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The Philippines in the Natural Rubber Global Value Chain[1]

Highlights

- *The Philippines is situated along the belt of rubber-producing countries; it frequently ranks among the top 10 exporters of raw or semi-processed rubber.*
- *However, the industry has undergone economic downgrading in recent years – from exporting process raw rubber to sending cup lumps to Malaysia – due to the uncompetitive domestic processing environment.*
- *Current issues faced by the domestic rubber industry include high logistics and energy costs, and uncertain security situation in Mindanao, which is the major rubber-producing island in the Philippines.*
- *The country's largest final rubber products are motorcycle and automobile tires (US$382 million exports in 2014) as well as articles of vulcanized rubber parts like rubber mats, gaskets and seals (US$76 million).*

The Rubber Global Value Chain

The global rubber industry is divided into two sub-sectors: natural and synthetic rubber.This paper focuses on the natural rubber global value chain (GVC), which consists of five major activities, namely: cultivation, tapping, processing, trading, and marketing and distribution.

Southeast Asia, led by Thailand, Indonesia and Vietnam, covers around 90 percent of the world's natural rubber output. The largest consumers of rubber are tire manufacturers, purchasing about 70 percent of the total output. Since 2000, overall demand for rubber has increased by around 30 percent due to its use in the medical field, as well as in the manufacture of athletic equipment and apparel. Other trends also influenced the rubber industry such as:

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[1] Condensed from the April 2017 study on "The Philippines in the Natural Rubber Global Value Chain" prepared by the Duke University Center on Globalization, Governance and Competitiveness (Duke CGCC) on behalf of the USAID/Philippines, through the Science, Technology, Research and Innovation for Development (STRIDE) Program.

[2] Rubber cup lumps refer to unprocessed natural rubber.

- **Changing production patterns as new players enter the industry.** Rubber production has expanded to Southeast Asia and Africa in the past 15 years. The total global area utilized for rubber production has increased by 35 percent (13 million hectares) mainly as a response to the exceptionally high prices of rubber between the periods of 2004 and 2013. However, the sudden increase in rubber supply brought the market prices down, forcing major producing countries to reduce their expansion rates. Emerging producers meanwhile, took advantage of their cheap labor and land resources and continued to ramp up their production. In 2012, for instance, Vietnam surpassed Malaysia and became the world's third largest producer of rubber.

- **Fluctuating rubber prices led established producers to consider the opportunity cost and seek for more profitable alternatives.** As compared with rubber, palm oil offers higher margin per hectare and requires less waiting period to maturity (i.e., 3 years for palm oil versus 5-7 years for rubber). Malaysia, the leading producer of rubber until 1991, has shifted away from rubber production and instead became a net importer of rubber. Thailand also appears to be treading a similar path as Malaysia.

- **Rubber production is currently characterized by plantation models after long being dominated by smallholders.**[3] Established rubber producing countries such as Thailand, Indonesia and Malaysia are dominated by smallholders. In contrast, rubber plantations in newcomer countries such as Vietnam, Cambodia and Laos are operated by large-scale public and private investors, which are vertically integrating into rubber processing. Three major rubber firms emerged in these newcome countries since 2010, namely, von Bundit, Sri Trang Agro-Industry, and Halycon Agri.

- **Tire production has shifted its bases from developed countries to Asia.** Tire manufacturing expends the largest demand for natural rubber. The strong demand and localized production in the automotive sector in developing countries has influenced the shift of tire production towards Asia, particularly in China.

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The Philippines in the Rubber Global Value Chain

The Philippines' rubber industry is characterized by small cluster of firms that are mostly based in Mindanao. The production of most firms are geared towards the domestic market and concentrated primarily in synthetic rubber. In additon, there are less than fifteen (15) firms that are involved in the export of natural rubber products.

Three categories of actors compose the country's rubber chain. These are: (1) Malaysian traders or processors – they purchase raw natural rubber; (2) Foreign tire companies or traders – they purchase processed rubber (usually crumb rubber) that are then sold to tire companies in China, Korea and other locations in Asia; and (3) Tire producers or rubber parts manufacturers located in the Philippines. Among the three, Malaysian traders purchase the largest share of the Philippines' total rubber production at around 60 percent.

