is the manager.

***But helper or authority? They are contradictory?*** The authority within the home and village are different things. At the village leave authority is mbumba (women) but this is still controlled by the uncle or brother (contradicts interview with community leader in Zomba but Eunice said I got that wrong). But the man who is married comes as the manager to make sure the family is able to eat and make sure his family is okay. But he can't say anything about land. For this it is the uncle. If there is a funeral the husband doesn't have a say on let's burry them here or there. The one who does is the brother or uncle to the women. Where they are they come here. Man doesn't have control over compound its the brother or uncle that does.

### **Inheritance**

***Who inherits other assets store- bicycles, cars?*** Depends on what assets. Land goes to daughter but bike and other things are divided among children even the boys but girls get bigger share. House stays with the girl.

Does she get any benefit from daughter after giving her some land? now I get benefit because we stay together they eat together, they harvest and all benefit is shared but she will leave and want her own house and then it will be difficult. She is constructing her house over there (right beside the shop but I guess that means more separate responsibility). But she will still care for me.

- 3 Has the importance of cassava for you changed over the past 4 years? How? *Note the criteria given for assessing importance (income, yield, labour cost, food preferences etc)*

Cassava has always been important in this community. We eat it with vegetables and can sell for small income, stems used as firewood, roots are for makaka, flour and snack. Food and income. In four years, producing hqcf has just added to its importance because of its higher price. The group stopped going because they didn't have much cassava but this year i will go back and do that this season (no it's because the group thought it was not transparent – through other interviews).

- 4 Thinking about the different activities that you and your spouse do with cassava, such as women weeding, peeling, processing and men clearing land and selling, are either or both of you doing different activities than 4 years ago? Have you noticed this in the community? If so, which and why?

We do these together.

- 5 I've heard that cassava is a women's crop, that they do the labour for it and get to keep all the income and spend it as they want. Is this true?

No I don't think so. Makaka is mainly done by women. But it is not for a man or a woman.

**6. Optional: Changes to cassava production (if the interviewee is 'mainly' a processor, leave this section until the end as it can be missed if there is a time shortage)**

- 6.1 Have you planted more, less or the same amount of cassava than 4 years ago?

Less because we have less land (gave 2 acres to her daughter). I used to plant all the boxes on the land but i cant now so now there is less. It is the same amount planted every 3 years.

- 6.1.1 How many cassava plots 4 years ago?

Boundaries on 4 plots and now 2.

- 6.1.2 If more, was this the result of acquiring more land and/or decreasing the production of another crop (indicate which crop)

N/A

- 6.1.3 If less, was this the result of losing land or increasing the production of another crop (indicate which crop)

Losing land.

- 6.2 Have you started using improved planting material in the last 4 years?

No bitter and sweet local varieties



6.2.1 Has this affected labour? Whose? (e.g. new variety could increase weeds, and weeding could be done by specific household members, women, men or both)

N/A

6.3 Do you use fertiliser with cassava? If so, since when? What type (organic/non-organic)?

6.3.1 Has this affected labour? Whose? (e.g. increased need for paid labour, or labour from household members, women, men or both)

No but will benefit from the fertilizer if it is close to the maize

6.4 What are the reasons for changing the amount of cassava grown/variety planted/use of fertiliser? (Note reasons behind the specific changes).

No change

6.5 What are your constraints in cassava production (land, labour, capital)? Are these constraints different for you compared to your spouse/other community members etc.?

Lack of land

6.6 Do you use credit for cassava production? What source?

No credit

No labour hired anymore.

6.7 Are you (your household) selling more, less or the same amount of cassava fresh roots than 4 years ago?

We aren't selling fresh roots anymore.

7. **OPTIONAL:** Changes in cassava marketing as fresh roots (for individuals who are selling fresh roots. if the interviewee is 'mainly' a processor, leave this section until the end as it can be missed if there is a time shortage)

7.1 Comparison of buyers and quantities sold last year and 4 years ago

7.1.1 Who are the buyers you have sold to for the last 4 years, even those you have stopped – including family?	7.1.2. Last year, how much did you sell to them?	7.1.3 4 years ago, how much did you sell to them?

8. In the household, who makes decisions on cassava production, the amount of cassava sold and to whom? (If the response is 'both' probe around who presented the idea, if there is consultation, and who makes final decision, ensure distinction between production and marketing).

Husband and me.

8.1 How much fresh cassava roots did you keep for home consumption last year? Was this more or less than 4 years ago?

I can't put an amount on it. But now we don't sell.

8.2 Do you harvest all at once and sell or gradually?

Gradually

8.3 Do you sell your roots to family members, or give roots to anyone? On what terms?

no

8.4 If you are selling more or less cassava roots, has this affected the availability of roots to other member(s) of the household? For household cassava processing? Why or why not?

N/A

8.5 In the past four years have you ever had to harvest prematurely or harvest late? Why?

No

## 9. Women and cassava production (*all female respondents*)

9.1 **Women only:** Thinking about decisions with cassava production (such as the variety, use of fertiliser, hiring labour), what is your involvement in these decisions? (*Note if interviewee has trouble with the question – it may vary by plot*).

d. Your spouse consults you with ideas and makes the final decision.

9.2 **Women only:** Thinking about decisions with selling cassava roots (how much and to who to sell to) what is your involvement in these decisions? (*Note if interviewee has trouble with the question – it may vary by plot*).

N/A

9.3 **Women only:** In the past 4 years, do you think your involvement in these decisions about cassava production and selling fresh roots has increased, decreased or stayed the same?

No change.

## 10. Changes to cassava processing and selling

[Only ask to those who are directly involved in cassava processing – skip section if they are not processing] [Refer to household and group – be clear about differences)

### 10.1 Cassava processing activities

10.1.1 What cassava products do you process?	10.1.2 What year did you start processing?	10.1.3 Do you process in a group, individually or both (G, I, B)? <i>Probe what this may mean to them.</i>	10.1.4 Where do you sell it?
Makaka	Since I was young	I	Vendors
HQCF	2011 (once)	G	Tiyamike markers

No I do not make mandazis or use HQCF in my shop

10.2 What are your sources for roots (if household, specify who's plots if different ownership, obtain proportion) for household processing? For group processing?

Household – own roots. For the group processing we once bought roots together.

10.3 Has the sale of cassava roots by other people in your household affected the availability of roots for your processing?

No.

10.4 Do you have to pay fees and/or commission for your processed cassava products? Which products? What is this for?

HQCF yes – this is why we (her and the other women in the community) left the group there wasn't profit afterward. They sold the HQCF to some people out of the village and this was at a very low price. They may have cheated us.

11. In the last 4 years, would you say you have increased or decreased the amount of cassava you process (all products) for household processing? For group processing? What was the reason for this?

