

# Commodity Status Report: Rubber

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This report was prepared for  
The Kalimantan Forests and Climate Partnership



**Australia Indonesia Partnership**  
Kemitraan Australia Indonesia



This report was prepared in accordance with the guidelines at the time of writing, including the overview of the KFCP project below. This research was carried out in collaboration with the Governments of Australia and Indonesia, but the analysis and findings in this paper represent the views of the author/s and do not necessarily represent the views of those Governments.

Australia's International Forest Carbon Initiative is a key part of Australia's international leadership on reducing emissions from deforestation. The Initiative will support international efforts to reduce deforestation through the United Nations Framework Convention on Climate Change (UNFCCC). It aims to demonstrate that reducing emissions from deforestation and forest degradation can be part of an equitable and effective international agreement on climate change. A central element of this is the Initiative's focus on developing practical demonstration activities in our region, particularly in Indonesia and Papua New Guinea.

Indonesia and Australia are working together under the Indonesia- Australia Forest carbon Partnership (The Partnership) to support international efforts on REDD through the UNFCCC. A key focus is on practical demonstration activities to show how REDD can be included in a future global outcome on climate change. Activities under the partnership are funded through Australia's \$200 million International Forest Carbon Initiative (IFCI) administered by the Australian Department of Climate Change (DCC) and AusAID.

Australia has committed \$30 million over four years to the Kalimantan Forests and Climate partnership (KFCP). Under the KFCP, Australia and Indonesia are working together to develop and implement a large scale REDD demonstration activity in Central Kalimantan. The KFCP is the first REDD demonstration activity of its kind in Indonesia. It aims to demonstrate a credible, equitable and effective approach to reducing emissions from deforestation and forest degradation, including from the degradation of peatlands, than can inform a future global outcome on climate change. With an overall funding target of \$100 million, the KFCP aims to rise remaining funding through contributions from or coordinated actions with the private sector or other donor countries.

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## Introduction

A key principle of REDD and KFCP is that, at the least, communities do not experience negative economic and/or social impacts due to REDD and KFCP interventions; at the best, communities will benefit both economically and socially from REDD. The development of REDD incentives to prevent Green House Gas (GHG) emissions in the KFCP work area is expected to influence the land use patterns of the villages in the area by reducing and/or stopping current land use trends such as clearing peat lands for agriculture and tree cropping (rubber and oil palm). These changes will be voluntary based on benefits (direct and indirect) from REDD payments. In order to support this change, KFCP has included an alternative livelihoods initiative in its project plan. This initiative will work with villagers to identify and increase sources of incomes that reduce and/or prevent GHG emissions. This initiative also supports the key principle that local communities will not be adversely affected by REDD and/or the KFCP pilot project.

The baseline assessment (CARE, 2009) and community participatory livelihood appraisals (Suyanto, et.al. 2009) have shown that Rubber is a key commodity in the KFCP work area. Therefore, KFCP commissioned GRM to conduct supply chain analysis for rubber in order to determine a) the potential for developing the supply chain to improve livelihoods in the communities without increasing GHG emissions and b) key intervention areas for the supply chain. This report provides data on the value chain aspects of rubber and suggestions for improving the value chain in order to improve livelihoods, within the framework of sustainable management of peat lands.

This report is based on a literature review of relevant data collected by:

- Previous projects (including the Dutch funded CKPP project); by
- CARE, GRM, and ICRAF during the design phase;
- Information gained from meetings and interviews conducted by the Livelihood Consultant (team leader) and Value Chain Consultant at the end February 2010; and
- The results of 2 value chain related workshops.

The report is organized into two sections.

Section A provides a summary of the findings of the market chain assessment. These findings are based on FAO guidelines for participatory value chain assessments (2007) and consist of six key performances indicators. These indicators are (1) The enabling environment; (2) Technology; (3) Market structure; (4) Chain coordination, (5) Farm and Firm management; and (6) Inputs.

Section B provides summaries of the objectives and results of the two key value chain workshops, the Rubber Value Chain Workshop and Rubber Grading Workshop held after the value chain assessment was completed.

## Background

Rubber production in the area dates back from the 1910's and gradually expanded along the river levees on mineral soils. Smallholder rubber on peat is recent and started after the mega rice project collapsed. Furthermore smallholder rubber plots, stimulated by high rubber prices after 2005 and rubber adapted to peat soils, have continued to be opened in shallow peat and are encroaching on deep peat (Suyanto. et.al. 2009).

Rubber is a key source of livelihoods for communities in the KFCP project area, in particular in the Block A. In Block A, 37 percent of the households claim that rubber is their main source of income and another 17 percent claim rubber as their secondary source of income. The figures for the block E are lower, with 12 percent and 9 percent respectively.

Table 1 underlines that a majority of farmers in Block A rely on rubber and that rubber in Block A is rapidly expanding onto peat lands which is leading to increased use of fire. Aside from the GHG emissions caused by these fires, they are, particularly during El Nino years, causing significant damage to recently planted rubber on peat soils (58% is burned by uncontrolled fire). This makes further investment in sustainable peat land management urgent.

**Table 1.** Key rubber related indicators.

Key Indicators	Block A	Block E
<b>Income/livelihoods</b>		
Rubber as primary income	37%	12%
Rubber as secondary income	17%	9%
Rubber as primary or secondary income	54%	21%
<b>Forest cover / land use</b>		
Rubber plot	49%	67%
Crop distribution (Plots having rubber)	56%	69%
Rubber plot	1047 ha	810 ha
Rubber plot	47%	38%
Rubber plot on peat land (of total rubber plot)	52%	4%
% of rubber plots burned by uncontrolled fire	49%	58%

Source: CARE baseline report (2009)

This data indicates that interventions that can increase incomes from existing rubber can have a positive economic impact for over half the families in Block A. At the same time, these interventions have to take into account the potential for increasing incentives to open up deep peat for rubber, and be designed to focus on existing rubber plots and sustainable, emission neutral management practices.

## Value Chain Analysis

To analyze chain performance, one must identify its main drivers and then assess the extent to which they contribute, positively or negatively, to maximizing the efficiency and effectiveness of the value chain. An efficient and effective rubber value chain will supply the quantity and quality of rubber demanded by the market and ensure that

proceeds flow to all stakeholders in an economically optimal manner. Taking into account economic, organizational and technological aspect of the commodity, the FAO guidelines suggest six major performance drivers as key factors that influence the ways in which a commodity chain is organized and operates. They are:

- The enabling environment – policies, institutions, and support services that affect the value chain;
- Technology – methods, processes, facilities, equipment, and current state of technology of rubber cultivation;
- Market structure–the competitiveness of the market, barriers to entry or exit, and distribution of power within the value chain;
- Coordination - the harmonization of the physical, financial, and information flows, and property right exchanges along a chain;
- Firm management–the ability of individual firms and farms to efficiently allocate resources, respond to consumer needs and adapt to market changes; and
- Inputs - availability and costs of the main inputs (land, labor and capital inputs).

The above performance indicators are employed here to organize the analysis of the rubber value chain in KFCP area and develop suggestions for interventions to improve the value chain for the benefit of all stakeholders.

In addition, this section will include a discussion on the impact these interventions may have on demand to exploit deep peat for rubber cultivation and present suggestions to avoid supporting unsustainable, GHG emitting exploitation of deep peat.

### **A.1. THE ENABLING ENVIRONMENT**

The FAO (Filho and Silva, 2007) define the enabling environment as policies, institutions and support services that form the general setting under which enterprises are created and operate. Depending on the policies and institutions established, the external environment can either support or harm the performance of a commodity chain.

At policy level the rubber industry in Indonesia comes under the Estates Crop Directorate of the Ministry of Agriculture. Of the 18 primary crops under the umbrella of the Directorate General of Estate Crops, Oil Palm is the top priority for support and development and rubber is the sixth priority (Budiman and Permune, 2007).

Policy support for the rubber industry comes from policy formulation at the Ministry of Agriculture and the Ministry of Industry and Trade. For the rubber sector, the following policies are important for the sectors:

- The regulation of the Minister of Agriculture (*Permentan*) no 38/2008: Guideline for natural rubber processing and marketing. This regulation set the standards/procedures to process natural rubber.

- The regulation of the Minister of Trade (*Permendag*) no 53/2009: quality control in SIR (Standard Indonesian Rubber) trading. Both traders and processors are required not to trade/buy non-standard product. Both traders and processors should work with a rubber certification agency - to be set up by the government - to conform to the regulation. The regulation aims to reduce the demand of rubber that uses non-recommended coagulants.

Our interviews suggest that the value chain stakeholders are skeptical of the effectiveness of the above regulations on the ground. There are two main reasons for their skepticism. First, the infrastructure for monitoring the regulations does not exist, and second, that when there is a high demand of rubber (such as at the time of survey), low quality rubber will always find its way into the market somehow. Factories in the area continue to accept poor rubber due to overcapacity in rubber processing

The Kapuas District government is beginning to make an effort to implement these regulations. The Kapuas District Department of Industry, Trade, and Cooperatives is in the process of setting up a unit to monitor and oversee the quality of rubber being produced and traded in the district. This unit may be operational in 2011. In addition, Rubber Traders need to be licensed and hold a *Surat Tanda Pendaftaran Pedagang Bokar* (STPPB) from the district Department of Industry, Trade, and Cooperatives in order to trade and sell rubber. In the future, factories may begin to refuse to purchase rubber from unlicensed traders.

