Working Paper

Agroforestry and Forestry in Sulawesi series:

Smallholders' coffee production and marketing in Indonesia

A case study of two villages in South Sulawesi Province

Nicholas A. Roshetko

World Agroforestry Centre

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About the author

Nicholas (Niko) Andrew Roshetko is a high school student at the Academic Colleges Group International School Jakarta. Born and raised in Bogor, Indonesia he is a dual USA and Indonesian citizen. The internship was his first work experience, providing him with good understanding of what goes into smallholder coffee production and marketing. The experience enabled him to gain a great appreciation for smallholder coffee farmers, and the hard work and dedication they invest into coffee production. Niko plans to attend university in the USA to study business and marketing.

Abstract

This study was undertaken as part of the Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action project, funded by the Department of Foreign Affairs, Trade and Development, Canada. The objective of the survey was to obtain information from farmers in Campaga and Pattaneteang villages in Bantaeng District, South Sulawesi Province, Indonesia about their harvesting, processing, packaging, selling and marketing of coffee; the roles of both men and women in the management, extraction, production and marketing of coffee; the challenges faced by farmers; and why they did not sell under brands. Two focus groups were held with coffee farmers using a questionnaire to stimulate discussion. The study found that both communities operated successful coffee businesses within the limitations of their socio-economic settings. Nevertheless, improvements could be possible if carefully planned and executed, leading to increased sales, profits and revenue, by indulging more in customer-orientated marketing. The study found that men and women had distinctly different roles in the production process but should participate equally in any decisions to change current operations.

Keywords: **coffee, marketing, smallholder, Sulawesi, gender**

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Contents

A. Introduction

This study was undertaken as part of the Agroforestry and Forestry in Sulawesi: Linking Knowledge with Action (AgFor) project, funded by the Department of Foreign Affairs, Trade and Development, Canada.

The main goal of the AgFor project is improved equitable and sustainable agroforestry and forestry-based livelihoods' systems for rural communities in Sulawesi, Indonesia. To achieve the goal, the project improves communities' awareness, access and skills related to natural resources and agriculture. Enhancing farmers' understanding of, and involvement in, markets is a focus of the project.

The study's objective was to assist farmers in developing their capacity to improve their income-generation strategies through identifying the harvest, production and marketing processes of coffee and to integrate a customer-driven marketing strategy with farmers in Campaga and Pattaneteang villages, Bantaeng District, South Sulawesi Province, Indonesia.

A customer-driven marketing strategy includes market segmentation, market targeting and product positioning and differentiation. Market segmentation divides a market into different groups of buyers who have different needs, characteristics or behaviours and who might want separate products. A market segment is a group of people who respond in a similar way to a specific marketing effort. Market targeting is the process of evaluating each market segment's attractiveness and selecting one or more markets to enter. Positioning is arranging for a product to occupy a clear, distinctive and desirable place relative to other consumer products, in the minds of consumers. Differentiation is differentiating the product from others in the market so that it increases in value in the minds of consumers (Kotler and Armstrong 2010).

B. Methods and materials

B.1 Survey methods

The objective of the survey was to obtain information from farmers about their methods and details of harvesting, processing, packaging and selling and marketing coffee in Campaga and Pattaneteang villages. The survey also aimed to identify the roles of both men and women in the management, extraction, production and marketing of coffee. The challenges and difficulties faced by farmers, as well as why farmers did not sell under brands, were also key objectives of the survey. A focus-group discussion was conducted with coffee farmers using a questionnaire that sought information about 1) the species of coffee cultivated; 2) the selling and production methods used; 3) factors that increased the value of the coffee sold; 4) the production process; 5) women and men's roles in the production of coffee; 6) factors affecting coffee production; 7) target marketing; and 8) branding of the coffee product. The questionnaire was used as an 'ice breaker 'to start the conversation and led to more detailed discussions regarding coffee. The respondents were specifically chosen owing to their knowledge and skill.

B.2 Survey location

The survey was conducted in Campaga and Pattaneteang villages, Bantaeng District, South Sulawesi Province, Indonesia. The total areas of Campaga and Pattaneteang are 5.0 and 19.1 km^2, respectively. Campaga is dominated by the Makassar ethnic group, with a total population of 1882 while Pattaneteang is a Bugis-dominated community with a population of 1885. Elevations are 500 masl at Campaga and 700 masl at Pattaneteang. The mean annual temperature at both sites is 26 °C, varying little: 25–27 °C. Annual rainfall in 2011 was approximately 2000 mm, with 116 total rain days in Tompobulu sub-district (BPS 2011).

The two villages were chosen for the survey because coffee was a prominent component of their livelihoods' systems. Furthermore, these communities were representatives of general conditions in Bantaeng and neighbouring districts. Farmers at the locations had cultivated mixed agroforestry systems for a long time, with an average of 1 ha of land per family. Coffee, cacao and clove were the dominant crops cultivated in the mixed agroforestry systems. The percentages of land devoted to these crops in Campaga and Pattaneteang were 60% and 48%, respectively. Rice was cultivated on irrigated land and the area of rice cultivation had remained stable (Khususiyah et al 2012).

In Bantaeng, coffee monocultures provided a return to land of USD 518 per year, while mixed coffee gardens provided a higher return of USD 888. However, a monoculture coffee system provided a return to labour of USD 19 per day while a mixed coffee system provided a return to labour of USD 16 per day. This means that coffee monocultures had a lower annual gross profit than mixed coffee gardens, however, for each individual day of labour, coffee monoculture provided a higher income than mixed coffee gardens (Rahmanulloh et al 2012).

C. Results and discussion

C.1 Production

Three species of coffee were cultivated in the villages of Campaga and Pattaneteang: *Coffea arabica, Coffea robusta* and *Coffea liberica*. Arabica was the most commonly cultivated by the two villages, followed by robusta then liberica.

Arabica

Arabica is a species of coffee indigenous to the mountains of Ethiopia. It was the first species of coffee ever cultivated, over 1000 years ago. Arabica plants grow to heights of 9–12m, with an open branch system, allowing branches to spread. Leaves are 6–12cm long and 4–8cm wide, exhibiting a dark-green colour. Each arabica fruit is 10–15mm in diameter and typically contains two beans. Annually, a total of several hundred tonnes of arabica are produced in Campaga and Pattaneteang.

Arabica was harvested three times a year in Pattaneteang, every three months (during the last three months of the year there is no harvest). Annually, hundreds of tonnes of arabica coffee have been sold from Pattaneteang. The average farmer easily sold hundreds of kilograms from each harvest. On average, 1 ha of arabica plants yielded two tonnes of coffee beans. In Pattaneteang, arabica bean was sold to distributors, who bought in bulk, and powder or bean to individual buyers, who bought much less.

In Campaga, arabica coffee was harvested twice a year, with the average farmer only selling about 50 kg of arabica from each harvest and only several dozen tonnes are sold in total every year. One hectare yielded only about 200 kg. There were mostly mixed gardens with other crops and much less was produced per hectare. The coffee fruit was sold to distributors, who bought in bulk, and bean or powder to individuals, who bought much less.

Robusta

Robusta is also indigenous to the upland forests of Ethiopia. Robusta coffee has low acidity and high bitterness and globally is primarily used for instant coffee powder. Approximately 30% of coffee produced globally is robusta. Robusta plants grow to about 10 m and are shrub-like. It takes approximately 10–11 months for robusta fruits to ripen, producing oval-shaped beans. Robusta has greater crop yield than arabica thus making it cheaper to mass produce and contains more caffeine than arabica. Robusta was the second-most cultivated species of coffee in Pattaneteang and Campaga, with several hundred tonnes of robusta produced in the two villages every year.