Stopped HQCF (because of unequal benefits)

Household processing – less because of less cassava grown but the daughter is also processing and we eat together.

There is also less cassava because of drought. This year there will be good production so I can do HQCF if we can agree with the group or do makaka. (4 years ago 1000kg or 20bags).

12. If you are processing more cassava, where are these additional roots from (more sold through buying more roots/producing ore roots/reducing consumption or combination)? *Household and group.* - N/A

12.1 Have you changed anything about the way you process (quality standards) in the last 4 years for household processing? For group processing? What and how?

No.

12.2 **Women only:** What assets do you own in your own right used for cassava production/ processing/ marketing land, equipment, storage)?

Utensils

12.3 Do you use credit for any of your processing activities?

No.

12.4 Do you hire labour for any of your processing activities?

No.

### 13. Changes to selling processed cassava

13.1 Are you selling more, less or the same amount of processed cassava in the last 4 years?

Less, less production and less land. This year will be good and maybe HQCF or makaka.

13.2 Quantities of cassava processing. *Note if individual or group selling.*

<i>Cassava product as listed in previous question</i>	Quantities processed specify time frame/ months of year	Amount or % sold	Quantities processed 4 years ago	Amount or % sold
HQCF (2012)	Don't know	Don't know 40kw	See previous interview	all
Makaka	2013 no roots from drought	All kept	2011 20 bags – 1000 kg 2012 hqcf only	Can't estimate

13.3 What are the reasons for changing the amount of cassava processed/change in the process?

*(Note reasons behind the specific changes).*

When had HQCF opportunity I took it. Otherwise I will process makaka depending on the amount of roots she produces.

13.4 Did this affect the amount of labour required for certain tasks? Who does it affect? What activities (e.g. reproduction) change as a result? *Household and group.*

With makaka I can do this at home but with HQCF we have to go to the centre.

14. What constraints do you experience in cassava processing (labour, capital)? Are these constraints different for you compared to your spouse/other community members etc.?

The bad market and low prices.

15. Who is involved in making these decisions cassava processing (how, how much etc.)? (Probe around who presented the idea, if there consultation, and who makes final decision). Household and group.

My husband will decide (these are slightly different answers to previous where she said there was more shared decision making it seems).

16. **Women only:** Thinking about decisions with cassava processing, such as how much to process and the way it is processed, what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

D Your spouse consults you with ideas and makes the final decision

17. **Women only:** Thinking about decisions with selling processed cassava (how much and to who to sell to) what is your involvement in these decisions? (*Note if interview has trouble with the question – it may vary by plot*).

D Your spouse consults you for your opinion and makes the final decision

17.1 **Women only:** In the past 4 years, do you think your involvement in these decisions about cassava

processing and selling has increased, decreased or stayed the same in the?

No

17.2 If you are selling more or less processed cassava, has this affected food consumption in the household (of cassava and otherwise)? How?

No change (less cassava but living with daughter so they share food).

17.3 What are the differences with processing the different products compared to other activities (e.g. advantages and disadvantages)?

With HQCF we have to go to the centre.

17.4 Are HQ activities are more, less or the same in exertion and hours of work compared to other activities?

It was the same.

17.5 What is the most significant change that the HQCF/CG opportunity has created (*open ended*)

I did process HQCF once. We bought cassava as a group, processed it and sold it. 40kw per kilo.

Just did one year and made losses because it wasn't known market and the market wasn't there.

Buying cassava made processed and bought at 40kw per kilo. No benefits but maybe it will change in the future and that's why i want to try. The group still exists and we are still powerful (the group that separated from Tiyamike).

## 18. Outcomes from cassava production and processing

18.1 Rate the following changes in past 4 years. Probe reasons for differences, drawing out any impacts raised from C:AVA

	large increase	increase	change	decrease	decrease	(large extent, to some extent, not at all)
Level of income				X		Not at all
Food security and diet				X		Not at all
Your status in the community			X			Not at all

### Income management in household

*Is there income pooling in extended family?* We are in one extended family its two families living together daily expenses of food are shared. One person will buy one day and then the next day the next person well. We help each other. Husband to her daughter is a teacher who gets a salary so they share responsibilities.

*In her household with husband?* We keep the money in a place that is known to both of them. They agree on what to use the money on and use it. One person doesn't take money. But if I was away the husband can take money and use it and he will tell me. If he is away I can take the money use it and then tell him.

18.2 Do you know your spouse's income?

Yes

18.3 Do you know how your spouse spends his/her money?

Yes

18.4 **Women only:** What is your level of control over the income made from cassava production?

B You consult other person (spouse) for their opinion but you make the decision

B

18.5 **Women only:** What is your level control over the income made from cassava processing?

B You consult other person (spouse) for their opinion but you make the decision

18.6 **Women only:** Has the level of control over income from cassava production or processing changed in the last 4 years? Why? If so, what has this impacted?

No change

18.7 What expenditures have been made with this income from cassava production (school fees, livestock, technology, agricultural production, processing, food, health, housing etc.)?

- Any assets, who owns them?

Not asked and less income from cassava over the years

### 19. Food security

19.1 If you are selling more or less cassava roots or processed cassava, has this affected food consumption in the household (of cassava and otherwise)? How? N/A

19.2 Has too much ever been sold? What happened? How did you manage? NO

19.3 Do you buy cassava to consume? More or less than 4 years ago? NO

20. What are the roles of you and your spouse in food security for the home (e.g. man responsible for staple food provision and budgeting, women responsible for luxury or condiment purchases)?

We share the responsibilities between our family and the daughters fields. We each will use money for buying things for the household. I will usually go the shop or my daughter will.

20.1 How satisfied are you with your diet and the diet of your household? -quality and quantity. satisfied

20.2 Reflecting on your households diet and how it's changed over the years, are you eating more or less or any of the following food groups?

Grains	same
Roots and tubers	same
Pulses (beans and lentils)	same
Fruits and Veg	same
Meat	Little less
Dairy	Not taken
Sugar	Little less
Processed foods	same
Soft drinks	Not often

21. Taking into consideration ALL your food sources (own food production + food purchase + help from different sources + food hunted from forest and lakes, indigenous fruits and vegetables, etc), how would you define your family's food consumption?

	Last year	5 years ago
No food shortage but no surplus	X	X

22. If you experience food shortages, how do you cope? (E.g. Rely on less preferred or less expensive food, borrow food, buy food on credit, harvest early, skip meals?) Is this the same as it was four years ago?

Doesn't experience

Thank you and close.



## Appendix L: Prices and Costs of cassava products in Nigeria and Malawi

### Nigeria

Thai farm prices, Ogun state, Nigeria ([www.nairaland.com](http://www.nairaland.com), July, 2014)

Cassava is bought according to the starch content. Farm gate price less transport cost.

