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West Kalimantan Integrated Border Area Development

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**WEST KALIMANTAN
INTEGRATED BORDER AREA DEVELOPMENT**

Part I: Project Concept Design

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and

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February 2018

The views expressed herein reflect those of the authors and do not necessarily reflect the views of any organization with which the authors are currently or formerly associated.

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Source: archipelago fastfact. Online: <https://archipelagofastfact.wordpress.com/>.

Map of West Kalimantan

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This study responds to request by the Government of Indonesia to the Asian Development Bank (ADB) that a pre-feasibility study be carried out on the potential for developing a border economic area in West Kalimantan and expanding cross-border trade and investment in goods and services with the Malaysian state of Sarawak.

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Photos in this report are from fieldwork site visits and were taken by Alisa Lord.

Abbreviations

ADB	Asian Development Bank
AFTA	ASEAN Free Trade Association
AILPA	Australia Illegal Logging Prohibition Act
APL	Land classified as Other Land Use
ASEAN	Association of Southeast Asian Nations
ASRI	Alam Sehat Lestari
BAPPENAS	Indonesian Ministry of National Development Planning
BDS	Business Development Service
BIMP-EAGA	Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area
BKPM	Indonesian Investment Coordinating Board
CEPT	Common Effective Preferential Tariff
CF	Conversion Factor
CGF	Credit Guarantee Facility
CIFR	Center for International Forestry Research
CIQS	Customs, immigration, quarantine and security
CITES	Convention on International Endangered Species of Wild Fauna and Flora
CPO	Crude Palm Oil
CSF	Cost Sharing Facility
DP	Damaged Plants
DWT	Dead-Weight Tons
EIRR	Economic Internal Rate of Return
EP	Economic Price
EUTR	EU Timber Regulation
FIRR	Financial Internal Rate of Return
FP	Financial Price
FSC	Forest Stewardship Council
GMS	Greater Mekong Subregion
GNI	Gross National Income
GPDP	Gross Provincial Domestic Product
HDI	Human Development Index
HPK	Convertible Production Forest
HS	Harmonized System
ICQS	Immigration, customs, quarantine and security
ICT	Information and Communication Technology
INS	Indonesian National Standard
ISPO	Indonesian Sustainable Palm Oil
ITTO	International Tropical Timber Organisation
KM ²	Square Kilometer
M&E	Monitoring and Evaluation
MOA	Memorandum of Agreement
MOS	Malaysian Organic Scheme

MOU	Memorandum of Understanding
MSEs	Micro and Small size Enterprises
MW	Megawatts
NGOs	Non-government organizations
NTMs	Non-tariff measures
OECD	Organisation for Economic Co-operation and Development
OP	Old Plants
OSV	Offshore Support Vessels
PEFC	Programme for the Endorsement of Forest Certification
PKI	Indonesian Communist Party
PKO	Palm Kernel Oil
PLBN	Pos Lintas Batas Negara
PP	Productive Plants
PPP	Purchasing Power Parity
RCA	Revealed Comparative Advantage
REER	Real Effective Exchange Rate
RER	Real Exchange Rate
RPJMD	West Kalimantan's Medium-Term Development Plan
RTSS	Regional Tourism Sector Strategy
SAP	Strategy and Action Plan
SBSR	Shipbuilding/Ship Repair Industry Strategic Plan
SEMZs	Special Economic Mega-Zones
SEZs	Special Economic Zones
SFIA	Sarawak Furniture Industry Association
SMEs	Small and Medium size Enterprises
SWOT	Strengths, Weaknesses, Opportunities and Threats
TA	Technical Assistance
TRCBs	Trade-Related Capacity Building
UPP	Unproductive plants
UV	Ultraviolet
WBEC	West Borneo Economic Corridor
WWF	World Wildlife Fund

Summary

1. *Motivation for the Study*

West Kalimantan is one of four provinces that the Government of Indonesia has included in its recent plan to develop particular border areas of the country. The intension is to improve living standards, promoting commerce, attracting workers and their families, and reducing agglomeration in Java's major urban centers. The Government's plan, announced by President Joko Widodo in December 2016, initially focused on three provinces, namely, West Kalimantan, bordering the Malaysian state of Sarawak; East Nusa Tenggara (gateway to Timor-Leste); and Papua (gateway to Papua New Guinea).

At the suggestion of the Asian Development Bank (ADB), the Government of Indonesia added North Kalimantan province to the list of provinces since ADB was already in the process of designing an integrated border area development program for that province. The Government has used the ADB's model as a high-profile, demonstrable pilot project for the three other provinces. This study for West Kalimantan therefore follows the structure and analytical methodology of the North Kalimantan pre-feasibility study.

2. *Pre-Feasibility Study Components*

Objective: This study identifies concrete and high-impact projects that will advance implementation of an integrated border area development program for West Kalimantan. This part of the study determines what the integrated border economic area should look like. The process involves carrying out a scoping study in the province and, based on those findings, preparing a concept report on program design and how it should be prepared and implemented. The next part of the study appraises the projects that make up the border economic area development program.

Components: The main components of this concept report are (a) program rationale; (b) objectives, outputs, outcome, and risks; (c) geographic delimitation of the program; (d) socio-economic profile of the province; (e) policy and regulatory framework; (f) economic analysis, including comparative advantages and competitiveness and complementarities analyses; (g) Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis; (h) program strategy and masterplan; (i) program components; and (j) potential cross-border value chains.

3. *Economic Profile*

Leading Sectors: West Kalimantan's economy has traditionally been highly dependent on its natural resources. Initially, that dependence focused on forestry. But deforestation has shifted attention to plantations, initially those for rubber and, more recently, those for oil palm. Overall, the contribution of the agricultural and mining sectors are substantial, especially since West Kalimantan is the only province in Borneo that does not have significant oil and gas reserves. Plantations cover an area of nearly 2.5 hectares of the province, or 16,8% of the land. On average, 56% of the province is under cultivation, but there are large differences among regencies.

Labor Force: Nearly half of employed people in the formal sector operate in the agricultural, forestry and fisheries sector. Among Indonesia's administrative divisions, West Kalimantan ranks 29th out of

34 administrative divisions in the country. The low ranking is largely due to its poor performance in education, especially that of basic education.

Education: West Kalimantan's low ranking in education relative to other Indonesian provinces is due to several factors. Schools in the province lack adequate number of teacher work hours, adequate number of education hours, availability of school curricula, lesson plans, implementation of the program assessment, supervision by principals, and submission of evaluation results by teachers. The dropout rate from senior secondary schools in the province is 7.2%, which is more than twice the national average of 3%. Overall, one-fourth of the labor force lacks even the most basic primary school education.

Salaries: Average monthly salary in West Kalimantan is in line with the national average. However, average salaries differ substantially across provinces. Relative to the rest of the Kalimantan provinces in the island of Borneo, West Kalimantan's average salary is nearly 20% lower. Within the province, agricultural sector salaries are, on average, 30% below the average for all salaries, while those of the service sector are 40% above the average. Manufacturing sector salaries are in line with the average for all sectors, while service sector salaries are much higher than the average of any other province.

Urbanization: West Kalimantan's large cities of Pontianak and Singkawang, offer important opportunities for economic development and for expanding access to basic services, including health care and education. Pontianak is aiming to become a so-called smart city by 2019 under the Government's 100 Smart City project, which aims to integrate information and communication technology (ICT), and various physical devices connected to the network (the 'Internet of things' or IoT) to optimize the efficiency of city operations and services and connect to citizens.

4. Trade Analysis

West Kalimantan's major exports are as follows:

- *Aluminum Oxide* – Alumina's contribution to export earnings has risen greatly. Exports for the compound began in 2013, but did not become significant until 2014. By 2017, their contribution had expanded to 45% of total export earnings.
- *Rubber* – Rubber exports in 2012 represented over 50% of total export earnings. But by 2017 their contribution had declined to 34%.
- *Wood* – Wood and its products have also declined in importance for the province's exports. Between 2012 and 2017, the contribution of this category fell by one-third, from 15% to 10%.
- *Palm Oil* – The value of palm oil exports in 2012 represented only US\$2.2 million. By 2017 they had expanded to US\$42.2 million, a near 20-fold increase in earnings.
- *Coconut* – Coconut exports are mainly shipped in their fresh or dried forms and in their inner shells. Their export earnings contribution expanded from US\$1.4 million in 2012 to US\$36.8 million in 2017.

Customs Ports: Nearly 75% of all exports are shipped from Pontianak, and another 16% leave from Kendawangan in the southern regency of Ketapang. The next most important customs ports are those bordering Sarawak. In order of their magnitude of exports in 2017, they are Nanga Badau in Kapuas

Hulu Regency (US\$ 33.1 million); Aruk in Sambas Regency (US\$ 13.6 million); and Entikong in Sanggau Regency (US\$ 12.8 million). Together these three CIQs process 10% of the province's total exports.

Export Destinations: West Kalimantan's exports are highly concentrated in three countries: Pakistan, Japan and South Korea. Together these three countries absorb two-thirds of all the province's exports. Malaysia, the fourth most important export destination, absorbs 11% of all exports. With the opening of the new ICQS facility in Nanga Badau in Kapuas Hulu Regency, palm oil exports to Malaysia are projected to expand significantly and increase that country's importance to the province's overall export levels in the coming years.

Comparative Advantage: West Kalimantan has a comparative advantage in the production and export of natural resource intensive and unskilled-labor intensive products. The province's comparative advantage is narrowly concentrated in rubber, wood products, alumina, and coconuts and areca nuts.

Competitive Advantage: Between 2015 and 2017, Indonesia's rupiah has remained stable against the Malaysian ringgit. However, this stability followed a 5-year period of significant weakening of the rupiah relative to the ringgit. The result was an improvement in the competitiveness of West Kalimantan's exports to Sarawak and the rest of Malaysia in 2010-2014, followed by stability since then. In the near future, it is likely that the price competitiveness of West Kalimantan's exports relative to goods produced by Sarawak will remain unchanged.

5. Potential Cross-Border Value Chains

Fieldwork visits to companies and subsequent economic analysis of those industries have led us to identify eight (8) potential industries that would help drive the provinces border economic area with Sarawak. It is important to note that not all activities within these industries were found to be viable for cross-border trade. For example, the wood pellet industry directed at providing fuel for nuclear power plants in China and Japan is an important activity in West Kalimantan. But it does not lend itself to cross-border collaboration with Sarawak.

The following are the eight industry activities with strong cross-border trade potential:

- (1) *Alumina* – West Kalimantan is an important producer of bauxite and alumina, while Sarawak has one of the world's largest smelter plants. Transport costs of alumina are very high. Yet Sarawak smelter plants have not sourced any of their raw material supplies from nearby West Kalimantan. It would make economic sense for West Kalimantan to ship its raw materials to Sarawak since alumina is a bulk commodity whose competitiveness is closely related to distance-to-markets and transport costs.
- (2) *Rubber* – Both West Kalimantan and Sarawak produce natural rubber and process it for manufacturing applications. However, only Sarawak currently has manufacturing operations in natural rubber products. The proposed cross-border value chain is therefore characterized by production and manufacturing activities being conducted in both territories, and manufacturing of natural rubber products taking place in Sarawak.
- (3) *Palm Oil* – The palm oil cross-border value chain project aims to develop collaboration and an integrated industry between West Kalimantan and Sarawak in the palm oil industry. There are high margins in the upstream market, which explains the rapid expansion of oil palm

plantations and milling processes in the Kalimantan provinces in recent years. Negative environmental consequences of the milling process can be converted in Sarawak's new biofuel facilities.

- (4) *Wood Products* – Both West Kalimantan and Sarawak have well-established downstream activities in plywood, veneered panels, and blockboard, and many companies have long-term contract with overseas markets for the delivery of those products. Company managers have expressed little interest in cross-border collaboration between similar industries from their neighboring territory. Instead, they have indicated that they would like to diversify and expand their downstream activities into high value furniture-making. The project therefore aims to develop a cross-border value chain between West Kalimantan and Sarawak in furniture.
- (5) *Fisheries* – The project would promote cross-border clustering of activities in fisheries products that are more value-added downstream products, especially those products that are processed and packaged under internationally accepted standards. The targeted types of products include semi-refined carrageenan from locally-grown seaweeds, canned crab meat, surimi and fish meal. Surimi or fish meat paste is a new local fisheries product and is used in the making of imitation crab and lobster meats, fish balls and cakes, and other convenient, ready-to-eat seafood products.
- (6) *Ship Building* – West Kalimantan has a well-established shipbuilding industry, as does Sarawak. However, Sarawak is interested in upgrading its industry to build larger ships with high-tech equipment. West Kalimantan companies like Steadfast Marine, has the capability and interest to expand its operations in Sarawak and provide the needed technology and know-how for that state's industry. The project aims to develop a cross-border collaboration between West Kalimantan and Sarawak in the shipbuilding industry.
- (7) *Organic Foods* – There are ten reasons why West Kalimantan should develop organic agriculture and extend those activities to cross-border trade and investment with Sarawak: (a) many households are involved in small scale agricultural activities; (b) the global food market is robust, with prices for foods having risen by over one-third each year; (c) global market prices for organic vegetables are, on average, nearly 2.5 times higher than their conventional counterparts; (d) prices of organic vegetables tend to be more stable than those of conventional vegetables; (e) West Kalimantan has a comparative advantage in the production of organic vegetables because of its low-cost labor relative to that of the more advanced countries; (f) safe food concerns are driving the rapid growth in demand for organic vegetables; (g) Indonesia's and Malaysia's large deficit in existing production of organic products provides a ready market for any production taking place in West Kalimantan; (h) both Governments support development of organic agriculture; (i) Sarawak could offer access to international organic certification for West Kalimantan producers; and (j) implementation of organic vegetable value chains could substantially improve living standards of large pockets of the local population.

The project would (i) survey existing local, domestic and international markets for key organic products; (ii) explore opportunities for clustering of organic producers; (iii) organize training workshops for producers on requirements for national and international organic certifications; (iv) identify distribution systems for domestic supermarkets and international wholesalers; (v) help to link clusters with packaging companies; (vi) identify champions who can advance the organic foods movements across border; and (vii) develop eco-tourism linkages and cooperative arrangements across borders.

- (8) *Tourism* – The West Kalimantan Government has designated cross-border tourism as one of the province’s most promising growth areas. The province’s geographic proximity to Malaysia places it in an enviable position since Malaysia is one of the leading sources of tourism for Indonesia. Tourism also reaches into other sectors, such as construction, manufacturing and IT services, thereby producing a multiplier effect along the value chain. The project would provide technical assistance for the development of a cross-border value chain for the tourism industry. The aim of the project would be to develop two-way tourism between Sarawak and West Kalimantan. It would bolster collaboration between the West Kalimantan Provincial Government and Sarawak State Government, and create an enabling environment for the support institutions.

6. Program Design

Geographic Coverage: The geographic area in West Kalimantan covered by the border economic area extends well beyond the regencies bordering Sarawak, or those where the border crossings are located. It extends to all Western and central regencies. The reason is the relatively large number of industries where there exist opportunities for one-way (traditional) and two-way (intra-industry) trade. And those industries are located throughout the province. Only in the most southern regency of Ketapang have businesses not developed sufficiently close relationships with those in Sarawak to have established trade and other cross-border relationships. Moreover, supporting institutions like education and training centers and hospitals are spread across the province.

Cross-Border Value Chains: Clustering of industries across the neighboring territories allows producers to bypass the need to handle the entire production process, and instead concentrate on processing stages. Segmentation of production activities permit the exploitation of differences in factors of production between West Kalimantan and Sarawak, and they generate economies of scale and ‘cross-hauling’ or two-way trade between the neighboring territories, thereby increasing the competitiveness of border industries in regional and global markets. The potential benefits from strategic alliances between Sarawak and West Kalimantan industries are compelling: they can expedite entry into new markets, expand access to skills, technologies and product diversity, and help to share fixed costs and resources.

Tourism as a Special Case: The drivers for collaboration in tourism are based on horizontal integration of markets and cost-savings from joint promotion of services offered jointly by both West Kalimantan and Sarawak. This model has proven successful throughout the world. It involves collaboration in (a) cross-border travel facilitation; (b) air, ground and water transportation connectivity; (c) positioning and branding to reach major tourist-generating markets; and (d) development of innovative tourism

products, including joint tourism fairs and collaborative marketing operations. The more advanced the integration system is, the more opportunities will be generated for tourism.

Forming Clusters: West Kalimantan's integrated border area development program relies on value chains that build on collaborative networks of business activities, which are often referred to as 'clusters'. To succeed, those clusters must accommodate local business styles and practices. Much of the technical assistance needed for the program will have to be directed towards cultivating business relationships in the context of Asian interests in building professional trust and mutually beneficial cost-sharing activities leading to common goals. This style of doing business contrasts sharply with the Western model of competitive tendering, formal procedures, and contracts. It is based on informal relationship-based business practices. For that to occur, personal interactions over time are necessary. The role of cluster leaders then become one of organizing those interactions and creating a growing trust among participants.

Building clusters within West Kalimantan is important. But for cross-border value chains to succeed, those clusters need to extend across territorial boundaries. In cases such as bauxite, alumina and aluminum production, joint ventures between companies can readily occur because the number of participants is relatively small. In the case of fisheries, organic vegetables, and other activities involving large numbers of producers, the establishment of clusters across time will take dedication and focus on the part of cluster leaders. The process cannot be rushed.

7. Next Steps

The next part of this pre-feasibility study will look at the project viability for each of the 8 leading industries identified in this report. While necessary to the conceptualization process, the identification of possible growth industries for the border area is not sufficient to justify investment decisions.

