



Understanding Jelutung (*Dyera polyphylla*) value chains for the promotion in peatland restoration and sustainable peatland management in Indonesia

Photo: Aulia Perdana/ICRAF

Introduction

Jelutung (*Dyera polyphylla*) is a commercial tree species that used to be highly valued for its latex and wood. It was used in the manufacture of commodities such as edible gum and cable insulators. Jelutung wood is also renowned for its soft texture that is suitable for pencils, interior design material and woodcarving. The species is indigenous to rainforests throughout Malaysia and the Indonesian islands of Kalimantan and Sumatra. More recently, jelutung trees have become increasingly rare due to deforestation and forest conversions, including of the peat swamp forests on Sumatra and Kalimantan. Many rehabilitation, restoration and reforestation programs in Indonesia have since included jelutung as a recommended species. One important factor for the success of promoting this tree species lies in the value chain and market aspects. Therefore, information on and links to markets and other value-chain actors should be understood and incorporated along with the promotion of this species.

Jelutung (*Dyera polyphylla*) latex and timber exploitation and trades in Indonesia fluctuated along with market demands, competing commodities and decreased natural habitat.

Indonesia was once considered to be the main source of jelutung latex, followed by Malaysia (Coppin 1995), mainly during the 1990s. The most important importers were the United States, Japan and Europe. Prior to that, jelutung timber had already been exploited during the logging concession era in Indonesia, starting from the early 1980s. From 1980 to 1990, Malaysia was the most important supplier of jelutung timber and Japan was the major importer (Lemmens et al 1995).

Jelutung latex was tapped from naturally-growing trees in the forest. By the time the mass logging period concluded in the 1990s, jelutung trees had become rare as a result, and jelutung extraction activities drastically decreased. The Central Statistics Bureau (Biro Pusat Statistik–BPS) only recorded data on jelutung latex production in Jambi until 2007, as the production seems to have ceased afterwards. In the districts of Tanjung Jabung Barat and Tanjung Jabung Timur in Jambi Province, tapping occurred in production forest areas owned by companies, or in protected areas and thus considered illegal, resulting in negative impacts on tappers' livelihoods. Currently, jelutung stands can only be found in protected areas where exploitation is prohibited.

Highlights

- Jelutung (*Dyera polyphylla*) latex and timber exploitation and trades in Indonesia fluctuated along with market demands, competing commodities and decreased natural habitat.
- Jelutung latex trade involves different actors and is influenced by different factors along the market chain.
- Jelutung latex market experienced decreasing supply and demand throughout the 1980s–2010s and showed low market efficiency.
- Promotion of jelutung as part of restoration and sustainable peatland management must address gaps and challenges which include aspects of NTFP regulation, trade policies, value chains and technical capacities of key actors.

Jelutung domestication in Jambi began in 1989 through PT Dyera Hutan Lestari, an industrial forest concession company. The concessionaire was established to address the needs of pencil manufacturers, not for its latex. Since the early 1990s, rubber has become the preferred crop in Jambi. However, farmers who had profited from jelutung sap compared it with the price of rubber, and recognized the competitive pricing of jelutung latex. This sparked an interest in cultivating jelutung, and nurseries gradually sprung up in communities. Companies and district forest and plantation offices also encouraged jelutung nursery development in surrounding villages, such as in Rawasari village in Tanjung Jabung Timur, and Bram Itam Kiri, Bram Itam Kanan, Teluk Nilau, and Senyerang villages in Tanjung Jabung Barat (Widayati and Suyanto, 2013). The limited availability of seeds and seedlings and the high demand encouraged villages to produce jelutung seedlings.

Jelutung latex trade involves different actors and is influenced by different factors along the market chain.

In general, actors involved in jelutung marketing include tappers, village collectors, and provincial traders or exporters.

Tappers

Farmers form groups of tappers and tap naturally-growing jelutung in production and protected forest, as well as in forests surrounding their villages. In Jambi and Central Kalimantan, tappers act as price takers. No negotiation is evident and collectors declare the price as they receive barrels filled with the thickened latex. Larger traders put up signs with the day's price in front of the depot for everyone to see. Tappers are aware of the quality control procedures employed by the large traders. Based on a survey conducted in mid 2016, no active tappers were found in Jambi.

