

DOI: 10.5191/jiaee.2012.19104

**Coffee as a Livelihood Support for Small Farmers:
A Case Study of Hamsapur Village in Nepal**

Kana Aoki

CIA, Inc. The Brand Architect Group
B1F 6-15 Udagawa-cho
Shibuya-Ku, Tokyo 150-0042, Japan
Tel: 81-90-2366-7237
E-mail: kana.a.aoki@gmail.com

Murari Suvedi

Michigan State University
Department of Community, Agriculture, Recreation and Resource Studies
135 Natural Resources Building
Michigan State University, East Lansing, MI 48824
E-mail: suvedi@msu.edu

Abstract

Coffee production as an income-generating project has been promoted by the Nepalese government with the collaboration of international development agencies. Those areas of Nepal with suitable climate and geography have the potential to grow high-quality Arabica coffee for the international market. This research examines the possibilities of organic coffee production as a livelihood support for small-scale farmers in Hamsapur village in Nepal. Using value chain analysis, coffee producers and collectors were interviewed, and semi-structured interviews were conducted with key informants. Findings showed that local farmers have great interest in coffee production; however, the income generation promises have not been realized because of insufficient quality, a lack of transparency in the local coffee market, and organizational issues. Analysis showed there is a need for alternative business relationships with producers along the coffee value chain that result in greater benefit to farmers.

Keywords: Value Chain Study, Coffee, Nepal, Small-Scale Farmers, Social Business, Rural Development

Introduction

Nepal is one of many countries growing coffee for the international export market. Started as a soil erosion project, coffee production spread quickly in Nepal due to perfect climate conditions and the high market value of coffee. Coffee is grown mostly in the Western part of Nepal, and only Arabica coffee, the variety sold as high-quality specialty coffee, is produced (Manandhar et al., 2009; Panthi et al., 2008). In the village of Hamsapur in the Kaski district, coffee cultivation started in the 1980s as an income-generating project with the support of CARE Nepal, a branch of an international non-governmental organization, as well as Indragufa, a Hamsapur-based non-profit organization. They provided seedlings and training free of charge to those who were interested in coffee production, with the collaboration of the Kaski District Coffee Producers Association (DCPA), the district level coffee producers' association. Currently, there are about 446 coffee producers in the Hamsapur village.

Purpose and Objectives

Nepal remains as one of the poorest countries in South Asia, with a GNI per capita of US \$440 (The World Bank, 2009). As in many developing countries, the agricultural sector plays a critical role in the Nepalese economy. Unemployment in rural areas and subsequent migration are critical issues in Nepal, so creating employment opportunities within the

agricultural sector has the potential to significantly benefit those living in rural areas (Haggblade et al., 2002; Henson et al., 2008). Thus, coffee is gaining attention from aid agencies and the Nepalese government as a source of livelihood support. An analysis of the current local coffee market is critical in order to evaluate the current situation as well as for the future development of the local coffee market. The objectives of this study are the following: 1) to analyze the value chain of coffee production; 2) to study obstacles to coffee production; and 3) to develop recommendations for the development of the coffee market.

Methods

Face-to-face interviews were conducted in Hamsapur in the Kaski district with both producers and key informants along the coffee value chain. The sample of coffee producers (N=48) was selected from all coffee producers in the village (N=446) using a snowball sampling method. The sample of key informants was also selected using this method, and key informants were interviewed from coffee collectors, local non-profit organizations, international development agencies, government officials, and local coffee buyers. In addition, in order to include an example from the international retail side of the coffee trade, interviews were also conducted with one retailing company in Tokyo, Japan.