In Pattaneteang, robusta was harvested only once a year, yielding hundreds of tonnes. Each hectare yielded approximately 1 tonne. Robusta in Pattaneteang was integrated with other crops and other coffee species. The average farmer sold several hundred kilograms of robusta each harvest. The species was slowly decreasing in area and being replaced by cloves. Robusta coffee bean was sold to large distributors, who bought in bulk, and bean or powder to individual buyers.

In Campaga, robusta coffee was harvested only once a year, with several dozen tonnes sold from Campaga. Each hectare yielded about 200 kg, with each individual farmer selling less than 50 kg. Robusta gardens in Campaga were mostly mixed with other crops and much less were produced per hectare. The fruit was sold to distributors, who bought in bulk, and the fruit or bean to individual buyers.

Liberica

Liberica is a species of coffee indigenous to western and central Africa, from Liberia to Uganda and Angola. Liberica coffee is very similar to robusta in taste: it is very bitter. Liberica grows up to 20 m in height, making it much taller than both arabica and robusta. Liberica plants also produce larger fruits and beans than arabica and robusta. It was the least cultivated species of coffee in Pattaneteang and Campaga. Less than a dozen tonnes of liberica were produced annually in the two villages combined.

In Pattaneteang, liberica coffee was harvested once a year, producing several dozen tonnes. Each farmer sold about 100 kg of liberica coffee annually. One hectare of liberica yielded less than one tonne of beans, which were sold to distributors in bulk. Individual buyers bought beans or powder.

In Campaga, liberica was also only harvested once a year, producing a couple of tonnes. On average, each farmer sold about 20 kg of liberica per harvest. One hectare yielded up to 100 kg. Liberica was sold in fruit form to distributors, who bought in bulk and in bean or powder form to individuals.

In both villages, liberica was slowly decreasing in favour of increased production of cloves. It was integrated with other crops, therefore, there was much less produced per hectare than arabica and robusta.

C.2 Processing

Each type of coffee went through its own distinct process from planting to packaging. The same type of coffee in each village also underwent a slightly different process than in the other village.

Table 1. Sale of coffee in Pattaneteang

Product	Sold to individuals	Self-consumption	Sold in bulk	Sold in traditional markets
Arabica	√	√	√	
Robusta	√	√	√	
Liberica	√	√		

Table 2. Sale of coffee in Campaga

Product	Sold to individuals	Self-consumption	Sold in bulk	Sold in traditional markets
Arabica	√	√	√	
Robusta	√	√	√	√
Liberica	√	√		

Robusta and liberica in Pattaneteang, when sold to individuals or for self-consumption

In Pattaneteang, both liberica and robusta went through the exact same process for self-consumption or when sold to individuals. After the coffee berries ripened, the harvest lasted anywhere from one to ten days. The fruit was peeled and the skins were made into compost. Next, the beans were dried in the sun for a day or so. Then the beans were roasted for about 45 minutes in a clay pan, softening them. After being roasted, the beans were then pounded into powder either manually or in a machine. Farmers claimed that if the coffee bean was pounded manually the coffee tasted better. Next, the coffee powder was packaged into either a can or a plastic bag. Finally, the coffee in powder form was sold.

Arabica in Pattaneteang, when sold to individuals or for self-consumption

In Pattaneteang, arabica went through a slightly different process than liberica and robusta. It went through all the same steps as liberica and robusta, however, there was one very important exception: both liberica and robusta were straight away peeled after the fruit was harvested but arabica fruit was not. After the arabica fruit was harvested, it went through a separation process. In this step, bright-red fruit was separated from pink. The beans from the red fruit were sold for a much higher price. After separation, the arabica fruit was peeled and went through the exact same process as for liberica and robusta.

Arabica, robusta and liberica in Pattaneteang when sold in bulk

When coffee was sold in bulk the process differed from when it was sold to individual buyers. In Pattaneteang, all three coffee types largely went through the same process, however, arabica had two additional processes. After harvest, the arabica fruit was separated and the beans from the brighter fruits were sold for a higher price. For all types, the next step saw the coffee fruit peeled and the beans soaked—entirely submerged— in water for 12 hours. Then the beans were dried in the sun for about 3 hours. The next step was only for arabica: after being dried, the beans were again separated and the better-looking ones were sold for a higher price. Next, all the types of beans were packaged into large rice sacks, tin cans or plastic bags. After that, the coffee, in bean form, was sold to large distributors in bulk.

Arabica, robusta and liberica in Campaga when sold in bulk

In Campaga, when coffee was sold in bulk the process from planting to packaging was quite short and concise. The harvest usually lasted one-to-three days. Post-harvest, the coffee fruit was packaged into rice sacks, tin cans or plastic bags. After that, the coffee, still in the form of fruit, was sold to large distributors who bought in bulk. Farmers in Campaga only sold very large amounts of coffee in fruit form, unlike Pattaneteang farmers, who sold very large amounts in bean form.

Arabica, robusta and liberica in Campaga when sold to individual buyers

In Campaga, when coffee was sold to individual buyers the process was slightly longer than when it was sold in bulk. However, the overall process was still quite short. After harvest, the coffee fruit was peeled. As in Pattaneteang, the skin of the coffee fruit was then made into compost. Next, the coffee beans were packaged into either tin cans or plastic bags. The coffee, in the form of beans, was then sold to individual buyers. In Campaga, the coffee beans were not dried or soaked in water before being sold. They were simply peeled, packaged and then sold.

Arabica, robusta and liberica in Campaga when sold in traditional markets or for self-consumption

When coffee was processed to be sold in traditional markets or for self-consumption, the process took longer. After the coffee fruit was harvested, it was peeled and the skins used for compost. Next, the coffee beans were roasted in a clay pot for about 45 minutes. The beans were then dried in the sun for about 3 hours. Next, they were pounded into powder form. This was either done manually (by hand) or automatically (by machine). The farmers of Campaga claimed that the coffee tasted significantly better if pounded by hand. However, this took much longer compared to pounding by machine. After being pounded, the coffee powder was packaged into either tin cans or plastic bags. Lastly, the coffee was sold in traditional markets in Bantaeng or consumed by the farmers.

It is important to note that in Campaga only robusta was sent to traditional markets, to be sold in powder form. However, arabica, robusta and liberica still went through the exact same process when converted into powder.

C.3 Management

In management, both men and women had their respective jobs and responsibilities that were drastically different. Some of the responsibilities were shared by men and women, while others were the solely conducted by either men or women (see Table 3).

The farmers in Campaga were more farming orientated, that is, farming was their primary skill. However, they were also somewhat skilled in finding buyers. Even though the respondents in Campaga had many customers, they were less skilled in the selling of coffee.

The respondents in Pattaneteang dealt primarily with the business side of the coffee. The farming and production of coffee in Pattaneteang was mainly the responsibility of the women. In Pattaneteang, the farmers had many more business partners and buyers; they even had business connections in Makassar and the rest of Indonesia.

Table 3. The roles of men and women in coffee production and sales in Pattaneteang and Campaga

Gender	Purchase of assets	Land and system Management	Coffee harvesting	Coffee processing	Coffee packaging	Coffee trade
Male	√√	√√	√√			√
Female		√	√√	√√	√√	

Note: Two checks means main job; one check means minor job; no check means not a responsibility and doesn't apply.