Monetarized Project Appraisal: We use cost-benefit analysis to determine whether the monetary benefits from any additional investments would outweigh their monetary costs. Since none of the 8 projects are mutually exclusive of one another, they can all be individually appraised. If, however, there are limited public funds to support all projects, then the selection of projects can be carried out from the project ranking based on calculated net benefits.

Non-Monetarized Project Appraisal: Projects also need to be prioritized according to the preferences of different stakeholder groups. Those interests can, for example, reflect the socio-economic welfare of households, local commercial entities, multinational companies, local and national public authorities, or the development agenda of international development institutions. Economics provides a way to reflect stakeholder preferences that is both theoretically and empirically sound. Each project discussed in this report has characteristics that benefit stakeholders in various degrees, and we use the results of our fieldwork interviews to prioritize stakeholder preference and rank the monetarized results for the projects by those preferences.

PART I. INTRODUCTION

1. Background

1.1. Situation Analysis

West Kalimantan is Indonesia's fourth largest province, covering nearly 8% of the country's total land mass. Yet, in comparison to the provinces in the island of Java, it is sparsely populated. The population density of the eastern part of the province is only 17 persons per square kilometer (km²), while that of the western part, excluding its two large cities, is 31 persons per km². In contrast, provinces in Java island have a population density of between 850 and 1,200 persons per km². And the Jakarta Capital Region's density is nearly 13,000 persons per km².

West Kalimantan is one of the few provinces in the country that is adjacent to another country's land. As such, it is one of four provinces that the Government of Indonesia has included in its recent plan to develop particular border areas of the country with the intension of improving living standards, promoting commerce, attracting workers and their families, and reducing agglomeration in Java's major urban centers.

The Government's plan, announced by President Joko Widodo in December 2016, initially focused on three provinces, namely, West Kalimantan, bordering the Malaysian state of Sarawak; East Nusa Tenggara (gateway to Timor-Leste); and Papua (gateway to Papua New Guinea). Additionally, at the suggestion of the Asian Development Bank (ADB), the Government of Indonesia added North Kalimantan province to the list of provinces in April 2017. Since ADB was already in the process of designing an integrated border area development program for that province, the Government decided to use the ADB's model as a high-profile, demonstrable pilot project for the three other provinces. This study for West Kalimantan therefore follows the structure and analytical methodology of the North Kalimantan pre-feasibility study.

1.2. Development Strategy

The Government's integrated border area development strategy for West Kalimantan and elsewhere is founded on the new economics of geography. With its inclusive socio-economic approach to border areas, this analytical technique seeks to advance networks of economic activities that promote cross-border trade and investment and encourage the economic and social development of areas along the border.

There are four channels through which the Government seeks to bolster the socio-economic well-being of border economic areas:

- (i) Incoming investment transfers of know-how and technology, thereby helping border areas move up the value chain, expand skilled labor requirements, and raise wages and salaries.
- (ii) Balanced growth between Indonesia's border regions and urban centers to promote income equality and reduce welfare disparities.
- (iii) Cross-border cooperation that opens opportunities for wider regional cooperation, especially along the West Borneo Economic Corridors and regional arrangements.

The present integrated border area development concept differs from traditional and narrowly defined special economic zones (SEZs) and the newer Special Economic Mega-Zones (SEMZs) whose

successes are closely associated with their location to major gateways. Instead, the benefits of Indonesia's new border program depend on proximity to upstream activities, relevance to the specific context in which they are introduced, and the effectiveness of program design and implementation.

There are three key characteristics to integrated border areas:

- (a) They work equally well for countries at similar stages of development as for countries with widely dissimilar stages of development.
- (b) They adopt well to varying degrees of collaboration between bordering territories.
- (c) They encompass a wide range of possible objectives, the specifics of which determine the strategy and action plan for any particular area.¹

1.3. BIMP-EAGA Context

Since implementation of the ASEAN Economic Community at the end of 2015, West Kalimantan has been consolidating its economic integration in the region and seeking to expand trade ties with neighboring countries, particularly in the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA). These initiatives reflect government and private sector interests in diversifying the province's economy and developing complementary production activities that generate economies of scale and allow industries to move into high-value markets. New infrastructure developments underway between West Kalimantan and Sarawak will support those efforts and lay the groundwork for possible transboundary supply chains.

West Borneo Economic Corridor – West Kalimantan's economic relations with Sarawak are grounded part of BIMP-EAGA's West Borneo Economic Corridor (WBEC). The Corridor links West Kalimantan, Sabah and Sarawak in Malaysia, and Brunei Darussalam and was endorsed in the 4th BIMP-EAGA Summit in Singapore in November 2007.² It aims to promote physical and cross-border mobility to enhance trade and investment activities within the corridor, with Pontianak in West Kalimantan and Kota Kinabalu in Sabah as corridor gateways to international markets.

1.4. Border Crossings

Border ICQS Facilities – The main form of transportation between West Kalimantan and Sarawak is through land. There are three border crossing posts. The main land crossing point is at Entikong on the Indonesian side and Tebedu on the Malaysian side. President Joko Widodo inaugurated the new immigration, customs, quarantine and security (ICQS) facility in December 2016. Its 8-hectare area contains buildings, parking areas, commercial offices, employee housing, a mosque, and a thematic market.

The other two border crossings are at Nanga Badau (West Kalimantan) – Lubok Anto (Sarawak), and Aruk (West Kalimantan) – Lundu (Sarawak) (Figure 1.1). Their ICQS facilities are new, and cross-border trade at these two crossings is limited to local trade (Figure 1.2 to 1.4). In all three border crossings, road transportation infrastructure has been upgraded, or is in process of being upgraded.

Figure 1.1. West Kalimantan Border Checkpoints with Sarawak, Malaysia



Source: Adopted from Google Maps.

Figure 1.2. West Kalimantan's Aruk Border Crossing



Source: Map by Google; photos by Alisa Lord.

Figure 1.3. West Kalimantan’s Entikong Border Crossing



Source: Map by Google; photos by Alisa Lord.

Figure 1.4. West Kalimantan’s Badau Border Crossing



Source: Map by Google; photos by Alisa Lord.

2. Objective and Coverage

2.1. Objective

The objective of this study is to identify and appraise concrete and high-impact projects that will advance implementation of an integrated border area development program for West Kalimantan.

This objective can be broken down into parts in order to clarify its meaning:

- ... *identify and appraise* means that the focus is on the first two stages of the project cycle dealing with identification and preparation. Projects range from cross-border value chains to soft and hard infrastructure components that form part of the border economic area.
- ... *high-impact projects* means that concrete projects are to be identified, appraised and ranked in terms of their socio-economic impact. To achieve this part of the objective, both the monetarized and non-monetarized returns on the projects need to be measured and ranked.
- ... *advance implementation* means that the study supports the Governments overall program to implement integrated border area development programs in key provinces of the country.

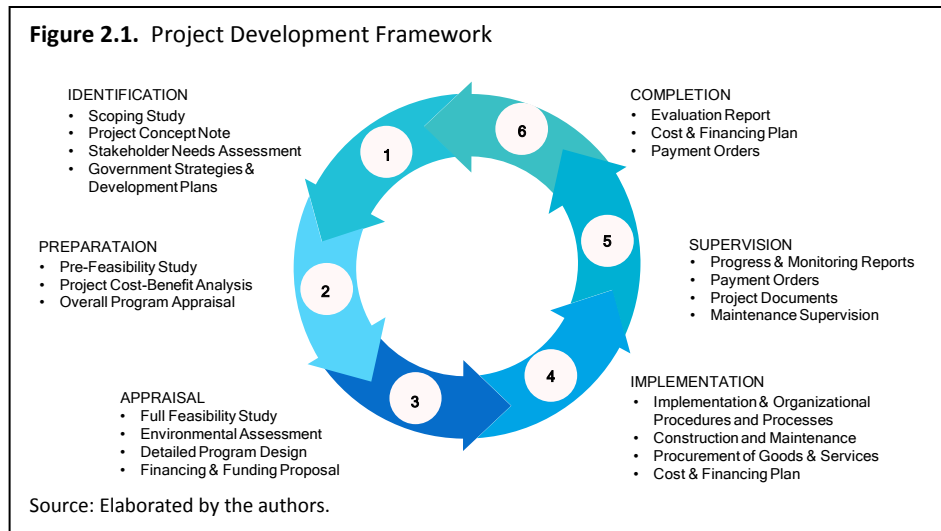
2.2. Coverage

To achieve the study's objective, the present study provides two essential work products of the *project cycle* (Figure 2.1). The first is the main output needed in Stage 1 on 'identification' in the project cycle. The second is the main output for Stage 2 on 'preparation'.

1. For project identification, this part of the study provides the *Project Concept Note*, including *Scoping Study* and *Stakeholder Needs Assessment*. The Concept Note contains the proposed project objectives, socio-economic profile and economic analysis of the focal area, potential industry drivers, and soft and hard infrastructure for the border economic area. It also contains a likely action plan for the implementation process.
2. For the project preparation component, the second part of the study presents the *Pre-Feasibility Study*. It examines the options and scope of the project and makes recommendations about which cross-border value chains and soft and hard infrastructure components for the border economic area should be included in the full feasibility study at the next stage of the project cycle.

2.3. Project Cycle Context

The project cycle is the framework used to design, prepare, implement, and supervise projects. Its stages are depicted in Figure 2.1 and are widely used by national planning agencies like the Indonesian Ministry of National Development Planning (BAPPENAS), as well as international development institutions like Asian Development Bank and World Bank.³



The six stages consist of identification, preparation, appraisal, execution, operation, and closure and evaluation. Effective implementation of these steps is especially important when designing a program like the present West Kalimantan border economic area program that consists of a complex set of integrated subprojects to promote cross-border trade goods and services.

(a) Identification

Projects are identified by the government or the private sector where the intervention will take place. Once identified, the conceptual stage of the project begins. It should define the overall project potential, identify potential sub-projects, eliminate options that are unlikely to yield desired benefits, and determine whether there is sufficient opportunity to justify the investment needed to further the overall project.

(b) Preparation

An analysis is made of the project's technical, financial, economic, environmental, marketing, and management aspects and potential social impact. The social impact inquiry needs to include an examination of all stakeholder preferences for the project scope. That will help to guide the focus of the intervention and ensure that it addresses the needs of the potential beneficiaries and those who may be negatively affected. The pre-feasibility study is carried out at this stage. It aims to select the preferred intervention activities from a shortlisted set defined by the scoping study, and an assessment of whether the potential net benefits warrant a commitment to proceed with the subsequent step involving the full-fledged feasibility study.

(c) Appraisal

An independent assessment is next carried out with a full feasibility study. In addition to determining whether further action justifies moving to the next stage of the project cycle involving project design and construction. The objective is to determine the optimum configuration of the project since, once completed, the next stage involves procurement and construction efforts, at which point there is little or no further opportunity to influence the project outcome.

(d) Execution

After approval, the implementation of the project should follow the detailed plans contained in the feasibility study to ensure that project execution costs are in line with expectations contained in the

feasibility study. Reasonable alignment of expected and actual costs requires appropriate time and expenditure investment in the feasibility study and excellence in project execution. What little information is available suggests that there exists a record of failure about expectations when compared with outcomes.⁴ If feasibility studies are to provide realistic and sufficiently detailed information for project outcomes to reasonably align with expectations, sufficient time and funding needs to be given to pre-execution stage of the project.

(e) Supervision

Project oversight has three major objectives. First, it ensures that the funds provided to the project are directed towards the agreed-upon activities. Second, it allows the governments or international development institutions to provide technical assistance to help the project achieve its objectives. Third, it provides a mechanism for due diligence covering the project costs, financing and implementation plans, legal and regulatory requirements, and environmental and social impact.

(f) Closure and Evaluation

The evaluation compares project costs, benefits, timetable, and efficiency with what had been expected at the time of appraisal, and feeds into the next cycle of projects with suggestions for project performance improvements. The entire process covers inputs, outputs, outcomes, and impacts.

2.4. Concept Report Stage

The aim of the project cycle's first step, preparation of the Concept Report, is to determine what the integrated border economic area should look like. The process involves carrying out a scoping study in the province and, based on those findings, preparing a concept report on program design and how it should be prepared and implemented.

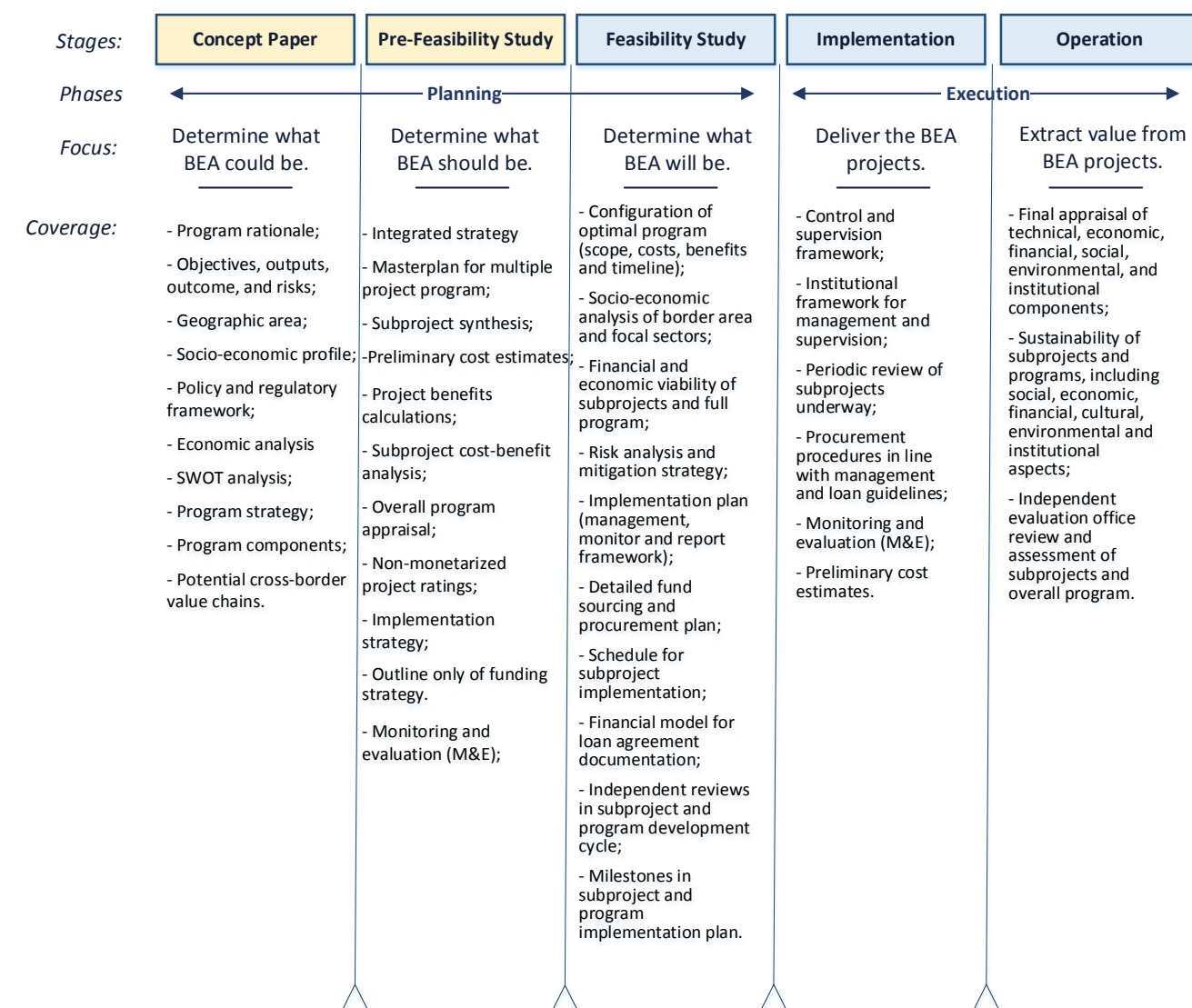
The main components of the concept report are (a) program rationale; (b) objectives, outputs, outcome, and risks; (c) geographic delimitation of the program; (d) socio-economic profile of the province; (e) policy and regulatory framework; (f) economic analysis, including comparative advantages and competitiveness and complementarities analyses; (g) SWOT analysis; (h) program strategy and masterplan; (i) program components; and (j) potential cross-border value chains (Figure 3.2)

2.5. Pre-Feasibility Study Stage

The aim of the project cycle's second step, preparation of the pre-feasibility study, is to determine whether the subprojects have a solid market, sound financial base, and support the objectives of stakeholders that include the public and private sectors, the donor community, and households. In the context of government and ADB support to the program, it also aims to determine possible capacity building through technical assistance needed to promote and develop specific projects and overcome obstacles to cross-border trade and investment.

This pre-feasibility study follows standard international practices for the steps needed to carry out such an analysis: First, it conceptualizes the interrelationship between different cross-border components that are needed to make the program successful in reaching well-defined objectives specified by the Government of Indonesia. Second, it determines the key project parameters in terms

Figure 2.2. Stages of Border Economic Area Development Project



Source: Elaborated by the authors based on W. Mackenzi and N. Cusworth, "The Use and Abuse of Feasibility Studies: 2016 Update." Adelaide, AusIMM conference, 2017.

of location, financial requirements, technical support needed, gains to major beneficiaries, preliminary cost estimates, financial and economic feasibility, implementation program and timeline. It focuses on methods to optimize each program component in conjunction with an in-depth analysis of project parameters that make the overall integrated program successful.

To the extent that the study accomplishes these objectives and that the program proves to be viable, the full feasibility study should then carry out minor adjustments to all the details of the present study to optimize the returns of investments made to the program, and guide its design and implementation, including its construction stage, where appropriate, and final operation.