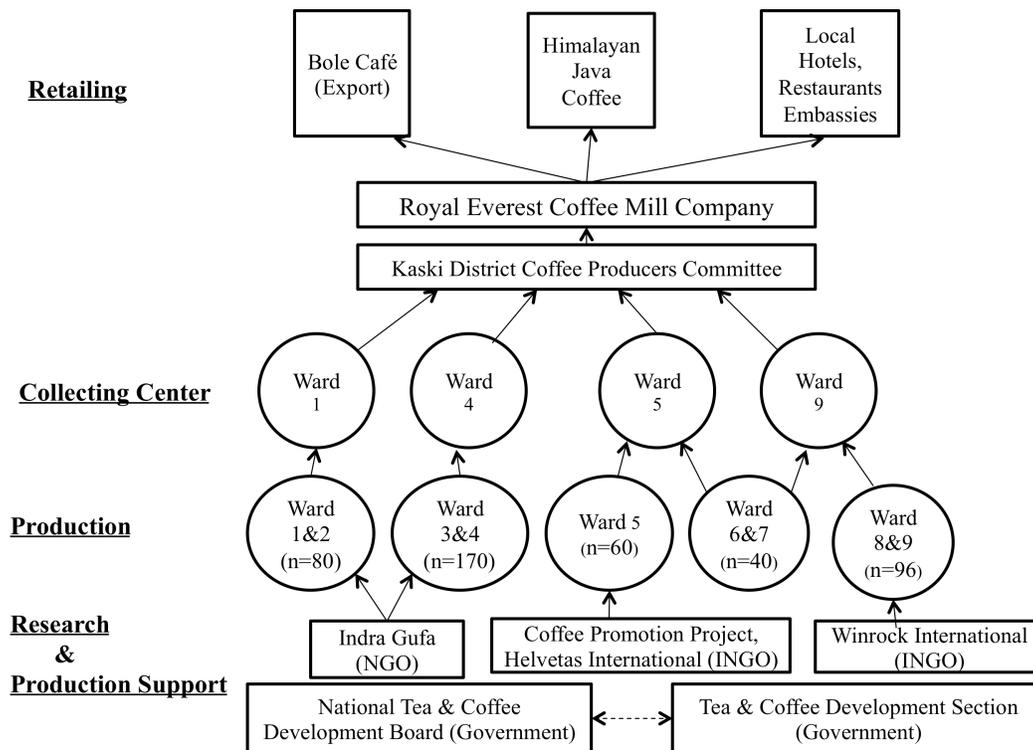


Figure 1. Value Chain Analysis for Hamsapur Coffee

The following terms will be used throughout this paper. The term *coffee cherry* refers to those ripe and ready to be harvested coffee beans. Once a coffee cherry is harvested, it is *pulped*, which is the process of removing the pulp by machine. The pulped coffee beans are called *parchment*.

Findings

Figure 1 describes the value chain map of Hamsapur coffee and indicates the relationships among these key informants and coffee producers (Bernsten & Staatz,

1992; Haggblade & Ritchie, 1992). The National Tea and Coffee Development Board (NTCDB) and Tea and Coffee Development Section promote coffee as part of the Ministry of Agriculture, providing policy, organizational development support, and extension services. Coffee Promotion Project (CoPP) and Winrock International are major international development agencies supporting coffee production and Indragufa, a Hamsapur village-based non-governmental organization, also supports coffee production at the local

Table 1. Summary of Scale of Coffee Production, Practices, Income

Ward		1 & 2 (n=11)	3 & 4 (n=24)	5, 6, 7 (n=8)	8 & 9 (n=5)	Total Average (n=48)
Scale	Average # of Plants	131.4	236.6	45.1	107.2	167.1
	Fruiting Plants	86.4	82.2	21.5	87.2	73.1
	Average per Tree (kg)	6.5	9.6	5.3	6	7.8
	Total Production (kg)	212.3	104.4	28.5	138.7	120
Practice	Fertilizers					
	Manure	63.6%	62.5%	75%	40%	62%
	Manure +Compost	27.3%	29.2%	-	-	20.8%
	No Fertilizer Used	9.1%	8.4%	25%	60%	14.6%
	Irrigation					
	Yes	27.3%	29.2%	25%	40%	29.2%
No	72.7%	70.8%	75%	60%	70.8%	

level. As Figure 1 indicates, all coffee produced in Hamsapur is collected by the District Coffee Producers Association (DCPA). Kaski DCPA charges 10 rupees to each member and requires each to have over 100 coffee plants, which they enable by providing extension services. Coffee collectors receive payment at an exchange of 2% of the commission from the Kaski DCPA. Kaski DCPA also functions as a connection between the buyer and producers. After collection, the Kaski DCPA sells the coffee beans to the Royal Everest Coffee Mill Company, a leading coffee retailing company in Nepal. The company purchases coffee from eight different districts and they currently purchase approximately 70 metric tons of

green beans from all over Nepal. The Royal Everest Coffee Mill Company sells their coffee to the international market and local retailers, including embassies and local coffee shops such as Himalayan Java Coffee.