Village collectors

Intermediaries in the jelutung latex value chain mostly consist of collectors at the village level. Most village-level collectors are tappers themselves; some have direct

access to traders and own vehicles to transport latex to town, others are just informants or distributors who resell the latex to traders. Nonetheless, collectors and traders play an important role along the value chain. First, both collectors and traders analyse the market by visiting villages or tapper huts and explore upstream areas for product supply. Second, collectors perform various sorting functions by grading the quality of the latex of multiple producers for sale to processors. Third, traders serve to minimize and facilitate the number of contacts in the channel system.

Provincial-level traders or exporters

The next set of jelutung-latex chain actors are the provincial-level traders and exporters, all private companies, who purchase raw latex directly from the collectors and ship it mostly to Singapore and Japan. Provincial-level traders and exporters are often strategic business partners. Traders would process blocks of latex into cubes with only 30 percent water content and the exporters ship the cubes in containers to other processing companies overseas. In Sumatra, there used to be three exporters in Jambi, three in Rengat, one in Pekanbaru, Riau, and one in Palembang, South Sumatra. Due to supply shortages, one Jambi exporter moved to Central Kalimantan and started a new venture where the supply of jelutung latex was better. One exporter in Sijenjang, Jambi shifted to other commodities, such as rubber and agricultural crops, while the other exporter is presumed to have retired from the commodity trade.

From the observation of the trade in Jambi, jelutung latex commodity development followed a relatively simple flow (Figure 1). At some point, tappers sold raw latex directly to large traders or through local collectors depending on the ease of access. Most tappers in Tanjung Jabung Timur and Muaro Jambi (Jambi) sold raw latex through local collectors owing to remoteness and substantial travelling costs. These collectors transported the latex, still in barrels, to the provincial-level traders. In most cases, the local collectors were also involved as members of the tapping community. Provincial-level exporters would then receive latex from traders and ship it to a processing company for export overseas.



Photo: Muhammad Sofiyuddin/ICRAF



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A comparative study of the jelutung-latex value chain in Central Kalimantan found that tappers followed the same product flow.

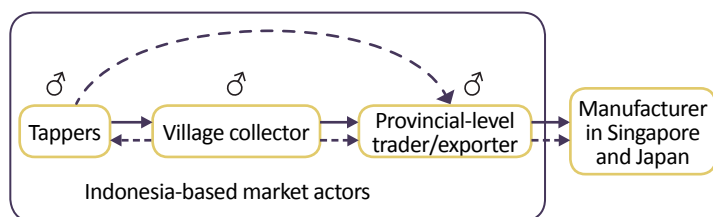


Figure 1. Jelutung sap and latex flow based on observation in Jambi and Central Kalimantan

Jelutung latex market experienced decreasing supply and demand throughout the 1980s–2010s and showed low market efficiency.

Currently, Indonesia is the only major source of jelutung latex. Jelutung-latex production centres around the peat swamp area. In Sumatra, this area covers the provinces of Riau, Jambi, and South Sumatra. In Kalimantan, it covers the parts of West Kalimantan, Central Kalimantan and South Kalimantan. Jambi and Central Kalimantan were the major manufacturers of jelutung latex until 2007.

Jelutung supply

Jelutung-latex production in Jambi peaked in the late 80s and again in the late 90s, and has declined since (Figure 2). The average production between 1985 and 2007 was at 352 Mg year⁻¹. Meanwhile, the average production of jelutung sap in Indonesia from 1996 to 2006 reached 600 Mg year⁻¹.

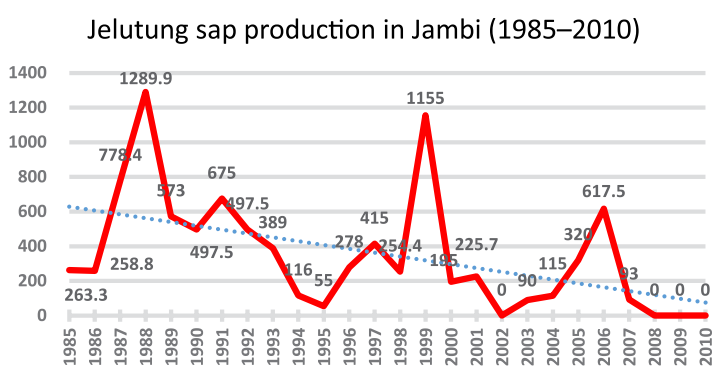


Figure 2. Jelutung sap production from 1985 to 2010 in Mg (Central Bureau of Statistics, 1985–2011) – see also Sofiyuddin et al (2012)

This data is unlikely to represent the real picture due to missing information on small-scale production. In-depth interviews with tappers in Jambi show that up to 2007 people were still looking for and tapping jelutung trees in production forest areas and even in protected forests, although this is illegal.