2.6. Contents

The report consists of the following parts:

- Part I provides the economic rationale for the study, and the study's objective and contents.
- Part II, on the socio-economic profile, provides a comprehensive look at West Kalimantan in terms of its socio-economic characteristics, connectivity with Sarawak, and specific activities of interest in possible areas of economic collaboration.
- Part III, on government policies, focuses on national and provincial government strategic objectives in developing an integrated border economic area in West Kalimantan. It also examines private sector interests and concerns about soft and hard infrastructural needed to promote cross-border commercial activities. Finally, it examines the integrated border economic area in the context of the West Borneo Economic Corridor and how the corridor framework can help to promote cross-border value chains.
- Part IV, on trade analysis, offers detailed information about traded products, and identifies areas of competitiveness and complementarities. It also reports on the results of a SWOT analysis on factors influencing cross-border trade.
- Part V, on cross-border value chains, describes the potential areas of collaboration in upstream and downstream activities for a range of industries in West Kalimantan.
- Part VI, on program design, provides a master plan for the integrated approach to developing cross-border trade and investment between West Kalimantan and Sarawak.
- Part VII describes the next steps that will be taken in the preparation of the pre-feasibility portion of this study.

2.7. Terminology

(a) Border Economic Area

Border development programs have evolved in a fairly haphazard manner across the world, often with little or no regard to the experiences and lessons of others. Nor has there been any attempt to create a set of international best practices that can guide the design and implementation of these types of programs, create a common concept framework and use common terminology. As a result, there is a fairly large variety of programs that vary in coverage and use different terminologies.⁵ In this study, we adopt the broadest designation of an economic area located along a border. It can refer to an area limited to a single country or to adjoining border areas of two or more countries. It is used throughout this study to refer to both informal and formal economic zones along a border. In all cases, however, a border economic area has specific services and facilities in customs, logistics and other areas that help strengthen supply or value chains with the neighboring country.

(b) Program and Projects

Throughout this study, we use the term 'project' to refer to individual investment activities, and 'program' to refer to a set of interrelated projects for a particular geographic area or cluster of activities. The two terms are differentiated by their scope and scale. A project has a defined start and end point and specific objectives that, when attained, signify completion. A program consists of a series of related projects that meet an overarching objective. Hence, a program is defined as a group

of related projects, managed in a coordinated way to obtain benefits not available from managing the projects individually.

(c) Project Cycle Stages and Phrases

In this study, we use *stages* of the project cycle to denote the six time segments of a project; and we use *phases* of the project to indicate the two major time segments of a project, namely, the planning and execution of a project (see Figure 2.1).

(d) Internal Rate of Return

Throughout this study we use the *internal rate of return* measure the monetary benefits of a project. It is the *discount rate* at which the *net present value* of an investment is zero. The *discount rate*, in turn, is the rate of return used in a discounted cash flow analysis to determine the present value of future cash flows. In a discounted cash flow analysis, the sum of all future cash flows (C) over some holding period (N), is discounted back to the present using a rate of return (r). The *net present value* is the *present value* of the expected future cash flows minus the cost. The *present value* is the amount of cash today that is equivalent in value to a payment, or to a stream of payments, to be received in the future. To determine the present value, each future cash flow is multiplied by a *present value factor*. Finally, the *present value factor* is the factor used to calculate an estimate of the present value of an amount to be received in a future period. For example, if the opportunity cost of funds is 10% over next year, the factor is $[1/(1 + 0.10)]$.⁶

The IRR is either measured in economic or financial prices. The *conversion factor (CF)* is used to measure the relation between the two prices, specifically, $CF = \text{economic price (EP)} / \text{financial price (FP)}$, and it is defined as the economic price value of all goods in the economy at their border price equivalent values to their domestic market price value.

- (a) *Economic Internal Rate of Return (EIRR)*. Rate of return achieved on all project resource costs measured in economic prices; for a project to be acceptable, the EIRR should be greater than the economic opportunity cost of capital.
- (b) *Financial Internal Rate of Return (FIRR)*. Rate of return achieved on all project costs, where all costs are measured in financial prices and benefits represent the financial revenues that would accrue to the main project participants.

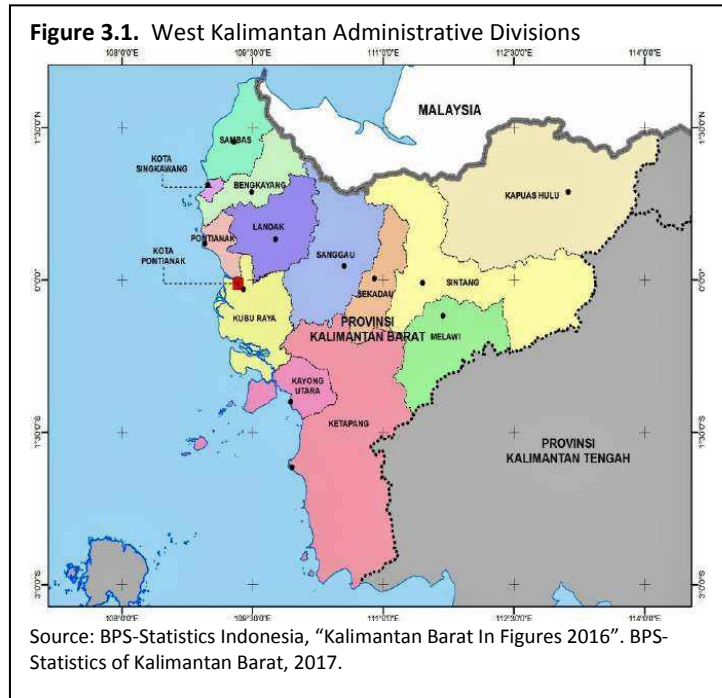
PART II. SOCIO-ECONOMIC PROFILE

3. Overview and History

3.1. Geography

West Kalimantan has an area of 72,567 km². It is bound by the Malaysian state of Sarawak in the north, the Java Sea and Central Kalimantan in the south, East Kalimantan in the east, and the Natuna Sea and Karimata Strait to the west. The Upper Kapuas mountain range forms the border between West Kalimantan and Sarawak.

The administrative divisions consist of 2 cities and 12 regencies (Figure 3.1). The size of its territory is $\pm 5\%$ greater than that of East Kalimantan and Central Kalimantan, 2 times greater than that of North Kalimantan, and nearly 4 times greater than South Kalimantan.



3.2. Demographics

Population – West Kalimantan’s population size is much greater than the other Kalimantan provinces, as is its population density. Its population is 20% greater than South Kalimantan, 50% greater than East Kalimantan, 2 times larger than Central Kalimantan, and 7 times larger than North Kalimantan. And its population density is one-third greater than East Kalimantan, 2 times greater than Central Kalimantan, and 3 times greater than North Kalimantan. Only South Kalimantan has a higher population density, equal to 3 times more than that of West Kalimantan. At the national level, West Kalimantan is the third largest province, after Papua and Central Kalimantan, but its population density ranks in the bottom fifth of all the provinces.

Population Distribution – Within the province, the population distribution varies greatly among the administrative divisions (Figure 3.2). The Western Group of subdivisions, which includes the provincial capital city of Pontianak and the city of Singkawang, is more densely populated than the Eastern Group. Nearly 30% of the province's population lives in the capital area of Pontianak, located in the delta of the Kapuas River, which is Indonesia’s longest river and one of the world’s longest island rivers. The 7 regencies in the Western Group have an average population density of 51 persons per km², while those in the Eastern Group average 22 persons per km². Kapuas Hulu Regency, in the northeast and bordering Sarawak, has the smallest population density of only 8 persons per km². It is home to a diversity of indigenous groups, including the Silat and Iban, a branch of the Dayak peoples of Borneo.

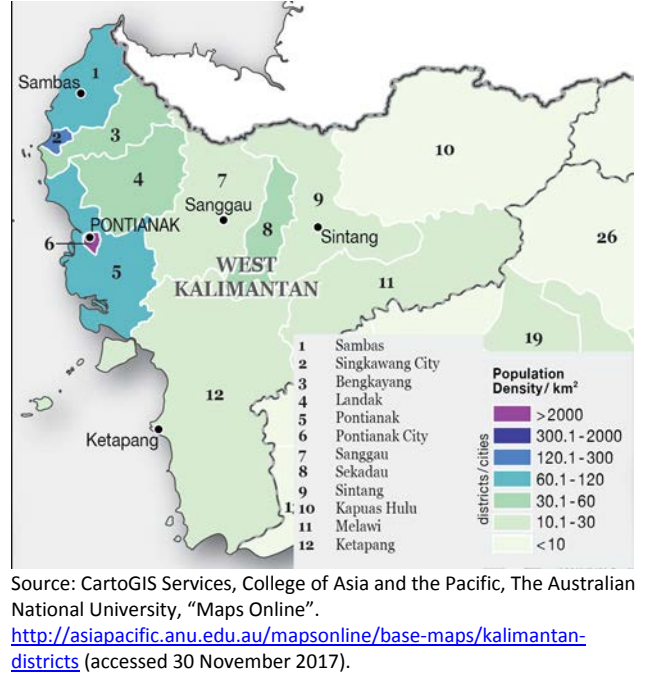
Ethnic Groups – There are nine important ethnic groups in the province. The largest are the Dayak (34.9%) and Malays (33.8%). The Dayaks live mainly in the interior, while the Malays live in coastal areas. The Javanese (9.7%) settled in during the 1930s transmigration areas, and earlier on the

Chinese (8.2%) settled in the urban areas of Singkawang and Pontianak, as did the Madurese (6.3%), who also live in Kubu Raya Regency, south of Pontianak. Other ethnic groups are the Bugis (3.13%), Sunda (1.13%), Batak (0.60%), Power (0.52%) and Banjar (0.33%).

Languages – Besides Indonesian, the official language, there are numerous dialects within the major languages. For Malay, there are the Pontianak Malay and Sambas Malay associated with the dialects spoken in Pontianak city and Sambas regency. In the Dayak language, there are about 188 dialects and, in Chinese, there are two dialects, namely Hakka and Teochew.

Religions – The main religion is Islam (51% of the population). The second largest is Christian, composed of Roman Catholics (24%) and Protestants (12%). Buddhism is followed by another 12% of the population, while 2% follow Confucianism.

Figure 3.2. West Kalimantan Population Density



3.3. Early History

Dayaks and Malays –The Dayaks were the original inhabitants of West Kalimantan. They represented a confederation of over 200 ethnic groups, each with its own dialect and located in the central and southern interior of Borneo. After the 17th century the Malays migrated to West Kalimantan and built their own sultanates. During the 18th century, the sultan leaders imported Chinese labor for gold and tin mining and the Chinese population grew throughout the province.

Chinese Influence – As Dutch imperialism spread in Indonesia, several Chinese leaders in West Borneo made efforts to protect their people from the Dutch. One such leader was Luo Fangbo, head of the Southern Company, whose headquarters was located in Guangdong province of China. He left a written account of his creation of the Lanfang Republic in western Borneo in 1777, after his Chinese miners defeated the local Malay sultans.⁷ As a republic, the government under Luo Fangbo implemented numerous democratic principles, including consultations with the citizenry on important matters to the republic. He also created a comprehensive set of executive, legislative, and judicial branches of the government. The Lanfang Republic was allied with Sultan Abdurrahman of the Pontianak Sultanate.

Pontianak Sultanate – The Pontianak Sultanate (Malay: Kesultanan Pontianak) was an Islamic Malay state that existed on the western coast of the island of Borneo from the late 18th century until its disestablishment in 1950. The Sultanate was located at the mouth of the Kapuas river in what is today the Indonesian province of West Kalimantan, and the Sultan's residential palace was situated in what later grew to become the modern-day Indonesian city of Pontianak. The Pontianak Sultanate was

founded in 1771 they established the Kadariah Palace and received endorsement as the Sultan of Pontianak by the Dutch East India Company in 1779.

Dutch Colonization – In 1884 the government of Lanfang Republic was overthrown in West Kalimantan by the Dutch. The Dutch as well as the British gained a footing in Borneo in the early 17th century. The Dutch began to trade on the west coast in 1604, and the British appeared around 1609. By 1698 the British had established a settlement at Banjarmassin in South Kalimantan. But they were soon expelled by the Dutch, who thereafter dominated the southern and western Borneo coastal areas.

The spread of the Dutch sphere of influence in southern and eastern Borneo began with their restoration of authority in Java in 1816. A series of treaties, culminating with a treaty in 1817 with the Sultan of Banjarmasin, established Dutch sovereignty over southwestern Borneo. Then, in the 1830s, the Dutch claimed the more northerly Tidung region, which had previously been regarded as vassal to the Sultan of Sulu.⁸

The British and Dutch concluded agreements in 1824 and 1871 delimiting their spheres of interest in the region. Most of Borneo was allocated to the Dutch East Indies, while the North (Sarawak, the Sultanate of Brunei, and North Borneo) went to the British. Sarawak had been granted as a fief in 1841 to James Brooke and continued to be ruled by his successors until 1946. Sarawak became the North Borneo Protectorate in 1888.

*Indonesian-Malaysian Border in Borneo*⁹ - The Indonesia-Malaysia territorial division in the island of Borneo began with the arrival in Sarawak in 1841 of James Brooke from England to become the territory's governor. The Dutch-Indies Government in Batavia (currently Jakarta) felt threatened in their position over Bornean coastal trade. As a result, Dutch Governor General J.J. Rochussen issued a decree in February 1846 outlining Dutch terrestrial interests in Borneo. This document provided a division of Borneo based on the flow of watersheds and it became the blueprint that was subsequently negotiated between the Dutch and British in the Anglo-Dutch Treaty of 1891.

Land Border –The Border Convention or London Convention of 1891 is the principal document determining the land border between Indonesia and Malaysia on the island of Borneo. It was signed in London signed between Great Britain and the Netherlands on 20 June 1891. The Convention stated that the eastern end of the border would start at the 4° 10' North latitude, proceeding westward across the island of Sebatik off the coast of Sabah near Tawau town, bisecting it. The border then crosses the water channel between Sebatik and the mainland and travels up along the median line of the Tambu and Sikapal channels until the hills which form the watershed between the Simengar (in Indonesia) and Serudung (in Malaysia) rivers.

The border travels generally northwestward towards the 4° 20'N, and then generally westwards but accommodating the watershed, although the Pensiangan, Agisan and Sibuda rivers are allowed to intersect the border. The border then follows the line of ridges along the watershed between major rivers following northwards into the South China Sea, and those flowing eastwards, southwards and westwards into the Celebes Sea, Java Sea and Karimata Straits until Tanjung Datu at 109° 38'.8 E 02° 05'.0 N in the western extremity of Sarawak. The watershed is, however, not followed in a short stretch southwest of Kuching between Gunung Api at 110° 04'E and Gunung Raja at 109° 56'E where the border follows streams, paths, crests and straight lines which are marked by boundary markers and pillars.

Recent Demarcation of Border – On 26 November 1973, a memorandum of understanding was signed between Indonesia and Malaysia for the joint survey and demarcation of their common land border. Work began on 9 September 1975 and was completed in February 2000. As of 2006, a total of 19 memoranda of understanding with 28 maps had been signed between the two countries pertaining to the survey and demarcation of the border covering a distance of 1,822 kilometers of the 2,020 kilometer border.

3.4. Contemporary History

Transmigration Plan – During the 1930s the Dutch colonial powers initiated a *transmigration plan* to move people from heavily populated islands such as Java, to the less populated islands of Irian Jaya and Kalimantan. The plan sought to reduce poverty and overpopulation in Java and to provide a workforce to better utilize the natural resources of other areas of the country. The plan became controversial because of fears by native populations of so-called *Javanization* and *Islamization*, and it strengthened separatist movements and communal violence.

Japanese Occupation – From 1942 to 1945, the Japanese occupied West Kalimantan until Indonesia declared its Independence. The violent massacre of the Malay sultans, local rulers, intellectuals and politicians by the Imperial Japanese Army during the Pontianak incidents of 1943-1944 in present-day West Kalimantan province. The Sultans of Pontianak, Sambas, Ketapang, Soekadana, Simbang, Koeboe, Ngabang, Sanggau, Sekadau, Tajan, Singtan, and Mempawa were all executed by the Japanese. Among the 29 people of the Sultan of Pontianak's family who were beheaded by the Japanese was the heir to the Pontianak throne.¹⁰

Dayak Leadership – The Japanese extermination of the Malay elite of Pontianak paved the way for a new Dayak elite to arise in the West Kalimantan political and administrative system. The Dayak ruling elite were mostly left unaffected because they were in the hinterland and because the Japanese had little interest in them. This situation gave an advantage for the Dayak leaders to fill the administrative and political position after Indonesia's independence. The Dayak Unity Party became an important force in West Kalimantan at the time of the 1955 Indonesian Constituent Assembly election. It was later disbanded after an order by the then-president Soekarno prohibited an ethnic-based party. Afterwards, its party members continued in other political parties and several subsequently became important national and provincial leaders.¹¹

Indonesian-Malaysian Confrontation – West Kalimantan was the site of substantial fighting during the Indonesia-Malaysia 'Konfrontasi' (Confrontation) under the Sukarno government in the mid-1960s. After Suharto deposed Sukarno in 1965, the confrontation was quickly resolved. Domestic conflict continued, however, for another ten years between the new military Suharto government and fighters organized during the confrontation and backed by the banned Indonesian Communist Party (PKI).