Challenge of Quality Management

The 48 respondents who participated in this survey were 58.3% male and 41.7% female, and the average age was 51 years old. The study showed that the average number of people in the household was 4.7. Table 1 summarizes the study findings on the scale of coffee production and growing practices. The findings on production show that there are significant scale differences in each ward.

The number of plants is considerably higher in wards 3 and 4, but the total production volume is largest in wards 1 and 2. This is because producers in wards 1 and 2 started coffee production earlier than the other regions, which results in a higher volume of production because of older coffee trees. Also, producers in wards 3 and 4 only started receiving seedlings from Indragufa in 1997, so although the number of coffee plants is large, many of these trees have not reached production stage yet, since it takes about 3 years for coffee trees to fruit. In addition, the findings from Table 1 show the inconsistent practices of

fertilization and irrigation between each ward. Table 2 demonstrates the relationship between irrigation and scale of production and shows that small-scale coffee producers apply irrigation more frequently than larger scale coffee producers. This is because farmers have to carry irrigation water from community water sources, and it is more difficult for larger scale farmers to provide water without a proper irrigation system. These study results show the diversity in production practices and the importance of ward-based strategy and promotion for coffee in Hamsapur.

Table 2. Cross Tabulation: Irrigation and the Scale of Production

Statement	Irrigation		Total	
	Yes	No		
Number of coffee plants	1–50	7	11	18
	51–100	6	8	14
	101–150	0	4	4
	151–200	1	2	3
	251–300	0	4	4
	301–350	0	1	1
	450 more	0	4	4
Total coffee production (kg)	1–10 kg	2	2	4
	11–50kg	4	11	15
	51–100kg	3	8	11
	101–150kg	2	4	6
	151–200kg	1	1	2
	201–250kg	1	1	2
	251–300kg	0	2	2
	301–350kg	1	0	1
350kg more	0	3	3	

Although the production practices differ by ward, it was commonly recognized that the majority of the respondents (70.8%) do not provide irrigation or water during the dry season. In particular, the delay of the monsoon in 2009 raised concerns with many producers, and four out of five (79.2%) producers mentioned irrigation as the biggest challenge in production. One of the producers said: "I know the necessity of irrigation, but there is a shortage of water so I cannot irrigate my coffee plants."

Water plays a very important role in both the production and processing of coffee, and lack of water negatively impacts its quality (Van der Vossen, 2005). The issue of quality management was frequently mentioned during interviews with the key informants, since the majority of the coffee produced is exported to the international market (CoPP, 2008). Since Nepal focuses on high-quality Arabica coffee, quality management is essential. However, as the findings from the farmers' interviews showed, quality management has not been practiced at the farm level in Hamsapur. Even though Hamsapur provides excellent growing conditions for Arabica coffee, the farmers have not been able to take advantages of its environment. The president of the Royal Everest Coffee Mill said:

We have lack of water in remote areas. After pulping, we ferment for 24 hours, and we should wash for

three times but we do not have water for washing. After washing, we need to put the beans 24 hours again into the water, but again, we do not have enough water.

In addition to the lack of irrigation and insufficient fertilizer, scattered and small-scale production also creates a challenge to quality management. Because of the hilly terrain, farmers produce coffee on small, scattered plots. Moreover, coffee collectors in the village were selected not by location, but by availability and trust from other farmers, which has resulted in inefficient coffee collection. Water accessibility was not a criterion at the time of the distribution of pulping machines to the collectors; therefore, some of the collectors are far from water sources, which makes wet-processing, the process of washing beans, and the fermentation process, harder. The project manager at CoPP said:

Coffee production is scattered all over the district. You go to one district, and there is one group with 25 members, and maybe 500 plants in that village. In such a scattered production, we cannot increase the production and the quality.