Jelutung demand

Lotte Co., Ltd. is the only importer of Indonesian jelutung latex to date, and only uses jelutung latex for the manufacturing of chewing gum. For the last five years,

this company has imported jelutung latex solely through PT Sampit in Sampit, Central Kalimantan. Mainly sourcing from Central Kalimantan, PT Sampit ships eleven containers each year. Each shipment consists of one container with 18 Mg of jelutung latex cubes. Due to the decreasing supply, in 2015 PT Sampit could only ship seven containers (Table 1), which was not sufficient to meet Lotte’s demand.

Table 1. Shipment of jelutung-latex cubes from PT Sampit to Lotte Japan

Year	Shipments	Quantity (approximate in tonnes)
2010	11	198
2011	11	198
2012	5	90
2013	8	144
2014	7	126
2015	7	126

Based on the figures and tables in the earlier sections, the export trade value of jelutung latex is assessed as high and the local trade value is also considered high. The market itself has local, national and international scope, and a community-based market chain involvement, such as cooperatives and farmer groups. The downside is that there is only one end-manufacturer, Lotte Japan, who uses jelutung latex only for one product (chewing gum). If Lotte at some point decides to refrain from jelutung latex, the whole demand side will collapse.

If jelutung sap collected from rehabilitation areas in Jambi can be fully developed, the projected potential of jelutung-sap production will be more than 1 500 Mg year⁻¹ (Table 2), assuming that the potential jelutung sap per tree is up to 0.36 grams (Bastoni and Lukman, 2004) and can be tapped 40 times a year. This amount does not include the production of natural and the potential of personal gardens.

Table 2. Potential sap capacity

District	Area (ha)	Number of trees	Sap potential capacity (tonne/year)
Central Kalimantan			
Kapuas	1,100	165,000	166
Pulau Pisang	2,100	300,000	302
Kotawaringin Barat	2,000	274,000	276
Palangkaraya	1,000	125,000	126
Katingan	2,000	250,000	252
Jambi			
Tanjung Jabung Timur	1,000	250,000	252
Tanjung Jabung Barat	1,315	205,140	207
Total	10,151	1,569,140	1,582

Adapted from Tata et al (2015).

Promotion of jelutung as part of restoration and sustainable peatland management must address gaps and challenges which include aspects of NTFP regulation, trade policies, value chains and technical capacities of key actors.

Jelutung has been promoted in peatland rehabilitation and restoration programs, as well as in broader sustainable peatland management efforts, being an indigenous species that best fits the ecological and economic conditions. However, there are barriers and challenges that stakeholders must pay attention to, especially in promoting it as a livelihood and income source. Indonesia has so far been able to produce only semi-finished products. Cultivation programs by the government or private entities may make an advanced jelutung-latex processing industry a significant proposition to be taken into account.

As described above, both export- and local-trade value of jelutung latex are considered high. Despite a local, national and international market scope, only one country outside Indonesia has served as a major target market. It is crucial that existing markets and products be understood and new markets be explored. The potential for jelutung-latex marketing in Jambi also depends heavily on the application of NTFP regulations for certain forest land (e.g. protection forest or conservation areas).

In order to cater for the needs of farmers that tap jelutung latex as a part of their livelihood portfolio, policies and regulations need to accommodate both the rehabilitation purposes as well as local livelihoods. Jelutung promotion should be accompanied by relevant guidance and recommendations, for example on farm management, harvest methods and market potential.

Progress can be made if tappers and local collectors are facilitated to 1) have access to markets and information on the current status of the jelutung-latex market in Indonesia; 2) obtain information on jelutung cultivation and sap processing; and 3) acquire financial support such as microcredit, which requires them to form collectives or cooperatives.

Active support from relevant agencies is required for capacity building among farmers for seed certification

and jelutung cultivation, as well as technical marketing assistance. A policy framework and analysis of implementation practicalities regarding jelutung management and marketing are required. Considering the existence of market actors and the high demand for jelutung products, it is crucial to develop a jelutung sap-processing industry at the provincial level.

Facilitation is also key, referring to the temporary actions of a project facilitator to bring about system-level changes and develop market systems for the benefit of farmers.

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Correct citation

Perdana A, Sofiyuddin M, Harun M, Widayati A. 2016. *Understanding Jelutung (Dyera polyphylla) value chains for the promotion in peatland restoration and sustainable peatland management in Indonesia*. Brief no. 72. Bogor, Indonesia: World Agroforestry Centre (ICRAF) Southeast Asia Regional Program.

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