Value chain development and rural poverty reduction: asset building by smallholder coffee producers in Nicaragua

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ABSTRACT

Value chain development (VCD) dominates discussions on how to address poverty through engagement with the private sector. Interventions by development organizations working in poor rural areas typically focus on building or otherwise improving linkages among two or more chain actors engaged in the supply or marketing of products and services. However, the poverty impacts of VCD remain an open question. This research examines the impacts of interventions that involve linking smallholder specialty coffee producers and their cooperative in Nicaragua with international buyers of certified fair trade and organic coffee. Impacts are assessed based on changes in five livelihood asset endowments from 2006 to 2009 for 292 households. Clustering was used to identify differences in asset building across the sample. The results suggest that most households benefited from VCD in terms of asset building, increased income flows, and greater resilience. However, faced with high vulnerability, harsh tradeoffs for intensifying coffee production, and incomplete access to crucial inputs and services, many households struggled to make effective use of their gains in assets for intensifying or diversifying their agricultural production. Significant differences in asset building across the clusters highlighted the role of pre-existing assets in determining VCD impacts. This paper indicates that more attention to the needs and realities of smallholders is needed in intervention design if VCD is to have a greater impact on poverty reduction.

Key words

Value chains, value chain development, poverty, asset building, vulnerability, coffee, cooperative, Nicaragua

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LIST OF ABBREVIATIONS & ACRONYMS

ANOVA	Analysis of Variance
BMZ	Bundesministerium Für Wirtschaftliche Zusammenarbeit
CATIE	Tropical Agricultural Research and Higher Education Centre
CEPAL	La Comisión Económica para América Latina
DSF	Diversified small-scale farming households
GTZ	Gesellschaft für Technische Zusammenarbeit (now GIZ)
IADB	Inter-American Development Bank
ICRAF	World Agroforestry Centre
IICA	Inter-American Institute for Co-operation on Agriculture
MDG	Millennium Development Goals
NGO	Non-Governmental Organization
SDC	Swiss Agency for Development and Cooperation
SL	Sustainable livelihoods
SNV	Netherlands Development Organization
SLF	Specialized large-scale coffee farming households
SSF	Specialized small-scale coffee farming households
USAID	United States Agency for International Development
VCD	Value chain development
UK	United Kingdom
USA	United States of America

INTRODUCTION

Over the past decade, value chain development (VCD) has dominated discussions by civil society, donors and governments on how to reduce rural poverty through more intensive engagement with the private sector (Humphrey 2005, SDC 2007, SNV 2005). Interest in VCD stems, in part, from a general understanding that success in more demanding markets requires stronger collaboration between actors along a given chain (Kaplinsky 2000, Hobbs et al 2000). It also responds to the rapid growth in markets for agricultural and forestry products in which smallholders are considered to have a comparative advantage, such as those that require extensive labour inputs (e.g., fruits and vegetables) or compliance with standard systems (e.g., organic and fair trade). Moreover, the juxtaposition of VCD and poverty reduction responds to the need to re-invigorate rural development in the wake of the Millennium Development Goals (MDGs), which target, among other things, increased income as a precursor to livelihood security and a decent standard of living. Interventions for 'pro-poor' VCD focus on translating systemic competitiveness in higher returns to the poor by helping them increase their benefit-capturing through improved productivity, quality and long-term business relationships with downstream chain actors.

The poverty impacts of VCD, however, remain an open question (Zandniapour et al 2004, BMZ 2007, Humphrey and Navas-Alemán 2010). Where impacts have been identified, discussions tend to focus on changes in income or prices for a selected product/value chain without a systematic examination of the links between value chain interventions and poverty outcomes. As a result, policy makers and other interested actors lack objective evidence to support their poverty claims or to improve the design of interventions. In general, the design of VCD interventions has focused relatively limited attention on the needs and realities of rural households. It is often assumed that poor households: 1) have sufficient resources to effectively participate in VCD; 2) do not face substantial trade-offs when using these resources; 3) are able to assume higher risks for their capital and labour investments; and 4) that the value chain subject to the intervention is responsible for a substantial portion of the income of poor households. However, previous experiences in the promotion of non-traditional agricultural exports have highlighted the challenges of the poor to participate in and benefit from demanding export markets over the long term (Murray and Hoppin 1992, Conroy et al 1996, Dolan et al 1999). In the absence of sound evidence of VCD impacts there is a risk that efforts to promote VCD fall short of their expected results or, worse, cause undue trade-offs in terms of income generation and livelihood resilience among the rural poor.

This paper contributes to the debate about the role of VCD in providing a pathway out of rural poverty for smallholders. Drawing on research on sustainable livelihoods and asset building, it seeks to identify the capacity of the rural poor to build their assets through participation in value chains and the extent to which these assets allow for greater resilience. The case study explores asset building through a set of interventions which involved linking some 500 smallholder specialty coffee producers that belonged to the Nicaragua-based cooperative Soppexcca and international buyers of specialty coffee. Interventions were carried out in the wake of the coffee crisis—a period between 1999 and 2004 when prices fell below the cost of production for many producers in Central America (Bacon 2004).

FRAMEWORK FOR ASSESSING POVERTY IMPACTS

The surge in interest around designing and implementing interventions for VCD has yet to generate meaningful discussions about how to assess the potential of VCD to provide a pathway out of poverty. The relationship between value chain development and poverty reduction is complex, with changes taking place at different levels (household, enterprise, chain, overall political, legal and market contexts), in response to different interventions (often with different objectives, starting points and assumptions). Traditional assessment approaches based on relatively simple cause-effect relationships, are ill-suited for understanding complex development processes (Jones 2011), resulting in missed opportunities for improving the design of development interventions and making the most effective use of available resources. However, where assessment for VCD has been discussed in the grey literature, authors have advocated for relatively simple assessment tools aimed at understanding the outcomes of a single development intervention (GTZ 2007, Tanburn and Sen 2011). In light of this, the challenge for better understanding the poverty reduction potential of VCD becomes one of developing an assessment framework that embraces the complexity of VCD processes, but that is also feasible for development practitioners and researchers in the field.