At the institutional level, there are no inter-governmental/intra organization bodies to manage policy and implementation of rubber development activities in Indonesia<sup>1</sup>. At the processor level, GAPKINDO (*Gabungan Perusahaan Karet Indonesia*), the Rubber Producers Association of Indonesia, works to develop and improve production, processing and marketing of Indonesian natural rubber. GAPKINDO has a significant role in the following areas: quality certification systems, waste water treatment, packaging, shipping, and arbitration services. The association is a strong lobby group with the government and also helps put together foreign funded technical assistance for its members. Members of GAPKINDO comprise of rubber plantations (state-owned, private-national as well as foreign-capital), processors, exporters, traders (brokers, dealers) and buyer representative. The GAPKINDO office in Banjarmasin covers both Central and South Kalimantan. It represents 11 exporters/processors that work in both provinces.

GAPKINDO essentially aims to develop streamlined policies for their members to regulate quality. For this to be effective Districts are developing enabling policies through PERDA (District regulations) on quality standards and to regulate markets (*tata niaga*). However enforcement is lacking and, in the case of Kapuas at the time of the value chain assessment, continued supply of large quantities of low quality rubbers is being supplied to and bought by the factories. Farmers report that even if they receive lower prices, from a cash flow perspective, it still makes sense to sell heavier, poor quality rubber.

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<sup>1</sup> Similar to CSP (Cocoa Sustainability Partnership) for cocoa sector.

## **General Options**

The development of a “rubber marketing chain” forum/association would be a large step in improving the enabling environment in the rubber sector. Such a forum/association would bring together a wide spectrum of stakeholders related to rubber at district level. Kapuas district is one watershed following the Kapuas River, which makes this opportune. A key task of such a forum/association would be to act as a focal point for providing mutual support among stakeholders to improve the functioning of the rubber market chain. This support could include sharing information and negotiating value chain practices among stakeholders, supporting the implementation of government policies, and providing a forum for policy dialogue / policy feedback with district government<sup>2</sup>. The purpose of the organization would be similar to GAPKINDO, but with the involvement of other value chain actors beyond traders and processors<sup>3</sup> and working at district level.. The CSP (cocoa sustainability partnership) is a model that works in the cocoa sector.

Establishing such a forum is beyond the scope of KFCP. However, KFCP can play a catalytic role by supporting/facilitating meetings/trainings between all stakeholders (such as was done during the pilot phase) and facilitating GAPKINDO and other stakeholders to develop such a forum. The general desire from stakeholders for such a forum exists, but the major issue is finding funding for the meetings such a forum requires. The stakeholders need assistance in taking ownership for this type of forum and finding a sustainable source of funding for it. KFCP can not take responsibility for creating this forum, however, continued meetings and trainings (such as farmer field schools, joint evaluations, etc.) that bring together the different stakeholders in the value chain will help to improve the business environment of the rubber sector. These improvements can be sustainable if they result in changes such as farmer’s selling better quality rubber directly to factories.

## **A.2. TECHNOLOGY**

The FAO document (Filho and Silva, 2007) suggests that the evaluation of the ‘technology’ driver should consider methods, processes, facilities, equipment, and current state of technology of rubber cultivation and processing used in the commodity chain operations, This should also include aspects related to research and development (R&D) and technology adaptability.

In the area of research and development, the Indonesian Rubber Research Institute (IRRI) plays a significant role. IRRI is a research agency under the Ministry of Agriculture. The IRRI research stations have rubber gardens, nurseries and

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<sup>2</sup> At this point, the major feedback for local government from value chain stakeholders

<sup>3</sup> Further discussion on commodity forum is found in: Commodity associations: a tool for supply chain development? (FAO, 2009)



experimental plantations. IRRI also works with NGOs undertaking research projects on improving smallholder rubber cultivation. For the growers, IRRI provide high quality clone/planting material.

The current technology in use in the KFCP project location is basic and traditional. The following knowledge and technology of rubber agriculture is practiced (Suyanto et.al 2009):

- *Mixed systems of rubber, rattan and other trees. (Agro-forests).* Most of the mixed systems are in old rubber gardens that had not been established using any specific spacing of the plants. While more than 50 percent of the total tree basal area is rubber, tree diversity is high for the remaining of trees, which include both fruit and timber trees. These trees are derived from the native forest vegetation and are selectively maintained from spontaneous establishment. As well as providing additional income, these trees serve as poles for growing rattan. While research on these systems is extensive, adoption by farmers of improved/planned mixed systems remains limited. Most farmers tend to prefer to grow traditional jungle rubber systems.
- *Monoculture rubber.* The practice of rubber monoculture in the area is recent, and the plots devoted only to rubber are not yet productive. Farmers who tend to specialize are adapting monoculture as a key practice. In some of the recent plantings in Block A, monoculture is combined with drainage and the use of mechanical weeding. The farmers' knowledge and management skills are improving, although some of their practices are adapted from their poly-culture background. In particular, progressive farmers are investing in larger scale monoculture on peat lands.
- *Tapping process:* Farmers use a variety of traditional methods for tapping their trees. Very few, if any, use recommended tapping methods. The recommended methods of rubber tapping have the potential of increasing yields from 25% to over 100%.

The Farmers in the region do not tap their rubber trees continuously throughout the year. They report that they to stop tapping when floods swamp rubber gardens, usually from October to November and from March to April.

The yield per day of tapping latex depends on the climate and the condition of both the rubber trees and the rubber garden. A long rainy season will reduce production as farmers would not tap during this season, and rubber production decreases as trees grew older.

- *On Farm Processing:* On farm processing is traditional. Rubber is typically produced and sold by farmers in the form of cup lumps or lump slabs. Latex after tapping is collected in cups of coconut shell or plastic bottle and either allowed coagulating naturally or with coagulant. Every 3-5 days, the coagulated rubber (cup lump) is collected, soaked in water during storage and sold to the traders.

Most farmers use a catalyst to speed up the coagulation process (natural coagulation takes from eight to nine hours). The recommended coagulants are forms of formic acid. However formic acid is rarely used in real practice. According to our interviews, most rubber produced by smallholders in the project work area is of low quality. This is in large part due to the use of non-recommended coagulants (such as fruit juice, kaolin, alum and sulfuric acid from batteries). Farmers also reduce quality by soaking rubber in water and in some case adding pieces of tree bark or sand to the rubber in order to increase the weight. In 2009, prices at producer level were Rp. 2400 to 4000 per kilogram (Dohong et al, 2009).

- *Marketing Technologies:* Marketing technologies are traditional. Farmers in the KFCP area are do not have access to local market information and rely on negotiating with local traders. The local traders are able to receive some pricing information (the average price of all 11 GAPKINDO factories) through SMS from GAPKINDO. However, they are often tied to one factory, from which they receive the capital for purchasing raw rubber from local farmers.

The provincial and district level Estates Crop Offices are mainly responsible for the dissemination of information, technology, and technical skills to rubber farmers. Our interviews with relevant officers in Palangka Raya and Kapuas District suggest that extension services are very limited. Budget allocations are limited and, according to our respondents, the number of extension officers is not sufficient to cover their areas; extensions workers are assigned to cover a number of sub-districts and work with various agriculture commodities.

Rubber smallholders in the project area have received some training from extension services and other development projects. The effectiveness of these is questionable, as the short-term nature of the interventions does not allow for proper guiding of the learning process. CERD, CARE, Wetlands International Indonesia Programme (WI-IP), BOS and local NGOs are the key NGO that work and run projects in the area.

Farmers also learn through their informal farmer networks. Farmers often obtain clones, equipment and information on inputs from other farmers. Knowledge is further developed through endogenous experimentation. A clear example of this is the use of spill berms by farmers. The process they used to adopt spill burns included trial and error and sharing of experiences.

### **General Options**

Improving their access to technology and information (for example, better tapping practices, using better planting material, better rubber management, and better processing) will require increased financial resources for and capacity of agencies that provide technology and information. In addition, better financial services are required to help the local farmers to adopt new tools, agro-inputs, and to replant. Access to technology, information, and loans will enable the farmer to access the best agricultural practices that are compatible with the local context.

Unfortunately service providers for both information and finance are lacking in the project area. Access to technology and information, as previously noted, is mainly provided by government extension officers, which is limited in terms of numbers, coverage and quality.

Improving access to technology and information for the community can be achieved by working together with government extension officers and improve the quality, coverage and intensity of their work. In addition, local NGOs or cooperatives can play a role here. Cooperatives are preferred because these are member based. However in cases where community organizations are weak, local NGOs can assist in initiating joint marketing schemes.

NGOs or cooperatives (local farmers) can be trained as business service providers and providing fee-based service for the farmers. Since such systems will provide income for the NGO/cooperative, this approach can be self-sustainable.