Starch (%)	N/Tonne
15%	9,750
16%	10,400
18%	11,700
20%	13,000
22%	14,300
23%	14,950
24%	15,600
26%	16,900
28%	18,200
29%	18,850

Other conditions:

1. Tuber less than 18 months old since planting
2. Tubers free from disease and in good condition

**Mr. Pius Adesanya, JDPM extension worker (9) Ogun area**

Year	P fresh roots 100kg (make 33 kg of gari)		P gari 1 kg		Price fufu 5kg	
	Wet	dry	Wet	dry	Wet	dry
2014	800	Not yet	80		700	
2013	1000	1300	80	90	1300	1500
2012	1200	1500	70	80	1200	1300
2011	800	100	70	80	1200	1300
2010	800	100	60	70	1200	1300

**Costs (Key informant, Ashipa-Iilarp community, District: Ewekoro) (2014)**

Cost	1 interview	2 interview
Peeled roots per drum	250	200 (now from her husband)
Water	200 drum	200
Transport	2500 transport a drum	
Still need 5 drums of water for 10 drums of roots, still same labourers.		

**Costs (Ilaro community) (2014)**

	Quantity	Cost
Water		Free
Firewood	Frying 72kg garri	300
Farm labour	500kg of roots	300
Processing labour	500kg of roots	1400
Transport	72kg	200

### Costs (Akure) (2014)

25.6kg of gari one bag of flour

	Quantity	Cost
Water	2 bowl (like a basin)	100
Firewood	2 .5 bundles	1000
Farm labour	Basket (120kg)	1000 ?600?
Processing labour	Basket (120kg)	1250
Transport	Basket (120kg)	300-800

### Malawi

Price of cassava roots and makaka (Vito country manager, Tiyamike association, CMRTYE association)

	Fresh cassava (local processors) (Kw/kilo)	Fresh cassava (large processing factory) (Kw/kilo)	Fresh cassava to Vendors	Makaka	HQCF (Kw/kilo)
2013	25	30	50-60	10	20
2012	30	25-30			-
2011	15	-	10		-

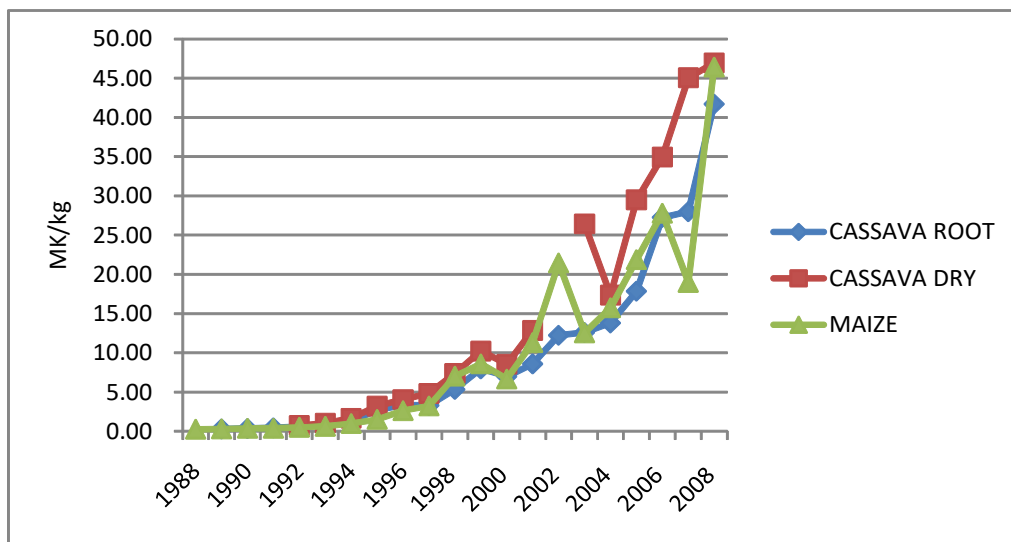
### Costs

- Cost group membership 1,000kw per year, from 500 in previous years
- Processing labour 200kw/day

**Prices for various cassava products (September 2009, C:AVA project document, 2009 )**

<b>Product</b>	<b>Location</b>	<b>Price (MK/kg)</b>
Fresh cassava destined for human consumption	Farmgate price near Lilongwe	20
Fresh cassava destined for processing of dried chips or flour	near Lilongwe	7 – 9
Fresh cassava destined for processing of dried chips or flour	near Kasungu	15
Fresh cassava destined for processing of chips or flour	Nkhotakota District	7
Fresh cassava destined for processing of starch	Nkhotakota District	7
Fermented cassava flour, <i>kondowole</i>	Nkatha Bay District	60
Fermented cassava, chips (for human consumption)	Nkatha Bay District	40
Cassava flour, fermented or unfermented, good quality (sold to bakeries or refugee camps)	Kasungu District	75-80
Dried cassava chips ( <i>makaka</i> ), farmgate price	Mulanje District	15-20
Dried cassava chips ( <i>makaka</i> ), bought by industrial users	Blantyre	25
Cassava flour ( <i>kondowole</i> )	Blantyre, supermarket	80
Dried cassava chips, bought by Raiply	Chikangawa, Mzimba	40

**Average annual market prices for selected commodities (nominal)**



Source: Ministry of Agriculture and Food Security.

## Appendix M: Sample of SPSS Chi-Square tests

The follow section presents a sample of Chi-square tests performed on the Nigeria dataset on input use by sample group.

Case Processing Summary						
		Cases				
		Valid		Missing		Total
		N	Percent	N	Percent	N
Non-participant, non-C:AVA village (C1)	Survey * Use of improved variety	270	94.4%	16	5.6%	286
	Survey * Use of herbicide	276	96.5%	10	3.5%	286
	Survey * Use of fertiliser	276	96.5%	10	3.5%	286
Non-participant, C:AVA village (C2)	Survey * Use of improved variety	125	93.3%	9	6.7%	134
	Survey * Use of herbicide	126	94.0%	8	6.0%	134
	Survey * Use of fertiliser	126	94.0%	8	6.0%	134
C:AVA participant (treatment)	Survey * Use of improved variety	338	92.6%	27	7.4%	365
	Survey * Use of herbicide	340	93.2%	25	6.8%	365
	Survey * Use of fertiliser	340	93.2%	25	6.8%	365

### Survey \* Use of improved variety

			No	Yes
Non-participant, non-C:AVA village (C1)	Survey	Baseline	42.8%	57.2%
		Endline	43.3%	56.7%
	Total		43.0%	57.0%
Non-participant, C:AVA village (C2)	Survey	Baseline	47.5%	52.5%
		Endline	40.9%	59.1%
	Total		44.0%	56.0%
C:AVA participant (treatment)	Survey	Baseline	42.4%	57.6%
		Endline	26.6%	73.4%
	Total		34.3%	65.7%