The literature on sustainable livelihoods, and more recently on asset building, provides a way forward on how to assess the poverty impacts of VCD. The sustainable livelihoods (SL) framework (Scoones 1998, Carney et al 1998, Farrington et al 1999) links inputs (assets) and outputs (livelihood strategies), connected in turn to outcomes, which include income and employment, as well as wider framings, such as well-being and sustainability. Assets include different types of capital: natural, social, human, physical and financial. It assumes that households work to attain various outcomes (health, income, reduced vulnerability, etc.) by drawing on various assets to pursue a variety of activities. The activities and asset investment strategies are driven by their preferences and priorities and their vulnerability context, including shocks (e.g., drought), overall trends (e.g., resource stocks) and seasonal variations. Development interventions that are based on the framework aim to empower the poor to build upon their assets, capabilities and activities to improve their outcomes. The framework has been criticized for its restraint in dealing with agency (O’Laughlin 2004, Scoones 2009), its weak linkage with markets/value chains (Dorward 2001, Dorward et al 2003), and its ambiguity regarding what constitutes improvements in a given livelihood context.

A focus on assets and asset building – the accumulation and consolidation of productive assets over time – holds promise to overcome some of the limitations of the SL framework. In an early application of an asset framework in the context of a developing country, Moser (1998) assessed the endowments of five assets: labour portfolio, human capital (education and training), housing infrastructure, household relations and community relations. Moser highlighted the relation between asset endowments and vulnerability, arguing that the more assets households possessed in the right combination, the higher their ability to respond to external shocks. Around the same period, Bebbington (1999) argued that informed policy for strengthening rural livelihoods needed to understand households’ access to assets, the ways in

which they combined and transformed those assets, and the ways in which they expanded their asset endowments through relationships with the state, market and civil society. Carter and Barrett (2004) argued that households below a given asset threshold were likely to face persistent structural poverty (as opposed to other forms of poverty which diminish over time). Adato and Meinzen-Dick (2008) showed the potential of asset-based approaches for understanding the impacts of agricultural research on smallholder farming households. To date, the use of an asset-based approach to guide assessment and learning processes for the design of value chain interventions has yet to feature in the literature.

CASE STUDY BACKGROUND

Among agricultural products exported by Nicaragua, coffee is the most important, comprising 37 percent of the total value of agricultural exports in 2008 (CEPAL 2009). Nicaragua's average coffee productivity, at 1,480 pounds/ha, makes it one of the least productive producers in Central America, at roughly 50 percent the productivity of Costa Rica and 40 percent the productivity of Guatemala (Varangis et al 2003). There are about 48,000 coffee farmers in Nicaragua, 80 percent of whom are small producers with less than 3.5ha of coffee in cultivation (Flores et al 2002). Despite the large number of smallholders, farms larger than 3.5ha produce more than 85 percent of the Nicaraguan coffee harvest due to higher intensity of management and access to purchased production inputs. In general, coffee producers are typically better-off than the landless or those that produce basic grains and tubers mainly for subsistence. That said, the poorest of coffee farmers often lack resources for coffee production and basic living expenses, and are vulnerable to negative changes in output and input prices or production risks.

The global 'coffee crisis' of 1999-2004, a period of dramatically low coffee prices is important background. In Central America, prices paid for green coffee did not allow coffee producers to cover their variable costs of production (IADB 2002), causing economic and social hardships to producers and labourers, as well as reduced investment in coffee production.

Among donors, academics and non-governmental organizations (NGOs), consensus emerged that the most promising response in Central America to the coffee crisis involved developing value chains that linked smallholder producers to buyers of specialty coffee, including certified fair trade and organic coffee (USAID 2003, Varangis et al 2003, IICA 2004, Kilian et al 2005). Participation in fair trade and organic markets offered producers in Nicaragua higher farm gate prices (approximately 40-50 percent over prices offered by local intermediaries) and more secure marketing conditions (Bacon 2004).

The case study presented here focuses on the interventions for building the capacities of smallholder coffee producers and the cooperative Soppexcca to effectively participate in value chains for certified coffee. Between 2003 and 2009, Soppexcca received support from NGOs and bilateral donors totaling approximately US\$2.1 million. These interventions provided financing and technical assistance for the following:

- Infrastructure development by Soppexcca, including the purchase of a dry-mill, offices for Soppexcca and 11 of its base cooperatives, construction of a

cupping laboratory and organic fertilizer production plant, equipment for two retail coffee shops

- Enhanced capacity to provide short and long-term credit to members for expanding/intensifying coffee production and improving wet-milling capacities
- Expanded service provision by Soppexcca: expanded technical assistance programme, new services (e.g., soil and water analysis), and training programmes for extension agents
- Addressing symptoms of poverty beyond coffee, including provision of health and educational supplies to Soppexcca members, as well as support for education and training in cooperative leadership.

The considerable financial and technical support provided to Soppexcca can be rationalized in the context of the coffee crisis, the inability of the Nicaraguan government to provide services to the coffee sector, and the overall importance of coffee for achieving social and environmental goals.

STUDY DESIGN AND METHODS

The characterization of asset endowments over time raises many theoretical and methodological issues. No 'gold standard' exists in terms of which indicators to use, at what levels to assess asset endowments, or how best to collect and analyze the data. Some researchers have assessed only those assets with a monetary value (Carter and Barrett 2004). While this facilitates quantitative analysis, it underestimates the role of intangible changes, both positive and negative, as a result of VCD. Others have included more qualitative indicators, but have yet to examine changes over time (Moser 1999). This case forms part of a larger effort by the Ford Foundation and a group of international researchers and practitioners to develop field-applicable tools for understanding changes in productive assets, and the contribution of VCD to these changes. Collaboration has yielded a field-tested methodology for assessing VCD, called the 5 Capitals Toolkit, which aims to determine asset building by smallholders and the enterprises that maintain direct contact with them (Donovan and Stoian, forthcoming). Value chain development is considered in the broader sense of the various interventions, by public and private sectors, for improving existing value chain relations or building new chain relations.

Data collection was linked to asset building among coffee-producing households during the four-year period between 2005-06 and 2008-09. To the extent possible, quantitative data was collected to understand the changes in assets, and qualitative information was used to understand the relevance of and the reasons for the changes. Primary data focused on understanding changes in endowments of livelihood capitals. After exploratory and participatory research to validate concepts and methodology, asset changes were assessed using the following indicators:

- *Natural capital*: area under coffee production; access to fertilizers (proxy for soil fertility); waste water disposal practices (proxy for environmental health)
- *Human capital*: skills in coffee production; ability to participate in Soppexcca's management
- *Social capital*: reciprocity in relationships with coffee buyers
- *Physical capital*: machinery, and infrastructure for agricultural production, improvements to domestic housing

- *Financial capital*: income benefit from coffee sales to Soppexcca; access to credit.

In addition to assets, data was collected on other major income sources, thus allowing for insights into the relative importance of coffee income.