Furthermore, facilitation and negotiation skill need to be improved so that NGO/village based cooperatives (KUD where they are in existence) can play a role to develop trust and facilitate a transparent trading process in the area. Again, since the service will be on demand fee basis, this initiative can be expected to be self-financed and sustainable.

KFCP can support the improvement of technologies in rubber production and marketing through providing Farmer Field Schools (FFS) during the life of the project. The FFS would impart key information to local farmers, train farmer trainers, and be a model for local extension services. A successful FFS program over the life of the project would be able to improve the skills and practices of farmers for the future resulting in increases in production and sales price.

KFCP and the Farmer Field Schools can also work with farmers to improve their financial and business management (and thus reduce the need for loans) as well as continue to explore ways to develop farmers' access to loans and capital.

The sustainability/continuation of the FFS would then depend on two elements. The first would be the Farmer Field Schools ability to train local farmers as trainers and provide them with some institutional support. This could be done, as mentioned above, through cooperatives or the proposed *BUMDes* and supported with REDD payments. The second element would be the interest of local government to adopt FFS practices into their work systems and budgets. KFCP can support lobbying for this through the village planning (*Mushrembang*) process.

### **A.3. MARKET STRUCTURE**

Filho and Silva (2007) suggest that the evaluation of market structures should aim to reveal the existence of competitive markets or concentrated markets, and also address qualitative aspects regarding the existence of barriers to entry and the distribution of power among value chain actors. Competitive markets provide the incentives for firms to seek the type of intra and inter-organizational relationships that favor effective and efficient market chain performance. Effective and efficient market chains provide the quality and quantity of product demanded by the market at the best prices for all

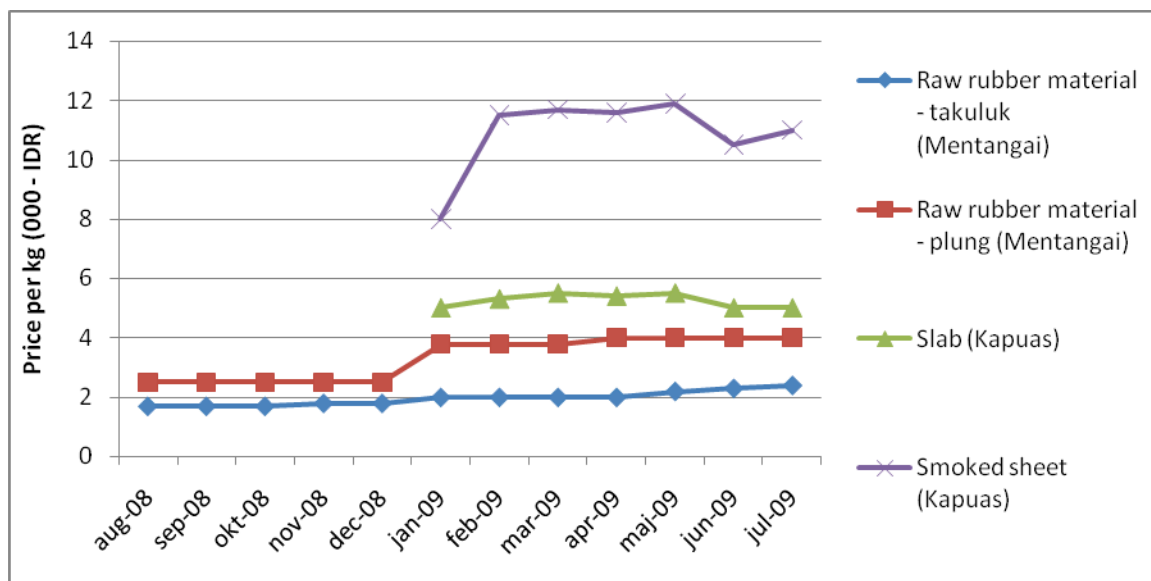
stakeholders. In other words, better market access allows farmers to make better decisions on where, to whom, and for how much they will sell their product, and thus enhance their bargaining positions

The market structure sets the key elements that determine prices and how information is shared on prices, supply and demand. In the rubber sector, due to the high demand for natural rubber, the producers (farmers) are able to sell all production. Prices received by the producer vary depending on:

- The quality of the product
- The reputation of the area
- The distance from processing factories,
- The number of collectors in the supply chain, and
- Availability of transportation.

The price dynamic of various rubber quality in district and village level is summarized in the figure 1.

**Figure 1:** Price of various type of natural rubber in Central Kalimantan, 2008 - 2009.



Source:

*Slab and Smoked sheet - district level (Kapuas): Estate Crop Office Kapuas District, 2009*  
*Raw rubber material plung and takaluk- village level (Mentangai): Dohong et al, 2009*

The role and characteristics of market structure component is explained in the following paragraphs:

### 1. Producers:

According to CARE baseline report (2009) the final price to the producers is approximately 30 percent of FOB price.

At the farm gate, the main determinant of price is weight. Quality and Dried Rubber Content (DRC) are, at best, minor determinants of the farm gate price. Currently, DRC cannot be measured at the farm gate and local rubber is not sorted by contamination levels. This means that all rubber gets essentially the same price. Therefore weight is the major the determinant of price, and this was reflected in our data. Both our survey and our literature study (Budiman and Permunte, 2007; Suyanto et al 2009 and Dohong et al 2009) showed that in the preparation of raw rubber, farmers consider weight more crucial than other factors such as cleanliness. This explains why farmers have been known to add contaminants such as sands and wood pieces in order to increase weight, hasten coagulation, and increase water retention. Furthermore as previously noted, farmers also use non-recommended coagulant such as alum and kaolin, making the rubber more difficult to dry.

This farm gate pricing system, which does not take into account quality, weakens the bargaining position of farmers. Not only can farmers not demand higher prices for higher quality rubber, but the system also provides them with the incentive to sell low quality (heavier) rubber to maximize their sales income.

Even though a competitive market exists, with various traders and processors active in the sector, it is not guaranteed that producers can sell their product to the highest bidder. At the village level, smallholder producers frequently finance their consumption expenses through loans from collectors. By providing loans to the producers, the traders ensure that the producers will sell their product back to the traders, their “financiers”. The advantage of this system is that farmers have the cash they need before the transaction and traders can anticipate their supply. However, this system not only gives the lender stronger bargaining power over the borrower but also allows the trader to capture any gains from finding higher prices. It has to be noted that these relationship and attitudes are long lasting and go form farther to son.

In addition to often being locked into a buyer by taking loans from them, farmers are not fully aware of pricing regulations or where to get price information due to remoteness, disinterest and trust.

## **2. Village collectors and traders:**

Up to two levels of collectors and traders exist along the value chain. A majority of the village collectors in the KFCP area trade rubber to regional collectors who then sell directly to the factories. The main role of the collector is financing producers, buying and collecting rubber directly from producer or lower level collector, providing transport, and conducting preliminary grading process. At village level, a collector may be a leading farmer and may also be processing wet coagulate blocks and/or produce and sell planting material. Price at collectors and traders level was Rp 4000 to 6000 per kilogram in 2009.

Many local collectors take advances from regional collectors (who may also take advances from factories) to finance their collection activities. This system locks collectors into selling to one regional collector or factory. While this ensures that the collectors will be able to sell the rubber they collect, it prevents them from seeking out the best prices for their product. This hurts both local collectors and farmers, as better

prices are not transmitted down the market chain. In addition, this system makes it more difficult for factories short on supply to quickly increase their stocks by offering higher prices.

As with farmers, prices collectors receive are mainly determined by weight, not quality. For the transaction between village collectors and regional collectors, DRC is not measurable and contamination/quality levels do not sort the rubber. For sales at the factory gate, quality is more of a determinant for final price and is based on regional reputation and manual inspection. Most collectors are not willing to wait for the completion of laboratory tests to determine DRC and therefore official prices<sup>4</sup>.

This whole system gives all collectors the incentive to offer as low prices as possible in order to protect themselves. They have no concrete way to estimate what they will receive from their buyer nor do they have, without a concrete determinant of quality (DRC), much of a bargaining position. They feel that they have to be prepared to receive low prices from the factory due the traditionally poor quality produced in the region and they pass this on to the farmers.

**Picture 1:** Rubber near village level collector/trader house in Kapuas showing soaking rubber



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<sup>4</sup> The official government calculation is: Price = DRC \* FOB \* exchange rate \* index (75-85 percent).

- Index at the farmgate level: the minimal price is 75 percent of FOB price.
- Index at processing gate level: the minimal price is 85 percent of FOB price.
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### 3. Processors:

Most processor (factories) produces SIR 20, a type of rubber that ready for export (mainly via Surabaya or Banjarmasin). Our observations in a facility in Banjarmasin suggest that international tire producers such as Bridgestone and Goodyear are the main buyers, and their quality standards were used as quality control standards in the factories.

The members of the regional GAPKINDO are 11 processors that work in South and Central Kalimantan. In terms of proximity, the rubber processor in Kuala Kapuas, PT Karya Sejati, is the facility that located nearest to the project area and said to buy significant amounts of rubber form the project areas. However Dohong et al (2009) and our interviews suggest that most rubber produced in Kapuas is transported to Banjarmasin (South Kalimantan), where factory gate prices are higher. Dohong et al (2009) report that the price difference between Kapuas and Banjarmasin is Rp.1000 per kilogram.