The president of Himalayan Java stated that "...when you actually buy coffee in such small quantity from different farmers, there is no way we can control the quality

Table 3. Results of a *t* Test about Scale of Production

Statement	Committee Member	N	Mean (Sd)	<i>t</i> value	Sig (2-tailed)
Number of coffee plants	Yes	22	176.3 (190.4)	.18	.855
	No	26	159.3 (397.1)		
Average coffee production per tree (kg)	Yes	21	9.4 (6.9)	.97	.333
	No	26	6.7 (11.2)		
Total coffee production in 2008/09 (kg)	Yes	21	177.3 (207.6)	2.33	.024
	No	25	72.0 (81.1)		

of coffee.” However, another result in the study suggested a potential solution for the quality management issue, which is to promote a coffee committee in each ward. There are coffee committees in wards 2, 4, 5, and 8, which provide support with the charge of 10 rupees as an annual fee. A *t* test shows a statistically significant result in the total coffee production in 2008 and 2009 among these members of coffee committees (Table 3). It should be noted that a significant result is only seen in total coffee production. This is likely because of the time required for coffee plants to grow. Therefore, the results of Table 3 imply that farmers’ participation in coffee committees has the potential to expand the scale of production in Hamsapur village.

Fair Price or Unfair Price?

In addition to the challenge of quality management, an argument over the price of coffee was noticeable during the study—in particular, disagreement over the fairness of coffee prices. While 10.4% of

the farmers raised “lack of market” as a challenge to coffee sales, both coffee suppliers and the government mentioned that Nepalese coffee has high international demand. The comparison of producers’ and key informant interviews highlights different perspectives on coffee markets. For example, the coffee producers mentioned, “Coffee is the most profitable crops, but there should be fair prices and proper market.”

On the other hand, one of the buyers said that the supply of Nepalese coffee has not even met the international demand. The owner of the Himalayan Java coffee shop said, “Although we have a market and we have a buyer, we are not even meeting the demand. We have the market and the buyer, but the supply is not there.” The disagreement over the coffee market between coffee producers and suppliers was based on different views of the coffee price. As the farmers’ interviews indicated, 52% of the respondents thought the price of coffee was unfair and brought this up as one of the biggest challenges of selling.

Table 4: Coffee Price Comparison (2007)

Country	Producer price (per kg)
Nepal	\$1.36
India	\$1.54
Sri Lanka	\$2.09
Indonesia	\$1.20

Source: FAOSTAT

Additionally, the delay in payment negatively affected the motivation of the producers. None of the producers had received payment even a few months after the end of the harvest season. According to the Kaski DCPA, this is the first year the Royal Everest Coffee Mill delayed payment. However, many of the farmers were particularly frustrated about the delay of payment because they received no explicit explanation. Those farmers who were discouraged by low prices had cut down their coffee trees. Many respondents asked the researcher to find out the official price of coffee because they felt they were not well informed, and some of the farmers even said they felt they were exploited by the trader. On the other hand, the key informants thought that Nepalese farmers were paid higher prices compared with other coffee-producing nations. Some of the key informants said Nepalese coffee producers received more than fair prices, so there should be enough incentive for the producers. The owner of Himalayan Java Coffee said, “[What Nepalese coffee producers are getting is] more than the fair

price, so we do not need the big fair price logo or anything. It is already fair price.”

Comparisons of the comments between the producers and the key informants show the need for further investigation. In order to offer a comparison with other coffee-producing countries, Table 4 shows the list of coffee prices among major Asian coffee-producing countries. It indicates the producer price of green beans, which is the price after pulping. According to the data, producers in Sri Lanka receive significantly higher prices compared with producers in Nepal. However, Nepalese producers receive higher prices than those producers in Indonesia, the fourth largest coffee-producing country in the world. Thus, the comparison with other coffee-producing nations suggests that coffee producers in Nepal do not receive significantly higher payment compared with other coffee-producing nations.