Women in both villages had similar roles. The main responsibilities of the women were coffee production, harvesting, processing, and packaging. For coffee production, women were almost entirely responsible for peeling the coffee fruit, washing, rinsing, drying, and roasting the coffee bean. In the extraction component, the women were responsible for harvesting (picking) the coffee fruits from the plant. During a very fruitful harvest, it could take up to ten days to harvest all the coffee fruit, though this was very unusual; it commonly only took one full day to harvest all the fruit. For the packaging, women were responsible for inserting the coffee—in the form of beans, fruit or powder—into the package, which would be either a can, plastic bag or rice sack. Some men also participated in these tasks but they were dominantly undertaken by women. With many crops in Bantaeng, at the farmgate women are responsible for negotiating price and receiving the money from traders. However, further along the market chain men take the dominant role (Perdana and Roshetko 2012).

Men were responsible for the management of the coffee plantation and for planting the coffee trees. Men were also entirely responsible for the business side of the coffee. Men had to find willing customers to buy the coffee. Finding business connections were important responsibilities. The men paid labourers, managed cash inflow and outflow, and reinvested money into the business. They also were responsible for buying new machinery or equipment when needed.

C.4 Increasing value and using waste products

Farmers in both Campaga and Pattaneteang had complementary ways of increasing the value of their coffee. Farmers in both villages roasted the coffee beans to increase their price, traditionally known as ‘sangrai’.

In Campaga, the farmers made sure to sell the brightest red-coloured coffee fruit, as these could be sold for a much higher price. Farmers in Pattaneteang sold their coffee in powder form to increase the value but they only did this if they received a special order, asking for powdered coffee. Farmers in both villages sold coffee in a form that the other did not. Campaga farmers sold in fruit form whilst Pattaneteang farmers did not. On the other hand, Pattaneteang farmers sold in powder form and the Campaga farmers did not. Farmers in both villages also made use of coffee waste products. The skins of the coffee fruit were all put in one area, which was made into a compost heap. When the coffee beans decomposed they were considered ‘healthy’ for the soil. With healthy soil, the coffee plants would grow better, resulting in more and better-quality coffee.

C.5 Marketing

Marketing is the activity, set of institutions and process for communicating, delivering and exchanging offerings that have value for customers, clients, partners and society at large. Marketing commonly involves advertising and promoting products. The farmers in both villages sold coffee; however, they did not conduct market research. Neither group researched consumers’ needs and preferences. In Pattaneteang, the farmers promoted their products through minimal advertisement. In Campaga, the farmers did not advertise at all, rather, they simply sold to, and negotiated prices with, consumers directly.

Marketing in Pattaneteang

The farmers in Pattaneteang had three key markets. Their first and most important market was in Makassar, where they sold to very large distributors. Their second-most important market was in Bantaeng, where they sold to medium-sized distributors. Their least important market was in the village of Pattaneteang itself, where they usually sold their coffee to individual buyers in the form of roasted beans or powder. To the large distributors in Makassar and Bantaeng they sold the coffee in bean form but unroasted. The farmers in Pattaneteang used minimal advertising and promotion by way of travelling to Makassar to find agents of distributors, to whom they promoted their coffee. The agent then asked the distributor whether they were interested or not. The farmers of Pattaneteang sold their coffee in two different categories to the distributors in both Makassar and Bantaeng.

However, when they sold to individual buyers they sold in three categories. To the distributors they only sold arabica and robusta beans. The farmers did not sell liberica as a separate category to the distributors. The reason behind this was that distributors bought coffee in extremely large amounts: usually well over a few tonnes at a time. Liberica was not produced as much and the farmers were unable to meet demand for many tonnes annually. Therefore, liberica coffee was integrated with robusta but only when sold to distributors. However, when the farmers sold locally, within Pattaneteang, they sold liberica coffee in its own category. Individual buyers of coffee in Pattaneteang would usually only buy a couple of kilograms, either in roasted bean or powder form. Despite liberica only being a minority crop, production could still easily keep up with this demand.

Farmers in Pattaneteang sold their coffee in a few different packages and sizes. Each size and each different type of package had a different price. Some packages were only used to sell coffee in a certain form. When selling to large distributors, Pattaneteang farmers sold coffee in large rice sacks, which were only used to sell coffee beans not powder or fruit. Another point was that rice sacks were only used to sell coffee to distributors not to individuals. Each rice sack contained about 115 kg of unroasted beans. No individual was ever likely to purchase such an amount, therefore, rice sacks were only used to sell to distributors. To individuals, Pattaneteang farmers sold in either a tin can or a plastic bag. Roasted coffee beans were commonly sold in tin cans whilst powder was regularly sold in plastic bags. However, coffee powder was also sold in tin cans and the beans were also sold in plastic bags. When coffee was sold in tin cans, the can would usually contain about 20 L of beans or powder. However, this varied. When coffee was sold in plastic bags, the weight varied anywhere from a couple of hundred grams up to about 5 kg.

Marketing in Campaga

Likewise, the farmers in Campaga also had three markets. Their primary market was the medium-sized distributors in Bantaeng to which they sold their coffee. Their second-most important market was the traditional market in Bantaeng, where they had a stand and sold coffee in powder form to individual consumers. Their third and least significant market was in the village of Campaga itself, where they sold to individual buyers. The farmers of Campaga sold only in fruit form to the distributors. They sold neither coffee beans nor powder to the distributors in Bantaeng. However, in the traditional market in Bantaeng they sold coffee only in powder form. In Campaga itself, farmers sold coffee to individual buyers in all three forms: fruit, bean and powder. However, they rarely sold powdered coffee within their village because most of the coffee they kept was for self-consumption. Although never explicitly mentioned, I believe that Campaga farmers did very minimal market research. The possible reason being that they chose to only sell coffee powder in the traditional market. This could be because they assumed individuals preferred to buy coffee which could be instantly used instead of buying fruit or beans, which needed further processing.

Just like with the Pattaneteang farmers, Campaga farmers had different categories of coffee for each of their three markets. When they sold to the medium-sized distributors in Bantaeng, they only sold two categories: arabica and robusta. Also, as previously mentioned Campaga farmers only sold in fruit form to large distributors. This meant they only sold arabica and robusta to the distributors. According to the farmers, liberica was produced in such small amounts that they chose not to sell it to distributors. In the traditional market, the only kind of coffee sold was robusta and it could only be bought in powder form. In Campaga village, certain individuals could buy any one the three types of coffee in any one of its three forms. However, the farmers did not regularly sell to individuals in their village because much of the coffee that they kept was for self-consumption.

Campaga farmers sold their coffee in a variety of different packages and sizes but only sold coffee packaged in rice sacks to distributors. It is interesting to note that the farmers did not have a set weight of coffee that they sold per sack to distributors, unlike the Pattaneteang farmers who sold 115 kg of coffee per sack. What's even more interesting is that Campaga farmers did not set price by weight but, rather, by volume: how much coffee was in the rice sack. If it was half full they might have sold it for IDR 15,000 (± USD 1) while if it was full they might sell for IDR 30,000 (± USD 2); which seemed like quite a strange strategy. This was only done when they were selling to the distributors in Bantaeng. When the farmers sold in the traditional market they sold per kilogram, in plastic bags, or they sold 20 L tin cans of coffee for a set price. In their village, farmers sold per kilogram in plastic bags. Or they sold 20 L tin cans of coffee for a set price. Campaga farmers only used rice sacks to sell coffee in fruit form; they used tin cans and plastic bags to sell coffee in any one of the three forms: fruit, bean, powder.