Madurese-Dayak Conflict – In the 1960s the Indonesian government granted the Madurese rights to clear forests for palm oil cultivation. This conflicted with the local Dayak tribes' traditional way of life. The tensions between the two ethnic groups resulted in major eruptions of violence in 1996, the Sambas riots in 1999 and the Sampit conflict in 2001, which resulted in thousands of deaths.¹²

4. Socio-Economic Features

4.1. Economic Profile

West Kalimantan’s economy has traditionally been highly dependent on its natural resources. Initially, that dependence focused on forestry. But deforestation has shifted attention to plantations, initially those for rubber and, more recently, those for oil palm. Overall, the contribution of the agricultural and mining sectors are substantial, especially since West Kalimantan is the only province in Borneo that does not have significant oil and gas reserves.

Land under Cultivation – Plantations cover an area of nearly 2.5 hectares of the province, or 16,8% of the land.¹³ Table 4.1 shows the proportion of each administrative subdivision that is under cultivation (see also Figure 4.1). On average, 56% of the province is under cultivation. But there are large differences among regencies, ranging from a high of 78% of Kapuas Hulu that is under cultivation to a low of 28% in the central regency of Sekadau. Along the border with Sarawak, the eastern regencies of Kapuas Hulu and Sintang have above-average proportions of land under cultivation, while the western regencies of Sambas, Bengkayang, and Sanggau have below-average proportions. These five provinces are highlighted in the color of maroon in Table 4.1.

Labor Distribution among Industries – Nearly half of employed people in the formal sector operate in the agricultural, forestry and fisheries sector (Figure 4.2). Of these, nearly 60% are male and 40% are female. The other two dominant sectors are (i) wholesale and retail trade, including the hospitality industry, and (ii) community, social and personal services. Construction and manufacturing only absorb 5% to 6% of the total work force, while mining employees 2% of the

Figure 4.1. West Kalimantan Agriculture, Mining and Protected Areas



Source: Farelli, “Indonesia Traveling Guide”. Online: <http://www.indonesiatravelingguide.com/kalimantan-maps/west-kalimantan-nature-reserves-mining-plantations/> (accessed 30 November 2017).

Figure 4.2. West Kalimantan Labor Distribution by Industry



Source: BPS-Statistics Indonesia, “Kalimantan Barat In Figures 2016”. BPS-Statistics of Kalimantan Barat, 2017.

workforce, and transport and communications and financial and business services, 2% to 3% of the workforce.

Table 4.1. West Kalimantan Share of Land under Cultivation and Non-Cultivation, 2016.

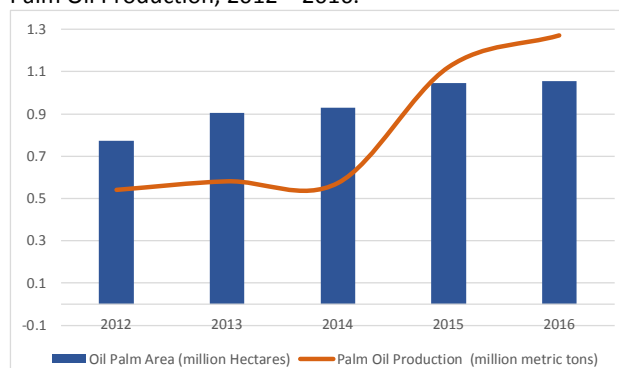
Regency/City	Cultivation Area		Non Cultivation Area		Total	
	Hectares	% of Total	Hectares	% of Total	Hectares	% of Total
<i>Kab. Kapuas Hulu</i>	<i>2,366,805</i>	<i>76%</i>	<i>746,554</i>	<i>24%</i>	<i>3,113,359</i>	<i>100%</i>
Melawi	752,223	74%	259,625	26%	1,011,848	100%
Kayong Utara	258,163	62%	155,578	38%	413,741	100%
Ketapang	1,804,033	59%	1,233,535	41%	3,037,568	100%
<i>Sintang</i>	<i>1,309,660</i>	<i>59%</i>	<i>909,001</i>	<i>41%</i>	<i>2,218,661</i>	<i>100%</i>
Kubu Raya	417,130	47%	465,954	53%	883,084	100%
<i>Sanggau</i>	<i>550,943</i>	<i>43%</i>	<i>723,101</i>	<i>57%</i>	<i>1,274,044</i>	<i>100%</i>
Pontianak	74,685	38%	121,411	62%	196,096	100%
<i>Bengkayang</i>	<i>200,499</i>	<i>36%</i>	<i>353,099</i>	<i>64%</i>	<i>553,598</i>	<i>100%</i>
<i>Sambas</i>	<i>178,699</i>	<i>30%</i>	<i>407,832</i>	<i>70%</i>	<i>586,531</i>	<i>100%</i>
Landak	244,138	29%	591,567	71%	835,705	100%
Sekadau	156,852	28%	404,666	72%	561,518	100%
Singkawang City	7,943	15%	46,497	85%	54,440	100%
Pontianak City	674	6%	11,300	94%	11,974	100%
West Kalimantan	8,322,448	56%	6,429,719	44%	14,752,167	100%

Note: Regencies highlighted in color maroon are regencies bordering Sarawak.

Source: BPS-Statistics Indonesia, "Kalimantan Barat In Figures 2016". BPS-Statistics of Kalimantan Barat, 2017.

Oil Palm – Figure 4.3 shows the rapid expansion of land dedicated to oil palm fruit and production of palm oil in the province. Between 2012 and 2016, the amount of land dedicated to the fruit expanded by 36%. Palm oil production rose by 135% in the same period. The largest producing regencies are Ketapang in the south, and Sanggau and Sintang in north, bordering Sarawak. The other three bordering regencies are also large producers of palm oil. Sanggau and Sintang are also the largest rubber producing regencies in the province. For details about West Kalimantan’s industry, see Chapter 11.

Figure 4.3. West Kalimantan Oil Palm Plantation Area and Palm Oil Production, 2012 – 2016.



Source: BPS-Statistics Indonesia, "Kalimantan Barat In Figures 2016". BPS-Statistics of Kalimantan Barat, 2017.

Major Food Crops – Rice is the major food crop. Secondary crops include the following:

- Maize
- Cassava
- Sweet
- Potatoes
- Peanuts
- Soybeans
- Mungbeans
- Pepper
- Coffee
- Cocoa
- Cucumber
- Mustard
- Water cabbage
- Spinach
- Leaks
- Chili
- Tomatoes
- Strengbean

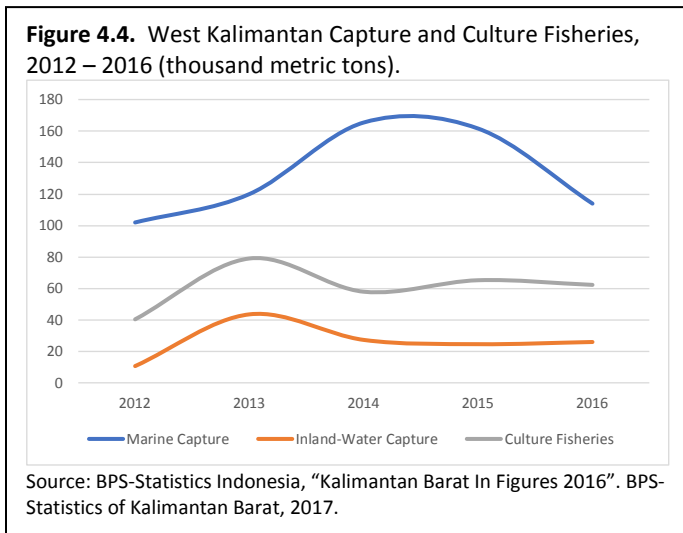
Chicken are raise commercially throughout the province, especially in Kubu Raya, Singkawang and Mempawah regencies, all of which are around Pontianak.

Major fruits produced in the province are as follows:

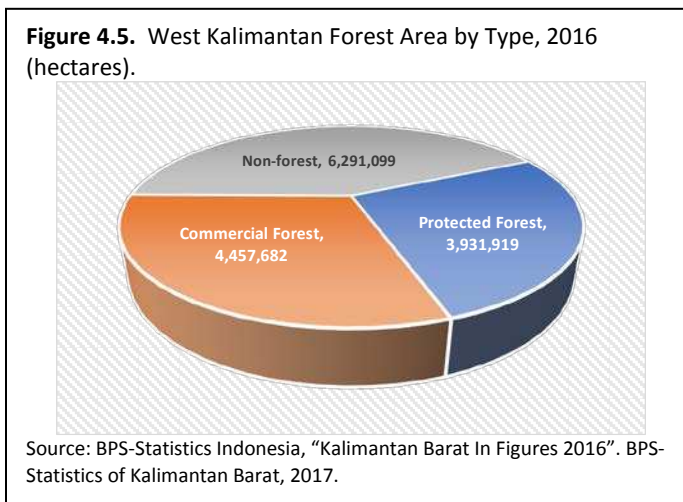
- Avocado
- Starfruit
- Langsant
- Durian
- Guava
- Oranges
- Mangosteen
- Mango
- Coconut
- Jack Fruit
- Pinapple
- Papaya
- Banana
- Rambutan
- Salak
- Sapodilla
- Soursop
- Breadfruit.

For details about West Kalimantan’s agricultural food industry, see Chapters 18 and 19.

Fisheries – Marine capture accounts for the largest proportion of West Kalimantan’s fish production (Figure 4.4). Currently, it accounts for 56% of all fish production, while culture fisheries represent 31% and inland-water capture the remaining 13%. Nevertheless, culture fisheries have been gaining in important. Its share of total production rose by 5 percentage points between 2012 and 2016. Within the province, Ketapang Regency in the south dominates marine captures. It currently accounts for 70% of all marine catch in the province. It is also the largest producers of culture fisheries, followed by Kapuas Hulu Regency in the northeast. For details about West Kalimantan’s fisheries industry, see Chapter 15.



Forestry – Forested land cover 63% of West Kalimantan’s territory, or 9 million hectares. Within that area, one-third is classified as tidal forest such with mangroves, and two-thirds are classified as dense forest. The largest forest area is located in Kapuas Hulu Regency, followed by Ketapang Regency.¹⁴ Of the total forest area, 47% is protected forest and 53% is commercial forest (Figure 4.5). About half of the commercial production forest area is under active harvesting, while the other half has limited production activity to allow for regeneration of desired species. For details about West Kalimantan’s fisheries industry, see Chapter 14.



Mining – Most of the regencies bordering Sarawak are important mining centers in the province. The exception is Bengkayang Regency, which only has a small amount of land dedicated to mining activities. Elsewhere in the province, Kubu Raya Regency in the central coastal area, has the largest

amount of land dedicated to mining activities. The mining sector employs over 51,000 people. West Kalimantan’s major mineral exports are in the form of aluminum ores and concentrates. Nevertheless, their contribution to total provincial exports is less than 3% of the total. For details about West Kalimantan’s alumina and bauxite industries, see Chapter 19.

Tourism – West Kalimantan’s major attractions include coastal and island resort facilities, marine and jungle eco-tourism, natural reserves, historical site and cultural events (Figure 4.6). There are numerous resort facilities around the city of Singkawang, including those in the northern regency of Sambas. The major marine reserves are at (a) Selimpah Beach, where turtles lay their eggs; (b) Karimata Island’s marine nature reserve, which covers an area of 77,000 km², and which contains many species of turtles and dugongs; and (c) Kendawangan Nature Reserve, a large area of lowland swamp forests, situated on the province’s south-west coast. Major national parks include Gunung Palung National Park in Ketapang Regency, Betung Kerihun National Park, Danau Sentarum National Park in Kapuas Hulu Regency, Bukit Raya-Bukit Baka National Park, and Baning National Park. For details about West Kalimantan’s tourism industry, see Chapter 20.

4.2. Social Profile

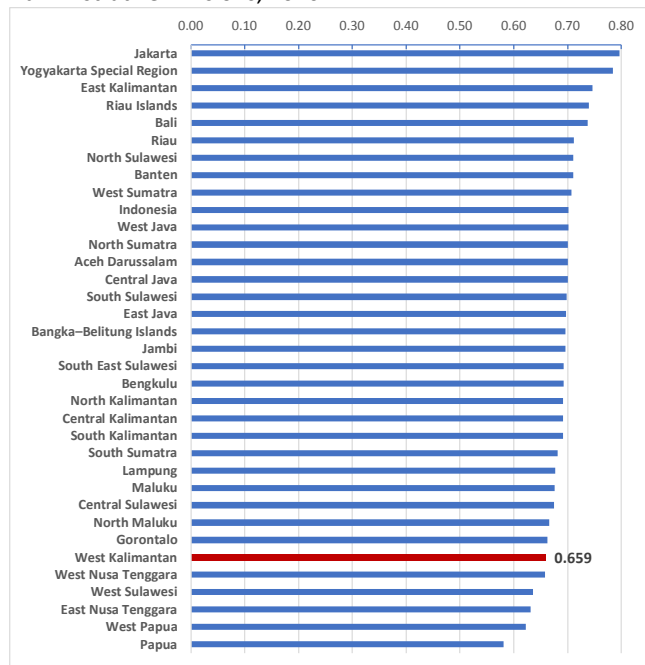
Human Development Index – The Human Development Index (HDI) measures three basic dimensions of human development: (i) health, (ii) access to knowledge, and (iii) standard of living. Health is measured by life expectancy at birth. Knowledge is measured by mean years of education among the adult population, and access to

Figure 4.6. West Kalimantan Tourist Map.



Source: IndonesiaTourism.com, “West Kalimantan”. Online: <http://www.indonesia-tourism.com/west-kalimantan/index.html> (accessed 5 December 2017).

Figure 4.7. Human Development Index (HDI) of Indonesia Administrative Divisions, 2016.



Source: Central Bureau of Statistics, “Statistics Indonesia”. Jakarta, 2017. Online: https://www.neliti.com/badan-pusat-statistik?province=kalbar&type=dataset&language=id&language=en&year_start=2016&per_page=100 (accessed 7 December 2017).

learning. The standard of living is measured by Gross National Income (GNI) per capita expressed in constant international dollars converted using purchasing power parity (PPP) conversion rates.

Among Indonesia's administrative divisions, West Kalimantan ranks 29th out of 34 administrative divisions in the country (Figure 4.7). The low ranking is largely due to its poor performance in education, especially that of basic education:

- In the education component, West Kalimantan ranks 25th in terms of expected years in school and a low of 32nd in terms of mean years in school.
- In the HDI health component, the province ranks 15th in terms of life expectancy (70 years, versus 71 for all of Indonesia).
- In the standard of living component, it ranks 13th among all the administrative divisions.

Education – West Kalimantan's low ranking in education relative to other Indonesian provinces. Its basic education falls short of the minimal service standards for implementation of good governance. In particular, schools in the province lack adequate number of teacher work hours, adequate number of education hours, the availability of school curricula, lesson plans, the implementation of the program assessment, supervision by principals, and the submission of evaluation results by teachers.¹⁵ The dropout rate from senior secondary schools in the province is 7.2%, which is more than twice the national average of 3%.¹⁶ Overall, one-fourth of the labor force lacks even the most basic primary school education.¹⁷

There are many higher-education institutions in the country. The following are the five leading universities in the province with their associated ranking in the country:¹⁸ (a) Universitas Tanjungpura (rank: 63); (b) Universitas Panca Bhakti (rank: 254); (c) Universitas Muhammadiyah Pontianak (rank: 271); (d) Universitas Kapuas Sintang (rank: 420); and (e) Universitas Nahdlatul Ulama Kalimantan Barat (rank: 494). All are in Pontianak, with the exception of Universitas Kapuas Sintang, which is located in Sintang. Universitas Tanjungpura is a large institution of over 25,000 students that offers several bachelor degrees programs. Universitas Panca Bhakti Universitas Muhammadiyah Pontianak also has a campus in Sintang and it has offers courses and programs leading to officially recognized higher education degrees such as bachelor degrees in several areas of study. The remaining universities, namely, Universitas Panca Bhakti, Universitas Nahdlatul Ulama Kalimantan Barat, and Universitas Kapuas Sintang are small institutions of under 250, 2,500, and 4,500 students respectively, with higher education degree programs.

Income – Average monthly salary in West Kalimantan is in line with the national average (Table 4.2). However, average salaries differ substantially across provinces. Relative to the rest of the Kalimantan provinces in the island of Borneo, West Kalimantan's average salary is nearly 20% lower. This difference mainly reflects the much higher average salary in East Kalimantan, as well as above-average salaries in North Kalimantan and Central Kalimantan. Only South Kalimantan has an average salary like that of West Kalimantan. Elsewhere, Irian Jaya's provinces have an average salary that is about nearly one-fourth higher than in West Kalimantan, which is mainly due to Papua's much higher average salary (over 40% higher). Only Jakarta has a higher average salary of nearly 1.5 times that of West Kalimantan.

Within the province, agricultural sector salaries are, on average, 30% below the average for all salaries, while those of the service sector are 40% above the average. Manufacturing sector salaries are in line with the average for all sectors. In comparison to other provinces, West Kalimantan's

service sector salaries are much higher than the average of any other region. Agricultural sector salaries are generally in line with the average of other regions, and those of the manufacturing sector are higher than the country's average for that sector.

Rural-Urban

Distribution – The

world's population is increasingly becoming urbanized. About half of the world population live in cities and, in Indonesia, that share equals 47%. Within Indonesia, 33% of the population in West Kalimantan lives in cities, which is the 7th lowest share among the country's 34 provinces for which data are available. However, the proportion of the total population living in urban areas has risen rapidly, from one-fourth, according to the 2010 census, to one-third, according to government estimates for 2015.¹⁹

Urbanization – If well managed, West Kalimantan's large cities of Pontianak and Singkawang, offer important opportunities for economic development and for expanding access to basic services, including health care and education, for large numbers of people. It is more efficient to provide public transportation, housing, electricity, water and sanitation for a densely settled urban population than to provide a similar level of services to a dispersed rural population. It is also less damaging to the environment. Pontianak is aiming to become a so-called smart city by 2019 under the Government's 100 Smart City project, which aims to integrate information and communication technology (ICT), and various physical devices connected to the network (the 'Internet of things' or IoT) to optimize the efficiency of city operations and services and connect to citizens.