### Chi-Square test

		Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Non-participant, non-C:AVA village (C1)	Pearson Chi-Square	.007a	1	0.933		
	Continuity Correction <sup>b</sup>	0.000	1	1.000		
	Likelihood Ratio	0.007	1	0.933		
	Fisher's Exact Test				1.000	0.517
	Linear-by-Linear Association	0.007	1	0.934		
	N of Valid Cases	270				
Non-participant, C:AVA village (C2)	Pearson Chi-Square	.542c	1	0.462		
	Continuity Correction <sup>b</sup>	0.309	1	0.578		
	Likelihood Ratio	0.542	1	0.461		
	Fisher's Exact Test				0.477	0.289
	Linear-by-Linear Association	0.538	1	0.463		
	N of Valid Cases	125				
C:AVA participant (treatment)	Pearson Chi-Square	9.394d	1	0.002		
	Continuity Correction <sup>b</sup>	8.705	1	0.003		
	Likelihood Ratio	9.441	1	0.002		
	Fisher's Exact Test				0.003	0.002
	Linear-by-Linear Association	9.366	1	0.002		
	N of Valid Cases	338				

### Use of herbicide

		Use of herbicide	
		No	Yes
Non-participant, non-C:AVA village (C1)	Baseline	72.1%	27.9%
	Endline	28.9%	71.1%
	Total	56.9%	43.1%
Non-participant, C:AVA village (C2)	Baseline	88.3%	11.7%
	Endline	37.9%	62.1%
	Total	61.9%	38.1%
C:AVA participant (treatment)	Baseline	68.9%	31.1%
	Endline	31.8%	68.2%
	Total	50.0%	50.0%

**Chi-Square test**

		Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Non-participant, non-C:AVA village (C1)	Pearson Chi-Square	47.871 <sup>a</sup>	1	0.000		
	Continuity Correction <sup>b</sup>	46.126	1	0.000		
	Likelihood Ratio	48.735	1	0.000		
	Fisher's Exact Test				0.000	0.000
	Linear-by-Linear Association	47.698	1	0.000		
	N of Valid Cases	276				
Non-participant, C:AVA village (C2)	Pearson Chi-Square	33.926 <sup>c</sup>	1	0.000		
	Continuity Correction <sup>b</sup>	31.820	1	0.000		
	Likelihood Ratio	36.656	1	0.000		
	Fisher's Exact Test				0.000	0.000
	Linear-by-Linear Association	33.657	1	0.000		
	N of Valid Cases	126				
C:AVA participant (treatment)	Pearson Chi-Square	46.709 <sup>d</sup>	1	0.000		
	Continuity Correction <sup>b</sup>	45.238	1	0.000		
	Likelihood Ratio	47.843	1	0.000		
	Fisher's Exact Test				0.000	0.000
	Linear-by-Linear Association	46.571	1	0.000		
	N of Valid Cases	340				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 41.82.

b. Computed only for a 2x2 table

c. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 22.86.

d. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 83.50.



### Use of fertiliser

Treatment3			Use of fertiliser		Total
			0	1	
Non-participant, non-C:AVA village (C1)	Survey	Baseline	81.0%	19.0%	100.0%
		Endline	71.1%	28.9%	100.0%
	Total			77.5%	22.5%
Non-participant, C:AVA village (C2)	Survey	Baseline	90.0%	10.0%	100.0%
		Endline	84.8%	15.2%	100.0%
	Total			87.3%	12.7%
C:AVA participant (treatment)	Survey	Baseline	74.9%	25.1%	100.0%
		Endline	72.3%	27.7%	100.0%
	Total			73.5%	26.5%

### Chi-Square test

		Value	df	Asymptotic Sig (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Non-participant, non-C:AVA village (C1)	Pearson Chi-Square	3.520 <sup>a</sup>	1	0.061		
	Continuity Correction <sup>b</sup>	2.976	1	0.085		
	Likelihood Ratio	3.436	1	0.064		
	Fisher's Exact Test				0.070	0.043
	Linear-by-Linear Association	3.507	1	0.061		
	N of Valid Cases	276				
Non-participant, C:AVA village (C2)	Pearson Chi-Square	.752 <sup>c</sup>	1	0.386		
	Continuity Correction <sup>b</sup>	0.359	1	0.549		
	Likelihood Ratio	0.761	1	0.383		
	Fisher's Exact Test				0.433	0.276
	Linear-by-Linear Association	0.746	1	0.388		
	N of Valid Cases	126				
C:AVA participant (treatment)	Pearson Chi-Square	.294 <sup>d</sup>	1	0.588		
	Continuity Correction <sup>b</sup>	0.176	1	0.675		
	Likelihood Ratio	0.294	1	0.587		
	Fisher's Exact Test				0.624	0.338
	Linear-by-Linear Association	0.293	1	0.588		
	N of Valid Cases	340				

## Appendix N: Sample of Tukey multiple comparison tests

The follow section presents a sample of ANOVA tests performed through R. Table 51 shows total output of cassava, yield/ha (produc) sample group (treatment) and gender, between baseline and endline (survey) in Nigeria. Table 52 shows the results for cassava yield/ha, fresh and processes cassava sold, by sample group, gender and survey, in Malawi.