Selling price and costs in Pattaneteang

In Pattaneteang, wages could be quite high during harvest periods. Each worker who participated in harvesting cost the farmer IDR 50,000 (± USD 3.50) per day. This cost included meals, drinks, cigarettes and the wage that the worker was paid at the end of the day. Costs of workers could increase greatly if the harvest period lasted as long as ten days. Each farmer with a hectare or more would usually employ at least a dozen people to harvest the coffee fruit. So the total cost of workers could be anywhere from IDR 600,000 to 6,000,000 ((± USD 41–410) depending on the amount of days of harvest. Transportation of the coffee products from Pattaneteang to Bantaeng would usually cost IDR 200,000 (± USD 13.50). Of course, the return trip doubled the cost of fuel. The total cost of wages for workers processing the coffee was much lower because less workers were hired for processing. However, each individual still cost IDR 50,000 (± USD 3.50). Processing could be done over a longer period whereas harvesting had to be done within a certain amount of time so the fruit was picked when perfectly ripe. The price to process a 20 L can was IDR 2,000 (± USD 0.14).

Pattaneteang farmers also sold coffee in large rice sacks to distributors in both Makassar and Bantaeng. Each rice sack contained 115 kg of coffee beans and each sack sold for IDR 35,000 (± USD 2.40). Each successful farmer in Pattaneteang sold two tonnes of arabica and one tonne of robusta during each harvest. Arabica was harvested three times a year, resulting in each farmer selling six tonnes annually. Robusta was only harvested once a year so that meant each farmer only sold one tonne annually. However, not all of the coffee produced was sold to large distributors. Some of the coffee was sold in the village in 20 L cans for IDR 50,000 (± USD 3.50). Coffee was also sold in plastic bags per kilogram: IDR 10,000 (± USD 0.70) for a kilogram of arabica, IDR 8,000 (± USD 0.55) for a kilogram of robusta, and IDR 6,000 (± USD 0.40) for a kilogram of liberica. A kilogram of coffee powder was the same price as a kilogram of coffee beans.

Selling price and costs in Campaga

In Campaga, the cost of wages was significantly lower because the farmers themselves participated in the harvesting of the coffee. Despite this, most workers who helped harvest the coffee fruit were still paid IDR 50,000 (± USD 3.50) per day. This cost included food, drinks, and cigarettes for the workers. However, there was still the cost for women who processed the coffee. Again, the costs of wages for the women were slightly lower because they didn’t smoke, meaning the farmers did not have to buy them cigarettes. The cost of wages for the women was roughly IDR 40,000 (± USD 2.70) per day. This cost included food, drinks and the wage itself. Transportation from Campaga to Bantaeng usually cost IDR 150,000 (± USD 10.20). Obviously, the return trip from Bantaeng doubled the price. Cost for canning per unit was about IDR 2,000 (± USD 0.14).

Campaga farmers sold their coffee in rice sacks to distributors. However, each rice sack did not have a set weight and the price varied depending not on the weight of the sack but on how much coffee was in the sack. Since Campaga farmers sold their coffee in fruit form to the distributors, the price was slightly lower than when Pattaneteang farmers sold their coffee. A full sack would usually be sold for IDR 30,000 (± USD 2). However, if the fruit in the sack was ripe red, then the price might increase. Since individual farmers in Campaga produced very little coffee, they usually formed small groups when selling to distributors. The group I interviewed consisted of seven farmers. When farmers sold locally in their village, they sold in three packages: 20 L and 10 L cans and plastic bags. One 20 L can sold for IDR 40,000 (± USD 2.70). A 10 L can sold for IDR 12,000 (± USD 0.80). Arabica, robusta and liberica were all sold per kilogram in Campaga: IDR 10,000 (± USD 0.68) for arabica, IDR 8,000 (± USD 0.55) for robusta, and IDR 6,000 (± USD 0.40) for liberica. The farmers also claimed that each harvest resulted in IDR 1–1.5 million (± USD 68–102) profit per farmers’ group.

C.6 Challenges

Farmers in both villages faced some difficult challenges. Most were common to both villages, however, there were a few that were unique to Pattaneteang.

Challenges in Pattaneteang

Pattaneteang faced quite a few challenges that had an impact on their coffee business. One was animals, which ate the coffee fruit and sometimes damaged or even destroyed the coffee plant. A lot of farmers in Pattaneteang had over 1 ha of coffee plantation. One of the farmers whom I interviewed claimed that he had over 2 ha of land. According to him, coffee plants which were on the edge of the village, furthest away from the centre were pillaged the most by animals. He also said that these animals ate his coffee fruit, which decreased his overall coffee production. The farmer assumed that the culprits of this pillaging were mostly, if not entirely, weasels and squirrels.

Another challenge was that the coffee plantation was over 2 ha. This made it hard to monitor the progress and health of all the trees. If one tree or a group of trees was sick, the farmer might not find out until it was too late.

Weather could also present a challenge in Pattaneteang. If it rained heavily for a prolonged period, the coffee fruit might be ruined or the quality decreased. If the quality decreased, then the selling price and total income of the farmers would also decrease. If it rained heavily during harvest periods, it could be quite difficult, and unpleasant, to pick the coffee fruit. Heavy rains during harvest periods can prolong the amount of time the harvest lasts.

A larger, more significant challenge was the slump of coffee selling prices during the last harvest of the year. Arabica was the only coffee in Pattaneteang which was harvested more than once a year, that is, three times. During the last harvest of the year, distributors tended to pay less for the coffee. This was because a lot of the distributors had already purchased colossal amounts of coffee during the last two harvests of arabica. The distributors didn’t only buy from Pattaneteang farmers, they had numerous suppliers. That was why the price of arabica greatly decreased during the last harvest of the year.

Branding, targeting and market segmentation

This was probably the greatest challenge for the farmers in Pattaneteang. But in both villages, the coffee was sold without branding and without targeting markets. The farmers from the two villages also did not conduct market segmentation (the process of defining and subdividing a large homogenous market into clearly identifiable segments). The farmers from Pattaneteang had the capability, the resources and the money to sell coffee with a special brand and even start a small registered company. However, branding, market targeting and market segmentation was a huge challenge for the Pattaneteang farmers. For the following reasons, Pattaneteang farmers chose to sell without branding and not to start their own official company for several reasons.

- Selling with brands required higher quality
- Quality needed to be looked after much more carefully
- More work in general

- Considerably harder
- Much more risk
- Selling only to individual consumers was much harder than selling to distributors and exporters who bought in bulk

Selling with an official brand required more work and was, without a doubt, more difficult. Coffee packets would require an appealing design that would attract customers and would need to be mass produced. New machinery would have to be purchased and new people needed to operate, and conduct maintenance of, such machines. Popularity for the product would be hard to achieve because usually most consumers did not buy new, unknown brands. Multiple, captivating advertising campaigns would need to be undertaken to obtain a strong brand image. This would cost a large sum of money. When buying branded products, consumers consider the appearance, presentation, price and brand image. Even if selling a brand for less, most consumers nevertheless only pay attention to quality.

Conducting business this way would result in higher risk. If the new product was negatively received, the notoriety of the newly established brand might spread quickly, which might in turn lead to consumers rejecting the product, with the ultimate result being the farmers carrying a large financial loss.

The farmers in Campaga did not have the capability to sell with a specific brand or start their own registered company. Therefore, this was only a challenge for Pattaneteang farmers.