For further analysis of coffee prices, Table 5 indicates the distribution of coffee revenues at the local market level. Producers receive 27 rupees per kilogram for fresh cherries, and collectors get 155

Table 5. Distribution of Coffee Revenues at the Local Level

Producers 27Rs (US\$0.34)/kg	<ul style="list-style-type: none"> • Grow coffee trees, harvest fresh cherries and bring them to collectors
Collectors 155Rs (US\$2.04)/kg	<ul style="list-style-type: none"> • Wash, pulp, ferment, dry, and bring to DCPA (4.25kg fresh cherry = 1kg dry parchment)
District Coffee Committee 3Rs (US\$0.04)/kg	<ul style="list-style-type: none"> • Collect coffee from entire district, taking 2% commission
Royal Everest Coffee 800Rs (US\$10.4)/kg	<ul style="list-style-type: none"> • Roast, package, market coffee

rupees per kilogram after processing. Collectors bring coffee parchment to the Kaski DCPA, and the DCPA takes a 2% commission from the total coffee payment as a handling fee. Then, Royal Everest Coffee visits the Kaski DCPA to collect the coffee parchment from the entire district. The company sells the final product for 800 rupees per kilogram in the domestic market. As illustrated in Table 5, this is approximately 30 times higher than the price farmers receive. However, the cost of production and processing should also be taken into consideration. The representative from the CoPP points out that coffee producers do not realize that they are getting good prices compared to their investment for coffee.

We did the cost of production estimation. It was around 18 rupees per kilogram of fresh cherry, and this is higher part of cost of production. But if you go to the farmers who are not investing in coffee, it will be

lower than that. They are getting 27 rupees per kilogram, so it is already good profit for the farmers.

Additionally, he points out that farmers do not realize how much processing is required for coffee to be sold as the final product. However, the issue appears to be the lack of transparency on the retail side. Producers must be informed about coffee prices, including the price at which the retailer is selling to the market and how much it costs for them to produce the final product. Such lack of transparency and communication is creating disincentives for the producers, and it will eventually affect the quality of products, because producers feel they are exploited by the buyers. Thus, the buyers must be aware of the importance of transparency in the coffee value chain, not only to build better relationships with producers but also in order to improve the overall quality of the coffee.

Organizational Challenges

The interviews with key informants and value chain analysis also made it clear that organizational issues are another challenge. First of all, there is only one coffee buyer in the district, creating a monopoly of the market. The market monopoly also exists in other districts, and specific coffee buyers dominate each district in Nepal. The community level involvement of these companies makes it difficult for other buyers to enter the district and prevents competition among buyers. In Hamsapur, Royal Everest Coffee Mill has been involved with the coffee growers since the beginning of coffee production and they have developed a network within the community, including monitoring production and collecting coffee beans. Although the company has significantly contributed to the development of coffee production in the village, its monopoly of the market has also created a lack of transparency, including insufficient information about coffee prices and delay of payments, as has been discussed above. If there were another buyer in the village, farmers might have been able to access information about coffee prices, and they could choose a buyer with better prices. However, the current local market system makes it difficult for other buyers or companies to intervene.

Additionally, political instability affects the lack of government leadership not only in the coffee industry but also in overall agricultural development in Nepal.

The conflict between the democracy movement and the Maoist party has caused instability in the government of Nepal. Despite the government's promotion of coffee, support from the government for the coffee sector is insufficient (Blaikie et al., 2002; Brown & Kennedy, 2005; Shrestha et al., 2007). Criticism of the government was often heard from the private sector because the private companies have been the driving force for the development of the international coffee market. However, the support for private companies growth in Nepal is not adequate, making business growth difficult or sometimes even impossible (Aryal, 2003).

Social Business for Rural Development

Despite several challenges for the current coffee market, interviews with farmers indicated that there is a high potential for the industry to grow (Kattel et al., 2009; Poudel et al., 2009). To the question, "Do you think coffee production has helped the improvement of your community?" an overwhelming number of respondents (97.8%) answered yes. About two thirds (66.7%) of the respondents indicated that this is because coffee offers economic benefits to households as well as utilizing land and requiring less labor. However, as the study showed, farmers are not satisfied with the current value chain of coffee for the reasons discussed above. How can this gap between farmers and the local coffee market be filled? (Govereh & Jayne, 2003; Loveridge et al., 2002) Obviously, there are several development

agencies already involved, and it will be challenging for the government to take the initiative given current political instability. The failure of income generation projects can be seen in various parts of the world due to the lack of sustainable support from international development agencies and the local government. (Bacon, 2005; Daviron & Ponte, 2005; Jaffee, 2007) The challenge is to create a system that sustains itself so that local farmers can continuously benefit from the project. Perhaps, one potential alternative is for the private sector to lead the industry further, but in a way that supports community development through empowerment of farmers. *Social business* refers to a hybrid of a profit-maximizing business with a social mission using market forces (Miehlbradt & McVay, 2005; Yunus, 2009). Social businesses target the poor and provide services or goods through private companies at inexpensive prices. Private sector approaches in international development have increasingly gained attention because of their innovation and efficiency.