Rubber companies within the Philippines are usually processors that have well-established connections with Malaysian traders and foreign tire companies. Many processors are either integrated backward or have long-standing linkages with land owners, tappers, and traders. Their export volumes, however, are relatively small. While large Filipino companies have the capability to operate

[3] Smallholders are farmers with rubber production accounting for 91%, 85% and 93% of the share in Thailand, Inodnesia and Malaysia, respectively. While newcomers in the production, such as Viet Nam, Cambodia and Laos, smallholders account for less than 35% of the total production.

across multiple stages of the value chain, many are focusing on large-scale aggregation and trading of raw or semi-processed rubber. There are around twenty one (21) processing companies in the country as of 2015, but only five (5) of these are International Standards Organization (ISO)-certified. Figure 1 provides further illustration of the Philippines' participation in the rubber GVC.

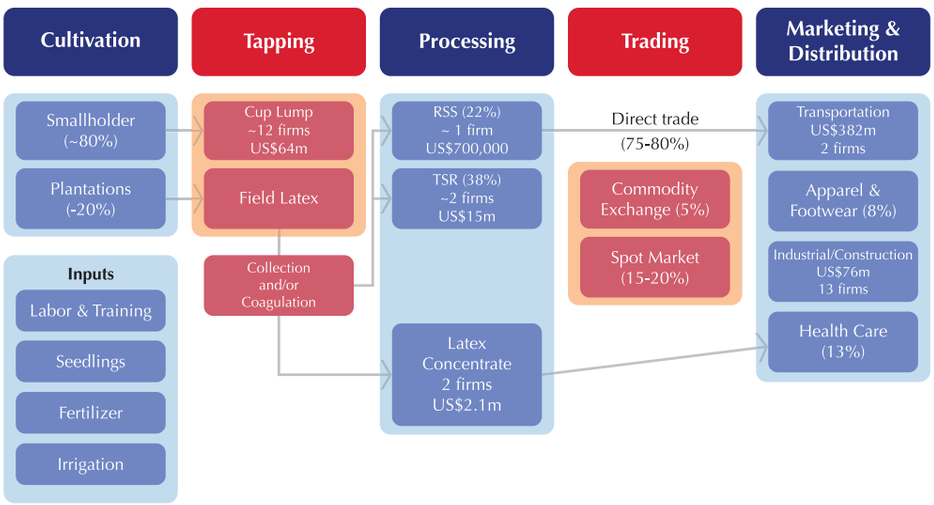

Figure 1. The Philippines in the Rubber GVC

Source: Adapted from the Duke University Center on Globalization, Governance and Competitiveness (Duke CGGC). The Philippines in the Natural Rubber Global Value Chain. April 2017

Advantages

The Philippines exhibits certain strengths that are valuable in its quest to upgrade in the rubber GVC. These include:

1. **Favorable environmental conditions.** It is located in the rubber belt, which is (ten) 10 degrees north or south of the Equator, characterized by temperate damp climate that is well suited for rubber production.

2. **Close to major processors and consumers of natural rubber.** ASEAN is the world's major producer and exporter of natural rubber. Neighboring countries like Thailand, Indonesia, Malaysia, and Vietnam exported around 85 percent of the world's unprocessed and semi-processed natural rubber in 2014.

3. **Commitment of Yokohama to increase local sourcing.** The Japanese company vowed to increase its domestic procurement of crumb rubber from 15 percent in 2012 to 50 percent in 2017. Yokohama also provided extension efforts to local suppliers toimprove rubber quality and increase incentives for domestic businesses to acquire ISO certification.

4. **Engagement of government agencies in the rubber industry**. Government support to the rubber industry is highly beneficial. The Department of Trade and Industry (DTI), for instance, helped coordinate initiatives across the sectors by facilitating Yokohama's outreach to the local sector and providing assistance to connect buyers and sellers in Zamboanga. DTI also collaborated with the Department of Agriculture (DA) to establish the Philippine Rubber Technical Working Group. Additionally, the DA has initiated capacity building and launched the Philippine Rubber Research Institute (PRRI) to improve capabilities across the value chain.