According to GAPKINDO, the demand for natural rubber for export is strong, and they expect demand to remain strong and increase as the world recovers from the banking crisis of 2009. In addition, local demand appears strong. Based on GAPKINDO data, three factories that purchase rubber from the Mantangai area are operating under capacity in 2009 (Table 2). And the factory owners interviewed all commented on the difficulty of getting enough good quality rubber.

*Table 2: Factory Capacities*

<b>Factory</b>	<b>Capacity</b>	<b>Production (2009)</b>
PT. Karya Sejati	18.000 Ton/Year	14.400Ton
PT. Insan Bonafide	36.000 Ton/Year	25.180 Ton
PT. Hoktong	20.000 Ton/Year	17.357 Ton

To assure their flow of rubber supply, processors typically maintain both semi contractual and open market relationships with collectors. Processors set prices based on estimated dry rubber content (DRC) and cleanliness (dirt content) of the rubber. DRC is estimated because a lab tests need up to two hours to produce a valid measurement of DRC, and traders are not willing to wait for that. The processors confirm the poor quality of smallholder production and suggest that low quality rubber increases their production costs, since they have to clean and reprocess the rubber. However, research conducted by Budiman and Peramune in Indonesia (2007) suggest that when material is in short supply to meet contractual obligations for export of finished product, processors will frequently buy any and all available raw material and are less concerned about quality.

Picture 2: Reception point in a processing facility.



According to Budiman and Perumute (2007) Indonesia supplies its rubber mainly to overseas tire manufacturing industries. This is also confirmed during our interviews. Export is mainly conducted via ports in Surabaya and Banjarmasin.

As with local rubber, regional reputation influences national prices as well. The quality of Indonesian Rubber (Standard Indonesian Rubber 20, or SIR 20) is lower than standard Thai rubber and thus receives lower prices on the international market. At the national level, GAPKINDO is working to improve this situation by working with factories to improve the quality of exported rubber and by lobbying for the development of a new standard, SIR 10.

**Picture 3:** Ready to export SIR 20 at processor warehouse.





## General Options

Improving the market structure depends on improving the quality of rubber produced in the region. As this condition is set into place (through the Farmer Field Schools), the following improvements in market structure can be made:

- Financial training for farmers to reduce the needs for loans and “pre-selling”, thus giving both farmers and collectors more freedom to search for better prices at the time of the sale;
- Access to credit for collectors so that they do not need to borrow from factories/regional collectors;
- Developing farmer groups (which would include the local collectors) to sell directly to the factories (and thus cutting out regional collectors) and enabling them to improve Mantangai’s reputation;
- Encourage these farmer groups/local collectors to wait for the lab results and sell to factories at prices determined by actual measurement of Dried Rubber Content. This practice would also give regional farmers direct feedback on the quality of their rubber;
- Introduce the device to measure DRC in the field as soon as it is developed and made available by the University of Gajah Mada.
- Encouraging farmer groups/local collectors to sort rubber by quality when delivering to factories; and
- Factories adhere to national standards and reject poor quality rubber

The Farmer Field School will work with farmers to improve the quality of the rubber supplied to factories and facilitate negotiations between factories and farmers for the good prices for good quality rubber.

Factory owners clearly want better communication with farmers, and have stated in a number of meetings that they would prefer to buy directly from farmer groups. Farmers and collectors want clear information on prices and the ability to sell to the highest bidder. Therefore, all the stakeholders are ready to come together and work to develop systems where farmers can sell directly to the factories.

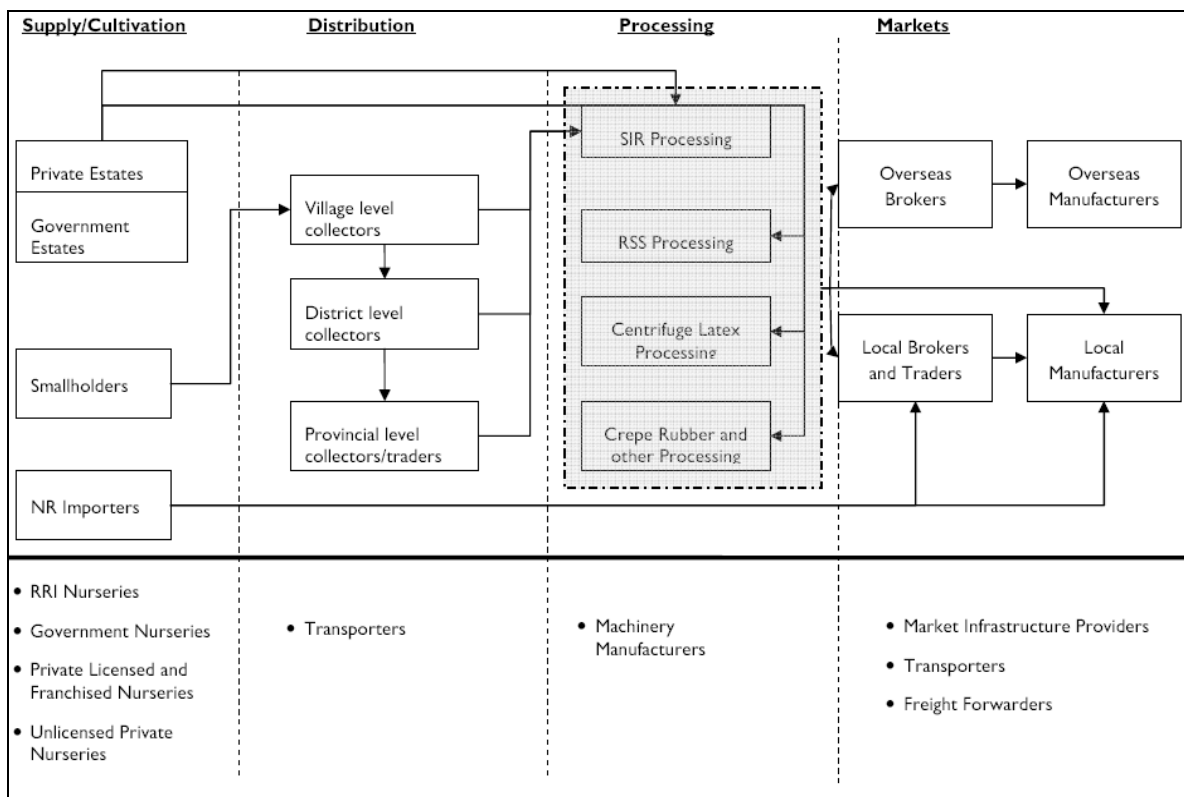
KFCP can support this process through the Farmer Field Schools, which will not only teach farmers to produce higher quality rubber, but will help them organize into farmer groups and arrange agreements for selling directly to factories. As local village collectors are often farmers themselves, they can integrate easily into the farmer groups and use their skills to collect a large enough amount of rubber from one or more groups (if necessary) to deliver adequate volumes directly to the factories. The FFS can also train farmers in the elements and regulations regarding pricing and help empower them to contract with factories as partners in the effort to improve the value chain and quality of Indonesian rubber. The Farmer Field School curriculum is flexible and if

agreed to by the farmers in the villages, sessions on financial management and managing cash flows can be added to the topics of the FFS.

#### A.4. CHAIN COORDINATION

Chain coordination refers to the harmonization of the physical, financial and information flows, and property right exchanges along a chain (Filho and Silva , 2007). This involves analyzing the different selling mechanism and the links between processors, collectors, transporters and farmers. The supply chain link of rubber industry in Indonesia is summarized in the figure 2 below (Budiman and Peramune 2007).

**Figure 2:** supply chain link of rubber industry in Indonesia



Source: Budiman and Peramune , 2007.

The factories still rely on what is essentially a traditional supply system. They rely heavily on traditional traders and rubber growers. There also appears to be (based on one informant's story) a reluctance to develop new supply sources but to rely on proven/trusted suppliers/traders, even if those suppliers cannot always supply the desired quantity.

Transportation at the local level is mainly managed by traders and normally consists as a combination of land transport and water transport. Farmers and traders do not consider availability of transport a problem or constraint.

The factories depend on the collectors to pass information on type, quantity, and quality of rubber required by the factories. However, the factories acknowledge that they are disappointed with this system. They do not feel the key messages, particularly on the importance of and ways to process quality rubber, are reaching the farmers.

Price information is transmitted the same way, from factories to regional collectors, to village collectors, to farmers. GAPKINDO has set up a system where regional collectors can request the average price of all Central and South Kalimantan GAPKINDO factories through SMS. This system is helpful, but not yet optimal, as it does not provide collectors with actionable information on which factories offering higher prices. Farmers only receive price information through the offers of their local collectors. Farmers do not have access to other independent sources of price information (e.g. government price information on the internet, FOB prices in regional ports, etc.).

In general, the information flows are one way from factory to collectors to farmers. There is little direct information flowing the other directions. Factories and farmers rarely, if ever, have direct contact and there are no established information conduits from farmer to factory.