The sample included 292 coffee-producing households—or approximately 95 percent of the membership of 11 of Soppexcca's 16 base cooperatives. Households not interviewed from a selected base-cooperative were those that had recently sold their coffee-producing land, refused to be interviewed or were unavailable after two visits. Questions related to production and land use were directed to those household members who directly participated in coffee production and harvest. The traditional unit of measurement in Nicaragua, *manzana* (mz) was used to define land area. Unless otherwise indicated, coffee quantities are presented as wet parchment coffee – the state of coffee when it is sold by producers to buyers such as Soppexcca. One hundred pounds of export-ready (green) coffee is commonly processed from roughly 200 pounds of wet parchment coffee produced in north-central Nicaragua.

Data collection was conducted within Jinotega and Matagalpa (north-central Nicaragua) during a nine-month period in 2009. Primary data from household surveys and key informant interviews were supplemented by secondary information from Soppexcca staff. More than 20 key informant interviews were carried out with Soppexcca leaders, international coffee buyers, certification agents and other relevant actors. No baseline data existed; thus, recall information was used to understand changes in asset endowments. A form of 'weak' attribution was tested by asking respondents the extent to which they considered that livelihood changes were attributable to engagement with Soppexcca and the specialty coffee chain.

Cluster analysis allowed for a nuanced understanding of asset building. Clusters were formulated using a two-step clustering technique in SPSS. Two variables with strong correlation that formed the basis for formation of the clusters were: 1) area under coffee production in 2008-2009 and 2) percentage of total household income derived from off-farm sources in 2008. A three-cluster solution emerged from this analysis:

- *Diversified small-scale farming households (DSF)* DSF (n=77): Majority of income derived from off-farm labour activities, relatively small area under coffee production
- *Specialized small-scale coffee farming households (SSF)* (n=162): Majority of income derived on-farm from coffee, with contributions from banana, citrus and other products; relatively small area under coffee production
- *Specialized large-scale farming households (SLF)* (n=53): Majority of income derived on-farm from coffee, relatively large area under coffee production.

Table 1 provides insight into the differences between the clusters.

Table 1: ANOVA results comparing selected indicators across clusters

	Cluster			Total (SD)
	DSF n=77 (SD)	SSF n=162 (SD)	SLF n=53 (SD)	
Total income 2008 (US\$) F (2,292)=80.98, p<.05	2,617 (±2,557)	2,927 (±2,730)	14,627 (±13,221)	4,969 (±7,605)
Income from sale of coffee 2008 (US\$) F (2, 292)=50.73, p<.05	867 (±1,033)	2,486 (±1,828)	13,474 (±8,579)	4,053 (±4,543)
Income from off-farm sources 2008 (US\$) F (2, 292)=61.79, p<.05	1,618 (±1,651)	157 (±466)	304 (±757)	569 (±1,154)
Area under coffee production (mz) 2008-09 F (2, 290)=96.98, p<.05	2.15 (±.44)	2.57 (±1.54)	9.19 (±6.82)	2.52 (±2.62)
Highest education achieve Soppexcca-registered household member (Highest grade achieved) F (2, 290)=0.34, p>.10	3.61 (±3.76)	2.96 (±2.20)	3.25 (±2.48)	3.18 (±2.74)
Age of household head registered with Soppexcca F (2, 290)=2.84, p<.10	44.08 (±12.18)	42.02 (±13.30)	48.62 (±10.65)	43.34 (±12.61)
Producer type (0=conventional, 1=organic) F (2, 292)=4.23, p<.05	0.36 (±0.48)	0.20 (±0.40)	0.19 (±0.40)	0.24 (±0.43)

The mean total income for the sample was US\$4,969 (or, given an average household size of 5.2, US\$961 per capita). Pushing up the average was total income for SLF, which at US\$14,627 was several times higher than that of other households. For both SLF and SSF households, coffee contributed between 93 percent and 85 percent of total income. For DSF households, coffee-derived income represented approximately 33 percent of total income, with off-farm derived income and all other sources comprising 62 percent of income. In most cases, these households depended on short-term, low skill jobs in the agricultural sector. Across all the clusters, on-farm income derived from agricultural sources other than coffee was generally a small share of total income. Altogether cluster 1 households were more likely to produce certified organic coffee with lower levels of productivity than households from the other clusters. The ANOVA results suggest that the cluster solution was robust and thus provide a solid basis for analysis of changes in livelihood assets.

CHANGES IN ASSETS OF COFFEE PRODUCING HOUSEHOLDS

Illustrating how different types of households are able to build assets in response to VCD interventions raises a number of important questions. What assets are built and by whom? What factors contributed to the asset building? What were the barriers to asset building? Findings on the five assets are examined in light of these questions.

Natural capital

Exploratory research pointed to changes in the area under coffee production and the ability of smallholders to sustainably manage their coffee plantations as appropriate indicators of natural capital formation and depletion.

The total area under coffee production increased by nearly 30 percent between 2004-05 and 2008-09, from 827mz to 1,066mz (Table 2).

Table 2: Change in area under coffee production, 2004-2005 to 2008-2009

Cluster	Total area under coffee 2004-05	Mean area under coffee 2004-05 (SD)	Total area under coffee 2008-09	Mean area under coffee 2008-09 (SD)	% change in area under coffee
DSF (n=77)	131.00	1.73 (±1.32)	165.50	2.15 (1.44)	26.34
SSF (n=162)	316.00	1.95 (±1.41)	414.00	2.57 (1.54)	31.01
SLF (n=53)	381.00	7.18 (±8.21)	487.25	9.19 (6.82)	27.89
Total (n=292)	827.00	2.83 (±4.22)	1,066.75	3.67 (4.13)	28.99

The highest percent change was recorded by households from the SSF cluster (31 percent); although, changes only slightly smaller were recorded for households from the other clusters. In general, the expansion of shade-grown coffee production systems, of the type often adopted by smallholders in Nicaragua, can be considered an increase in natural capital endowment. In addition to reducing production costs and risk of disease, they can provide options for diversifying production, such as firewood and fruit trees (Beer et al 1998). They may conserve biodiversity, soil and water over alternative land uses, such as production of annual crops or intensive livestock in hillsides. Households identified whether their expansion resulted from the purchase of new land, land clearance and/or the conversion of other production systems to coffee. They reported approximately 151mz of coffee production that was expanded on previously existing land, thus requiring changes in land use (elimination of annual crops, reduction of forest cover or bringing idle land into production). The most common crop reduced was basic grains. Roughly 50 percent (or 75mz) of expanded coffee production was achieved through reduced basic grain production. Another 35 percent (or 53.3mz) of expanded coffee production was achieved through the cultivation of land that was previously idle. New land clearance contributed only 7 percent (or 10.5mz). The remaining 7 percent came at the expense of pasture (8.75mz) and horticulture (3mz).