Table 4.3 summarizes the key socio-economic indicators for West Kalimantan. As noted earlier, indicators for education generally fall short of the national average. Moreover, there is a low number of technical training high schools that can prepare students for employment as skilled labor in targeted industries operating in the province. The result is that economic indicators for the population are also low, compared with the national average. These indicators refer to per capita GDP, which is one-third below the national average, and average net wages for such professions as administrative and managerial workers (30% below national average), sales workers (16% below national average), services workers (26% below national average), and workers in agriculture, forestry and fisheries (19% below national average).

Table 4.2. West Kalimantan and Other Provinces by Region: Average of Net Monthly Income by Main Industry (thousand rupiahs), 2016

	<i>Agriculture</i>	<i>Manufacture</i>	<i>Services</i>	Total
West Kalimantan	1,046	1,535	2,118	1,476
Irian Jaya Region	1,322	1,405	2,320	1,827
Other Kalimantan Provinces	1,285	2,119	2,167	1,806
Java Region	808	1,122	1,636	1,542
Sumatra Region	1,141	1,356	1,746	1,455
Sulawesi Region	1,101	1,138	1,493	1,299
Maluccas Region	879	1,459	1,577	1,275
Lesser Sunda Islands	763	722	1,546	1,193
Indonesia	981	1,186	1,616	1,410

Notes: *Agriculture* refers to agriculture, forestry, hunting, and fisheries. *Manufacture* refers to mining, manufacturing industry, electricity, gas, water, and construction. *Services* refer to wholesale trade, retail trade, restaurants and hotels, transportation, warehousing, and communication, financing, insurance, real estate, business services, and public service.

Source: Central Bureau of Statistics, "Statistics Indonesia". Jakarta, 2017. Online:

[https://www.neliti.com/badan-pusat-](https://www.neliti.com/badan-pusat-statistik?province=kalbar&type=dataset&language=id&language=en&year_start=2016&per_page=100)

[statistik?province=kalbar&type=dataset&language=id&language=en&year_start=2016&per_page=100](https://www.neliti.com/badan-pusat-statistik?province=kalbar&type=dataset&language=id&language=en&year_start=2016&per_page=100)

Table 4.3. West Kalimantan Profile

<i>Category</i>	<i>Item</i>	<i>West Kalimantan</i>	<i>Indonesia</i>
A. Geography			
	Land Surface (sq.km)	146,807	
	Capital City	Pontianak	
	Administrative Divisions	Regencies of Bengkayang, Kapuas Hulu,	
B. Population			
	Population (2014)	4,546,439	
	- % Urban	33.1	
	- % Rural	66.9	
	% Annual Population Growth (2010-2015)	16.6	1.38
	Population Density (persons/sq.km)	31	
	% Poverty (2012)	8.0	
	Human Development Index (2016)	65.9	
C. Demographics			
	Ethnic Groups	Dayak (35%), Malay (34%), Javanese (10%),	
	Major Languages Spoken	Indonesian (official), Malay (Pontianak Malay,	
	Religions	Islam (59%), Christian (34%), Buddhism (5%),	
D. Education			
	Number of Universities	47	
	- Private	4	
	- State	43	
	Number of University Students	81,579	
	- Private	32,699	
	- State	48,880	
	Vocational High Schools		
	- Number of Schools	24	
	- Number of Teachers	735	
	- Number of Students	7,669	
	% Literacy Rate	95.0	97.4
	- Men	97.2	98.6
	- Women	92.9	96.2
	% Population that Uses Internet	10.0	
	- Urban	23.2	
	- Rural	4.2	
D. Economy			
	Gross Provincial Domestic Product (US\$ million in 2013)	1,489	912,500
	Per Capita GDP (US\$ in 2015)	2,357	3,570
	% Real GDP Growth (2000-2013)	4.9	5.2
	- Exports (fob value, million US\$)	495.8	
	- Imports (cif value, million US\$)	267.0	
	- Trade Balance (million US\$)	228.8	
	Average of monthly expenditures per capita in urban areas, USD/month (2015)	72.9	78.3
	- Food	34.5	33.3
	- Non-Food	38.4	45.0
	Average of monthly expenditures per capita in rural areas, USD/month (2015)	44.0	48.1
	- Food	24.9	26.7
	- Non-Food	19.1	21.3
	Average of Net Wage or Salary, USD/month (2016), of which:	153.4	159.0
	- Professional, technical and related workers	198.4	207.6
	- Administrative and managerial workers	262.8	373.8
	- Clerical and related workers	202.8	196.2
	- Sales workers	114.5	136.0
	- Services workers	86.3	116.9
	- Agricultural, forestry, hunting and fishermen workers	114.7	96.2
	- Production and related workers, transport equipment operators and laborers	132.4	134.8

Sources: Badan Pusat Statistik (BPS-Statistics Indonesia) and Wikipedia, "West Kalimantan". Online: https://en.wikipedia.org/wiki/West_Kalimantan#Demographics (access date: 30 November 2017).

PART III. GOVERNMENT POLICIES

5. National and Provincial Governments

5.1. National Border Area Development Program

In 2016 the Government of Indonesia introduced a new Integrated Border Area Development Program that aims to (a) lower poverty of the more disadvantaged border regions, where poverty rates are more than twice as high as in urban areas; (b) bolster economic growth of those areas, whose expansion has been 20% lower than the country as a whole; and (c) reverse the trend towards increasing congestion and agglomeration in major cities. President Joko Widodo has prioritized key areas bordering Malaysia, Timor-Leste and Papua New Guinea. West Kalimantan has been included as one of the initial three provinces in the program.

The border area development program will achieve its goals through three channels:

- First, greater employment and more value-added activities will improve living standards, reduce poverty and lower inequality in the targeted border areas.
- Second, faster economic growth will be brought about by increased productivity associated with economies of scale and production complementarities with neighboring countries.
- Third, accelerated border activity will reverse the negative investment effects from agglomeration of activities in the major urban centers of Jakarta, Surabaya and Bandung, where population density is over 15,000 persons/km², compared with only 10 persons/km² in Papua and 32 persons/km² in West Kalimantan.

The Government's border area development initiative refers to the new economics of geography and its inclusive socio-economic approach to border area advancements. It refers to a network of activities that seek to promote cross-border trade and investment and encourage economic and social development of areas along the border. Underlying this strategic goal are four channels through which border economic areas bolster socio-economic well-being:

- (i) Incoming investment transfers know-how and technology, and thereby helps the border areas move up the value chain, expand skilled labor requirements, and raise wages and salaries.
- (ii) Balanced growth between border regions and urban centers promotes income equality and reduces welfare disparities.
- (iii) Improved welfare and employment along the border ameliorates possible socio-political instability that can spill over from neighboring countries.
- (iv) Cross-border cooperation opens opportunities for wider regional cooperation, especially along subregional economic corridors.

The Government's border area development program is founded on the construction of 7 state border crossing posts (*Pos Lintas Batas Negara*, or PLBN) in the provinces of West Kalimantan (Malaysia gateway), East Nusa Tenggara (Timor-Leste gateway), and Papua (Papua New Guinea gateway). Some of the PLBN have already been inaugurated by President Joko Widodo, while others still await official inauguration.

Building on those PLBNs, the program seeks to integrate a cluster of industries and infrastructures that will deepen trade with neighboring countries. The characterization of the 'integrated border area development' program is as follows:

- The *industries* are those that produce either traditional or newly emerging tradeable goods and services, and they can be spread across the entire province, or concentrated in certain regions.
- The *infrastructures* refer to:
 - *Hard infrastructure* that consists of large physical networks necessary for the functioning of industries and the commercialization of their products; and
 - *Soft infrastructure* that consists of the institutions required to support the socio-economic conditions needed for cross-border trade, including services associated with finance, education, health, public policies and the regulatory environment, security and law enforcement.

The border development area therefore extends well beyond conventional special economic zones (SEZs) that have narrow physically defined and often secured areas with a single management and administration. A border development area instead covers the operation of a network of activities spread over a wide geographic area. The extent of that area depends on the location and network systems of the clusters that make up the border area development program.

As such, we define the Government's border development area program as a *cluster of activities that is associated in varying degrees of collaboration with cross-border networks of productive activities to achieve well-defined goals selected from a broad spectrum of development options.*

Those development goals need to be clearly delimited because there are a wide range of possible objectives that will determine the strategy and action plan for any particular area. The spectrum of possible goals for the border zone include, among others, economic growth of the target areas, alleviation of income inequality among geographic areas, attainment of political and social stability within an area, or the general improvement of well-being of households in the border region.

5.2. Provincial Development Plan

West Kalimantan provincial government's commitment to the central government's border area development program is motivated by the desire to transform the province's resource-based economy, currently driven by external demand for its raw materials, into more productive, high-value added industries, with widespread and enhanced investments, more technology-based industries, and a knowledge-based labor force. The present study supports that objective with the identification of specific projects making up a cluster of integrated activities that promote increased commerce between West Kalimantan and Sarawak, and ultimately help West Kalimantan's industries produce high-value and innovative goods and services at the technology frontier.

Since 2000 the Government of Indonesia has implemented a wide range of decentralization programs, reversing its previous system of centralized government and development planning. The programs cover health, primary and middle-level education, public works, environment, communication, transport, agriculture, manufacturing, and other sectors.

West Kalimantan's Medium-Term Development Plan (RPJMD) 2013–2018 has as its vision the achievement of a society that is religious, healthy, educated, safe, cultured, and prosperous.

The provincial government's plan is to diversify the economy to reduce its dependence on relatively few commodities like rubber and oil palm whose markets are subject to large price fluctuations. Special emphasis is to be given to agri-processing industries as one of the engines of growth. It requires development of downstream activities to expand value added and reduce dependence on primary processing activities. In infrastructure, special attention is to be given to connectivity along the West Borneo Economic Corridor and reliable power supplies to domestic industries and households. The challenge for the Government is to integrate different sector and industry development projects into a cohesive strategic plan that is internally consistent and supportive of the border area development program.

Trade at the West Kalimantan-Sarawak border checkpoints remains modest because of regulations restricting trade. On the West Kalimantan side are the need to present to the Indonesian authorities with documents on standardization and certification of food and beverage products obtained from Malaysia's local authorities in Sarawak, regardless of the extent to which the products are processed. This restriction affects Indonesia's halal product imports from Sarawak. Regulatory guidelines for officials on both sides of the border remain unclear and businesses are anxiously awaiting government clarification to facilitate trade between the two territories.

6. West Borneo Economic Corridor

6.1. Importance of Corridor

Economic corridors have emerged as one of the main vehicles for BIMP-EAGA subregional development. The West Borneo Economic Corridor, along with the Greater Sulu Sulawesi Corridor where initially proposed in 2004 by the Asian Development Bank (ADB), which is the regional development advisor for BIMP-EAGA. They were subsequently endorsed in the 4th BIMP-EAGA Summit in Singapore in November 2007.²⁰ A follow-up ADB technical assistance (TA) assessed the viability of potential economic corridors based on existing and potential trade and tourism flows. That TA also identified potential public–private sector investments in transport infrastructure, trade and logistics.²¹

The corridors were formally incorporated into the BIMP-EAGA strategy as leading drivers of cross-border collaboration under the *Implementation Blueprint (2012-2016)*.²² According to the Blueprint, the BIMP-EAGA corridors form the basis for priority infrastructure projects that aim to activate and accelerate cross-border activities, promote access to markets, reduce trade and transport costs, and facilitate growth between neighboring production, export or consumption points. As economic instruments, those corridors aim to promote efficient cross-border movement of the factors of production and stimulate trade, investment, tourism and other economic activities.

The West Borneo Economic Corridor represents a well-defined geographic area within BIMP-EAGA subregion. It has economic nodes that provide connectivity and networking of production, distribution and market functions within and outside the area. And they represent important vehicles for subregional networking of activities.

The *West Borneo Economic Corridor* or WBEC (Figure 6.1) extends approximately 1,500 kilometers and covers Brunei Darussalam, West Kalimantan in Indonesia, and Sarawak and Sabah in Malaysia. The BIMP-EAGA Blueprint does not explicitly include the Federal Territory of Labuan (Malaysia).

6.2. Corridor Characteristics

The WBEC's notable features are as follows:

Figure 6.1. West Borneo Economic Corridor



Source: Map by Google, modified by the authors.

- ▶ *Commercial Nodes* – The corridor links important *commercial nodes* in each area: (a) Pontianak in West Kalimantan, Indonesia; (b) Kuching (Sarawak, Malaysia); (c) Bandar Seri Begawan (Brunei Darussalam); (d) Federal Territory of Labuan (Malaysia); and (e) Kota Kinabalu (Sabah, Malaysia).
- ▶ *Border Nodes* – The corridor contains the *border nodes* of Entikong, Nanga Badau, and Aruk in West Kalimantan and Tebedu, Lubok Anto, and Lundu in Sarawak; Miri in Sarawak and Sungai Tujuh in southwest Brunei Darussalam; Limbang in Sarawak and Kuala Lurah in northeast Brunei Darussalam, Limbang in Sarawak and Bangar in Brunei Darussalam; and Temburong in Brunei Darussalam and Lawas in Sabah.
- ▶ *Gateway Nodes* – The corridor includes the *gateway nodes* of Pontianak in Indonesia and Kota Kinabalu and Sandakan in Malaysia as gateways to regional and international markets.

6.3. Corridor Development

Corridor Stages – The success of the West Borneo Economic Corridor depends on its ability to attract investment, which, in turn, depends on the establishment of appropriate infrastructure and facilitation policies. In effect, that means that at the early stages of development, policymakers need to concentrate on building connectivity in the first of what is often been described as the four stages of economic corridor development (Figure 6.2).²³

Figure 6.2. Stages of Corridor Development

Stage	Type corridor	Definition
1	Transport	Corridor that physically links a well-defined geographic space.
2	Multimodal	Corridor that physically links an area through the integration of various modes of transport, and extends those linkages to the subregional or broader global context.
3	Logistics	Corridor that not only physically links an area, but also harmonizes the corridor institutional framework to facilitate the efficient movement of goods and people.
4	Economic	Corridor that is able to attract investment and generate economic activities along its less developed areas. As a prerequisite, physical linkages and logistics facilitation must be in place.

Stage 1 provides an efficient movement of cargo and people within the corridors. Stage 2 offers efficient movement of cargo and people within and outside the corridors. Stage 3 adds the efficient flow of knowledge and information as well as flow of funds. Stage 4 builds commercial, border and gateway nodes and develops townships and urban centers along the corridor to support cross-border supply or value chains that connect to subregional, regional and global value chains.²⁴

At times a fifth stage is added to cover the building of corridor-level institutions, including the coordination of policies and regulations. It also covers implementation of cross-border socio-economic and environmental policies, programs and institutional capacity building.²⁵

West Kalimantan’s Connectivity – Connectivity in the West Borneo Economic Corridor prioritizes both electricity and road infrastructure. ADB is helping West Kalimantan to build a cross-border high-voltage transmission line and substation linking the West Kalimantan grid with that of Sarawak,

Malaysia. It also includes road construction from Pontianak to the town of Entikong at the border with Sarawak. Additionally, the project will construct a new distribution network to improve the reliability of power in West Kalimantan and supply more households with electricity.

The project is aligned with ADB's support to the BIMP-EAGA implementation blueprint, which made improving infrastructure facilities a priority and power interconnection a key strategic pillar. It is also part of a larger effort by the Association of Southeast Asian Nations (ASEAN) to develop the Power Grid Interconnection Development Project.

Through ADB financing, the so-called West Kalimantan Power Grid Strengthening Project is helping the Indonesian Government build a transmission line from Bengkayang in West Kalimantan to the Malaysian border. To provide access to electricity in West Kalimantan, the project will also construct two 150 kV HVTLs, from Bengkayang to Ngabang and from Ngabang to Tayan. Malaysia will finance the transmission line extension from the border to Mambong, Sarawak.

On the West Kalimantan side, the project includes new power transmission lines, distribution lines, and associated substations that will result in a 145-kilometer distribution line, distribution feeder extensions, and a substation. An 83-kilometer cross-border high-voltage transmission line and a substation will be part of the overall transmission link on the Indonesian side to connect the West Kalimantan power grid to the power grid of Sarawak, thus enabling power exchange of about 230 megawatts (MW) between the two systems. ADB is preparing part of the transmission link on the Malaysian side as a separate non-sovereign loan financed project for the state-owned power utility in Sarawak.²⁶

The project is part of Indonesia's efforts to reduce the country's dependence on oil-fueled power plants and lower the cost of electricity production. Imported electricity from Sarawak will help West Kalimantan reduce the marginal cost of electricity production, from more than \$0.25 per kilowatt-hour to about \$0.18 per kilowatt-hour. Depending on oil prices, PLN potentially will save about \$100 million and reduce its government subsidies.²⁷ On the Sarawak side, it will support the Government's efforts to export power.

PART IV. ANALYSIS OF TRADE

7. Export Characteristics

7.1 Exports by Major Classification

Figure 7.1 shows West Kalimantan's major export categories, defined by their 2-digit Harmonized System (HS) classification, known as 'HS Sections'. There are 92 HS Sections and the figure shows those groupings of exports that contributed over 1% to total export earnings in 2017.