**Table 51 Results for total output of cassava by sample group, gender and survey, Nigeria**

<pre>&gt; yy&lt;-(log(output+1)) &gt; m2&lt;-aov(yy~survey*treatment*gender,na.action="na.exclude") &gt; anova(m2) Analysis of Variance Table  Response: yy       Df Sum Sq Mean Sq F value Pr(&gt;F) survey    1 238.63 238.628 64.8552 3.642e-15 *** treatment  2 211.56 105.778 28.7488 1.040e-12 *** gender     1  14.45  14.452  3.9277  0.04790 * survey:treatment  2  87.11  43.555 11.8375 8.851e-06 *** survey:gender    1  0.13  0.133  0.0363  0.84900 treatment:gender  2 24.54 12.268  3.3344  0.03622 * survey:treatment:gender  2  2.51  1.253  0.3405  0.71155 Residuals      676 2487.27  3.679 --- Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1</pre>						
<pre>survey treatment gender Freq means se natmeans natses 7 baseline con1 female 41 8.395081 0.3032901 4425.2464 1362.8043 8 endline con1 female 33 8.846538 0.3502092 6950.2832 2484.1141 9 baseline con2 female 26 5.721332 0.4795438 305.3114 152.0865 10 endline con2 female 17 8.122699 0.4952707 3370.1038 1738.1923 11 baseline treat female 74 7.244085 0.2397719 1399.8004 338.8580 12 endline treat female 56 8.958874 0.2797946 7776.5976 2204.3506 13 baseline con1 male 141 8.819077 0.1657051 6762.0226 1125.6364 14 endline con1 male 69 9.254577 0.2397719 10452.2951 2530.2490 15 baseline con2 male 36 6.974120 0.3445144 1068.6159 375.4796 16 endline con2 male 55 8.898750 0.2859446 7322.8148 2122.5712 17 baseline treat male 98 6.971445 0.2044781 1065.7616 219.4467 18 endline treat male 131 8.968491 0.1796535 7851.7456 1418.1941</pre>						
<p>Tukey multiple comparisons of means 95% family-wise confidence level</p> <p>Fit: aov(formula = yy ~ survey * treatment * gender, na.action = "na.exclude")</p>						

```

$survey
  diff lwr upr p adj
endline-baseline 1.182076 0.8938721 1.470279 0

$treatment
  diff lwr upr p adj
con2-con1 -1.3538790 -1.8691148 -0.8386432 0.0000000
treat-con1 -1.0033091 -1.3782805 -0.6283376 0.0000000
treat-con2 0.3505699 -0.1539871 0.8551269 0.2328552

$gender
  diff lwr upr p adj
male-female 0.3121732 0.001189664 0.6231567 0.0491325

`s`survey:treatment`
  diff lwr upr p adj
endline:con1-baseline:con1 0.444321609 -0.2574016 1.1460448 0.4601848
baseline:con2-baseline:con1 -2.150897410 -3.0520733 -1.2497215 0.0000000*
endline:con2-baseline:con1 -0.008935574 -0.8296549 0.8117837 1.0000000
baseline:treat-baseline:con1 -1.606714162 -2.2153385 -0.9980898 0.0000000*
endline:treat-baseline:con1 0.245377078 -0.3540989 0.8448531 0.8511390
baseline:con2-endline:con1 -2.595219019 -3.5745594 -1.6158786 0.0000000
endline:con2-endline:con1 -0.453257183 -1.3591103 0.4525959 0.7086996
baseline:treat-endline:con1 -2.051035771 -2.7703502 -1.3317213 0.0000000
endline:treat-endline:con1 -0.198944531 -0.9105351 0.5126461 0.9676606
endline:con2-baseline:con2 2.141961836 1.0741265 3.2097972 0.0000002*
baseline:treat-baseline:con2 0.544183248 -0.3707571 1.4591236 0.5323485
endline:treat-baseline:con2 2.396274488 1.4873940 3.3051549 0.0000000
baseline:treat-endline:con2 -1.597778587 -2.4335884 -0.7619688 0.0000010
endline:treat-endline:con2 0.254312653 -0.5748592 1.0834845 0.9520431
endline:treat-baseline:treat 1.852091240 1.2321159 2.4720666 0.0000000*

`s`survey:gender`
  diff lwr upr p adj
endline:female-baseline:female 1.1264939 0.4419177 1.8110702 0.0001506*
baseline:male-baseline:female 0.2828608 -0.2647122 0.8304337 0.5438263
endline:male-baseline:female 1.4760190 0.9167221 2.0353160 0.0000000
baseline:male-endline:female -0.8436332 -1.4450752 -0.2421911 0.0018463
endline:male-endline:female 0.3495251 -0.2626101 0.9616603 0.4559491
endline:male-baseline:male 1.1931583 0.7393952 1.6469214 0.0000000*

`s`treatment:gender`
  diff lwr upr p adj
con2:female-con1:female -1.77730804 -2.95998949 -0.5946266 0.0002885*
treat:female-con1:female -0.63085085 -1.46754309 0.2058414 0.2606492
con1:male-con1:female 0.48134323 -0.28095120 1.2436377 0.4634139

```

```

con2:male-con1:female -0.68049001 -1.58863999 0.2276600 0.2672573
treat:male-con1:female -0.65694290 -1.41726342 0.1033776 0.1347521
treat:female-con2:female 1.14645719 0.03283263 2.2600818 0.0393532*
con1:male-con2:female 2.25865127 1.19978463 3.3175179 0.0000000
con2:male-con2:female 1.09681803 -0.07144656 2.2650826 0.0799405
treat:male-con2:female 1.12036514 0.06291866 2.1778116 0.0305737
con1:male-treat:female 1.11219408 0.46218096 1.7622072 0.0000186
con2:male-treat:female -0.04963917 -0.86582581 0.7665475 0.9999780
treat:male-treat:female -0.02609205 -0.67378917 0.6216051 0.9999972
con2:male-con1:male -1.16183324 -1.90156261 -0.4221039 0.0001225*
treat:male-con1:male -1.13828613 -1.68651094 -0.5900613 0.0000001*
treat:male-con2:male 0.02354711 -0.71414796 0.7612422 0.9999991

$`survey:treatment:gender`
      diff lwr upr p adj
endline:con1:female-baseline:con1:female 0.451456441 -1.0679166 1.97082950
0.9981649
baseline:con2:female-baseline:con1:female -2.673749107 -4.5345935 -0.81290474*
0.0001867
endline:con2:female-baseline:con1:female -0.272382424 -2.1770174 1.63225251
0.9999987
baseline:treat:female-baseline:con1:female -1.150996305 -2.4189480 0.11695540
0.1176128
endline:treat:female-baseline:con1:female 0.563792947 -0.7894841 1.91707003
0.9694133
baseline:con1:male-baseline:con1:female 0.423996077 -0.7094432 1.55743534
0.9867285
endline:con1:male-baseline:con1:female 0.859495618 -0.4084561 2.12744732 0.5333185
baseline:con2:male-baseline:con1:female -1.420961744 -2.9262662 0.08434275
0.0853906
endline:con2:male-baseline:con1:female 0.503668826 -0.8633649 1.87070257 0.9882638
baseline:treat:male-baseline:con1:female -1.423636338 -2.6232452 -0.22402744
0.0061033
endline:treat:male-baseline:con1:female 0.573409905 -0.5826597 1.72947946 0.8989203
baseline:con2:female-endline:con1:female -3.125205548 -5.0726466 -1.17776449
0.0000123
endline:con2:female-endline:con1:female -0.723838865 -2.7131652 1.26548744
0.9894027
baseline:treat:female-endline:con1:female -1.602452746 -2.9943890 -0.21051652
0.0094331
endline:treat:female-endline:con1:female 0.112336506 -1.3577464 1.58241942 1.0000000
baseline:con1:male-endline:con1:female -0.027460365 -1.2980781 1.24315740
1.0000000
endline:con1:male-endline:con1:female 0.408039177 -0.9838970 1.79997540 0.9983771
baseline:con2:male-endline:con1:female -1.872418185 -3.4835440 -0.26129233
0.0082630