Household interviews identified a mix of factors that allowed for expansion in coffee area, which typically included long-term credit by Soppexcca. Logistic regression showed the effects of credit, off-farm income and pre-existing land size on the expansion of area under coffee production. The strongest predictor of increased area under coffee was access to long-term credit, most of which was provided by Soppexcca (for details, see financial capital section). For each US\$500 installment of credit obtained, households increased their odds of expanding their area under coffee production by nearly five times (Table 3).

Table 3: Multiple logistic regression showing effects of credit, off-farm income generation, and pre-existing land ownership on coffee expansion

(N=292)*	B	S.E.	Sig.	Odds ratio
Pre-existing land holding (2004-05)	-.065	.025	.010	.937
Percentage income generated off-farm	-1.230	.525	.019	.292
Age of Soppexcca member	-.028	.013	.030	.972
Total credit received between 2004-05 and 2008-09 (US\$500 units)	1.589	.282	.000	4.897
N household members	-.038	.065	.561	.963
Constant	1.532	.572	.007	4.627

* The model as a whole correctly classified 77.2 percent of all cases.

For households in the DSF and SSF clusters, growth in the area under coffee production likely reflects efforts to revive coffee area that was lost during the crisis (due to neglect or removal for the planting of basic grains). On the other hand, the larger the pre-existing landholding, the less likely a household was to have expanded its area under coffee production. In addition, the higher a household's dependence on off-farm labour for income generation, the less likely it was to have expanded the area under coffee production.

Evidence also suggested why households from the DSF were the least likely to build their natural capital endowments, despite the expansion of Soppexcca's services and the improved conditions for coffee marketing. For members of two base cooperatives, which together comprised nearly 33 percent of the DSF cluster, a history of struggle to obtain, manage and retain their collectively-owned coffee plantations impeded investments in natural capital. In one case, internal divisions among community members over how to produce and market the coffee for their collectively-owned plantation resulted in 13 years of limited investment in coffee production. In 2003, individual land titles were obtained with the help of Soppexcca. In another case, households linked through the collective ownership of a former state-owned plantation incurred approximately US\$80,000 in debt during the late 2000s for legal fees to fight off conflicting claims to their land. Until the debt is paid in full, the land title is being held in the custody of the legal representation.

The ability of households to make efficient use of their land under coffee production depends, in part, on their timely access to fertilizers. Coffee production mines nutrients from the soil, which, if not replaced through organic or inorganic fertilizers results in gradually declining productivity (van der Vossen 2005). The average coffee yield in Nicaragua is 2,100 lbs/mz (Flores et al 2002). Evidence from long-term experiments in Nicaragua suggests that shade-grown organic and conventional coffee production in Nicaragua can reach productivity levels of 2,258 lbs/mz and 2,926 lbs/mz, respectively, with 'moderate' levels of fertilization (Hagger et al 2011). The average productivity for the sampled households was 1,737 lbs/mz (Table 4). However, for all households that produced organic coffee, and for small-scale producers of conventional coffee, productivity levels tended to remain well below their potential. This suggests that lack of access to fertilizers remains a barrier to building natural capital.

Table 4: Productivity estimates for coffee for Soppexcca members

	Coffee productivity 2005-06 to 2008-09 (lbs/mz of wet parchment coffee)			
	Cluster			Total (SD)
	DSF (SD)	SSF (SD)	SLF (SD)	
All households (n=292) F (2, 290)=36.72, p<.05	866 (±731)	1,837 (±1,261)	2,697 (±1,590)	1,737 (±1,358)
Conventional only (n=221) F (2, 219)=31.45, p<.05	883 (±724)	1,995 (±1282)	2,980 (±1,615)	1,941 (±1,421)
Organic only (n=71) F (2, 69)=3.43, p<.05	839 (±755)	1,167 (±928)	1,616 (±908)	1,103 (±887)

All organic producers applied coffee pulp to their plantations as a source of fertilizer. For some, it was the main source of fertilization. However, the coffee pulp available from a given farm likely provides only a fraction of the nutrients that were lost through coffee production. Other sources of nutrients identified by the sample were compost and chicken manure. In 2008-09 only 37 percent of organic producers reported compost application. When organic production was first promoted by Soppexcca, compost production was advocated for all producers. The decline in compost usage likely means that the labour and transport costs of compost fertilization are high given the large amount of compost needed and the scarcity of key ingredients, such as manure in the coffee growing region. The lack of manure and basic tools (e.g., thermometer, composting shed) suggests that the overall nutritional content of the compost was low. For some organic coffee producers, processed chicken manure sold under the brand name “Biogreen”, was the most important fertilizer for organic coffee production. One 45kg sack of Biogreen provides 1 kg of nitrogen. However, between 2006-07 and 2008-09 on average, only 36 percent of organic producers applied Biogreen to their coffee plantations. Moreover, among these households, few were able to purchase enough Biogreen to allow for reasonable productivity levels. The mean number of bags/mz of Biogreen applied ranged from a high of 15.1 in 2006-07 to a low of 11.5 in 2008-09. In general, these results suggest that nutritional requirements for organic coffee production are not being met.

Among households that produced conventional coffee, insufficient access to inorganic fertilizer also presents a challenge to replenishing soil nutrients lost to coffee production. Data on inorganic fertilizer utilization (complete and urea) were collected from 152 households between 2006-07 and 2008-09. Twenty-two households, or 14 percent of those sampled, reported no purchase of inorganic fertilizer during the entire period. For any one year, the percentage of households that reported inorganic fertilizer usage in a given year varied from a high of 79 percent in 2008-09 to a low of 61 percent in 2006-07 (Table 5).

Table 5: Inorganic fertilizer usage by producers of conventional coffee

Cluster	No of households using at least 1 bag of inorganic fertilizer (%)	Average quantity of nitrogen supplied for coffee production (kg/mz)* (SD)
DSF (n=33)		
2006-07	12 (36)	8.91 (25.60)
2007-08	14 (42)	12.23 (35.70)
2008-09	19 (58)	17.33 (35.75)
SSF (n=92)		
2006-07	54 (59)	14.71 (28.68)
2007-08	65 (71)	18.35 (29.12)
2008-09	76 (83)	27.19 (59.42)
SLF (n=27)		
2006-07	26 (96)	26.56 (39.29)
2007-08	25 (93)	23.16 (35.12)
2008-09	24 (89)	27.62 (39.20)

* Assumes 6.75 kg N per 45 kg sack of complete fertilizer and 21 kg N per 45 kg sack of urea.