GAPKINDO and a number of factory owners interviewed do recognize their interdependence with farmer suppliers and traders and are aware of the need to develop better communication and partnerships. GAPKINDO has made some efforts to inform farmers of what they need (e.g. posters describing government policies and photos of quality rubber) However, it appears that they have yet to develop or adopt an effective strategy to partner with suppliers to improve the quality and quantity of supplies.

In other areas and commodities, commodity associations, chambers of commerce, and other forms of trader groups, are known to be instrumental in the promotion and development of market chains. For rubber in Central and South Kalimantan, GAPKINDO provides overall coordination at processor and exporter level, but there is no similar organization that serves the trader and farmer levels.

## **General Options**

Potential interventions in this area are mainly via market linkage activities in which the development of commodity network forum as noted in section A1 is important. Capacity building for farmer groups is an option to enable farmers to improve their coordination with the other players in the market chain. Such a forum would facilitate greater two-way communication between factories and farmers. In addition, the development of farmer groups that sell directly to factories will improve two-way communications between producers and buyers.

The technology to improve the dissemination of pricing information is readily available. The *SMS Marketing Information System Assessment for the KFCP Area* (GRM 2010) indicates that it is technically feasible to set up a system that could supply individual factory prices via SMS request by farmers and traders. Such a system could be established by GAPKINDO to help direct rubber supplies to factories when the factories need the supplies.

KFCP can support these initiatives by playing a catalytic and facilitation role. KFCP, through GRM, has already implemented a participatory multi-stakeholder workshop that developed visions and strategies for improving the rubber value chain from the Mantangai area (see below for a summary of the results of this workshop). KFCP can continue to support directly and indirectly opportunities for stakeholders to meet and develop agreements, skills, and activities that improve the value chain coordination. Particularly, it can work, in a capacity building role, with GAPKINDO to develop the SMS system described above.

After the pilot phase implemented by GRM, the KFCP is in a unique position as a facilitator that is trusted by all stakeholders in the value chain. This position can be exploited during the life of the project to facilitate the negotiation of market linkages between stakeholders and the development of a value chain forum.

## **A.5. FARM AND FIRM MANAGEMENT**

The ability of individual firms and farms to efficiently allocate resources, respond to consumer needs and adapt to market changes is to a great extent a function of its managerial prowess (Filho and Silva, 2007). Farm and Firm management define how actors manage their business, respond to markets, allocate resources (opening of peat lands for example), and choose commodities to produce/sell etc.

It is clear that at the farmer level, managerial skills and business acumen is not highly developed. Local farmers do respond to prices, moving in and out of commodities as prices change. However, their ability to manage the production of commodities remains at traditional levels. Many farmers are still using rubber in what is essentially subsistence mode; “we need some money now so we sell some rubber”. They also continue to maintain traditional relationships with markets through local collectors. Previous sub sections (A.1. to A.4.) have already discussed the practice at farm level and options to improve it.

Competing commodities are often forest products (such as gemor), which are hard to harvest or wood crops, which require long lead times for a single harvest. In addition, with recent fall in rubber prices, farmers in the KFCP area are showing an interest in determining the feasibility of growing oil palms.

At the factory level, the local industry has adopted the use of industry standards. The standard SIR (Standard Indonesia Rubber) is widely used by the factories and is accepted by the major manufacturer such as Bridgestone and Goodyear. The factories do respond to the demands of their buyers. For example, the use of pallets is being phased out (in at least one factory) for the use of reusable bins at the request of their international buyers.

### **General Options**

Developing farm management skills should include not only technical skills, but also financial and business skills. The Farmer Field Schools can provide training to farmers on the business of their rubber plots that will help them maximize the use of their resources devoted to rubber. Business skills that could be included in these trainings

include cash flow analysis, budgeting, marketing and developing new buyers, and negotiating with collectors.

In addition, the Farmer Field Schools will include modules on effective use of various types of land. These modules will demonstrate and reinforce the message that deep peat under forest generates more value (through REDD, less flooding, less fires, and sustainable harvest of forest products) than converting that land to rubber cultivation, which requires high levels of investment (drainage, clearing, etc.) for limited (compared to dry-land cultivation) rubber production.

## **A.6. INPUTS**

Filho and Silva, (2007) suggest that the availability and costs of the main inputs (land, labor and capital inputs) in the different segments of a chain directly affect its performance. Cost, quality, availability and regularity of supply of critical inputs, such as skilled labor and capital goods for both processing units and farms, should also be evaluated.

- *Land:* In one sense, land for rubber is limited in the area. National Indonesian policy is to focus on intensification of rubber production on existing rubber lands and discourage the conversion of new lands to rubber. In the KFCP area, the majority of mineral lands are already devoted to rubber and there is little opportunity to expand cultivation on mineral soils. In this sense, national policy and KFCP/REDD objectives are the same, to focus on intensifying the production of existing rubber stands and discouraging the development of new rubber lands.
- *Labor:* Rubber trees are established and managed primarily by family labor and the labor requirements of rubber declines dramatically as trees mature. In the agriculture sector, rapid development of oil palm plantation provides an alternative source of income for farmers to work as daily on-farm labor for them. Other non-farm activities such as selling logs, fishing, sawmill, upland farming, and gold mining work should also be considered, as they are potential competition for the local labor.
- *Capital input and services:* Improving the rubber value chain will require better access to financial service to help the farmers cope with higher cost of on-farm maintenance, post harvest processing, and replanting old rubber stands. Unfortunately the availability of financial service providers is minimal in the project area. Area farmers are not in the practice of using banks or formal lending institutions nor are such institutions located in the project area. In addition, problems with land tenure and land certification make it difficult for local farmers to access bank loans. Farmers are reported to frequently finance their consumption/production expenses through loans from collectors and or family members.
- *Inputs:* The supply of raw materials and agro inputs for farmers in the project area is somewhat limited. Private individuals mainly manage nurseries, but the majority of farmer receives their new clone/paling material from projects funded by local government and/or NGOs. Recommended coagulants are not

readily available in the project area. Only certain shops in Kapuas and Banjarmasin sell the product.

Cooperatives and/or local NGOs can have potential roles here to develop financial service and at the same time improve the availability of agro input (e.g. coagulant). To overcome the financial problem, and since the rubber farmers are normally smallholder clients (too small for commercial banks) and located in remote area, micro finance intervention can be implemented and attached as a function to NGO or local cooperative. The use of micro finance scheme in agriculture has been discussed by a lot of practitioners. These schemes may include not just saving and credit service but also trading facilitation and insurance. A cooperative/NGO can also be trained further to play a role as business service providers and provides fee-based market information service and honest – broker facilitation for those who willing to trade with the local farmers.

## **A7. MANAGEMENT OF DEEP PEAT AND DEVELOPING THE RUBBER VALUE CHAIN**

In developing interventions to improve the value chain, it is useful to review how farmers decide how they use of peat lands to expand land under rubber. Research in Central Kalimantan by Van Beukering et al (2008) found that the choice of species that people cultivate is determined by:

- Technical factors: the type of soil, (including the depth of peat) and the size of the plot that farmers owned; and
- Non –technical factors - (1) Familiarity with and knowledge about species; (2) Access to seeds and nurseries, (3) access to market, (4) Importance of the species for own consumption, (5) Availability and size of local markets for alternative crops, and (6) Frequency of harvest.

Rubber is a popular species because it can be harvested regularly (thus a regular income) and the market is well developed. Rubber trees are also popular due to the extensive promotion and supply of nursery trees by various government and/or NGO programs.

People who own land on mineral soil or mixed soil (very shallow peat) appear to use their deeper peat plots less intensively. Farmers tend to use very shallow peat (up to 1 meter) most intensively. Rice, vegetables and fruits are usually grown there, while in deep peat zones people grow rubber trees. People with just one hectare of land try to clear their land and use their entire plot for agricultural purposes, especially to grow rice, while owners of larger plots tend to have more diverse land uses and grow a variety of crops.

Improving the value chain of rubber leads to more farm added value and making rubber more attractive, potentially, providing an incentive to accelerate the opening of more peat land. The process is already on going and leads to:

- *The use of fire.* The baseline identified that for newly established rubber plots in Block A, fire is the most common used tool to clean land. As most of the vegetation is shrub (mostly ferns with some gelam) wildfire risks are significant.

(Replanting existing old rubber does not require burning and provides similar benefits to planting new rubber plots).

- *Drainage of rubber plots.* Rubber plots need drainage as rubber does not thrive in permanently flooded conditions.
- *Dependence on waterways by Farmers.* Farmers depend on waterways to both access and create their plots. Most of the plots are located on so called spill berms, which are artificial levees created during the construction of waterways. Most soils are clays (brought up) over peat. This means that closure of waterways will lead to loss of rubber.

## **Suggestions**

KFCP/REDD alternative income initiative activities will have to support the village land use and REDD planning. This means only supporting intensification of rubber on mineral soils and shallow peat. For example examples of such support include:

- Promoting the replanting of old rubber plots;
- Not providing credit for establishing rubber plots on deep peat (if KFCP supports developing local financial institutions);
- Incorporating into the Farmer Field School trainings analysis of the economics of land use choices (including REDD) to demonstrate that alternatives that support REDD are preferable to cultivating rubber in deep peat; or
- Developing alternative methods for land clearing that does not use fire.
- As planned in the canal blocking program, work with communities to design drainage systems that support both REDD and the cultivation of shallow peat within the “limited use zone”.