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Challenges

Conversely, the Philippines is also facing specific challenges that undermine the competitiveness of its rubber industry. The leading factors include:

1. **Inadequate training in production and tapping techniques compromise rubber quality and yields.** Filipino processors continue to receive low prices for semi-processed rubber due to concerns regarding contaminated output. The creation of the PRRI and the Philippine Rubber Technical Working Group are initial steps in building the capacity of rubber farmers.
2. **Access to higher-quality seedlings and appropriate fertilizers is constrained.** Although the Department of Environment and Natural Resources (DENR) helped establish 27 nurseries in the country, the stakeholders reported that the seedlings are of low quality and take a longer time to mature (Field Research, 2016).
3. **Cost-prohibitive processing environment.** There is little incentive to process rubber in the Philippines. This is quite evident in the country's shift from export of crumb rubber to cup lumps to Malaysia. Filipino processors report that they receive US$50-US$100 less per ton for processed rubber due to quality concerns. Moreover, the high energy cost in the country provides additional reason to export raw natural rubber to Malaysia and process it there.
4. **Low levels of ISO certification.** The overall enthusiasm of pursuing ISO accreditation in the country remains low as stakeholders report that the economic benefits fall below the economic costs (Field Research, 2016). ISO certification is an important prerequisite for crumb rubber and other intermediate rubber processors to integrate into supply chains of large-scale final product manufacturers. However, only five processors in the Philippines are ISO-certified.
5. **Political and security instability in Mindanao.** Political and security instability in Mindanao, which have impaired the progress of the island, are also affecting the development of the rubber industry as rubber plantations have been targets of rebel attacks. Likewise, security issues are making it difficult for private operators in the area to secure loans especially from foreign sources that either place the region on a "no-loan" list or charge higher rates (Field Research, 2016).
6. **Communication gaps among industry stakeholders.** There are communication gaps among industry stakeholders , which could be enhanced in at least three respects: 1) between government offices – there is no coordinated response to many of the industry's challenges; 2) between individual government offices and private sector actors – there is a mismatch in priorities as business officials point out that government efforts are often not suited for the rubber industry; and lastly, 3) between private sector actors at different segments of the value chain – characterized by trust deficits and failure to communicate market signals, especially between traders and intermediate processors, or between final product manufacturers and intermediate processors.
7. **Distance between EPZs[4] in Mindanao and rubber production hubs.** The Export Processing Zones (EPZ)[4] in Mindanao are relatively far from the rubber production hubs. Although the incentives offered by the Board of Investments (BOI) and the Philippine Economic Zone Authority (PEZA) can serve as a significant tool for recruiting foreign direct investments (FDI), the EPZs on the island are mostly concentrated in Davao and Cagayan de Oro. On the other hand, the Zamboanga Peninsula, which produces roughly 43% of the country's rubber, remains underrepresented.

The creation of the PRRI and the Philippine Rubber Technical Working Group are initial steps in building capacity of rubber farmers.

[4] The Economic Processing Zones (EPZ) are now referred to as Special Economic Zones (SEZ)

Upgrading: Lessons for the Philippines from Global Experience

The constraints discussed in the previous section limit the Philippines' possible upgrading trajectories. The country needs to upgrade its current rubber operation to establish a competitive position in the natural rubber GVC. As mentioned in a study (Humphrey & Schmitz, 2002), upgrading can allow actors in the GVC to capture higher value from their participation, which can be achieved through the adoption of new technologies, creation of new products or engaging in new activities. The following discussions summarize the upgrading trajectories pursued by select countries in the rubber GVC:

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Entry into the Value Chain

- **Establishing rubber plantations for export**

  Vietnam implemented a rubber-planting program in 2001to establish itself as a player in the sector. The program, which continues to date, has focused on developing and using the best agro and harvesting practices. In 2013, Vietnam posted the highest yield in the industry at 1.75 tons per hectare (Accenture, 2014).

Process Upgrading

- **Introducing new or more sophisticated technologies or reorganization of production systems to increase productivity**
- **Improving yields through new cultivation and tapping techniques, tree replacement, etc.**

  Indonesia focused on an education program that aimed to improve tapping techniques and to replace current trees with higher-yielding varieties. GAPKINDO, Indonesia's Rubber Association, collaborated with the Estate Crops division of the government's Department of Agriculture and the country's Centre for Policy and Implementation Studies for this initiative, which eventually led to over 90% increase in yield from 2001 to 2013 (Accenture, 2014).

Product Upgrading: Processing Segment

- **Producing a higher value product**
- **Requiring knowledge of market preferences, costs, and prices**
- **Introducing better quality or higher valued semi-processed rubber**

  The global export share of Technically Specified Rubber (TSR), a higher value product, has increased over the past decade. However, latex concentrate, a lower value product, still accounts for about a third of export earnings of Thailand and Guatemala. Thailand remains as the world's largest exporter of latex (UN Comtrade, 2016).