The relatively high usage for 2008-09 was achieved despite the record-high fertilizer costs during that year, which pushed up coffee production costs by as much as 30 percent in Central America (Ganes-Chase 2009). In general, the data suggest that the number of producers using fertilizers and the intensity of fertilizer application increased during the access period for households with relatively small coffee holdings. The average quantity of nitrogen supplied by DSF and SSF households nearly doubled during the period. Despite the overall increase in fertilizer application, however, most households in the DSF cluster did not reach the estimated nitrogen threshold (27 kg of nitrogen/mz) for achieving reasonable productivity levels. In the case of fertilizer purchases, short-term credit from Soppexcca and other buyers was often identified as the main contributing factor. In addition, in the beginning of 2007-08, Soppexcca sold fertilizer on credit to its members at competitive costs, which included transport to the base cooperative.

Human capital

Exploratory research identified that in the context of quality coffee production, improved crop management practices constitute an important livelihood skill. Hence this was considered an important indicator of human capital formation. Most households increased their skills for reducing contamination and providing higher-quality coffee, but faced serious limitations in upgrading their skills for increased coffee productivity. Over the assessment period, good practices in harvest and wet-milling were sine-qua-none for delivery to the Soppexcca warehouse. The majority of households reported the application of select harvesting during the period (54 percent). Most of the other households reported having applied selective harvest techniques prior to joining Soppexcca. Among the producers of conventional coffee, 57.5 percent of those in DSF cluster (n=26), 73.9 percent of those in the SSF cluster (n=82), and 69.8 percent (n=30) of those in the SLF cluster reported having adopted more environmentally-friendly techniques for dealing with wastewater. The remaining households either continued to discharge wastewater directly into the stream or reported having adopted environmentally-friendly wastewater disposal methods prior to joining Soppexcca.

Proper plantation management, including the pruning of coffee bushes and shade trees, plays an important role in determining coffee productivity and disease resistance, and overall soil health (Beer et al 1998, Staver et al 2001). Traditionally, however, smallholders in Nicaragua do not practise regular pruning (Rice 1999). From a development perspective, the challenge is to identify options for ‘modernizing’ smallholder coffee production systems, which would provide benefits to producers through sustained yields and lowered costs in the long term, while at the same time maintaining or enhancing natural capital: biodiversity, protection from erosion, reducing contamination, and enhancing nutrient cycling. Modernization of this type would require extensive collaboration between producing households, Soppexcca, and research centres. According to Soppexcca staff, however, efforts to encourage more intensive tree management for coffee production have been ineffective, due, in part, to a general reluctance to trim or stump coffee trees that are productive and inability of Soppexcca to engage intensively with their members (Interview R.R. - Nov 24, 2009).

For most households, Soppexcca was the only provider of training and on-site technical assistance during the assessment period. Households reported their perceptions on the utility of technical assistance for coffee production between 2007-2008 and 2008-2009. Among the sampled households, 44.3 percent (n=129) reported being dissatisfied or highly dissatisfied with technical assistance provision. Selected household responses shed light on the nature of the problem:

- Household #26: “We were visited once in 2008, but the extensionist didn’t provide technical advice; he arrived to inform us of a meeting at the cooperative.”
- Household #265: “I lack advice when I need it: on one occasion I requested a visit from the extensionist because the coffee berries were falling off the branches, but he never came.”
- Household #187: “He only comes to estimate the harvest. I am only able to consult with the extensionist during training events—that is how I have obtained technical assistance.”
- Household #277: “Visits are only for estimating the harvest—the extensionist does not know my coffee plantation. He sends others from the community to assist me and does not provide advice.”
- Household #282: “Sometimes he indicated which product I should use, but the extensionist did not indicate the doses and I burned the plants.”

The ability of some households to dedicate the labour needed to proper plantation management is also constrained. There are trade-offs between labour dedicated to household maintenance and coffee production or between off-farm employment and coffee production. These trade-offs may be especially large for female-headed households, which comprised 14 percent of the sample. Average coffee productivity (2005-06 to 2008-09) of female-headed households in the DSF and SLF clusters was roughly half of the productivity achieved by all the households in each cluster (Table 6). With an average difference in productivity of -19 percent, female-headed households in SSF cluster fared somewhat better than their counterparts.

Table 6: Coffee productivity for female-headed households

Cluster	# female headed (%)	Coffee productivity 2005-06 to 2008-09 (lbs/mz of wet parchment coffee)		
		Female headed households	All households	% difference
DSF	19 (24.7)	578	884	-41.9
SSF	20 (12.4)	1,530	1,830	-17.9
SLF	3 (5.7)	1,511	2,654	-54.9

Social capital

From an individual or household perspective, the extent to which linkages with coffee buyers generate tangible benefits for maintaining and improving livelihoods forms an important element of social capital (Portes 1998). For most cooperative members, Soppexcca and the specialty coffee chain represent one of various outlets for coffee marketing. Each outlet presents different implications for coffee marketing and for access to additional services, such as credit and technical assistance. The overall benefits of these services and the extent to which linkages with Soppexcca complement the services provided by other buyers is explored below.

Prior to joining Soppexcca, most households from the DSF and SSF clusters (69 and 67 percent, respectively) sold their coffee exclusively to market buyers in the towns of Jinotega and Matagalpa. In contrast, only 36 percent of households from the SLF employed intermediaries for the marketing of their coffee prior to joining Soppexcca. Few households reported access to buyer-provided credit in the year prior to joining Soppexcca (19.6 percent, n=11) and even less reported having access to buyer-provided technical assistance (8.9 percent, n=5). In general, smallholders rarely have access to affordable credit in Nicaragua (Bastiaensen 2005). Households from the SLF cluster were more likely to have forged linkages with direct exporters prior to their having joined Soppexcca, and thus were more likely to have access to credit and higher prices.

Just prior to or during the assessment period, households forged new linkages with Soppexcca but most retained their previous relationships with other coffee buyers, either market buyers, direct exporters, or village-based buyers. From a household perspective, these other buyers differed in terms of services offered and the costs of doing business (Table 7).