Challenges in Campaga

Farmers in Campaga also faced a variety of challenges, just like the farmers in Pattaneteang. However, they faced less challenges overall. In Campaga, animals were also a problem. However, most farmers had less land than those in Pattaneteang but if one coffee plant was ruined by animals it would have a greater impact on the farmer. This was because with less land, one coffee plant was much more valuable. Campaga farmers also suspected that the animals were weasels and squirrels. The farmers did not have to face the challenge of extensive and time-consuming monitoring of sick trees and the productivity of each tree because their landholdings were much smaller, making it easier to monitor each individual tree.

Weather was also a challenge in Campaga. Heavy rain for long periods could greatly reduce the quality of the coffee fruit, making the overall selling price decrease, as well as the overall income of the farmers. If it was raining hard during a harvest, all tasks became difficult and unpleasant. One of the Campaga farmers I interviewed claimed that it was chaotic and crazy when people were harvesting coffee fruit during heavy rain. Heavy rain also increased the amount of time the harvest lasted.

In Campaga, coffee selling prices also decreased towards the end of the year. The only species of coffee harvested multiple times in Campaga was arabica. However, the selling price only decreased slightly because the second harvest took place around the middle of the year whilst the third harvest (like in Pattaneteang) occurred at almost the end of the year. However, most large distributors had not bought large amounts of coffee in the middle of the year so that when Campaga farmers sold their arabica from the second harvest to distributors in Bantaeng, the price only decreased slightly. Despite this, it still posed a challenge because the overall incomes of the farmers decreased owing to the slightly depreciated selling price of the coffee.

D. Recommendations

Farmers could increase sales as well as increase profits and revenue by indulging more in customer-orientated marketing. One negative aspect of the farmers' approach in Pattaneteang and Campaga was that they conducted very minimal marketing. The only form of marketing they did was promotion to the big distributors. Pattaneteang and Campaga farmers did not promote or advertise their products to individual buyers. Therefore, they had very few individual buyers, which made distributors their primary customers.

It is well known that selling to individuals is much more profitable than selling to distributors in bulk. For example, one bag of 115 kg of unroasted arabica coffee beans was sold for IDR 35,000 (± USD 2.40) while 1 kg of roasted arabica beans sold for IDR 10,000 (± USD 0.70) to individuals. Clearly, this shows that selling to individual buyers results in higher profit.

Perhaps a way of achieving this higher profit could be to prioritize sales to individual buyers. While it is not likely that individuals will become the primary customers because the market is limited and cannot absorb the entire local coffee harvest, it would likely nevertheless be worth the effort. Even selling regular unroasted coffee beans to individual buyers, per kilogram, will be more profitable then selling in bulk to distributors.

A very practical way of achieving this goal could be to set many small goals and achieve those small goals, which would result in ultimately achieving the greater goal. This process could be started by the farmers establishing a small registered company. Since Campaga farmers do not have the capability to do this, they could start a partnership with Pattaneteang farmers to share costs. When the company was officially established, the farmers would then have to purchase machinery for packaging and branding their products. Understanding the market, research, segmentation, targeting, promotion, advertising and building customer relationships would be of the utmost importance.

First, understanding the market. Farmers would need to understand how a coffee market worked. They would also need to understand their customers' preferences and the packaging they preferred.

The form and flavour of the coffee is also very important. Farmers must observe and understand the form of coffee consumers prefer—fruit, beans or powder—and the flavour, such as coffee mixed with sugar and milk powder, which is very popular in other brands and which are often packaged in small, single-serve plastic or paper sachets.

Price is another important factor: if the coffee is too cheap, customers could possibly refrain from buying as they might perceive it to be of lower quality; if too expensive, customers simply won't buy because they might not wish to spend too much on coffee. Finding the perfect price is crucial.

Understanding the market is commonly done through market research, which is the action of gathering information on consumers' needs and preferences. This is usually done through observation of the market, interviews with potential customers and established companies, and taste trials.

Market segmentation and targeting are also crucial matters. Market segmentation is the process of dividing one large homogenous market into multiple, clearly identifiable and definable segments. This includes dividing into multiple financial segments: poor, lower-middle, middle and upper-middle categories. Each segment may then be divided into multiple age groups, for example, teenagers, young adults, middle-aged adults and the elderly. Each age group can also be segmented by gender, for example, female and male teenagers. Each of these subgroups are likely to have different taste and expectations. For example, a lower-middle category male teenager might have a drastically different taste than an upper-middle category female young adult. The farmers would have to investigate each group and determine the preferences.

Serving one large market is extremely difficult and not very practical. Farmers would need to decide which subgroup or subgroups they were best equipped to serve and then target that specific market. They would have to take into consideration the profit and loss related to servicing each subgroup they target. For example, the international coffee company Starbucks targets middle and upper-middle categories. However, they target all age groups and genders in these two financial categories. The company is very profitable because they have targeted the right market.

Next is marketing itself. Marketing is not just the action of selling and buying products. It also involves advertising and promotion in order to benefit from a customer relationship. Building customer relationships is important because it makes customers loyal to the brand: they will only buy from competitors if your product is not available.

These recommendations would cost a lot to implement and could fail at any step. However, there is always a choice in life: you can be satisfied with what you have and stay that way or risk it all and win big! If this process is followed properly, the farmers would be able to increase their sales, revenue and profits.

E. Conclusion

Both the communities of Pattaneteang and Campaga operated successful coffee businesses within the limitations of their socio-economic settings. Nevertheless, improvements and expansion could be possible if carefully planned and executed. Of the three coffee species, arabica and robusta were undoubtedly the two most profitable. Arabica sold for a slightly higher price, however, robusta was sold in certain areas where arabica was not, making these two species equally important. Liberica was much less profitable and sold significantly less in the markets, therefore, liberica should be eliminated from being sold in the markets. Liberica takes up time and space but provides a lower return. That being said, liberica should still be kept for self-consumption as certain individuals prefer its bitter taste. The removal of liberica from the market would allow more space for arabica and robusta, resulting in higher profits.

Farmers in Pattaneteang could attempt to sell their coffee products under an established brand as this would result in a much higher profit. As previously mentioned, 115 kg of unroasted coffee bean sold for only IDR 35,000 (± USD 2.40) to distributors without a brand. Yet a mere 100 gm of powdered coffee sold as a brand could be sold to individuals for IDR 10,000 (± USD 0.70) each. Only Pattaneteang farmers have the financial capacity and resources to do this.

Farmers in Campaga could sell their coffee per unit using set weights, determining specific set prices for certain weights. An example of this new method would be to always sell 1 kg of roasted arabica beans for IDR 9,000 (± USD 0.60) instead of determining the sale price by the visual appearance of the amount of coffee in the package. The problem with selling per unit by visual amount is that selling prices will continuously fluctuate and the amount may appear more than it actually is, resulting in overpricing. Sale of coffee per unit using set weights, and specific prices for each weight, would ensure a consistent profit per unit of sale.

If the farmers of either village intend to implement any changes in the methods of production or marketing, both genders in the organisation should agree on the change. This is not to simply enforce gender equality but rather to safeguard the future operations of the coffee business. If not all members of the community agree on any change then they might lessen their commitment, quit or, worse, even sabotage operations. If certain members of the community are unaware of changes they might undertake tasks that are irrelevant or even harmful to the new procedure. An example to illustrate this is to think of the village’s coffee business as an enormous mechanical clock and the villagers as the complex array of interlocking wheels, gears and levers that allow it to operate. The clock will only function if all the parts work together harmoniously.