Functional Upgrading into Final Products (Health Care)

- **Acquiring new functions (or abandoning existing functions) which require an increase in the overall skill content of the activities**
- **Shifting into the production of health and hygiene products**
- **Requiring knowledge of new activities, market preferences, etc.**

Malaysia's global dominance in rubber production took its toll on the country's land and labor resources. As a result, Malaysia transitioned as a net importer of rubber and gradually became the largest manufacturer of latex gloves (Accenture, 2014; UN Comtrade, 2016). Similarly, Thailand has recently shifted to the production of gloves and condoms (Weerathamrongsak & Wongsurawat, 2013).

Functional Upgrading into Final Products (Transportation)

- **Acquiring new functions (or abandoning existing functions) which require an increase in the overall skill content of the activities**
- **Shifting to the production of tires, and other automotive part**s

  The growth of the automitive sector in Southeast Asia, for example, has influenced Thailand and Indonesia to build capacity in tire manufacturing. Thailand's local industry and rubber imports supply the rubber requirements of facilities established by tire companies such as Goodyear, Michelin and Bridgestone. The country also hosts an export-oriented plant established by the Shangahai Huayi Group.

Backward Linkages

- **Increasing in-country integration between value chain segments**
- **Providing supporting equipment, inputs and/or services for a downstream segment**

  Historically, Thailand's tools for tapping and cultivation of rubber were imported from Malaysia. Recently, Thailand has been producing these tools locally (Weerathamrongsak & Wongsurawat, 2013).

Environmental Upgrading

- **Reducing the environmental footprint of value chain operations**
- **Reducing water contamination during processing**

  Rubber water effluent, if left untreated, can pollute rivers. To address this problem, Malaysia introduced legislation and measures such as the introduction of inexpensive aerobic, anaerobic and facultative ponds, which has helped reduce contaminants by more than 80%. (Mohammadi et al., 2010).

Upgrading Trajectory Recommendation*s*

Opportunities for the Philippines to enter the natural rubber GVC are currently limited. Issues like high energy costs, weak domestic demand for final output, and security concerns must first be addressed to strengthen the domestic rubber processing industry. The following are some specific recommendations to facilitate the country's upgrading trajectories:

- **Short term: product and process upgrading in production, harvest and post-harvest activities.** The Philippines has consistently received the lowest unit value for its rubber products over the past 10 years. Poor harvest, as well as post-harvest operations, are exacerbating the shortage of high quality field latex and cup lump. The country needs to encourage farmers to use more modern agricultural techniques such as higher quality planting materials and fertilizers, improved irrigation and pruning techniques to ramp up domestic production. The quality of field latex and cup lump, on the other hand, can be enhanced by providing better trainings for tappers and traders.

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These steps will support DTI's initiatives to encourage Yokohama to invest in strengthening backward linkages in the country and eventually help the country fetch higher prices for its rubber. Increased production in the short-to-medium term could help support economies of scale for processors and encourage them to undertake process improvements.

- **Short to medium term: process upgrading in processing activities.** Improving processing operations for better quality of rubber will result to higher commodity prices and will enable the Philippines to access the global value chain for major end markets such as transportation and healthcare. However, these markets require a large and stable supply. To improve Philippine rubber quality, tappers and traders will need more intensive training, as well as increased use of higher quality inputs. Local processors will also need to obtain the necessary ISO certification to be able to participate in larger supply chains such as in the Yokohama deal pursued by the DTI.
- **Short-to-medium term: product diversification in final product manufacturing using imported natural and synthetic rubber supply.** In the short term, the Philippines can potentially take advantage of the relatively strong exports in final rubber products in the transport sector and the emerging producers in the healthcare sector. This opportunity, combined with the PEZA and the BOI's fiscal incentives, as well as the availability of manufacturing personnel, can help stimulate the rubber manufacturing operations in the country. This could also help encourage the demand for local production and processing of natural rubber in the long run. Moreover, it can allow the emergence of an integrated agribusiness sector if major constraints to the rubber industry are fully-addressed.

In the short term, the Philippines can potentially take advantage of the relatively strong export in final rubber products in the transport sector and the emerging producers in the healthcare sector.

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