Table 7: Characteristics of trading relationships for coffee sold by Soppexcca members

Buyer	Two year average farm gate price (2007-08 to 2008-09)	Payment conditions	Services offered in addition to coffee marketing
Soppexcca	Organic: US\$136 Conventional: US\$109	Floor price (fair trade) Interest rate 1.2%/month Initial payment with short-term credit (15%), partial payment upon delivery to warehouse (60%), final payment in June (15%)	Technical assistance Certification Fertilizer for purchase (delivered to farm) Short and long-term credit (not collateral required, interest rate between 1.2%-1.3% per month) Emergency credit Other services**
Market buyers in Jinotega and Matagalpa*	Conventional: US\$97	Full payment upon delivery Price to producer: direct exporter price, minus commission	Purchase of coffee Exchange of basic food items for parchment coffee (before and after harvest) Short term credit (no interest on credit taken prior to harvest; 5%/month interest on all other credit) Flexibility in credit repayment (paying coffee debt with basic grains production)
Village-based buyers	Conventional: US\$97	Land title not required for credit Full payment upon delivery, price based on NY market price	Technical assistance Short-term credit (interest rate at 1.5-2%/month) Fertilizer for purchase (delivered to farm) Transport of coffee to warehouse
Direct exporters	Conventional: US\$99	Contract required for credit (with collateral) Final payment upon delivery, priced based on NY market price	Short-term credit (Interest rate 1.5-2%/month)

* Information based on results from 18 key informant interviews carried out on-site with buyers of coffee at the markets of Jinotega and Matagalpa in August 2009

** For example, emergency transport to hospital or donations for funeral expenses

One important reason for maintaining two or more buyer linkages was related to credit access. Since credit amounts from any one provider were generally small (see discussion under financial capital), access to multiple buyers provided greater flexibility in managing coffee-related expenses and cash shortfalls during the year. Others have observed the overall high dependence on credit by smallholder coffee producers in Nicaragua and the general tendency for coffee credit to be diverted from coffee production to household subsistence (Wilson 2010).

Relative to other buyers, Soppexcca was the most demanding in terms of quality, but offered the most extensive menu of services. In 2008-09, credit was available for most members without formal land titles or other forms of collateral at an annual interest rate of 16 percent for short-term credit and 14 percent for long-term credit. Soppexcca was the only buyer that offered long-term credit. It was the only one that offered access to fair trade certification, and thus protection from future downturns in

coffee prices through the floor price. At the beginning of 2007, Soppexcca employed a team of eight extensionists to provide technical assistance. In addition, the cooperative provided safety nets for its members (use of Soppexcca vehicles for emergencies, donation of coffin in case of the death of member or member's spouse, credit/donations for covering medical expenses), and access to development projects, which have played a role in expanding the options available for agricultural production (e.g., cocoa, small livestock), as well as in reducing the costs of education. However, doing business with Soppexcca is relatively costly. Payment for coffee is doled out in three installments, with the final installment (approximately 15% of total price) being delayed till May-June. All credit and payment transactions require travel to Soppexcca's office in Jinotega and producers assume all risks for transport of coffee to the cooperative's warehouse.

Compared to Soppexcca, market buyers offered faster payment, with cash upon delivery of coffee, and credit on demand; however, the prices paid were generally lower and their costs for credit were higher. Roughly 60 percent of households reported having received at least one credit from market buyers during the assessment period. The average annual interest rate was 29 percent, nearly twice that of Soppexcca. However, in many cases, no interest was charged for credit taken out in November and December and repaid with coffee during harvest, thus providing households with low-cost access to cash for covering harvest-related expenses. The fact that market buyers also purchased basic grains allowed for flexibility in repayment: if the coffee harvest fell short, then producers could pay with the basic grains later in the year. Market buyers demanded less in terms of quality, often purchasing coffee that was rejected by Soppexcca.

Village-based buyers maintained close relationships with coffee-producing households in specific communities. One such buyer, Osman Gutierrez, purchased coffee from households in three of Soppexcca's base cooperatives. He provided services in line with those offered by Soppexcca. Credit was provided without formal land titles or other forms of collateral. In 2008-09, US\$325,000 of short-term credit was offered by Gutierrez at 18 percent per year. Quality requirements were established by the exporters, but were generally compatible with those required by other buyers (e.g., low tolerance for mould, over-fermentation or insect damage). Like market buyers, no-interest credit was also provided for food and other expenses prior to the harvest period. Technical assistance was reported by households on an as-needed basis. Moreover, Gutierrez provided transportation services to his warehouse, thus producers were not saddled with the extra expense and risk of transport. The overall costs of doing business were low compared to Soppexcca (e.g., no paperwork for credit, direct communication and coordination with buyer, no travel required for financial transactions).

Few sampled households sold to direct exporters of coffee (n=5). Exporters provided annual credit on a contract basis, with land titles generally required as collateral (in cases where producers have a history of compliance with contractual obligations, land titles may not be required). Short-term credit during the 2008-09 production season was offered at a 17 percent annual interest rate. Producers have the option to receive final payment (market price minus amount of annual credit) upon delivery of parchment coffee. Additional services, such as on-site technical assistance and pick-up of parchment coffee, were not reported.

Data on coffee sales by buyers shows the difficulty of Soppexcca to increase its capture of raw material from its members. For organically certified households, the mean percentage of coffee sold to Soppexcca between 2007-08 and 2008-09 was 73.1, while for conventional producers, the mean percentage was 57.2 (Table 8). This suggests that price is not the major factor behind selling to buyers other than Soppexcca. Households were asked their motivations for selling coffee to buyers other than Soppexcca. Responses presented below illustrate the diversity of reasons. The most common response related to the need to cover production expenses for the coffee harvest (n=31). In other cases, households identified emergencies and expenses as the main reason for selling to other buyers (n=8), poor quality (n=4), and restricted access to credit (n=2). Below are quotes from households in the DSF cluster (emphasis added):

- Household #190: "...Don Osman pays better than Soppexcca; Soppexcca has too many price deductions, and he is less concerned with quality." (Avg. percent production sold outside Soppexcca: 67.8)
- Household #24: "...because my brother needed money, I sold coffee in the market to resolve his need." (Avg. percent production sold outside Soppexcca: 50.0)
- Household #188: "...due to delays in the provision of credit—the intermediary is much quicker. Soppexcca always delivers credit in June, while the intermediary delivers in May." (Avg. percent production sold outside Soppexcca: 44.4)
- Household #19: "...the amount of credit offered by Soppexcca is very small ... from the Atlantic [direct coffee exporter] I receive US\$10,000 and Soppexcca has not provided any. Soppexcca also demands too much in terms of quality." (Avg. percent production sold outside Soppexcca: 84.1)
- Household #194: "...transport is very difficult from our farm to the road. The other buyer collects our coffee at the farm" (Avg. percent production sold outside Soppexcca: 89.5).