One such successful example in agricultural development is Alter Trade Japan (ATJ), a unique private company promoting “alternative” agricultural trade based in Tokyo, Japan. The company handles products such as bananas, shrimp, tea, cocoa, and coffee which have historically been traded as cash crops and promoted for poverty alleviation by international development agencies. However, instead of promoting their work

as a “development project,” ATJ has implemented it as a “business” by connecting small-scale farmers with Japanese consumers. The company, in collaboration with local and international non-governmental organizations, directly purchases products from farmers and sells to cooperative retailing stores in Japan. Another unique characteristic of this company is that it does not use any certification systems on its products (such as fair trade or organic). This is also reflected in the company name: “alternative trade company” rather than “fair trade company.” Instead of certification, quality assurance is conducted at each step of the production process, and ATJ staff members test the quality and the taste before selling to the market. Under ATJ’s philosophy, traceability means that they are able to trace back commodities from consumers to producers. It might seem that such a quality control system is loose, but the success of the quality assurance system is shown by satisfied feedback from Japanese consumers, so called the “strictest” consumers in the world. ATJ is a private company, but the company also exists as a supportive organization for small-scale farmers in developing countries. ATJ has successfully been in business for over 20 years, supporting farmers by becoming a business partner, not providing donations as a donor agency.

As the example of Alter Trade Japan has shown, one potential alternative for further development of the coffee

market in Hamsapur is to apply the social business strategy. The study showed farmers' high interest in coffee production; however, the current local market is not creating a sustainable market. If farmers were provided with better and guaranteed prices as Alter Trade Japan does for small-scale farmers in many developing countries, it would give better incentives for them to grow higher quality coffee. In order to do so, the establishment of a private company, not another development project, might provide one sustainable solution for the current situation. If such a business becomes successful, farmers would be able to send their children to school, leading to more sustainable development for the local economy. Therefore, creating a private company could multiply initial investments. Perhaps it is time to rethink development projects and to have holistic approaches for more effective and efficient project implementations.

Conclusion

This study attempted to provide an analysis of the current situation of the coffee market in Nepal using Hamsapur village as a case study. In order to investigate the coffee industry in Hamsapur, value chain analysis was applied. In particular, the study objectives were the following: 1) to analyze the value chain of coffee production; 2) to study obstacles to coffee production; and 3) to develop recommendations for the future. The value chain of Nepalese coffee

production was analyzed by assembling interviews with coffee producers and key informants, and Figure 1 summarizes the value chain map of Hamsapur coffee.

Quality management is raised as one of the biggest challenges for Hamsapur coffee because Nepal focuses on the market niche of high quality Arabica coffee. The findings also revealed the information gap over coffee prices that exist between the producers and the key informants. One of the reasons for this information gap is a lack of transparency at the local market level because of the market monopoly. The Hamsapur coffee market is monopolized by one company, causing a lack of transparency in price and its value chain. Furthermore, political instability has caused insufficient support for farmers and the private sector. Promotion of coffee committees and training should be considered as the immediate approach for improvement. Moreover, the study explored the potential for a social business approach, since the fundamental purpose of coffee promotion was for economic development in order to empower the rural community. Promoting such a social business might be one of the answers for sustainable rural community development.

References

- Aryal, A. P. (2003). Development of agribusiness enterprises: Nepal. In Oliver, R. (Eds.), *Report of APO Seminar on Development of Agribusiness Enterprises*. Bangkok,