Alumina – The largest export category refers to inorganic chemicals and compounds (HS Section 28). It is composed entirely of aluminum oxide compound, commonly called 'alumina'. Alumina's contribution to West Kalimantan's export earnings has risen greatly. Exports for the compound began in 2013, but did not become significant until 2014. By 2017, their contribution had expanded to 45% of total export earnings.

Alumina is derived from bauxite ore. Most aluminum oxide (90%) is used for the production of aluminum. Aluminum itself has a low density and is resistant to corrosion. It is vital to the aerospace industry, as well as the transport and building industries.

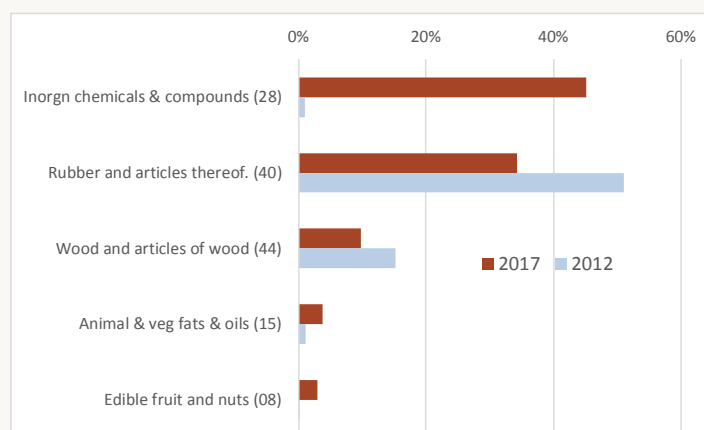
Rubber – West Kalimantan's second largest export category is rubber (HS Section 40). Its contribution to total export earnings, however, has been declining. Rubber exports in 2012 represented over 50% of total export earnings. But by 2017 its contribution had declined to 34%,

Wood – Wood and its products have also declined in importance to the province's exports. Between 2012 and 2017, the contribution of this category (HS Section 44) fell by one-third, from 15% to 10% over the 5-year period.

Palm Oil – The category of 'animal and vegetable fats and oils' (HS Section 15) includes West Kalimantan's rapidly growing palm oil exports, as well as coconut oil and edible preparations of those fats and oils. The value of palm oil exports in 2012 represented only US\$2.2 million. By 2017 they had expanded to US\$42.2 million, a 19-fold increase in earnings.

Coconut – The category of 'edible fruits and nuts' (HS Section 08) is largely composed of coconut exports in various forms. This category's export earnings contribution has also expanded, from US\$1.4 million in 2012 to US\$36.8 million in 2017. Coconut exports are mainly shipped in their fresh or dried forms and in their inner shells.

Figure 7.1. West Kalimantan's Major Export Categories, .Share of Total Exports, 2012 vs 2017



Note: 2017 based on ratio of January – September data to equivalent period in 2016, multiplied by annual data for 2016.

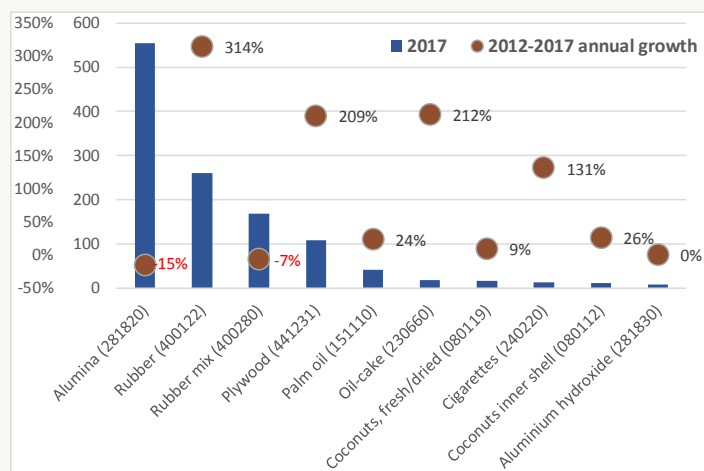
Source: Derived from HS 6-digit trade data provided by Ministry of Trade Indonesia.

7.2 Major Product Exports

Figure 7.2 shows the top-10 individual product exports from West Kalimantan in 2017, along with their average annual growth between 2012 and 2018. The following characterizations can be made about the major export products:

- As expected, *alumina* exports topped the list of major exports at the HS 6-digit product level. Since its emergence as a leading export did not occur until 2014, the average annual growth rate has only been calculated for the last 3 years. After the large expansion in 2014, exports have substantially fallen by an average of 15% a year.
- *Rubber* in its natural form and mixed with synthetic rubber are the second and third leading exports, followed by plywood exports.
- Exports of *plywood* had a large surge in 2014, which explains the high average annual growth rate of exports. But its growth since then has been more modest.
- *Palm oil* has had a robust growth since 2012, the exception being in 2015 when there was a sharp drop in exports. But their level has since expanded by two-thirds what it was two years ago.
- Finally, *coconuts* in both their fresh or dried forms, or in their inner husks, have experienced an uneven growth, surging in 2015 but since then expanding at more modest rates.

Figure 7.2. West Kalimantan's Top 10 Export Products, 2017, and Growth Rates, 2012-2017 (US\$ million and percent)



Note: 2017 based on ratio of January – September data to equivalent period in 2016, multiplied by annual data for 2016.

Source: Derived from HS 6-digit trade data provided by Ministry of Trade Indonesia.

7.3 Exports by Customs Port

Figure 7.3 shows West Kalimantan's major customs ports and the 2017 value of exports through those ports. Nearly 75% of all exports are shipped from Pontianak, and another 16% leave from Kendawangan in the southern regency of Ketapang.

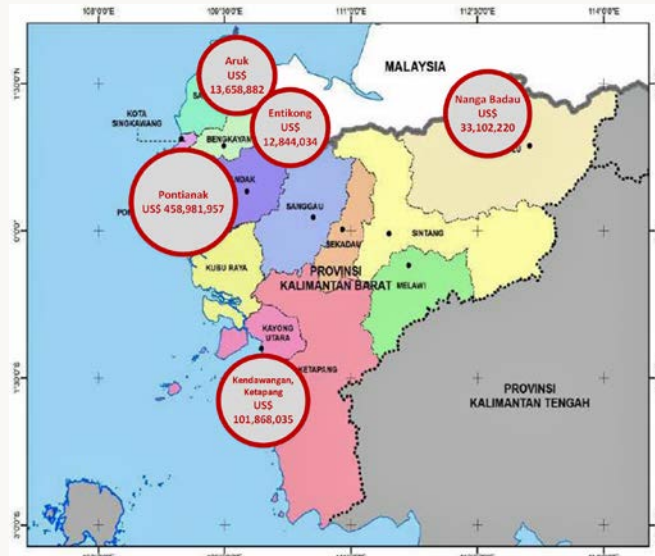
The next most important customs ports are those bordering Sarawak. In order of their magnitude of exports in 2017, they are Nanga Badau in Kapuas Hulu Regency (US\$ 33.1 million); Aruk in Sambas Regency (US\$ 13.6 million); and Entikong in Sanggau Regency (US\$ 12.8 million). Together these three CIQs ship 10% of the province's total exports.

7.4 Export Destination

West Kalimantan’s exports are highly concentrated in three countries: Pakistan, Japan and South Korea (Figure 7.4). Together these three countries absorb two-thirds of all the province’s exports. Malaysia, the fourth most important export destination, absorbs 11% of all exports. The other important market is India. All other markets represent no more than 2% of exports.

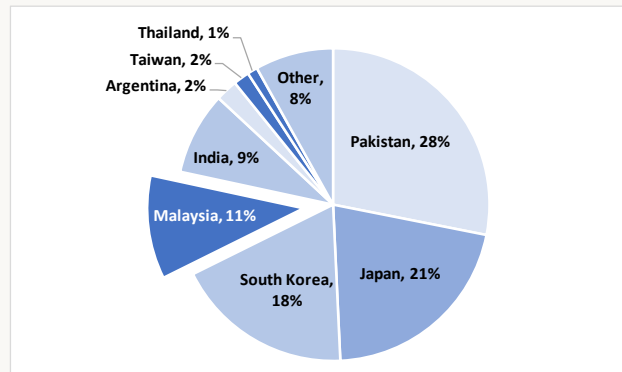
While Malaysia is a relatively small export market, its importance has been growing. Between 2007 and 2013, Malaysia’s market share rose from 1% to 3%. Then in 2014 it absorbed 10% of West Kalimantan’s exports because of a sharp increase in shipments of crude palm oil to that market. With the opening of the new ICQS facility in Nanga Badau in Kapuas Hulu Regency, palm oil exports to Malaysia are projected to expand significantly and increase that country’s important to the province’s overall export levels in the coming years.

Figure 7.3. West Kalimantan Value of Exports by Port of Exportation, 2016



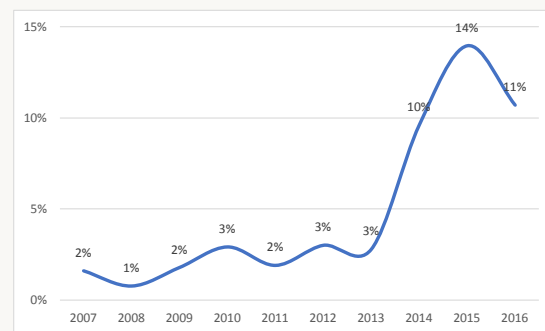
Source: Derived from HS 6-digit trade data provided by Ministry of Trade Indonesia.

Figure 7.4. West Kalimantan Destination of Exports, 2016



Source: Derived from HS 6-digit trade data provided by Ministry of Trade Indonesia.

Figure 7.5. West Kalimantan Share of Exports to Malaysia, 2007-2016



Source: Derived from HS 6-digit trade data provided by Ministry of Trade Indonesia.

8. Competitive Advantages

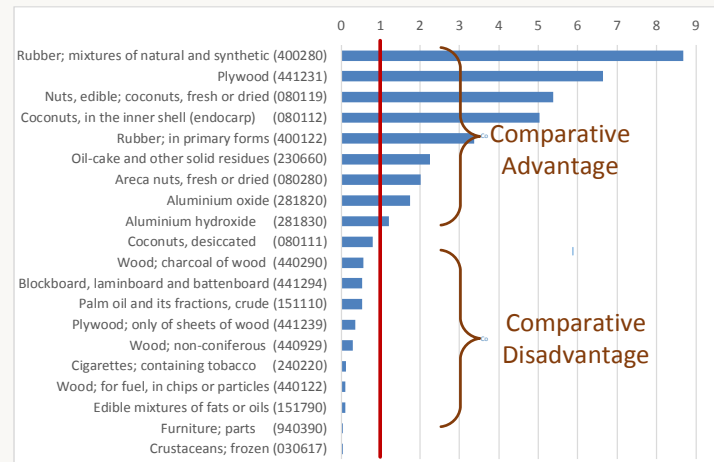
8.1. Comparative Advantages

The nature of a country's exports and its specialization in the production and trade of products can be assessed from the revealed comparative advantage (RCA). The RCA measures a country's export intensity in each product relative to other countries in the world. The ratio of a product's export shares in the country relative to that in the world is taken as a measure of the comparative advantage. If the index is greater than 1, it is indication that the country is internationally competitive in exporting the product being measured.

Figure 8.1 shows the RCA indices of West Kalimantan's top 20 products. Together these products account for 97% of all export earnings in the province. Some of the noteworthy highlights are as follows:

- West Kalimantan has a comparative advantage in the production and export of natural resource intensive and unskilled-labor intensive products;
- West Kalimantan's comparative advantage is narrowly concentrated in rubber, wood products, alumina, and coconuts and areca nuts.
- Nine (9) of the province's leading exports have a revealed comparative advantage: (a) rubber mixtures of natural and synthetic (400280); (b) plywood (441231); (c) coconuts, fresh or dried (080119); (d) coconuts, in the inner shell (080112); (e) rubber in primary forms (400122); (f) oil-cake and other solid residues (230660); (g) areca nuts, fresh or dried (080280); (h) aluminum oxide (281820); and (i) aluminum hydroxide (281830), where figures in parenthesis refer to their HS product classification codes.
- The remaining 11 top products have a comparative disadvantage in their production and exportation: (a) coconuts, desiccated (080111); (b) wood, charcoal of wood (440290); (c) block-board, laminboard and battenboard (441294); (d) palm oil and its fractions, crude (151110); (e) plywood, only of sheets of wood (441239); (f) wood, non-coniferous (440929); (g) cigarettes, containing tobacco (240220); (h) wood, for fuel, in chips or particles (440122); (i) edible mixtures of fats or oils (151790); (j) furniture, parts (940390); and (k) crustaceans, frozen (030617).

Figure 8.1. West Kalimantan Revealed Comparative Advantage of Top 20 Products, 2016



Note: Figures in parenthesis following product listing in graph refer to HS product classification code.

Source: West Kalimantan export data provided by Ministry of Trade Indonesia. World export data from COMTRADE database. Online: <https://comtrade.un.org/data/> (accessed 19 December 2017).

8.2. Competitiveness

International price competitiveness is one of the major macroeconomic determinants of trade and cross-border investments. The SWOT analysis conducted for this study underscores the concern of business leaders about price competitiveness being a critical factor affecting their ability to compete in foreign markets.

Price competitiveness is measured by the *real exchange rate*, which considers both general price movements in each country relative to that of each trading partner, and the *cross or bilateral exchange rate* between a country and each of its trading partners. When all trading partners are considered, then real bilateral exchange rates are weighted averages of the trading partners in each corresponding year and they measure the *real effective exchange rate*. The *index of competitiveness* is constructed as the inverse of the real bilateral or effective exchange rate.²⁸ A rise in the real effective exchange rate represents a decline in competitiveness because the country has relatively more expensive exports; and, conversely, a fall in the real effective exchange rate indicates a rise in competitiveness because the country's goods are becoming relatively less expensive relative to that of its competitors.

We begin by examining movements in the nominal exchange rate of Indonesia against the Malaysian ringgit, which is often the basis for perceptions about price competitiveness. Because the rupiah fell more than the ringgit against the U.S. dollar in the early part of the 2010's, the nominal cross-rate of the ringgit against the Malaysian rupiah fell sharply during that period.

However, since mid-2015, the ringgit has stabilized against the U.S. dollar, while the ringgit fell against the dollar after early 2016 (Figure 8.2). Exchange rate movements after early 2014 reflect these changes: the rupiah exchange rate against the ringgit has risen and, as perceptions in the SWOT analysis show, Indonesia's *nominal* competitiveness in goods and services against those of Malaysia has fallen.

However, notwithstanding these nominal exchange rate movements, Indonesia's competitiveness depends not only on relative exchange rate movements, but also relative domestic price movements, that is, domestic inflation and inflation in Malaysia. Hence, there exists the need to measure *bilateral real exchange rate* movements. Figure 8.3 shows the results of those calculations in terms of real cross-rate movements between Indonesia and Malaysia. It demonstrates that, between 2010 and 2014, Indonesia's rupiah has weakened somewhat against the ringgit in real terms. The result was an improvement in the competitiveness of West Kalimantan's exports to Sarawak and the rest of Malaysia.

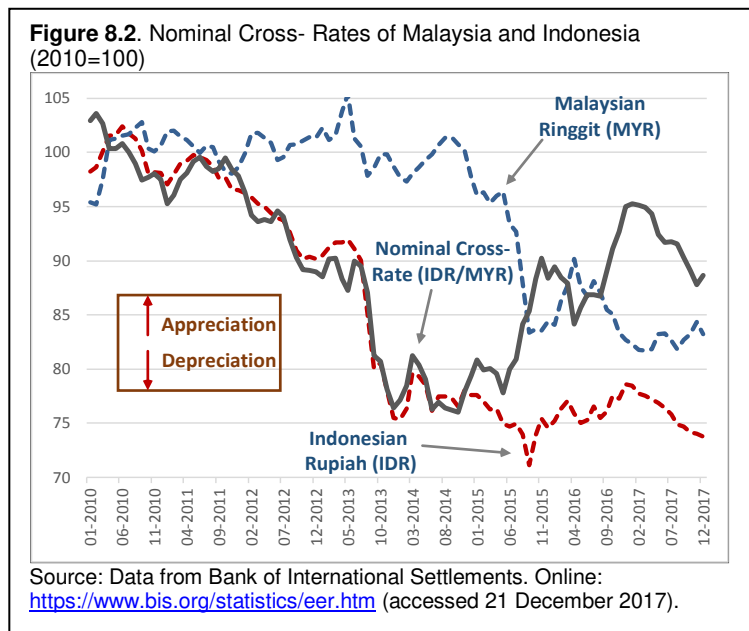
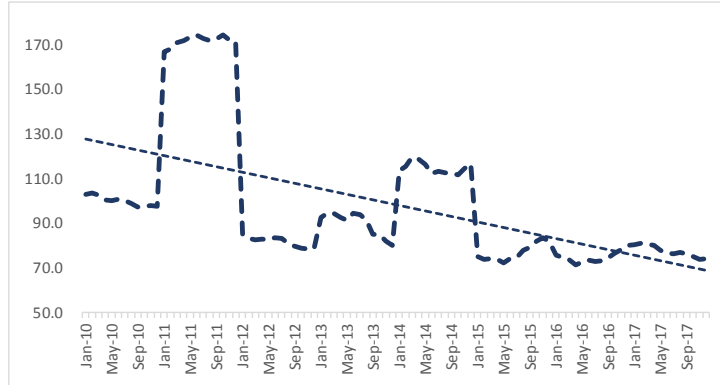


Figure 8.3. Real Cross-Rate of Indonesian Rupiah against Malaysian Ringgit (2010=100)



Source: Based on data from Bank of International Settlements. Online: <https://www.bis.org/statistics/eer.htm> (accessed 21 December 2017).