References

[BPS] Badan Pusat Statistik. 2011. *Kecamatan Tompobulu dalam angka 2011, Kabupaten Bantaeng, Sulawesi Selatan*. Jakarta: Badan Pusat Statistik.

Khususiyah N, Janudianto, Isnurdiansyah, Suyanto S, Roshetko JM. 2012. *Agroforestry and Forestry in Sulawesi series: Livelihood strategies and land use system dynamics in South Sulawesi*. Working paper 155. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. DOI: 10.5716/WP12054.PDF.

Kotler P, Armstrong G. 2010. *Principles of marketing*. Cambridge, UK: Pearson.

Perdana A, Roshetko JM. 2012. Agroforestry and Forestry in Sulawesi series: *Rapid market appraisal of agricultural, plantation and forestry commodities in South and Southeast Sulawesi*. Working paper 160. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. 17p. DOI: 10.5716/WP12059.PDF.

Rahmanulloh A, Sofiyudin M, Suyanto. 2012. *Agroforestry and Forestry in Sulawesi series: Profitability and land-use systems in South and Southeast Sulawesi.* Working paper 157. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program. DOI: 10.5716/WP12056.PDF.

Appendix 1: Questionnaire (in Indonesian)

Tabel pertanyaan untuk petani tentang penjualan kopi

Desa: ____

Kelurahan/Kecamatan: ____

Kabupaten: ____

Nama responden: ____

A. Produksi kopi yang diunggulkan

	Kopi jenis apa saja yang dijual?	Mana yang lebih diunggulkan? *(mendatangkan banyak keuntungan, paling besar mendukung ekonomi keluarga) → rank*	Kode
1			1
2			2
3			3
4			4
5			5

B. Penjualan jenis kopi yang diunggulkan

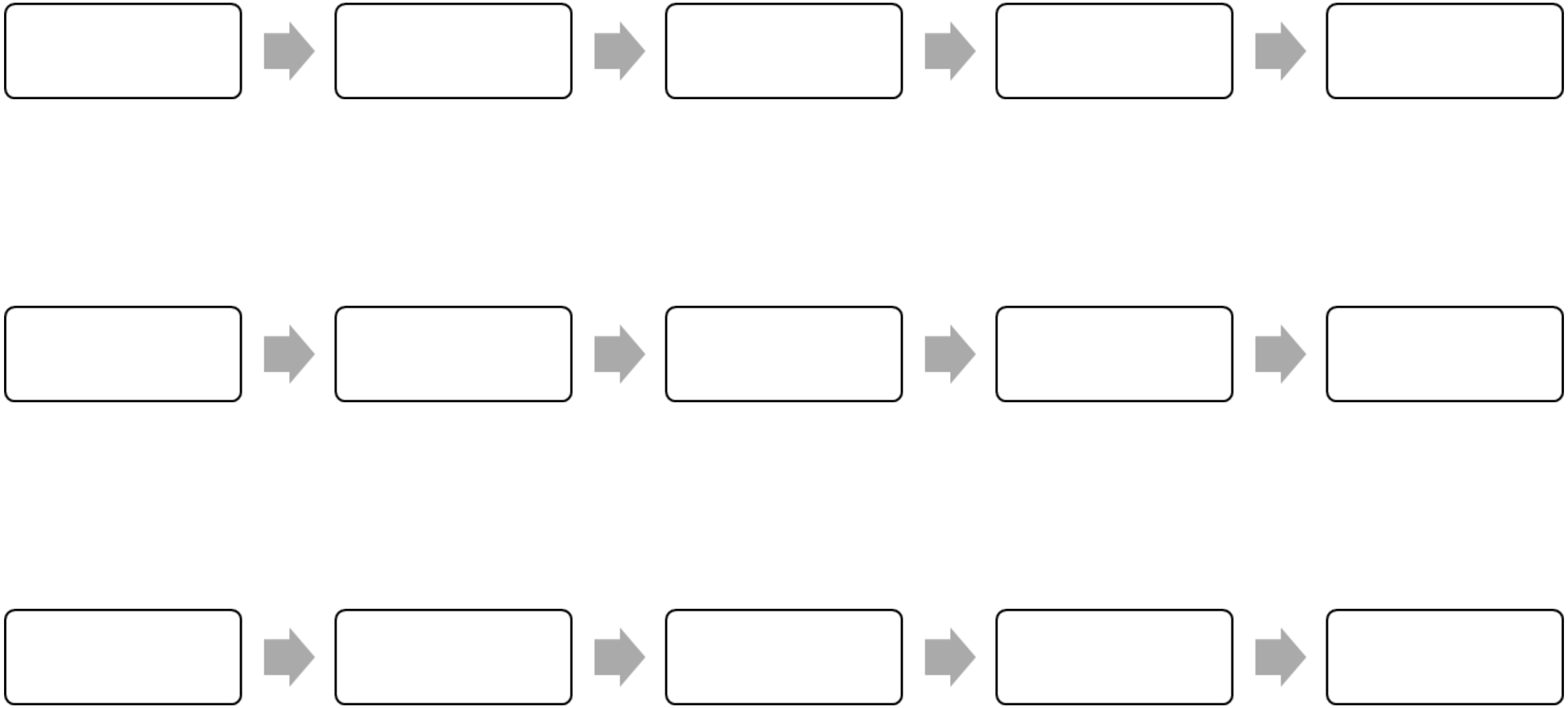
Kode	Berapa kali panen dalam setahun?	Berapa produksi rata-rata/ha/th? *(kg/liter/per ½ ha, enumerator perlu menyesuaikan hitungan)*	Setiap kali panen, berapa hasil panen yang dijual? *(kg/liter/%, enumerator perlu menyesuaikan hitungan)*	Bagaimana cara penjualannya? *(dipanen borongan oleh pedagang, diambil pengumpul/pedagang lokal, diambil pedagang besar, secara berkelompok, melalui koperasi)*
1				
2				
3				
4				
5				

C. Penambahan nilai kopi pasca panen

Kode	Apa saja penambahan nilai jualnya? *(penyortiran, pengupasan, pemipilan, penjemuran, pengeringan, pemasakan, atau pengepakan)*	Apakah ada pemanfaatan limbahnya? *(daun, batang, kulit buah, biji)*
1		
2		
3		
4		
5		

D. Alur penjualan jenis kopi yang diunggulkan

(termasuk harga jual, perubahan nilai/bentuk/ukuran, biaya dari perubahan tersebut, siapa yang menentukan harga dan pengguna akhir untuk tiap-tiap hasil kebun)



A. Apa peran perempuan dalam penjualan (menjual, menawar harga, mengirim, pengambil keputusan)?
B. Kesulitan yang ditemui dalam penjualan kopi secara umum?
C. Apakah menjual kopi dengan merek khusus? Dalam bentuk bubuk atau biji? Dalam berapa ukuran kemasan? Bagaimana kopi tersebut dipasarkan?
D. Siapa sasaran pembelinya? Apakah sudah diidentifikasi segmen pasar dan target pasarnya?
E. Bagaimana produk kopi tersebut diposisikan di pasar? Apa yang membedakannya dengan produk lain di pasaran?
F. Jika benar sudah dipasarkan, berapa harga jual, biaya-biaya, omzet penjualan, keuntungan?