```

endline:con2:male-endline:con1:female 0.052212385 -1.4305439 1.53496867 1.0000000  
 baseline:treat:male-endline:con1:female -1.875092779 -3.2050726 -0.54511292  
 0.0002812  
 endline:treat:male-endline:con1:female 0.121953463 -1.1688919 1.41279882 1.0000000  
 endline:con2:female-baseline:con2:female 2.401366683 0.1404672  
 4.662266150.0261758\*  
 baseline:treat:female-baseline:con2:female 1.522752802 -0.2355798 3.28108545  
 0.1657147  
 endline:treat:female-baseline:con2:female 3.237542053 1.4167205 5.05836358 0.0000006  
 baseline:con1:male-baseline:con2:female 3.097745183 1.4337990 4.76169132 0.0000001  
 endline:con1:male-baseline:con2:female 3.533244725 1.7749121 5.29157737 0.0000000  
 baseline:con2:male-baseline:con2:female 1.252787363 -0.6836975 3.18927227  
 0.6073148  
 endline:con2:male-baseline:con2:female 3.177417933 1.3463490 5.00848687 0.0000012  
 baseline:treat:male-baseline:con2:female 1.250112769 -0.4595930 2.95981850 0.4087841  
 endline:treat:male-baseline:con2:female 3.247159011 1.5677160 4.92660207 0.0000000  
 baseline:treat:female-endline:con2:female -0.878613881 -2.6832264 0.92599859  
 0.9100762  
 endline:treat:female-endline:con2:female 0.836175370 -1.0293764 2.70172717 0.9482047  
 baseline:con1:male-endline:con2:female 0.696378500 -1.0163997 2.40915672 0.9745320  
 endline:con1:male-endline:con2:female 1.131878042 -0.6727344 2.93649051 0.6537172  
 baseline:con2:male-endline:con2:female -1.148579321 -3.1271814 0.83002277  
 0.7567034  
 endline:con2:male-endline:con2:female 0.776051250 -1.0995036 2.65160608 0.9709354  
 baseline:treat:male-endline:con2:female -1.151253914 -2.9085206 0.60601276 0.5877637  
 endline:treat:male-endline:con2:female 0.845792328 -0.8820449 2.57362955 0.9069390  
 endline:treat:female-baseline:treat:female 1.714789252 0.5063395 2.92323901 0.0002450\*  
 baseline:con1:male-baseline:treat:female 1.574992382 0.6191281 2.53085666 0.0000059  
 endline:con1:male-baseline:treat:female 2.010491923 0.8984247 3.12255913 0.0000003  
 baseline:con2:male-baseline:treat:female -0.269965439 -1.6465313 1.10660042  
 0.9999669  
 endline:con2:male-baseline:treat:female 1.654665132 0.4308297 2.87850059 0.0006591  
 baseline:treat:male-baseline:treat:female -0.272640033 -1.3061068 0.76082669 0.9993906  
 endline:treat:male-baseline:treat:female 1.724406210 0.7418133 2.70699909 0.0000009  
 baseline:con1:male-endline:treat:female -0.139796870 -1.2062554 0.92666169 0.9999995  
 endline:con1:male-endline:treat:female 0.295702671 -0.9127471 1.50415243 0.9997031  
 baseline:con2:male-endline:treat:female -1.984754691 -3.4402927 -0.52921668  
 0.0005575  
 endline:con2:male-endline:treat:female -0.060124120 -1.3721571 1.25190886 1.0000000  
 baseline:treat:male-endline:treat:female -1.987429285 -3.1239638 -0.85089473 0.0000010  
 endline:treat:male-endline:treat:female 0.009616958 -1.0808628 1.10009672 1.0000000  
 endline:con1:male-baseline:con1:male 0.435499541 -0.5203647 1.39136382 0.9420132  
 baseline:con2:male-baseline:con1:male -1.844957821 -3.0987188 -0.59119684  
 0.0001090\*  
 endline:con2:male-baseline:con1:male 0.079672750 -1.0041890 1.16353449 1.0000000  
 baseline:treat:male-baseline:con1:male -1.847632414 -2.7107874 -0.98447744 0.0000000

endline:treat:male-baseline:con1:male	0.149413828	-0.6521296	0.95095722	0.9999802
baseline:con2:male-endline:con1:male	-2.280457362	-3.6570232	-0.90389150	0.0000050
endline:con2:male-endline:con1:male	-0.355826792	-1.5796622	0.86800866	0.9984943
baseline:treat:male-endline:con1:male	-2.283131956	-3.3165987	-1.24966524	0.0000000
endline:treat:male-endline:con1:male	-0.286085713	-1.2686786	0.69650717	0.9984750
endline:con2:male-baseline:con2:male	1.924630571	0.4562937	3.39296749	0.0011835*
baseline:treat:male-baseline:con2:male	-0.002674594	-1.3165595	1.31121031	1.0000000
endline:treat:male-baseline:con2:male	1.994371649	0.7201155	3.26862784	0.0000240
baseline:treat:male-endline:con2:male	-1.927305164	-3.0801856	-0.77442477	0.0000039
endline:treat:male-endline:con2:male	0.069741078	-1.0377645	1.17724661	1.0000000
endline:treat:male-baseline:treat:male	1.997046242	1.1043824	2.88971009	0.0000000*