REDD could also be used to support improvements in the market structure by linking quality gains with improved peat management (reduce drainage, better fire control and for example patrolling of peat lands). REDD payments, either through a kilogram-based payment for sustainable produced rubber or an acreage payment for land under sustainable water management, could be incorporated in the value chain.

Improving the value chain of rubber is consistent with the KFCP/REDD principle of ensuring no negative economic impacts from REDD. However, increasing incomes from rubber potentially creates an incentive for farmers to develop rubber plots in deep peat. The main strategy to prevent this from happening is REDD itself; the project will have to demonstrate that the communities will receive greater benefits from rehabilitating/protecting deep peat than they will from converting deep peat to rubber or other types of plantation crops that require fire and drainage as part of their cultivation systems.

## Summary of Value Chain Assessment

The analysis of the rubber value chain for the Mantangai area shows that there are a number of issues that reduce the efficiency of the value chain to the detriment of all the stakeholders in the system. The current weaknesses of the value chain include:

- Lack of knowledge about and poor implementation of national policies that affect the rubber market throughout the value chain;
- Poor channels of communication among all the stakeholders with no institution established to promote the efficiency and effectiveness of the value chain;
- Poor farmer technical and managerial practices resulting in the supply of poor quality rubber to the market;
- Poor access to extension services;
- Trading relationships often based on loans from buyer to seller, disempowering the seller and preventing the timely flow of raw rubber to factories that need it;
- Inability at the farm gate and unwillingness at the factory to measure rubber quality and Dried Rubber Content (DRC) resulting in a pricing system based on weight and not quality;
- Poor, limited, and one directional flows of information regarding demand and prices. In particular, farmers are unaware of pricing systems and current prices outside their region; and
- Key inputs for cultivating and processing raw rubber are not readily available in the Mantangai area.

There are a number of interventions possible that would improve the rubber value chain. The first, key intervention is to work with farmers to produce better quality rubber. By producing better quality rubber, the farmers open the door to selling directly to factories. Selling directly to factories would improve the relationship between producers and buyers and allow for direct two-way flows of information regarding quality, supply issues, demand issues, pricing issues, and prices. These two changes in the value chain would be beneficial to both farmers and factories in the region. Additional interventions that would support these changes include the development of a value chain forum/association, access to credit for farmers and traders to stop dependence on loans from their buyers, and improved access to key inputs, in particular, the recommended coagulants needed to process harvested rubber.

The KFCP project cannot take responsibility for implementing all of the potential interventions that would strengthen the value chain. However, it can take on key ones and act as a catalyst for the others. Given the positive attitudes of farmers and factories to work together, KFCP has the potential to have a large impact in the value system in its work area over the life of the project.

The core KFCP intervention needs to be the Farmer Field School. Through the farmer field schools, the project will be able to:



- Improve the capacity of farmers to manage their rubber as a business and produce good quality rubber;
- Improve farmer understanding of peat land/forest management and the best options for sustainable exploitation of peat lands (including REDD);
- Develop farmer trainers who, working with coops or other village level institutions, can continue to train community members in rubber cultivation, processing, and marketing;
- Facilitate the formation of farmer/collector groups that negotiate and sell quality rubber directly to the factories; and
- Facilitate negotiations and two-way problem solving between farmers and factories.

To support these activities, KFCP can act as a catalyst and facilitator with GAPKINDO, other stakeholders, and funders to:

- Develop the establishment of a rubber value chain forum/association which builds on the work of the Rubber Value Chain workshop reported below:
- Establish of a more effective and useful SMS Market Information System that provided farmers with current prices and demand information from all local factories;
- Connect traders with suppliers of coagulant and other inputs in Banjarmasin and/or Kapuas so they can supply the demand for these inputs created by the Farmer Field Schools.

Improving access to financial services would greatly support the efforts to improve the rubber value chain. Availability of credit would help farmers finance improved cultivation of existing rubber, but also the replanting of old rubber plots. In addition, access to credit for local collectors would free them to sell to factories offering the highest prices. KFCP should continue to explore sustainable ways to provide area residents with credit for livelihood development.

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## **B. Workshop Results**

As noted in the section A, a value chain workshops bringing together the stakeholders in value chain would be an effective approach to improving the supply chain efficiency and defining visions, barriers, interventions, and responsibilities of the value chain stakeholders. As part of the GRM market value chain development work, GRM held two participatory workshops in conjunction with the rubber value chain assessment. The first workshop brought representatives from all the value chain stakeholders together to assess the value chain. The second brought a smaller group of representatives together to refine criteria and standards for grading rubber. Summaries of these two workshops are reported below.

## **B1 VALUE CHAIN WORKSHOP RESULTS**

Useful agreement and multi-stakeholders activity depend on the ability of the different participants to understand each others' perspectives and to understand the effects of a range of factors that are affecting theirs and other stakeholders' work (Ribeiro and Zwirner, 2009). Via dialogue and intensive facilitation, the desired outcomes for the supply chain can be negotiated resulting in desired-outcomes for all players in the improved supply chain. Improving communications and setting common goals for the supply chain may also reduce conflicting drivers and increasing synergies and joint-problem solving among stakeholders.

The stakeholders' workshop conducted for the rubber sector, was a facilitated, participatory workshop, directed to come to an agreement on the overall direction of industry development and create a better understanding of the drivers (needs, wants, incentives) affecting each player. During the value chain analysis, various key players were identified from different areas and these stakeholders were invited to the workshop.

The outline of the workshop is as follows<sup>5</sup>:

1. Validation of the results of the value chain analysis.
  - a. Value Chain Assessment outputs
  - b. Experiences from other area (Jambi)
2. Formulation of a competitiveness vision, identification of the causes and effects (with special emphasis on grading and quality).
3. Identification and prioritization of key constraints and opportunities
4. Drafting the value chain action plan.

This workshop was held in April 2010 after the fieldwork and the draft *Commodity Status Report: Rubber* (this report) was completed. Based on this workshop, two follow up workshops were held, one workshop to develop the criteria for grading rubber and one to share these criteria with local collectors.

On the 26<sup>th</sup> and 27<sup>th</sup> of May 2010 at the Swiss-Belhotel in Banjarmasin, South Kalimantan, GRM held Rubber Value Chain Workshop as part of its Livelihoods Development contract with KFCP and IAFCP. In attendance were representatives of the rubber value chain of the KFCP intervention area, consisting of rubber farmers, rubber collectors, factory owners, GAPKINDO, government agencies and academics.

The goals of the workshop were:

- Developing a common understanding of the rubber value chain from producer to factory; and

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<sup>5</sup> Adapted from ACDI/VOCA and Strategic Development Cooperation Asia

- Developing agreed upon interventions to improve the value chain in ways that benefit stakeholders without hurting any stakeholders.

The objectives of the workshop were, that by the end of the workshop the participants would:

- Be able to explain, in detail, the rubber value chain in the KFCP area;
- Be able to explain experience and lessons from the rubber market in Jambi/Sumatra;
- Have develop a vision for their value chain;
- Have identify and prioritize the key constraints and opportunities in the current value chain and their effects on stakeholders and the whole system; and
- Have developed a value chain action plan.

The initial session of the workshop participants were broken into groups by stakeholder and each group (farmer, collector, and factory) was asked to describe the current situation of the value chain and with which aspects they were satisfied and unsatisfied. There responses are listed below:

Farmers	Collectors	Factories
<ul style="list-style-type: none"> <li>○ Prices and pricing are not transparent.</li> </ul>	<ul style="list-style-type: none"> <li>○ Standard prices with factories are “fluid” or variable;</li> <li>○ Openness about the setting of prices is not very clear;</li> <li>○ Supply from farmers is variable – can not count on amounts available for sale;</li> <li>○ Need to manually/visually determine the quality of the rubber;</li> <li>○ The standard prices from the factories that sets the price for buying from the farmers/community is not clear;</li> <li>○ Determining the price of rubber is based on the quality and moisture content;</li> <li>○ Slab rubber not of high quality should not be bought;</li> <li>○ There are transparent methods for determining the quality of farmers’ rubber;</li> </ul>	<ul style="list-style-type: none"> <li>○ The capacities of the factories are not synchronized with current quotas;</li> <li>○ The supply of raw rubber is not consistent with the quotas;</li> <li>○ The factories are not finding/getting enough <i>clean</i> rubber from traders/farmers;</li> <li>○ The long length of the rubber chain;</li> <li>○ Collectors do not know/understand about good quality raw rubber;</li> </ul>

In general, the positive aspects of the rubber chain include a ready market for rubber and easy transportation from field to factory. The main dissatisfaction with the value chain is the lack of accurate and timely pricing information for farmers and collectors,