It is noteworthy, however, that movements in the bilateral real exchange rate stabilized after early 2015. This change signals a change in the medium to long term competitiveness of exports from West Kalimantan and Sarawak. In the near future, it is likely that the price competitiveness of West Kalimantan’s exports relative to goods produced by Sarawak will remain unchanged. This projection is based on International Monetary Fund’s forecast of relatively similar movements in inflation and

exchange rate movements between Indonesia and Malaysia through the early 2020s.²⁹

PART V. POTENTIAL CROSS- BORDER VALUE CHAINS

9. Bauxite and Alumina

9.1. Rationale

(a) Why a Cross-Border Value Chain is Needed

Aluminum is the most widely used non-ferrous metal in the world, and global production exceeds that of any other metal except iron. It is characterized by its resistance to corrosion, its strength and hardness, and its low density. Aluminum's main ore is bauxite, which contains 30-60% of aluminum oxide, commonly known as alumina, and a mixture of silica, various iron oxides, and titanium dioxide. Bauxite is refined through the so-called Bayer process to extract aluminum oxide. The aluminum oxide is, in turn, refined through a smelter process to produce aluminum metal. Aluminum is used widely in the transportation sector because of its strength to weight ratio, the construction sector due to its resistance to corrosion, for electrical conductivity because of its low density in long-distance power lines, and in consumer goods due to its favorable appearance.

Smelters themselves cannot be located near raw material suppliers since they involve an electrolytic process. Aluminum smelter uses large amounts of electricity and therefore tend to be located close to large power sources, often hydro-electric power plants, and near ports since they tend to use imported alumina. For that reason, raw materials for the industry are usually located in different geographic regions of the world. Bauxite and alumina reserves and mines are located in countries like Guinea, Australia and Brazil, while the world's largest aluminum smelters are located in Russia, Canada and India. Only Australia and China have smelters near their raw material sources.

(b) Advantage of West Kalimantan – Sarawak Cross-Border Value Chain

West Kalimantan is an important producer of bauxite and alumina. In 2016, exports of bauxite and alumina reached US\$ 126.8 million. Exports are directed to East Asian (Hong Kong, Japan, China and Taiwan) and Latin American markets such as Mexico. There have been no exports to Malaysia, and in particular Sarawak, which has one of the world's largest smelter plants.

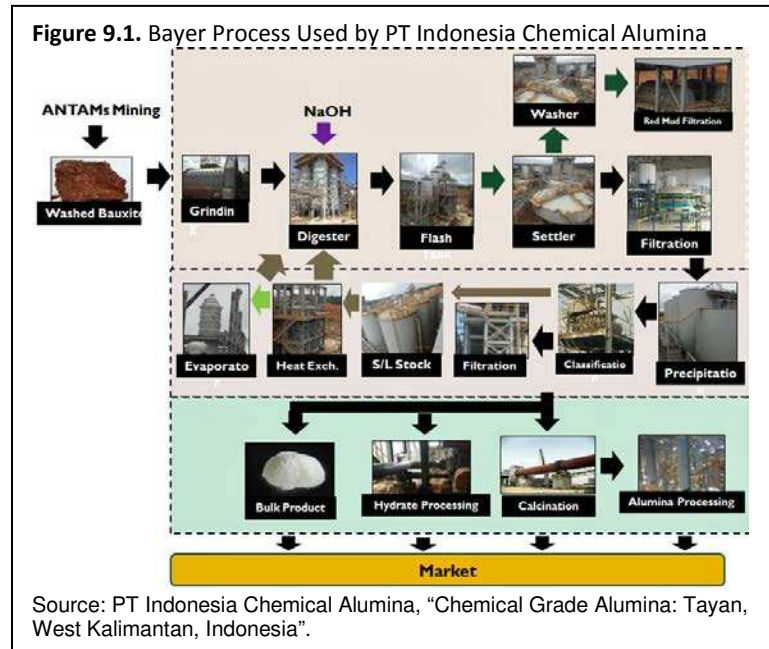
Given the high transport costs of alumina, it would make economic sense for West Kalimantan to ship its raw materials to nearby Sarawak. Alumina is a bulk commodity whose competitiveness is closely related to distance to markets and transport costs. The cost of transporting alumina from South America to U.S. aluminum smelters represents about 15% of the total cost of producing aluminum.³⁰ New roads being built to the border point to the interest of West Kalimantan in promoting alumina exports to that Malaysian state.

9.2. West Kalimantan Alumina Production

West Kalimantan currently has a chemical-grade alumina plant with a capacity of 300,000 metric ton a year of alumina. PT Indonesia Chemical Alumina began operation in 2014 and is in Tayan, Sanggau Regency. Ownership and control is shared by Indonesian state-owned metals and mining company PT Aneka Tambang, also known as PT Antam (80% ownership) and Showa Denko KK (20% ownership) of Japan. PT Antam also has bauxite mines in Tayan, where there exist Indonesia's largest bauxite reserves, estimated at nearly 116 million tons. Since September 2017, however, production in the plant has stopped as both PT Antam and Showa Denko KK are seeking to divest their holdings

of the company to a third party. The source of the difficulty appears to be concerns over some obligations to vendors and suppliers that had failed to be met.

PT Indonesia Chemical Alumina applies the commonly used Bayer method to produce alumina and aluminum hydroxide from bauxite (Figure 9.1). In the Bayer process, bauxite ore is heated in a pressure vessel along with a sodium hydroxide solution. The extraction process converts the aluminum oxide in the ore to soluble sodium aluminate. The solution is clarified by filtering off the solid impurities, commonly with a rotary sand trap and with the aid of a flocculant such as starch, to remove the fine particles. Some of the aluminum hydroxide produced is used in the manufacture of water treatment chemicals such as aluminum sulfate,



poly-aluminum chloride, or sodium aluminate (Figure 9.2). A significant amount is also used as a filler in rubber and plastics as a fire retardant. Some 90% of the gibbsite produced is converted into aluminum oxide by heating in rotary kilns or fluid flash calciners to a temperature of more than 1,000 degrees Celsius. Once produced, aluminum oxide is used to produce aluminum using the Hall–Héroult process.³¹

PT Indonesia Chemical Alumina produces over 50 different types of aluminum hydroxide products and 80 alumina products. Its aluminum hydroxide products include standard aluminum hydroxide, fine and extra fine varieties, heat proof grade, high whiteness, and special treatment varieties of products. Alumina products cover standard and coarse particle size, fine to extra fine particle size, low and ultra-low-soda alumina, and thermally reactive alumina.

A second alumina factory, also owned by PT Antam, will be completed in 2019 in Mempawah Regency. It will have a 1.0 million metric ton annual production capacity in the first of its two-stage development process. Its smelter-grade alumina refinery capacity will be capable of processing 6.0 million metric ton of bauxite ore a year.

9.3. Sarawak Aluminum Production

In Sarawak, Press Metal Berhad has three aluminum smelters: (a) the Mukah-based smelter was constructed in 2007; (b) the smelter plant in Samalaju Industrial Park, Bintulu, began operation in 2012 and has a production capacity of 320,000 tons a year; and (c) a second phase smelter in Samalaju was established in 2014.

Sarawak's total smelting capacity is currently 760,000 tons annually. Press Metal's operating capacity in Sarawak makes it the 12th largest aluminum producing company of the world. It produces primary

and extrusion products and a variety of finished products such as aluminum ingots and billets, bronze color finish, fabrication, fluorocarbon, mill finish, natural anodized finish, polishing, powder coating, and wood grain.

Figure 9.2. Major Applications of Alumina and Alumina Hydrate



9.4. West Kalimantan Exports

West Kalimantan Exports – West Kalimantan originally shipped aluminum ores, the most important of which is bauxite. In 2013, bauxite exports reached their peak of US\$ 536.2 million, after which those shipments virtually ended (Figure 9.3).

Instead, shipments began to occur in the forms of aluminum oxide (alumina) and aluminum hydroxide. By 2016, aluminum oxide exports were US\$ 116.9 million and aluminum hydroxide had reached US\$ 10 million. These products are

expected to grow significantly in the coming years as plant capacity in the province expands. While aluminum oxide is the major raw material in aluminum smelters, aluminum hydroxide is the other major component of bauxite. It serves as a raw material in the production of fire retardants and smoke suppressants, as well as in the pharmaceutical industry to produce antacids and other medications like vaccines.

Geographic Markets – Bauxite exports are mainly destined for China, which absorb 97% of all West Kalimantan exports of that product. Other smaller markets include Japan (1.2% of all shipments), Mexico (1.1%) and Hong Kong (0.4%). Aluminum oxide is direct mainly to China, which in 2016 bought 89% of all product exports from the province. Other markets are Japan (6.5%), South Korea (3.6%), and Taiwan (0.9%). Aluminum hydroxide is mainly destined for Japan, which absorbs 89% of all provincial exports. Another important market is South Korea (8.8% of all exports). Smaller markets that buy between 0.4% and 0.8% of all aluminum hydroxide exports are Singapore, Hong Kong, Taiwan and China. West Kalimantan ships a small amount of aluminum hydroxide to Malaysia (0.1% of all exports).

9.5. Project Profile for Cross-Border Value Chains

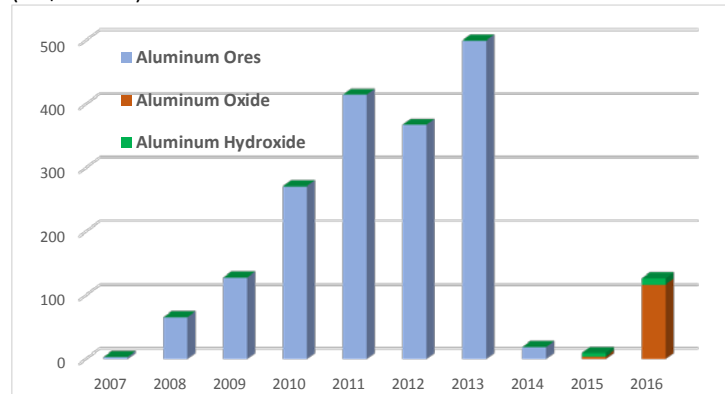
Figure 9.4 shows the potential division of the value chain for bauxite, alumina and aluminum production between West Kalimantan and Sarawak. West Kalimantan has the potential to supply alumina and aluminum hydroxide from its existing Tayan and upcoming Mempawah plants to Press Metal aluminum smelters in Sarawak. They represent more cost-effective channels than other suppliers because of the near distance between the raw materials and smelters.

The following is a summary of the production process involved in the proposed cross-border value chain:

(a) West Kalimantan Primary Production of Aluminum Oxide and Aluminum Hydroxide

- *Aluminum Oxide* – The main product of Indonesia Chemical Alumina's Tayan plant and that planned for the one in Mempawah is aluminum oxide, which is the main raw material used

Figure 9.3. West Kalimantan Alumina Exports by Type, 2007-2016 (US\$ million)



Source: Based on data provided by Ministry of Trade Indonesia.

to produce aluminum. It is extracted from bauxite, which itself contains between 30% and 60% aluminum oxide. The rest is a mixture of silica, various iron oxides and titanium dioxide. As such, aluminum oxide must be purified before it can be refined into aluminum metal. The so-called Bayer process is the standard industrial method used to refine bauxite into aluminum oxide.

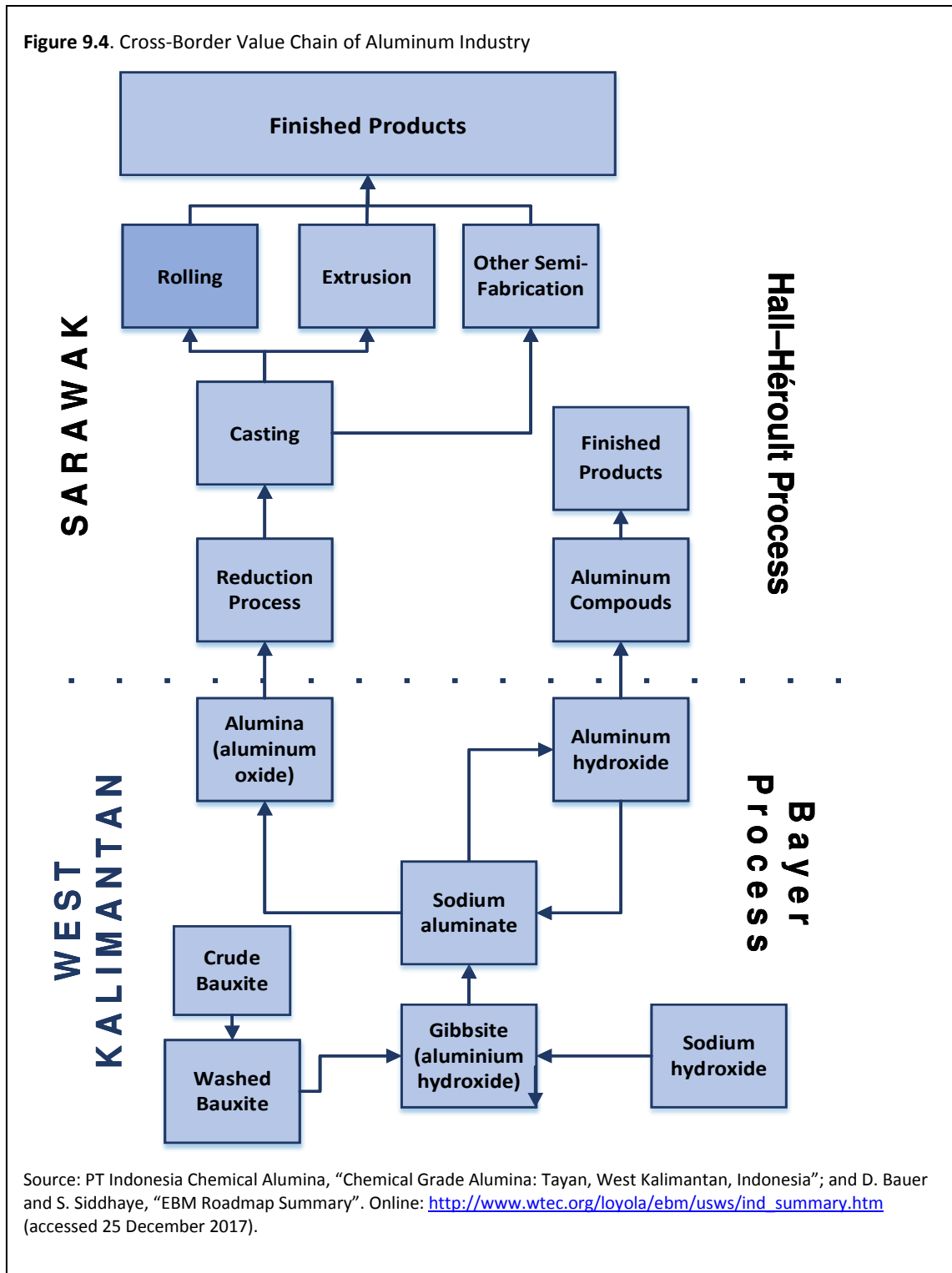
- *Aluminum Hydroxide* – Indonesia Chemical Alumina also produces aluminum hydroxide, which is used as a feedstock for the manufacture of other aluminum compounds. Those compounds include specialty calcined alumina, aluminum sulfate, poly-aluminum chloride, aluminum chloride, zeolites, sodium aluminate, activated alumina, and aluminum nitrate. The term ‘feedstock’ in this case refers to a raw material or unprocessed material used to make goods, finished products or intermediate materials. Aluminum hydroxide is used in fire retardants, pharmaceuticals, and other product applications.

(b) Sarawak Production of Aluminum Metal

- *Aluminum Metal* – Press Metal in Sarawak uses the Hall–Héroult process to convert aluminum oxide into aluminum metal. At their aluminum smelters, the aluminum oxide is poured into special reduction cells with molten cryolite. Electric currents are then induced in the mixture and the current breaks the bond between the aluminum and oxygen atoms. The process causes the liquid aluminum to settle at the bottom of the reduction cell. Primary aluminum is then cast into ingots and shipped to customers or used in the production of aluminum alloys for various purposes. Those aluminum alloys are then shaped into their required forms to make aluminum products for mobile telephone bodies, airplane fuselages, and other applications.

Figure 9.5 shows the steps involved in alumina production by PT Indonesia Chemical Alumina in Tayan.

Figure 9.4. Cross-Border Value Chain of Aluminum Industry



Source: PT Indonesia Chemical Alumina, "Chemical Grade Alumina: Tayan, West Kalimantan, Indonesia"; and D. Bauer and S. Siddhaye, "EBM Roadmap Summary". Online: http://www.wtec.org/loyola/ebm/usws/ind_summary.htm (accessed 25 December 2017).

Figure 9.5. Steps in Alumina Factory Processing



Source: Photos provided by PT Indonesia Chemical Alumina

10. Rubber

10.1. Background

Indonesia and Malaysia are the world's second and third largest natural rubber producing countries, respectively. Indonesia accounts for 27% of total world production, while Malaysia contributes 9% to the total. The focus of Indonesia's and Malaysia's activities is on the production and export of blocked rubber. They ship their raw materials to countries like China, Japan, United States and Europe to be processed into rubber products such as tires, industrial rubber goods, and consumer goods like footwear. The two countries have designed strategies to expand pre-export processing of their natural rubber to increase value added activities. Malaysia is already the world's leading exporter of latex, and it is a major producer of medical gloves and other rubber products.