**Table 52 Results for cassava yield/ha, fresh and processes cassava sold, by sample group, gender and survey, Malawi**

```
yy<-log(produc+1)
>
> m1<-aov(yy~survey*treatment,na.action="na.exclude")
> anova(m1)
Analysis of Variance Table

Response: yy
      Df Sum Sq Mean Sq F value Pr(>F)
survey  1 20.49 20.4928 10.7656 0.001127 **
treatment  2 16.36 8.1822 4.2984 0.014238 *
survey:treatment  2 15.69 7.8432 4.1203 0.016950 *
Residuals 391 744.28 1.9035
---
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

  survey treatment Freq means  se natmeans  natses
1 baseline  con1  69 5.047674 0.2104003 155.65994 32.99308
2 endline  con1 114 5.502969 0.1649042 245.41947 40.65437
3 baseline  con2  54 4.339232 0.2299479  76.64863 17.78093
4 endline  con2  88 5.530776 0.1738243 252.33968 44.08397
5 baseline  treat 115 5.445432 0.1479180 231.69745 34.39734
6 endline  treat 166 5.626859 0.1393695 277.78824 38.84065
> TukeyHSD(m1)
Tukey multiple comparisons of means
95% family-wise confidence level

Fit: aov(formula = yy ~ survey * treatment, na.action = "na.exclude")

$survey
      diff  lwr  upr  p adj
endline-baseline 0.4606125 0.1846117 0.7366133 0.0011269
```

```

$treatment
  diff lwr upr p adj
con2-con1 -0.2400096 -0.68685092 0.2068317 0.4166402
treat-con1 0.2531596 -0.13438822 0.6407074 0.2748277
treat-con2 0.4931692 0.08896765 0.8973707 0.0119997

$`survey:treatment`
  diff lwr upr p adj
endline:con1-baseline:con1 0.45529512 -0.3102945 1.2208847 0.5304891
baseline:con2-baseline:con1 -0.70844198 -1.6010650 0.1841811 0.2076811
endline:con2-baseline:con1 0.48310236 -0.2985047 1.2647094 0.4863377
baseline:treat-baseline:con1 0.39775866 -0.3388178 1.1343352 0.6342795
endline:treat-baseline:con1 0.57918532 -0.1435884 1.3019590 0.1985408
baseline:con2-endline:con1 -1.16373710 -1.9741245 -0.3533497 0.0006755*
endline:con2-endline:con1 0.02780723 -0.6583862 0.7140007 0.9999970
baseline:treat-endline:con1 -0.05753646 -0.6919628 0.5768899 0.9998391
endline:treat-endline:con1 0.12389020 -0.4944573 0.7422377 0.9926770
endline:con2-baseline:con2 1.19154433 0.3660082 2.0170805 0.0006200*
baseline:treat-baseline:con2 1.10620064 0.3231647 1.8892366 0.0008847*
endline:treat-baseline:con2 1.28762730 0.5175609 2.0576937 0.0000350*
baseline:treat-endline:con2 -0.08534370 -0.7390095 0.5683221 0.9990445
endline:treat-endline:con2 0.09608297 -0.5419890 0.7341549 0.9980994
endline:treat-baseline:treat 0.18142667 -0.4006139 0.7634672 0.9481406

yy<-log(rootsold+1)
>
> m1<-aov(yy~survey*treatment,na.action="na.exclude")
> anova(m1)
Analysis of Variance Table

Response: yy
  Df Sum Sq Mean Sq F value Pr(>F)
survey 1 107.7 107.744 12.1724 0.0005287 ***
treatment 2 52.5 26.249 2.9655 0.0524609 .
survey:treatment 2 25.6 12.817 1.4480 0.2360466
Residuals 491 4346.1 8.851
---
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

  survey treatment Freq means se natmeans natses
1 baseline con1 69 4.244835 0.4891109 69.744258 35.489168
2 endline con1 114 2.809129 0.2917370 16.595450 4.910477
3 baseline con2 54 2.403281 0.5102333 11.059405 5.890926
4 endline con2 88 2.275087 0.3265647 9.728764 3.233842
5 baseline treat 115 3.574646 0.3136079 35.681971 11.374477
6 endline treat 166 2.378777 0.2437334 10.791699 2.656418
> TukeyHSD(m1)

```

Tukey multiple comparisons of means  
 95% family-wise confidence level

Fit: aov(formula = yy ~ survey \* treatment, na.action = "na.exclude")

\$survey

	diff	lwr	upr	p	adj
endline-baseline	-0.9949282	-1.555232	-0.4346241	0.0005287	
	.244				

\$treatment

	diff	lwr	upr	p	adj
con2-con1	-0.9015783	-1.7762375	-0.02691912	0.0415936	
treat-con1	-0.4703487	-1.2130510	0.27235363	0.2971770	
treat-con2	0.4312296	-0.3579296	1.22038879	0.4045337	

\$`survey:treatment`

	diff	lwr	upr	p	adj
endline:con1-baseline:con1	-1.43570655	-3.065076442	0.1936633	0.1199855	
baseline:con2-baseline:con1	-1.84155393	-3.863718597	0.1806107	0.0978231	
endline:con2-baseline:con1	-1.96974822	-3.652338512	-0.2871579	0.0112115*	
baseline:treat-baseline:con1	-0.67018954	-2.332481893	0.9921028	0.8584776	
endline:treat-baseline:con1	-1.86605782	-3.429529936	-0.3025857	0.0089931*	
baseline:con2-endline:con1	-0.40584739	-2.087402393	1.2757076	0.9829721	
endline:con2-endline:con1	-0.53404168	-1.786873426	0.7187901	0.8272455	
baseline:treat-endline:con1	0.76551701	-0.459918907	1.9909529	0.4749509	
endline:treat-endline:con1	-0.43035128	-1.517973618	0.6572711	0.8678953	
endline:con2-baseline:con2	-0.12819429	-1.861367987	1.6049794	0.9999416	
baseline:treat-baseline:con2	1.17136439	-0.542110688	2.8848395	0.3695203	
endline:treat-baseline:con2	-0.02450389	-1.642288187	1.5932804	1.0000000	
baseline:treat-endline:con2	1.29955868	0.004198886	2.5949185	0.0487245*	
endline:treat-endline:con2	0.10369040	-1.062151006	1.2695318	0.9998548	
endline:treat-baseline:treat	-1.19586828	-2.332218567	-0.0595180	0.0325277	

yy<-log(procsold+1)

```
>
> m1<-aov(yy~survey*treatment,na.action="na.exclude")
> anova(m1)
```

Analysis of Variance Table

Response: yy

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
survey	1	6.5	6.5430	1.2349	0.266904
treatment	2	54.9	27.4597	5.1826	0.005868 **
survey:treatment	2	47.9	23.9426	4.5188	0.011276 *
Residuals	600	3179.1	5.2985		

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1



```

survey treatment Freq means se natmeans natses
1 baseline con1 69 0.8684933 0.2771089 2.383317 0.6689234
2 endline con1 114 0.8723803 0.2155870 2.392599 0.5198182
3 baseline con2 54 0.2390867 0.3132407 1.270089 0.4043815
4 endline con2 88 0.9148028 0.2453769 2.496283 0.6186954
5 baseline treat 115 1.8095234 0.2146476 6.107536 1.3210582
6 endline treat 166 1.0610140 0.1786574 2.889299 0.5189451
> TukeyHSD(m1)
Tukey multiple comparisons of means
95% family-wise confidence level

Fit: aov(formula = yy ~ survey * treatment, na.action = "na.exclude")

$survey
      diff lwr upr p adj
endline-baseline -0.2127712 -0.5888025 0.1632601 0.2669035

$treatment
      diff lwr upr p adj
con2-con1 -0.2137622 -0.81858760 0.3910633 0.6842854
treat-con1 0.4895768 -0.02415728 1.0033109 0.0655881
treat-con2 0.7033390 0.14649830 1.2601796 0.0087493

$`survey:treatment`
      diff lwr upr p adj
endline:con1-baseline:con1 0.003886929 -0.99987466 1.00764852 1.0000000
baseline:con2-baseline:con1 -0.629406609 -1.82508155 0.56626834 0.6612268
endline:con2-baseline:con1 0.046309430 -1.01188615 1.10450501 0.9999957
baseline:treat-baseline:con1 0.941030055 -0.06108467 1.94314478 0.0797933
endline:treat-baseline:con1 0.192520671 -0.75010083 1.13514217 0.9920802
baseline:con2-endline:con1 -0.633293538 -1.72043819 0.45385111 0.5553103
endline:con2-endline:con1 0.042422501 -0.89139911 0.97624411 0.9999948
baseline:treat-endline:con1 0.937143126 0.06738520 1.80690105 0.0261938*
endline:treat-endline:con1 0.188633743 -0.61185374 0.98912122 0.9847718
endline:con2-baseline:con2 0.675716039 -0.46187969 1.81331177 0.5334988
baseline:treat-baseline:con2 1.570436664 0.48481238 2.65606095 0.0005754
endline:treat-baseline:con2 0.821927281 -0.20903414 1.85288870 0.2041415
baseline:treat-endline:con2 0.894720625 -0.03733056 1.82677181 0.0682602
endline:treat-endline:con2 0.146211242 -0.72155645 1.01397893 0.9967875
endline:treat-baseline:treat -0.748509383 -1.54693083 0.04991206 0.0807126