Appendix 2: Newsletter article about the experience and findings of the internship

Publication: AgFor Newsletter, February 2015
Title of article – An intern amongst Bantaeng coffee farmers
Author – Nicholas A Roshetko
Web address -- http://worldagroforestry.org/newsroom/highlights/intern-amongst-bantaeng-coffee-farmers [for the English version]

Publication: AgFor Newsletter, February 2015
Title of article – Siswa Magang di Tengah Petani Kopi Bantaeng
Author – Nicholas A Roshetko
Web address -- http://worldagroforestry.org/newsroom/highlights/siswa-magang-di-tengah-petani-kopi-bantaeng [for the Indonesian version]

I had the opportunity to conduct field work with Aulia Perdana, marketing specialist, and Syarfiah Zainuddin, marketing facilitator, of the AgFor project in Bantaeng, Sulawesi. The objective of the work was to identify information related to market segmentation, targeting, positioning, and product differentiation for smallholding coffee producers in Bantaeng, South Sulawesi. The study was conducted through group discussions with key farmers and traders. A questionnaire was used to guide the discussions. The questionnaire sought information on current capacity, production, supply and demand, skills and knowledge on branding and promotion of the products, and their marketing strategy. The study served as fulfilment of an internship for my school, Academic Colleges Group School Jakarta, and was linked to my business studies course.

The internship occurred in June and July 2014. First, I met with the AgFor marketing team in the ICRAF Bogor office to discuss the objectives of the study and the draft questionnaire. The marketing specialist directed me to key literature resources regarding marketing segmentation, positioning, targeting and differentiation. That process greatly enhanced my understanding of the topic and the importance of the objectives of the study. On 1 July I flew with the AgFor team to Makassar, where we proceeded by car to Bantaeng City, four hours to the south. There we met the AgFor field team to review and finalize the questionnaire as well as develop the implementation schedule of the study. The following day we started the field study.

An hour's travel from the city of Bantaeng is the village of Pattaneteang. We met with a group of ten farmers and started the study. Pak Amiruddin and Pak Ramli were the key informants. They are both coffee farmers and local coffee traders. They conduct marketing with major coffee distributors in

Makassar. Pak Amiruddin and Pak Ramli act as marketing advisors providing marketing inputs to the other coffee farmers in the village. Following the group discussion, Pak Amiruddin showed us his coffee gardens and how he processed coffee.

Halfway between Pattaneteang and Bantaeng is the smaller village of Campaga. There we met with a group of seven people, all of whom were primarily farmers. They conducted a minimal amount of marketing. Campaga farmers sell their coffee in the villages, at the traditional market in Bantaeng City, and large distributors.

Three types of coffee are cultivated in both the villages of Pattaneteang and Campaga: arabica, robusta and liberica. Arabica is the most widely cultivated in both villages, followed by robusta; the least cultivated being liberica. Liberica is considered very bitter compared to the other two. It also yields less and has a lower price. Liberica is rapidly being replaced by clove, which is much more profitable for farmers.

Arabica is harvested three times a year in Pattaneteang whilst only two times a year in Campaga. In Pattaneteang, hundreds of tonnes of arabica are produced annually in the entire village. Campaga has a much smaller annual production of arabica, resulting in several dozen tonnes. Robusta is only harvested once a year in both villages. Pattaneteang has a very high yield of several hundred tonnes per year of robusta, whilst Campaga has a lower yet still high yield of several dozen tonnes of robusta. Liberica is harvested only once a year in both villages. Pattaneteang produces up to several dozen tonnes of liberica annually, while Campaga only produces several tonnes of liberica annually.

Almost all farmers cultivate coffee in the two communities. Based on studies conducted by the AgFor project, 27% of the land in Pattaneteang and 39% of the land in Campaga are monocultures or mixed coffee gardens. In Bantaeng, coffee monocultures provide a return to land of US $518 per year, while mixed coffee gardens provide a higher return of US $888. However, a monoculture system coffee system provides a return to labour of US $19 per day while a mixed coffee system provides a return to labour of US $16 per day.

There are four main market streams farmers in the two communities utilize, selling to: i) large distributors in Makassar; ii) small distributors in Bantaeng; iii) the traditional market in Bantaeng; and iv) people in their own respective communities. Each village only participates in three of the four. Pattaneteang sells coffee to large distributors in Makassar, to smaller distributors in Bantaeng, and to people in their community casually. Campaga farmers sell to distributors in Bantaeng, the traditional market in Bantaeng, and also casually to people in their community.

Undoubtedly, most of the coffee is sold to, and most of the profit results from, transactions with distributors in Makassar and Bantaeng. Greater per-unit profit is made when farmers sell to people in their own community and when they sell at the traditional markets. However, the demands from those markets are very limited. When selling to distributors, farmers sell their coffee for approximately Rp 35,000 per hundred kilograms while when selling to individuals in either their own respective community or traditional market, one kilogram goes for about Rp 10,000. When sold to distributors, coffee is sold raw, as either unroasted beans or just as fruit. When sold to individuals, the coffee is sold as roasted beans or powder. Less time and money is invested when selling to distributors as the coffee is harvested, then sold. When selling to individuals more time and money is invested as the coffee must be processed from a raw commodity to a finished product. Processing involves rinsing, drying, roasting and grinding, requiring a minimum of three days per batch. In summary, greater per-unit profit is made when selling coffee to individuals, however, selling to distributors is much more profitable because demand is much higher so much larger quantities of coffee are sold in a much less time-consuming manner.

Conducting the internship was a unique and interesting experience for me. As a student living in Bogor and going to school in Jakarta I was very impressed by the overall process of cultivation.

WORKING PAPERS WITH DOIs

2005

1. Agroforestry in the drylands of eastern Africa: a call to action
2. Biodiversity conservation through agroforestry: managing tree species diversity within a network of community-based, nongovernmental, governmental and research organizations in western Kenya.
3. Invasion of *prosopis juliflora* and local livelihoods: Case study from the Lake Baringo area of Kenya
4. Leadership for change in farmers organizations: Training report: Ridar Hotel, Kampala, 29th March to 2nd April 2005.
5. Domestication des espèces agroforestières au Sahel : situation actuelle et perspectives
6. Relevé des données de biodiversité ligneuse: Manuel du projet biodiversité des parcs agroforestiers au Sahel
7. Improved land management in the Lake Victoria Basin: TransVic Project's draft report.
8. Livelihood capital, strategies and outcomes in the Taita hills of Kenya
9. Les espèces ligneuses et leurs usages: Les préférences des paysans dans le Cercle de Ségou, au Mali
10. La biodiversité des espèces ligneuses: Diversité arborée et unités de gestion du terroir dans le Cercle de Ségou, au Mali

2006

11. Bird diversity and land use on the slopes of Mt. Kilimanjaro and the adjacent plains, Tanzania
12. Water, women and local social organization in the Western Kenya Highlands
13. Highlights of ongoing research of the World Agroforestry Centre in Indonesia
14. Prospects of adoption of tree-based systems in a rural landscape and its likely impacts on carbon stocks and farmers' welfare: The FALLOW Model Application in Muara Sungkai, Lampung, Sumatra, in a 'Clean Development Mechanism' context
15. Equipping integrated natural resource managers for healthy Agroforestry landscapes.
17. Agro-biodiversity and CGIAR tree and forest science: approaches and examples from Sumatra.
18. Improving land management in eastern and southern Africa: A review of policies.
19. Farm and household economic study of Kecamatan Nanggung, Kabupaten Bogor, Indonesia: A socio-economic base line study of Agroforestry innovations and livelihood enhancement.
20. Lessons from eastern Africa's unsustainable charcoal business.
21. Evolution of RELMA's approaches to land management: Lessons from two decades of research and development in eastern and southern Africa
22. Participatory watershed management: Lessons from RELMA's work with farmers in eastern Africa.
23. Strengthening farmers' organizations: The experience of RELMA and ULAMP.
24. Promoting rainwater harvesting in eastern and southern Africa.
25. The role of livestock in integrated land management.
26. Status of carbon sequestration projects in Africa: Potential benefits and challenges to scaling up.
27. Social and Environmental Trade-Offs in Tree Species Selection: A Methodology for Identifying Niche Incompatibilities in Agroforestry *[Appears as AHI Working Paper no. 9]*
28. Managing tradeoffs in agroforestry: From conflict to collaboration in natural resource management. *[Appears as AHI Working Paper no. 10]*
29. Essai d'analyse de la prise en compte des systemes agroforestiers pa les legislations forestieres au Sahel: Cas du Burkina Faso, du Mali, du Niger et du Senegal.
30. Etat de la recherche agroforestière au Rwanda etude bibliographique, période 1987-2003