- Thailand: Asian Productivity Organization.
- Bacon, C. (2005). Confronting the coffee crisis: Can fair trade, organic, and specialty coffees reduce small-scale farmer vulnerability in northern Nicaragua? *World Development*, 33: 497–511.
- Bernsten, R.H., & Staatz, J.M. (1992). The role of subsector analysis in setting research priorities. Presentation delivered at Symposium on the impact of technology on agricultural transformation in Africa, Washington, DC.
- Blaikie, P., Cameron, J., & Seddon, D. (2002). Understanding 20 years of change in west-central Nepal: Continuity and change in lives and ideas. *World Development*, 30(7), 1255–1270.
- Brown, S., & Kennedy, G. (2005). A case study of cash cropping in Nepal: Poverty alleviation or inequity?. *Agriculture and Human Values*, 22, 105–116.
- Coffee Promotion Program (CoPP). (2008). *Coffee promotion programme annual report 2008*. Lalitpur, Nepal: Helvetas International.
- Daviron, B., & Ponte, S. (2005). *The coffee paradox: Global markets, commodity trade and the elusive promise of development*. New York, NY: Zed Books Ltd.
- Haggblade, S., & Ritchie, N. (1992). CARE/Thailand, Small Economic Activity Development. (1992). *Opportunities for intervention in Thailand's silk subsector* (Gemini Working Paper No. 27). Retrieved from http://pdf.usaid.gov/pdf_docs/PNABK663.pdf
- Haggblade, S., Hazell, P., & Reardon, T. (2002). *Strategies for stimulating poverty-alleviating growth in the rural nonfarm economy in developing countries*. International Food Policy Research Institute. Retrieved from <http://www.ifpri.org/publication/strategies-stimulating-poverty-alleviating-growth-rural-nonfarm-economy-developing-count>
- Henson, S., Jaffee, S., Cranfield, J., Blandon, J., & Siegel, P. (2008). *Linking African smallholders to high-value markets: Practitioner perspectives on benefits, constraints, and interventions* (World Bank No. 4573). Retrieved from <http://econpapers.repec.org/RePEc:wbk:wbrwps:4573>
- Jaffee, D. (2007). *Brewing justice*. Berkeley, CA: University of California Press.
- Govere, J. & Jayne, T.S. (2003). Cash cropping and food crop productivity: Synergies or trade-offs? *Agricultural Economics*, 28, 39–50.
- Kattel, R. R., Jena, P., & Grote, U. (2009). The impact of coffee production on Nepali smallholders in the value chain. Presentation delivered at Tropentag 2009, Germany.

- Loveridge, S., Mpyisi, E., & Weber, M. T. U.S. Agency for International Development, (2002). *Farm-level perspectives in Rwanda's coffee supply chain coordination challenge*. (CDIE reference number PN-ADH-721). Retrieved from http://aec.msu.edu/fs2/rwanda/ps_2e.pdf
- Manandhar, G. B., Adhikary, S. K., & Sah, G. (2009). *Sustainable agricultural practices and technologies in Nepal*. United Nations Social and Economic Commission for Asia and the Pacific, Asian and Pacific Centre for Transfer of Technology Tech Monitor.
- Miehlbradt, A. O., & McVay, M. (2005). *From BDS to making markets work for the poor: The 2005 reader*. Geneva, Switzerland: United Nations International Labour Organization.
- Panthi, B. B., Devkota, B., & Devkota, J. U. (2008). Effect of botanical pesticides on soil fertility of coffee-orchards. *The Journal of Agriculture and Environment*, 9, 1–7.
- Poudel, K.L., Nepal, A.P., Dhungana, B., Sugimoto, Y., Yamamoto, N., & Nishiwaki, A. (2009). Capital budgeting analysis of organic coffee production in Gulmi district of Nepal. Paper presented at International Association of Agricultural Economists conference, Beijing, China.
- Shrestha, N.P., Manandhar, H.K., Joshi, B.R., Sherchan, D.P., Paudel, K.P., Pradhan, A., & Gurung, T.B. United Nations Social and Economic Commission for Asia and the Pacific, CAPSA. (2007). *Poverty alleviation through agriculture and rural development in Nepal*. Bangkok, Thailand: Nepal Agriculture Research Council.
- Van der Vossen, H. A. M. (2005). A critical analysis of the agronomic and economic sustainability of organic coffee production. *Experimental Agriculture*, 41, 449–473.
- World Bank. (2011, February). *Nepal at a glance*. Retrieved from http://devdata.worldbank.org/AAG/npl_aag.pdf
- Yunus, M. (2009) *Creating a world without poverty: Social business and the future of capitalism*. New York: Public Affairs.