```

## Appendix O: Regression analysis

This presents the results table for the regression analysis in Chapter 7. The regression in Table 53 and Table 54 show the test of if cassava revenue was a function of total cassava production and total sales, for Nigeria and Malawi respectively. Figure 67 and Figure 68 show the regressions for Poverty Likelihood Score and the total amount of cassava sold, for Nigeria and Malawi, respectively.

**Table 53 Summary output from regression: revenue as a function of total cassava production and total sales, Nigeria (2014)**

<i>Regression Statistics</i>	
Multiple R	0.799183147
R Square	0.638693702
Adjusted R Square	0.636697535
Standard Error	867.9880587
Observations	365

ANOVA	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	482117808.3	241058904.2	319.9599918	9.45086E-81
Residual	362	272731983.8	753403.2701		
Total	364	754849792.1			

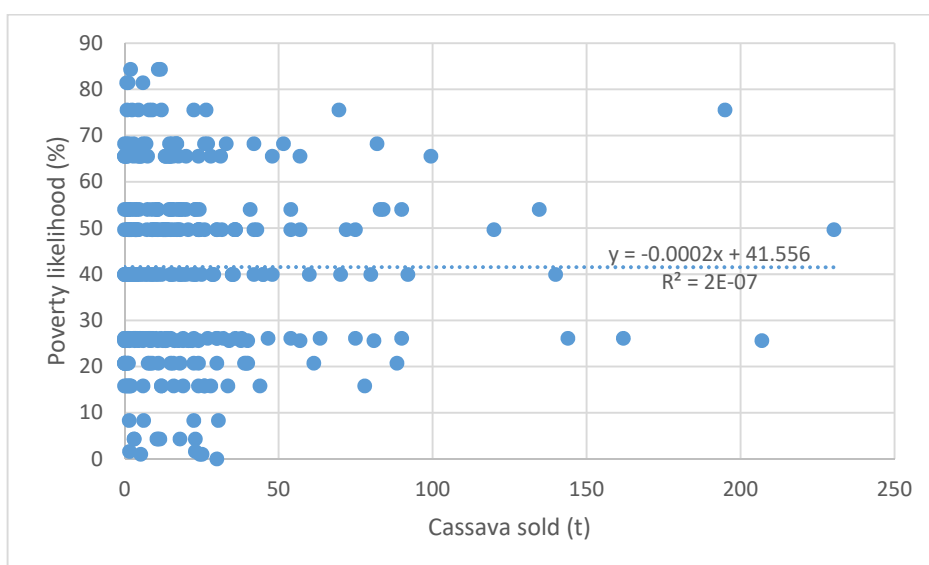
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	69.20	55.61	1.24	0.214166959	-40.16	178.57	-40.16	178.57
Total cassava production	0.00	0.00	0.26	0.79837724	-0.00	0.01	-0.00	0.01
Cassava sold	0.08	0.00	19.20	3.65054E-57	0.07	0.08	0.07	0.08

**Table 54 Summary output from regression: revenue as a function of total cassava production and total sales, Malawi (2014)**

<i>Regression Statistics</i>	
Multiple R	0.59961
R Square	0.359533
Adjusted R Square	0.355994
Standard Error	23343.3
Observations	365

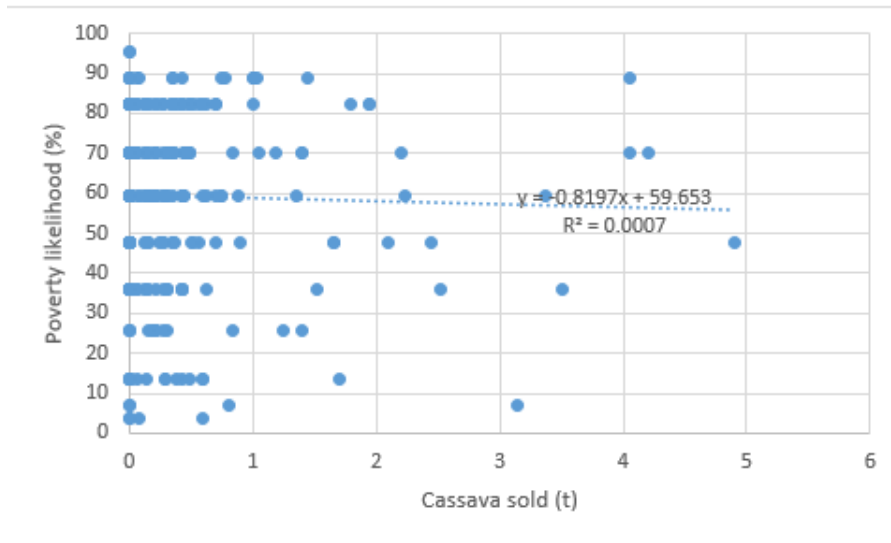
ANOVA	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2	1.11E+11	5.54E+10	101.6061	9.46E-36
Residual	362	1.97E+11	5.45E+08		
Total	364	3.08E+11			

	<i>Co-efficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P- value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-34.10	1513.5	-0.02253	0.98204	3010.44	2942.25	-3010.44	2942.25
Total cassava production	2.08	0.1607	12.95088	8.76E-32	1.77	2.40	1.77	2.40
Cassava sold	2598.52	507.69	5.118314	5.02E-07	1600.13	3596.91	1600.13	3596.91



**Figure 67 Poverty likelihood status by quantity of cassava sold (tonnes) in 2014 based on LSS, 2014, Nigeria**

N=366; r=-0.0004; p=1. The result is not significant at  $p \leq 0.05$ .



**Figure 68 Poverty likelihood status by quantity of cassava sold (tonnes) in 2014 based on LSS, Malawi**

N=365;  $r=-0.02595$ ;  $p=0.634031$ . The result is not significant at  $p < 0.05$ .