2007

31. Science and technological innovations for improving soil fertility and management in Africa: A report for NEPAD's Science and Technology Forum.
32. Compensation and rewards for environmental services.
33. Latin American regional workshop report compensation.
34. Asia regional workshop on compensation ecosystem services.
35. Report of African regional workshop on compensation ecosystem services.
36. Exploring the inter-linkages among and between compensation and rewards for ecosystem services CRES and human well-being
37. Criteria and indicators for environmental service compensation and reward mechanisms: realistic, voluntary, conditional and pro-poor
38. The conditions for effective mechanisms of compensation and rewards for environmental services.
39. Organization and governance for fostering Pro-Poor Compensation for Environmental Services.
40. How important are different types of compensation and reward mechanisms shaping poverty and ecosystem services across Africa, Asia & Latin America over the Next two decades?
41. Risk mitigation in contract farming: The case of poultry, cotton, woodfuel and cereals in East Africa.
42. The RELMA savings and credit experiences: Sowing the seed of sustainability
43. Yatich J., Policy and institutional context for NRM in Kenya: Challenges and opportunities for Landcare.
44. Nina-Nina Adoung Nasional di So! Field test of rapid land tenure assessment (RATA) in the Batang Toru Watershed, North Sumatera.
45. Is Hutan Tanaman Rakyat a new paradigm in community based tree planting in Indonesia?
46. Socio-Economic aspects of brackish water aquaculture (*Tambak*) production in Nanggroe Aceh Darrusalam.
47. Farmer livelihoods in the humid forest and moist savannah zones of Cameroon.
48. Domestication, genre et vulnérabilité : Participation des femmes, des Jeunes et des catégories les plus pauvres à la domestication des arbres agroforestiers au Cameroun.
49. Land tenure and management in the districts around Mt Elgon: An assessment presented to the Mt Elgon ecosystem conservation programme.
50. The production and marketing of leaf meal from fodder shrubs in Tanga, Tanzania: A pro-poor enterprise for improving livestock productivity.
51. Buyers Perspective on Environmental Services (ES) and Commoditization as an approach to liberate ES markets in the Philippines.
52. Towards Towards community-driven conservation in southwest China: Reconciling state and local perceptions.
53. Biofuels in China: An Analysis of the Opportunities and Challenges of Jatropha curcas in Southwest China.
54. Jatropha curcas biodiesel production in Kenya: Economics and potential value chain development for smallholder farmers
55. Livelihoods and Forest Resources in Aceh and Nias for a Sustainable Forest Resource Management and Economic Progress
56. Agroforestry on the interface of Orangutan Conservation and Sustainable Livelihoods in Batang Toru, North Sumatra.
57. Assessing Hydrological Situation of Kapuas Hulu Basin, Kapuas Hulu Regency, West Kalimantan.
58. Assessing the Hydrological Situation of Talau Watershed, Belu Regency, East Nusa Tenggara.
59. Kajian Kondisi Hidrologis DAS Talau, Kabupaten Belu, Nusa Tenggara Timur.
60. Kajian Kondisi Hidrologis DAS Kapuas Hulu, Kabupaten Kapuas Hulu, Kalimantan Barat.
61. Lessons learned from community capacity building activities to support agroforest as sustainable economic alternatives in Batang Toru orang utan habitat conservation program (Martini, Endri et al.)

62. Mainstreaming Climate Change in the Philippines.
63. A Conjoint Analysis of Farmer Preferences for Community Forestry Contracts in the Sumber Jaya Watershed, Indonesia.
64. The highlands: a shared water tower in a changing climate and changing Asia
65. Eco-Certification: Can It Deliver Conservation and Development in the Tropics.
66. Designing ecological and biodiversity sampling strategies. Towards mainstreaming climate change in grassland management.
67. Towards mainstreaming climate change in grassland management policies and practices on the Tibetan Plateau
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71. Les unités de transformation des produits forestiers non ligneux alimentaires au Cameroun. Diagnostic technique et stratégie de développement Honoré Tabuna et Ingratia Kayitavu.
72. Les exportateurs camerounais de safou (Dacryodes edulis) sur le marché sous régional et international. Profil, fonctionnement et stratégies de développement.
73. Impact of the Southeast Asian Network for Agroforestry Education (SEANAFE) on agroforestry education capacity.
74. Setting landscape conservation targets and promoting them through compatible land use in the Philippines.
75. Review of methods for researching multistrata systems.
76. Study on economical viability of *Jatropha curcas* L. plantations in Northern Tanzania assessing farmers' prospects via cost-benefit analysis
77. Cooperation in Agroforestry between Ministry of Forestry of Indonesia and International Center for Research in Agroforestry
78. "China's bioenergy future. an analysis through the Lens if Yunnan Province
79. Land tenure and agricultural productivity in Africa: A comparative analysis of the economics literature and recent policy strategies and reforms
80. Boundary organizations, objects and agents: linking knowledge with action in Agroforestry watersheds
81. Reducing emissions from deforestation and forest degradation (REDD) in Indonesia: options and challenges for fair and efficient payment distribution mechanisms

2009

82. Mainstreaming climate change into agricultural education: challenges and perspectives
83. Challenging conventional mindsets and disconnects in conservation: the emerging role of eco-agriculture in Kenya's landscape mosaics
84. Lesson learned RATA garut dan bengkunat: suatu upaya membedah kebijakan pelepasan kawasan hutan dan redistribusi tanah bekas kawasan hutan
85. The emergence of forest land redistribution in Indonesia
86. Commercial opportunities for fruit in Malawi
87. Status of fruit production processing and marketing in Malawi
88. Fraud in tree science
89. Trees on farm: analysis of global extent and geographical patterns of agroforestry
90. The springs of Nyando: water, social organization and livelihoods in Western Kenya
91. Building capacity toward region-wide curriculum and teaching materials development in agroforestry education in Southeast Asia
92. Overview of biomass energy technology in rural Yunnan (Chinese – English abstract)
93. A pro-growth pathway for reducing net GHG emissions in China
94. Analysis of local livelihoods from past to present in the central Kalimantan Ex-Mega Rice Project area
95. Constraints and options to enhancing production of high quality feeds in dairy production in Kenya, Uganda and Rwanda

2010

96. Agroforestry education in the Philippines: status report from the Southeast Asian Network for Agroforestry Education (SEANAFE)
97. Economic viability of Jatropha curcas L. plantations in Northern Tanzania- assessing farmers' prospects via cost-benefit analysis.
98. Hot spot of emission and confusion: land tenure insecurity, contested policies and competing claims in the central Kalimantan Ex-Mega Rice Project area
99. Agroforestry competences and human resources needs in the Philippines
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