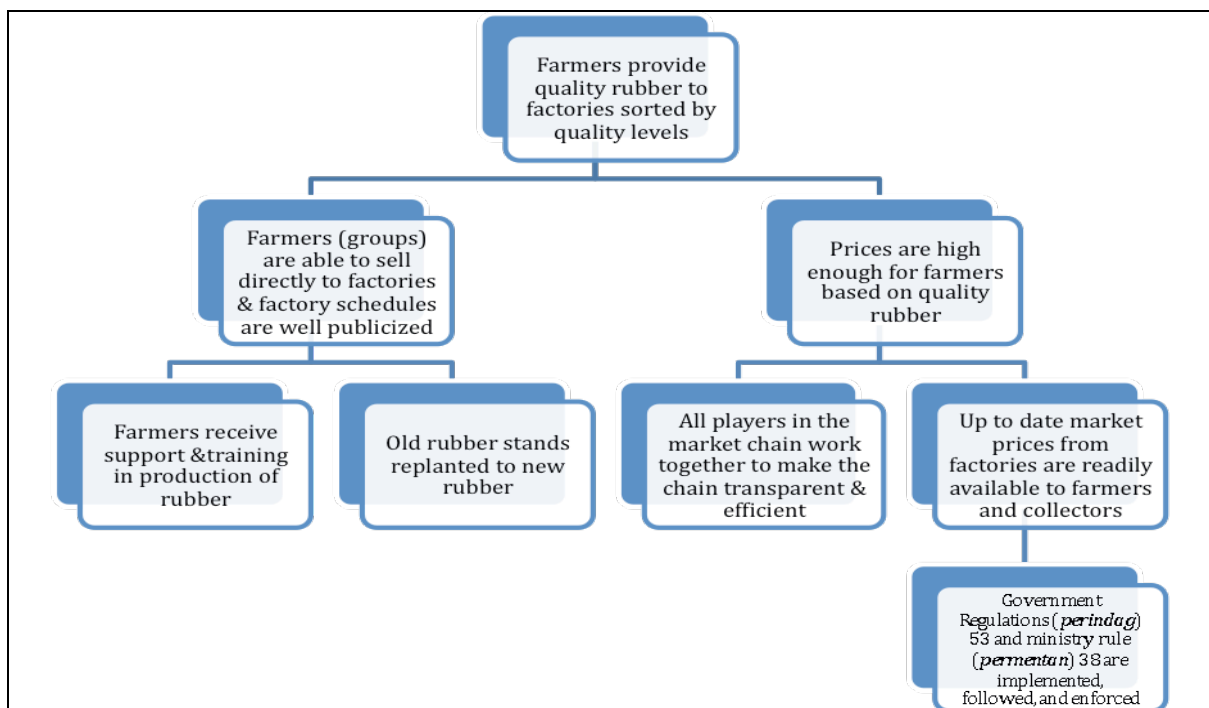
the difficulty in measuring rubber quality, and the low quality rubber being delivered to the factories.

The next session asked the group to work together to develop a vision for the future of the value chain. In a participatory process of meta-planning they developed the vision as follows.

The ultimate goal of the envisioned market chain is to supply good quality rubber to the factory. This goal will be supported by economically viable prices for the farmers and collectors. For the farmers and collectors to get the best prices the farmers will be producing high quality rubber and pricing information will be readily available to both collectors and farmers in a value chain where all actors are working together. Finally, the value chain will follow Indonesian government for quality and pricing standards.

Below is a visual representation of the vision created by the participants.

### Vision for Kalimantan Rubber Value Chain



With the vision established, the group analyzed blocks and opportunities to achieving that vision – identifying the following.

The key blocks to achieving an improved rubber value chain, according to the workshop participants revolved around the skills and practices of farmers, the availability of key inputs (both material and financial), and lack of cohesion and common understanding within the value chain itself. The key opportunities consisted of taking advantage of government programs and policies, NGO and development projects in the region (including KFCP), and the mutual desire from stakeholders to improve the value chain.

The blocks/challenges identified by the participants are listed below:

Blocks and Challenges	Opportunities
<ul style="list-style-type: none"> <li>○ Limited and uneven human resources – particularly regarding the skills, knowledge and attitudes for producing and selling high quality;</li> <li>○ Lack of availability of materials (<i>asam semut</i>) to make latex at the sub-district and village levels;</li> <li>○ Lack of access to funds/investment money for replanting rubber;</li> <li>○ There is not a common perception among farmers, collectors, and factories regarding the market chain (and need for quality rubber to supply to the world market);</li> <li>○ There is not a consistent application of the existing rules;</li> <li>○ There is not yet an acceptance of testing rubber quality before setting and paying prices;</li> <li>○ Government regulations on quality and pricing rubber have not yet been socialized thoroughly in the area;</li> <li>○ Farmers are of the habit of considering rubber as a last alternative for meeting needs of daily living;</li> <li>○ Collectors still purchase poor quality rubber;</li> <li>○ The communities are not yet self-supporting in developing their rubber production;</li> <li>○ The scales used during collection are not accurate; and</li> <li>○ Farmers have low skills in managing rubber cultivation and production;</li> </ul>	<ul style="list-style-type: none"> <li>○ To empower farmers - farmers groups, government programs, NGO and development programs can be utilized;</li> <li>○ To control quality - government regulations, factories' requirements, and government programs can be implemented;</li> <li>○ To market directly to the factories - existing farmer groups and availability of transportation can be used;</li> <li>○ For sources for inputs - key inputs are on the market in Banjarmasin and possible through government programs;</li> <li>○ For partnership - there is a desire for partnership;</li> <li>○ For replanting rubber stands -government policy and programs for upgrading rubber production through replanting (not area expansion) are available;</li> <li>○ For market information - there is a need for market information and hand phones are ubiquitous;</li> <li>○ For pricing - Government regulations on pricing;</li> </ul>

Based on the key blocks identified, the group developed the following list of potential actions to improve the value chain.

Block	Actions
<p>There is not a common perception among farmers, collectors, and factories regarding the market chain (and need for quality rubber to supply to the world market).</p>	<ul style="list-style-type: none"> <li>○ Develop information and conduct (often) socializations about government and ministry regulations regarding quality and marketing of rubber to all stakeholders.</li> </ul>
<p>Lack of access to funds/investment money for replanting rubber:</p>	<ul style="list-style-type: none"> <li>○ Identify sources of loans/investment for replanting rubber from related technical institutes; and</li> <li>○ Identify and access sources of financing and implement rubber replanting with farmer groups.</li> </ul>

There is not yet an agency to make available information on the price of quality rubber in the villages.	<ul style="list-style-type: none"> <li>○ Develop a business group that can manage rubber market information;</li> <li>○ Hold a workshop on the criteria for quality rubber and its connection with prices; and</li> <li>○ Produce leaflets leaflet about the SOPs to access the criteria for quality rubber and rubber pricing.</li> </ul>
Plans for Human Resource Development:	<ul style="list-style-type: none"> <li>○ Empower farmers and collectors through training, Farmer Field School, comparative studies, extension, and media (print and electronic);</li> <li>○ Socialize the standards for quality rubber (by KFCP, GAPKINDO, and other stakeholders);</li> <li>○ Extension;</li> <li>○ Strengthen farmer groups; and</li> <li>○ Rubber demonstration plots.</li> </ul>
Lack of availability of materials ( <i>asam semut</i> ) to make latex at the sub-district and village levels.	<ul style="list-style-type: none"> <li>○ Stimulate assistance (government, NGO, private business) through facilitating programs and aid; and</li> <li>○ Connect suppliers (wholesalers/retailers) with farmers.</li> </ul>

KFCP and GAPKINDO have done some work on a number of these activities. In particular, GAPKINDO has made initial efforts to inform farmers of government regulations and qualities of good quality rubber. KFCP is initiating farmer field schools and work with the value chain. However, due the fact that this was the first meeting of its kind, and the potential high expense (especially for travel and meeting arrangements) of many of the actions, the participants were not in a position to commit to implementing any actions themselves. This is understandable, and requires follow up with the groups to explore ways to create activities that brings all the value chain stakeholders together at a reasonable cost.

In the end, the suggested actions that will be followed up after the workshop by the KFCP Livelihoods program were:

- Implementation of the Farmer Field Schools to improve Rubber Quality, Marketing, and Cultivation
- Holding a workshop to develop rubber-grading standards
- Holding a training in rubber grading with local area collectors

It was also mentioned that the KFCP Livelihood programs *might* take on the task of developing

- Access to financing for rubber farmers
- Developing price information delivery systems

However, these activities depend on the follow up KFCP plans for Livelihood Development.

This workshop was the first of its kind in the region where all actors of the rubber market chain sat down together to evaluate the value chain and develop a common vision. There is a wealth of important and useful details in their brainstorming and discussions that can serve as a basis for future interventions. In addition, all the participants realized their interdependence and left willing to work together for their mutual benefit.

## **B.2. RUBBER GRADING WORKSHOP SUMMARY**

An agreed upon, objective grading system is important because the grading should determine the final price, and thus has a significant effect on farmer income. According to article 34 of the regulation of the Minister of Agriculture (Permentan) no 38/2008, the price of raw rubber material (*Bahan Olah Karet BOKAR*) should be based on the FOB (free on board) price of 100 percent Dry Rubber Content (DRC) material and follow the following formula:

Price = DRC \* FOB \* exchange rate \* index (75-85 percent).

- Index at the farmer group level: the minimal price is 75 percent of FOB price.
- Index at processing gate level: the minimal price is 85 percent of FOB price.