Table 8: Percentage of coffee sold to Soppexcca, by producer type and cluster

Cluster	Percentage of parchment coffee sold to Soppexcca *	N	SD
Conventional			
DSF	54.55a**	50	32.82
SSF	59.48a	128	30.86
SLF	53.51a	43	33.94
Total	57.20	221	31.89
Organic			
DSF	69.99b	27	33.29
SSF	74.48b	32	22.47
SLF	76.95b	10	28.98
Total	73.08	69	27.78

* Average percentage of production sold to Soppexcca from 2006-07 to 2008-09

** Means with different letters are significantly different.

Physical capital

Improvements in wet milling capacity at the household level played a major role in Soppexcca's strategy for improving coffee quality. In this regard, the building of physical capital was fundamental. Improved physical capital for wet milling includes the construction/refurbishment of mill enclosures, construction/refurbishment of fermenting tanks, or the purchase/repair of machines for de-pulping and pumping water. Households invested, either individually or collectively, a total of US\$204,197 in wet-milling tools, machinery, and infrastructure during the assessment period. Table 9 provides cluster-wise details of household expenditures.

Table 9: Purchase of tools, equipment and machinery, 2005-06 to 2008-09

Cluster	Wet milling machinery and infrastructure		All other tools, equipment, and machinery	
	Total US\$	Mean US\$ (SD)	Total US\$	Mean US\$ (SD)
DSF	15,221	197.68 (557.82)	7,032	91.32 (255.37)
SSF	96,112	593.28 (1,106.05)	38,725	239.05 (760.75)
SLF	92,864	1752.15 (2,178.31)	53,576	1,010.86 (2295.85)
Total	204,197	699.30 (1,371.40)	99,334	340.18 (1175.71)

The average investment by households from the DSF cluster was US\$198 during the four-year period. However, the average was strongly influenced by a few households that constructed new wet-milling infrastructure; among the 72 households in the cluster, only 12 (17 percent) reported cash investments for improved wet milling. Investments by SSF, while significantly higher than those of the DSF cluster, remained low at US\$593. Moreover, 70 SSF households, or nearly half the cluster, reported no cash investments during the period. Investments by SLF household, at nearly three times those of SSF households, showed considerably less variation within the cluster. Credit by Soppexcca contributed US\$97,847 to investments in wet-milling infrastructure and machinery, or roughly 48 percent of the total reported household expenditure.

Sampled households also reported their acquisition of machinery, tools and infrastructure for agricultural production, in addition to those used for wet milling between 2005-06 and 2008-09. Notable is the extremely low investment by households in the DSF cluster, at US\$91 (Table 8). When investments were made by DSF households, they were generally confined to basic tools for production of coffee and basic grains (machetes, shovels, sprayers). Similar to experiences in the building of physical capital for wet-milling, households in the SSF cluster achieved higher investments than their DSF counterparts, but the absolute level of investments was low. In addition to basic tools for the production of coffee and basic grains, oxen and storage silos were commonly reported. In general, findings suggest that households from DSF and SSF clusters struggled to build their physical capital endowments for farm production. Investments by LC-DI were several times higher than investments by SSF households, and often included relatively large purchases for mechanized machinery for the production of coffee, livestock, and off-farm business activities.

Secure shelter is a basic physical capital requirement for livelihood maintenance and improvement. Typical housing infrastructure for Soppexcca members included a one-room hut, with a zinc roof, dirt floor, and, in some cases, a latrine. Few households reported cash investments for additions to or improvements in their housing during the assessment period. In the case of the DSF, 83 percent of the households did not report any cash investment in housing. Average expenditures for DSF households was roughly US\$470; however, the mean was highly influenced by one household that spent over US\$16,000 on a house in the town of Jinotega with savings accumulated while working in the United States. The results for the SSF and SLF clusters were similar, at 71 and 81 percent, respectively. Reported expenditures likely underestimate total investments, as timber and other products were likely sourced on the farm and some materials were often donated by projects (e.g., zinc roofing materials, latrine infrastructure).

Most households faced challenges in upgrading key features of their existing housing infrastructure. In 2004-05, approximately 60 percent of the households lived in a house with a dirt floor. By 2008-09, the percentage had decreased to 55 percent. In 2004-05, eight households from the DSF and SSF clusters reported having a plastic roof. By 2008-09, the number fell to four. The age and condition of the zinc are also important determinants of the quality of the housing. Households were asked if they had invested in the replacement of zinc during the five-year period. Responses indicated that few had done so. Of the 209 households that reported having zinc roofs in 2004-05, 27 (12.9 percent) reported having purchased zinc during the period, with an average expenditure of roughly US\$175.

Financial capital

A clear definition of financial capital is important for this research and for general livelihoods analysis. Financial capital is more than income or credit arrangements. Financial capital underpins investment in other livelihood assets, particularly natural and physical: such as fertilizer (for maintaining natural capital) and agricultural equipment and roofing (for physical capital). It is also an important entitlement mechanism to meet general household expenses (e.g. food for those who are not self-sufficient, clothing and medicines), and other human capital-building pathways such as educational expenses for children. Thus financial capital has two important characteristics: it is a means to an end rather than an end in itself; and is fungible: actually it is a means to various ends. While Soppexcca was not an important provider of finance in quantitative terms, engagement with the cooperative was important for other reasons. Most of all, it provided insurance in the form of emergency financial support in times of shocks such as illness – medical costs – and death – funeral expenses, which otherwise would have resulted in asset erosion.

Previously, it was noted that most cooperative members sell a significant portion of their annual coffee production to buyers other than Soppexcca. These findings held for producers of both conventional coffee and organic coffee. However, assessments of the household income of certified coffee sales often assume that households sell all of their coffee into fair trade markets (Utting-Chamorro 2005). Table 10 presents estimates of the annual gross income benefits from participation in Soppexcca, taking into account the leakage of coffee to non-Soppexcca buyers.

Table 10: Estimated average annual gross income benefit (US\$) for households from coffee sales to Soppexcca and other buyers (2007-08 to 2008-09)

Cluster	Total coffee production (100 lb. green coffee)	Highest possible income from coffee*	Highest possible income benefit**	Actual income from coffee taking into account sales to Soppexcca and other buyers	Actual additional income from coffee sales from sales to Soppexcca	Percent of total highest possible income captured
<i>Conventional</i>						
DSF	5.9	637	63	609	29	45
SSF	18.0	1,944	191	1,866	78	41
SLF	100.2	10,822	1,064	10,326	495	46
Total	31.3	3,380	333	3,238	142	43
<i>Organic</i>						
DSF	6.6	898	255	821	77	30
SSF	9.5	1,292	367	1,198	94	26
SLF	49.4	6,718	1,908	6,279	440	23
Total	14.0	1,904	541	1,758	146	27

* Assumes that 100% of coffee production was sold to Soppexcca. The following 2-year average farm gate prices were used: US\$1.36/lb. for organic coffee and US\$1.09/lb. for conventional coffee.