The regulation does not specify which port's FOB price as the standard. Processors should base their prices on the ports they are shipping to. On the ground, market forces do not follow the above formula. Prices are based on mainly on weight and only somewhat on quality, which is determined by visual inspection. In our meetings with GAPKINDO, the rubber processing association suggested that collectors are reluctant to use laboratory facility to check the DRC since it takes some hours for the lab to do the test, and that delay the payment process.

As a general rule of thumb, the price of rubber is determined by the Dry Rubber Content (DRC), level of impurities in the rubber, and coagulant used to process the raw rubber:

- Dry rubber content (DRC).

DRC is the percentage of rubber in the raw rubber material. Though this can be determined via laboratory test, in practice this is arbitrarily determined by feeling and rubbing the produce.

- Processing.

Good quality raw rubber material also indicated by the use of recommended coagulant (*asam semut*). Fail to use the recommended coagulant will make trader/processor to discount the price or reject the product.

- Impurities.

Impurities may either be introduced deliberately by the farmers or come out as a natural effect of the poor drying, processing and transportation. Impurities such as tree bark, leaves and soil are often added deliberately to increase the weight of the final produce in the hope of obtaining a higher price. Many farmers believe

that despite receiving lower prices for their dirty produce, the extra weight will result in higher income for them.

In the field, visual determination of DRC and impurities are speculative and make price determination hard to be precise. Since traders' and processors margins are dependent on knowing the exact rubber content and impurities they will have to acquire this through experience. As an insurance to protect themselves from grading errors, they discount the price they offer to farmers.

GAPKINDO has prepared a booklet with photos of rubber with different amounts of impurities. As impurity levels, along with the use of non-approved coagulants, are most important to the rubber factories, there appears to be an opportunity here to develop some grading standards.

As a follow up to the Rubber Value Chain workshop, and in cooperation with GAPKINDO, GRM held a workshop to review and refine the criteria for rubber quality standards and develop the material for a leaflet/handbook that would provide a reference to evaluating rubber quality. This workshop was held on June 28, 2010.

Attendees included representatives from the Kapuas rubber factory, GAPKINDO, Mantangai area rubber collectors, farmers from Mantangai and Mangkutup, and the Department of Plantations and the Department of Industry, Trade, and Cooperatives.

The group developed a framework for evaluating the quality of rubber based on four key characteristics:

- Purity: The rubber needs to be clean without any foreign matter or contaminants;
- Coagulation: The coagulation process has to be done correctly;
- Plasticity; and
- Dry Rubber Content (DCRC)

The criteria for the four characteristics are:

- Purity (Photographs of contamination levels are in Annex 1)
  - Clean rubber with a yellowish white color;
  - No contaminants such as leaves, twigs, bark, sand, etc;
  - No contamination from using dirty or turbid water (*air-tanah*) in processing and
  - No forbidden materials such as vulcanized rubber (old tires, sandals, etc.).
- Coagulant
  - Use of recommended coagulants such as *Asam Semut* or Deurop SOP, or coagulated naturally without chemicals;
  - Well processed rubber has a sharp, clean rubber smell;



- Rubber processed with non-recommended coagulants, such as pineapple juice, *Tawas*, or Urea smells of the coagulant and/or smells rotten; and
- Reusing coagulant or using in the wrong concentration results in poor coagulation and poorer quality rubber.
- Plasticity;
  - The rubber should be unbreakable;
  - Poor rubber can be broken or crumbles; and
  - Do not dry rubber under the direct sun as this lowers quality.
- Dry Rubber Content (DRC);
  - DRC can only be measured by laboratory equipment;
  - DRC of between 40-60% is considered low DRC and over 60% considered high DRC;
  - Good quality rubber has higher DRC than poor quality rubber; and
  - Soaking rubber in rivers/water reduces DRC.

The connection between quality and price is not as clear-cut as might be desired. The key issue is that price at the farm gate is based on DRC, but the price factories receive for their rubber is more dependent on quality and level of contamination. For the domestic market, there are no official standard grades of rubber aside from regulations stipulating quality levels that may or may not be marketed. Rubber with contaminant levels of 5% or less may be marketed, but there are no official pricing regulations that differentiate price by quality within that 5%. The only quality criteria that affects farm-gate prices is DRC.

However, factories do take quality into consideration when purchasing rubber in two ways. First, good quality rubber processed with recommended coagulants has a higher DRC than low quality rubber and therefore will receive higher prices. Second, factories offer different pricing levels to different regions based on each region's reputation for the quality of its rubber. As the Mantangai region has a poor reputation, rubber from that area receives lower prices than other areas. In addition, the best price determination is made at the factory gate, where contamination levels and DRC can be measured. For these reasons, GAPKINDO and factory owners recommend that farmers form groups and sell directly to factories in order to get the best, most accurate prices for their rubber.

Because of the indirect connection between quality and pricing (e.g. contamination levels do not directly determine prices), the handbook that will be produced as a result of this workshop will not, in itself, help improve the prices farmers receive for their rubber. It will provide farmers and collectors with clear information on the criteria for good rubber, which is the basis for other interventions in the supply chain that can improve prices. These other interventions include:

- Improving the general quality of the area's rubber can improve the area's reputation among factories. Improving the quality of rubber from the area and

objectively demonstrating that to factories will improve the areas bargaining power. Improving the area's reputation will benefit both farmers and collectors;

- As part of improving the area's reputation, farmers, traders, and factories will need to stop producing and trading low quality, unacceptable rubber (contaminants greater than 5%). The market in unacceptable quality rubber provides an incentive for farmers to continue producing lower quality rubber.
- Developing farmers' groups that sell directly to factories will also help assist the farmers to capture gains from improved quality. If farmer groups can deliver directly to the factory and wait for the DRC to be calculated, they can receive the full benefits of improving the quality of their rubber. Providing high quality rubber will also improve their bargaining position with the factories;
- If the University of Gajah Mada can develop an instrument for measuring DRC in the field and this instrument is adopted in Mantangai, farmers and collectors will be able to directly see the relationship between quality and price. Moreover, combining such an instrument with price information (FOB at regional ports and prices at local factories) will allow farmers to calculate expected prices for their rubber;
- Finally, in the future there may be an opportunity to negotiate price differentials based on the quality criteria established above. Such negotiation could take place directly between farmers groups and factories during contracting or could include government and the development of local government policy on rubber pricing.

Other important information shared during the workshop relating to rubber quality included:

- The University Gajah Mada in Yogyakarta has an MOU with the government to develop a field DRC testing kit by 2011;
- The Kapuas District Department of Industry, Trade, and Cooperatives is in the process of setting up a unit to monitor and oversee the quality of rubber being produced and traded in the district; and
- Rubber Traders need to be licensed and hold a *Surat Tanda Pendaftaran Pedagang Bokar (STPPB)* from the district Department of Industry, Trade, and Cooperatives.

Based on the results of this workshop, and with the agreement of its participants, GRM will design and print a handbook as a reference guide to good quality rubber.

## **Summary of Workshop Results**

One thing that was clearly successful during these workshops was the co-mingling of the stakeholder groups. This appears to be the first times such workshops have been held in the region, and all the participants valued the direct access to other stakeholders. The factory holders and farmers appreciate the opportunity to

communicate directly, without the collectors as middlemen. The collectors also appreciated the opportunity to meet with other stakeholders. All the stakeholders see the creation of a shared vision and criteria for good quality rubber as useful. The process has led to a greater interest in supplying quality rubber and working with factories on the part of the farmers. The factory representatives have expressed how useful it is for them to meet directly with farmers and traders to have two-way discussions on rubber value chain issues.

Finally, these workshops have established KFPC's credibility as a facilitator and consultant with all the stakeholders in the rubber value chain. Thus, KFPC is in a unique position to work with these stakeholders to develop the efficiency and effectiveness of the rubber value chain.

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## Annex 1: Standard Indonesian Rubber (SIR)

### Specification Scheme:

Parameter	Unit	TSR CV		TSR L		TSR 5	TSR 10		TSR 20	
		SIR 3CV50	SIR 3CV60	SIR 3L	SIR 3WF	SIR 5	SIR 10	SIR 10VK	SIR 20	SIR 20VK
Dirt (max)	% wt	0.03	0.03	0.03	0.03	0.05	0.1	0.1	0.2	0.2
Ash (max)	% wt	0.5	0.5	0.5	0.5	0.5	0.75	0.75	1	1
Nitrogen (max)	% wt	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Volatile Matter (max)	% wt	0.6	0.6	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Initial Plasticity (min)		30	30	30	30	30	30	30	30	30
PRI index (min)		60	60	75	75	70	60	60	50	50
Colour Lovibond Scale (individual value, max)		NA	NA	6	NA	NA	NA	NA	NA	NA
Mooney Viscosity (ML, 1+4, 100°C)		50 +/- 5	60 +/- 5	NA	NA	NA	NA	60 +/- 5*	NA	60 +/- 5*

Source: <http://www.astletterubber.com/nr/sir.html>

### Note:

\*Not specification status, but are controlled at the producer end.

These figures are limits, not typical values. Typical values will vary by producer.