** Difference in income generated from 100 percent of coffee production being sold to Soppexcca versus income generated from 100 percent of coffee being sold to other buyers. A two-year average farm gate price of US\$0.97/lb. was used for estimating income from sales to other buyers.

Among households from DSF and SSF clusters that produced conventional coffee, the actual income benefits from participation in Soppexcca were relatively small, at US\$29 and US\$78, respectively. In general, these households captured 43 percent of the highest possible income benefits from the sale of conventional coffee to Soppexcca. Organically certified households captured higher income benefits from sales to Soppexcca. However, given the larger gap between prices for organic coffee and those conventional coffee sold outside the cooperative, these households captured, on average, only 27 percent of the highest possible income benefit from organic sales. Interestingly, SLF households that produced conventional coffee also faced challenges in capturing the income benefits from their linkages with Soppexcca. This likely reflects the need for these producers to diversify their buyer relationships and thus increase their access to short-term credit.

As noted previously, most sampled households reported no access to short-term credit prior to joining Soppexcca. During the assessment period, opportunities for obtaining short-term credit increased, in part, due to linkages with Soppexcca. Forty-four households, roughly 15 per cent of the sample, reported no use of short-term credit during the assessment period. Among the households that received short-term credit, most (n=160, 55 per cent) reported Soppexcca as their only source of credit. Other credit sources included specialized lending organizations, coffee buyers, NGOs, and, to a lesser extent, informal lenders and commercial banks. Collateral requirements varied, for example direct coffee exporters and banks required land titles, while Soppexcca, intermediaries, specialized lending organizations, NGOs, projects and informal lenders typically did not. The cost of short-term credit varied between 16 percent and 25 percent for most providers, the exception being market buyers who charged between 50 and 120 percent. While the terms offered by Soppexcca were relatively favourable, the average amount provided by Soppexcca

was small. For example, in 2007-08, the mean credit value for DSF households was US\$197, US\$390 for SSF households, and US\$1805 for SLF households. Even for households with relatively small coffee holdings, Soppexcca-provided credit is unlikely to cover variable production costs, much less facilitate more strategic investments in asset building.

As noted previously, the ability of households to build natural and physical capital was strongly related to their access to long-term credit. Between 2004-05 and 2008-09, 164 sampled households received credit for the purchase of land or expansion of coffee production. The average amount of credit was US\$1,271. Roughly 93 percent of this credit was provided by Soppexcca. Among the clusters, the average amount varied from a low of US\$889 for households in the SLF cluster to a high of nearly US\$1,319 for households in the SSF cluster. Among households in the DSF cluster, an average of US\$957 in credit was received, all of which was provided by Soppexcca. The only other sources of long-term credit identified by the sample were Osman Gutierrez and commercial banks.

CONCLUSION

This research has examined the capacity of smallholders to build their assets through participation in a value chain for certified coffee and the extent to which such asset building contributed to greater resilience. Before summarizing, a limitation should be noted. In particular, the methodology and results depend on the choice of indicators for livelihood assets. Those selected do not capture all the elements of a given livelihood asset, but reduction to a tractable set of key indicators has enabled important insights to be gained within this specific socioeconomic and agro-economic context. Further research probably will require a set of indicators that is small enough to ensure feasibility and precise enough to be conceptually incisive.

In general, the research has highlighted both the potential and the limitations of asset building by the poor in response to VCD. A significant number of households built up key elements of natural capital, including land area and coffee plantation health. On the other hand, many households struggled to improve soil quality through access to fertilization. A similar pattern of significantly, but incomplete, asset building was detected for the other capitals. For example, most households provided information that showed improved skills for coffee quality, but few provided direct or indirect evidence to show that their skills for plantation management had increased during the period—a critical determinant of productivity and disease resistance. While many households received credit for coffee production for the first time, in many cases, the credit was insufficient to carry out more intensive coffee production or for longer-term strategic investments in asset building. The asset building that did take place provided the minimum conditions for Soppexcca and its members to expand their sales in specialty coffee markets during the period. However, as the analysis of asset building by cluster showed, many households faced serious constraints to transform asset building into a viable pathway out of rural poverty.

Perhaps the most important outcome of this research is the detection of significant variation in the ability of households to build assets through VCD due to pre-existing asset endowments. Households in the DSF cluster struggled to build most types of

assets during the assessment period. These households did benefit from increased social capital, mainly through access to Soppexcca-provided services that increased their resilience to shocks (e.g., access to affordable credit and the floor price for fair trade coffee). The dependence of these households on off-farm income and their limited ability to intensify their agricultural production (due to their overall lack of assets and the related trade-offs for diversion of these assets to coffee production), meant that they had little potential to escape poverty through VCD. Altogether, evidence suggested that SSF households were more able to intensify their coffee production through participation in certified coffee value chains. Evidently SLF households benefited more extensively from access to credit and from higher prices for their coffee. These households, both conventional and organic, were critical for Soppexcca's ability to obtain sufficient volumes of coffee to meet contractual agreements with international coffee buyers. However, they generally sold a significant percentage of their coffee to buyers outside of Soppexcca. The relationship between Soppexcca and the SLF households highlights a dilemma for achieving pro-poor VCD: Soppexcca could reduce its dependence on NGO funding by dedicating more resources to the not-so-poor SLF households; however, such changes would dramatically reduce its ability to facilitate asset building by the poorest households.

The analysis of asset building presented here suggests that VCD can achieve a broader set of outcomes than merely favourable prices and market access, including building a sustainable and more competitive value chain, the building of more viable cooperatives, and building of specific assets by poor farming households. It was shown that all of these outcomes were important to achieving a viable value chain in the specialty coffee subsector that had potential to provide a pathway out of poverty for many of the households that were linked to it. However, the Soppexcca experience also showed that such achievements did not come cheap; they resulted from years of investments by coffee buyers, donors and civil society, Soppexcca, and Soppexcca's members. In addition, the experiences of households from DSF showed that rural poverty goals might best be achieved by helping those households with the smallest asset endowments to transition out of agriculture. Discussions in the literature on value chains and VCD have not yet addressed the complexities, challenges, and dilemmas for achieving poverty reduction through VCD. Among these dilemmas is the ethics of targeting development efforts at the not-so-poor, and hence the policies which 'mediate' or encourage the migration of the poorest out of farming and into the non-farm economy—or even out of rural areas. The Soppexcca case shows the potential that exists for pro-poor VCD, but also the need for deeper discussions about the role of different stakeholders in VCD, the goals of VCD, and the need for increased coordination and mutual learning as part of the development process.

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