In West Kalimantan, rubber was introduced into the province in the early 1900s and dominated agriculture during the 20th century. By 1924, the territory (then part of Dutch Borneo) had as much as 100,000 hectares.³² Production growth responded to the surge in world rubber prices. Rubber trees mature in 5 to 7 years and cultivation cannot be easily changed. Nevertheless, the trees can be tapped for a long time and require little maintenance. The decision to harvest, or tap, the tree can therefore be made on short notice. For that reason, output in the province has tended to align closely with the international market price of rubber relative to competing crops like copra and, more recently, oil palm.

In the western part of the province, coastal Chinese and Malay farmers planted most of the rubber and shipped official supplies through Pontianak. In the eastern part of the province, the Dayak population cultivated rubber trees. Since road access to the capital was non-existent, rubber was sent to Sarawak until the early 1980s. The subsequent construction of a road to the capital made rubber production more attractive and farmers substantially increased their plantings of rubber trees.

Dyak farmers in the east traditionally use a so-called swidden agricultural system. It involves an annual slash-and-burn process to plant rice, and possibly other crops or tree species. After harvesting the rice at the end of the year, they may plant manioc and fruit-tree species for two or three years. After the third year, however, they allow the field to grow into a secondary forest. Rubber trees can form part of the swidden stage, when farmers can plant rubber trees right before the rice plantings. They can then leave the rubber trees virtually unattended until they are ready to be tapped. This low labor-intensive method of rubber production allows the farmer to have a regular source of cash, especially since rubber can be stored and marketed when the cash is needed.³³ Until oil palm arrived in the 1990s, most villages practices swidden rice cultivation and had plots of rubber agroforests. Consequently, much of the land now dedicated to oil palm had previously been managed as rubber agroforests.³⁴

In Sarawak, rubber was also introduced into the state in the early part of the 20th century. Although production expanded rapidly, it grew at a somewhat slower rate than in West Kalimantan. In 1930, there were 30,000 hectares under cultivation, and by 1961 that area had grown to nearly 150,000 hectares.³⁵ Afterwards, rubber exports of Sarawak decline and replanting rates by farmers fell. By 1971, there were only 36,000 hectares under cultivation. Pepper cultivation expanded in its place and became an important cash crop. Farmers also use the same swidden system as those in West Kalimantan.

10.2. Rational for Cross-Border Collaboration

The rubber industry in West Kalimantan is focused on the production and distribution of raw rubber products. Manufacturers that produce rubber derivative products like tires and rubber gloves are lacking. In contrast, Sarawak is an important producer of rubber derivative products and has the technology and know-how needed to be competitive in global markets. The Indonesian Rubber Association has called on the Government of Indonesia to encourage the introduction of downstream activities in the rubber industry of West Kalimantan to add value to the industry.³⁶ Development of a cross-border value chain would provide much needed raw rubber supplies from West Kalimantan to rubber derivative manufacturers in Sarawak and encourage the transfer of technology and capital to West Kalimantan to introduce downstream activities in the province.

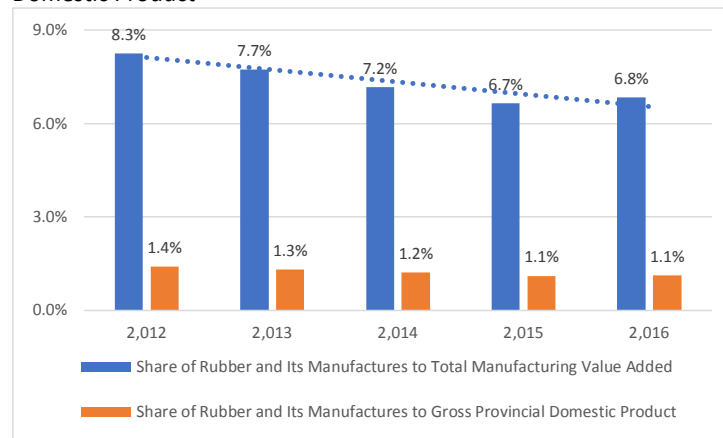
Collaboration between West Kalimantan and Sarawak has been proposed in the form of complementary production activities, joint international marketing, and knowledge-sharing and knowhow. They would both benefit from the transfer of skills through either cross-border investment or support to business development centers within each territory. Also, collaboration in marketing of processed rubber products could provide scale economies for the industries in each country and improve the ability of Indonesia and Malaysia to compete in the global market. They could also collaborate in the establishment of centers for the development of rubber timber production and rubber products design to strengthen the capacity of producers, especially SMEs, to meet the changing preference of consumers in the major markets of Asia, Europe and North America.

10.3. Industry Analysis

West Kalimantan's rubber trees are predominantly grown by small-size farmers. Production capacity at the farm level is low, as is productivity. Because of the dominance of small farmers, there is a highly fragmented supply chain. Multiple levels of middlemen link smallholder farmers to companies.

Rubber and rubber manufacturing contributes nearly 7% to total provincial manufacturing activities and over 1% of gross provincial domestic product (GPDP). Its contribution has been gradually declining, however (Figure 10.1). In 2012, rubber and its products contributed over 8% to manufacturing value added, and 1.4% to GPDP.

Figure 10.1. West Kalimantan Percentage Contribution of Rubber and Rubber Manufactures to Total Manufacturing and Gross Regional Domestic Product



Source: BPS Provinsi Kalimantan Barat, "Gross Regional Domestic Product of Kalimantan Barat by Industrial Origin, 2012-2016."

10.4. Project Profile for Cross-Border Value Chains

Both West Kalimantan and Sarawak produce natural rubber and process it for manufacturing applications. However, only Sarawak currently has manufacturing operations in natural rubber products. The proposed cross-border value chain is therefore characterized by production and manufacturing activities being conducted in both territories, and manufacturing of natural rubber products taking place in Sarawak (Figure 10.2).

In both West Kalimantan and Sarawak, farm production and factory processing are similar. The value chain begins at the farm level with the tree plantings. Rubber trees require up to 7 years to be productive, and then have a 25-year productive phase. The latex in the trees is “tapped” by making incisions in the bark and collecting the fluid in vessels. The coagulated cup lumps are then formed into slabs for shipping to the factory. Latex is generally processed into either latex concentrate for manufacture of dipped goods or coagulated under controlled, clean conditions using formic acid. The coagulated latex can then be processed into the higher-grade, technically specified block rubbers.

At the factory processing stage, Figure 10.3 shows the steps involved in processing the latex into rubber blocks. The photos were taken at PT New Kalbar Processor in Kubu Raya Regency. The following is a description of the steps involved in the process:

1. *Step 1:* The raw material arrives the factory in slabs from a variety of sources, including the factory’s own plantation, small independent plantations, and smallholders. In the case of PT New Kalbar Processor, the material is sourced from smallholders.
2. *Steps 2 to 4:* The process begins by shredding the rubber prior to its immersion in solvents because otherwise the material will not easily dissolve. After washing, the shredded rubber is blended and granulated (so-called crumbing). The resulting material is then flattened into a crepe shape. The wet blankets are then air dried in large sheds for several days before oven drying at elevated temperatures. The result is a product of consistent quality.
3. *Steps 5 to 9:* The cleaning process continues to remove contamination and prepare the material for the final stage of drying.
4. *Step 10:* Testing is carried out for dirt content, ash content, nitrogen content, volatile matter, initial Wallace plasticity value and plasticity retention index.
5. *Step 11 and 12:* The crumbed rubber is transported to the compressor, which converts the material into rubber block shapes.
6. *Step 13:* Imperfections are removed from the rubber blocks.
7. *Steps 14 to 16:* The blocks are placed inside polyethylene bags and sealed, while those blocks found to have major imperfections are recycled.
8. *Steps 17 to 20:* The blocks are placed in bins and transported to warehousing facilities to await shipment to manufacturers of intermediate and final products such as tires and rubber gloves.

West Kalimantan rubber processing factories export nearly all their rubber to external markets. Indonesia absorbs between 15% and 20% of all rubber production. The main users within Indonesian are the multinational tire companies Bridgestone, Goodyear, Pirelli, Vredestein and a local tire company named Gajah Tunggal. In contrast, Sarawak and Malaysia in general do have rubber product manufacturing and rubber wood industries, which add a great deal of value to their products. The state government is intent on promoting additional manufacturing activities in rubber-based industries.

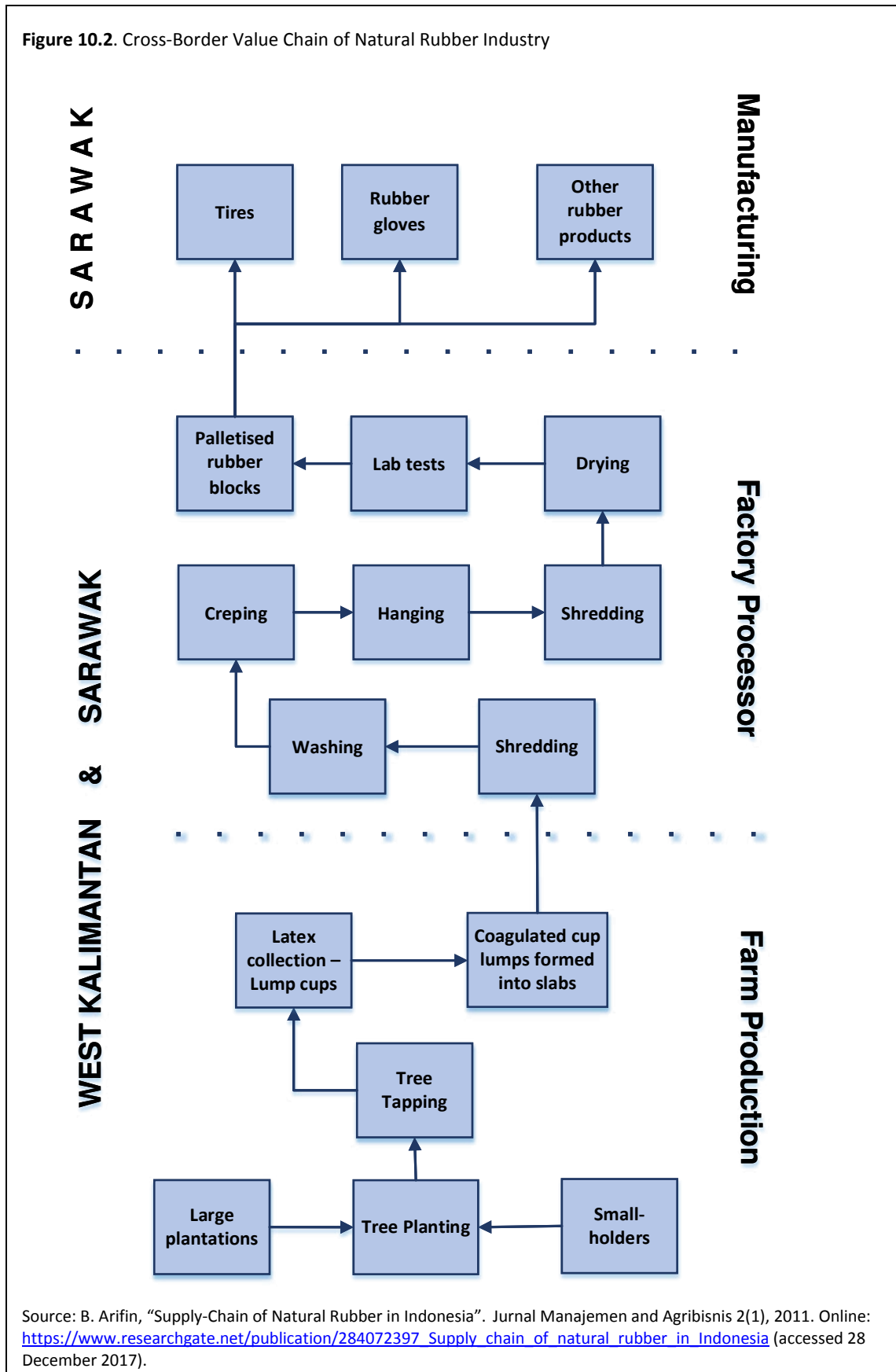


Figure 10.3. Steps in Natural Rubber Factory Processing



Continued next page...

Figure 10.3. Steps in Natural Rubber Factory Processing (Continued)



Continued next page...

Figure 10.3. Steps in Natural Rubber Factory Processing (Continued)



Source: Photos by Alisa Lord during visit to PT New Kalbar Processor in Kubu Raya Regency.

11. Palm Oil

11.1. Rationale

As the world's largest producer of palm oil, Indonesia accounts for over half of world supplies of the product. The 34.5 million tons of Indonesian palm oil that were produced in 2016 consisted of 31.5 million of crude palm oil (CPO) and 3 million tons of palm kernel oil (PKO). The islands of Borneo and Sumatra contribute over 95% of the country's total production. West Kalimantan ranks 5th in terms of top oil palm producing provinces. Within Borneo, West Kalimantan ranks 2nd in importance among oil palm production (after Central Kalimantan) and accounts for one-fourth of all Indonesian production in the island.

During interviews conducted for this study in October-November 2017, palm oil companies expressed an interest in developing downstream investment and vertical integration by partnering with processing and trading companies to develop refineries, storage terminals and ports. However, they lack knowledge and expertise to be able to develop those industry dimensions. Some companies have already formed joint ventures with more experienced enterprises, as in the case of Kencana and Louis Dreyfus Company, as well as Astro Agri Lestari and KLK. Others have expressed interest in forming joint cross-border ventures with Sarawak-based companies involved in downstream activities.

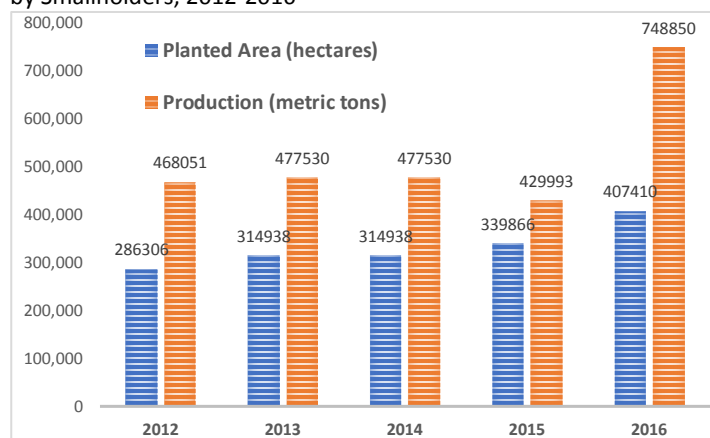
Sarawak has succeeded in developing downstream activities for its palm oil industry. Yet the state's foundation for continued growth of manufactures such as oleochemical rests on the ability of plantation companies to ensure reliable flows of palm oil. Upstream activities are also challenged by aging palm plantations, which lower productivity and represent an opportunity cost for higher-yielding new trees. For Sarawak to sustain its growth of manufactures such as oleochemical, local manufacturers are anxious to access oil palm fresh fruit bunches in nearby West Kalimantan, which like other provinces in Indonesia, is enlarging its plantings of oil palm. There are therefore potential synergies between West Kalimantan and Sarawak in further developing their palm oil industries.

11.2. Industry Analysis

1. Production and Distribution

Production of West Kalimantan oil palm in 2015 was 2.1 million metric tons and that of palm oil in 2016 was 750,000 metric tons (*palm oil* is the vegetable oil derived from the mesocarp (reddish pulp) of the fruit of the *oil palm*). Figure 11.1 shows the growth of the area planted of oil palm and production by smallholders in West Kalimantan. Since 2012, the area planted has expanded by 10% and production has grown by 5%.

Figure 11.1. West Kalimantan Oil Palm Area Planted and Production by Smallholders, 2012-2016



Source: BPS Provinsi Kalimantan Barat, "Gross Regional Domestic Product of Kalimantan Barat by Industrial Origin, 2012-2016."

Within West Kalimantan, five of the six top palm oil producing regencies are at or near the border with Sarawak (Figure 11.2). The largest area of plantings and production in the province is Sanggau Regency, in the north-central part and bordering Sarawak. Other border regencies with large oil palm production and areas of cultivation are Sintang (3rd largest producer, Landak (5th) and Sambas (6th). Sekadau (4th largest producer) is near the border with Sarawak. The second largest producer of oil palm is Ketapang in the south of the province.

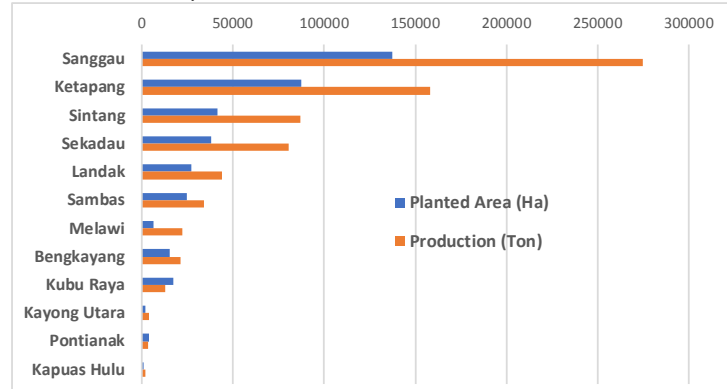
2. Border Oil Palm Mega-Project

The Indonesian Minister of Agriculture put forward a plan in 2005 to develop the world’s largest oil palm plantation in a 5 to 10-kilometer band along the border of Indonesia with Malaysia. It covered West Kalimantan’s and East Kalimantan’s border with Sarawak, and North Kalimantan’s border with Sabah. However, the project’s 1.8-million-hectare oil palm project was found to negatively impact primary forests of three national parks, and threaten land rights of the indigenous Dayak communities in the border area.

Subsequent campaigns and lobby by civil society, Indonesian media and foreign concerns supported a revision to the Indonesian Government’s mega-project. As a result, the Ministry of Forestry decided that it would not release protected forests in the border area;

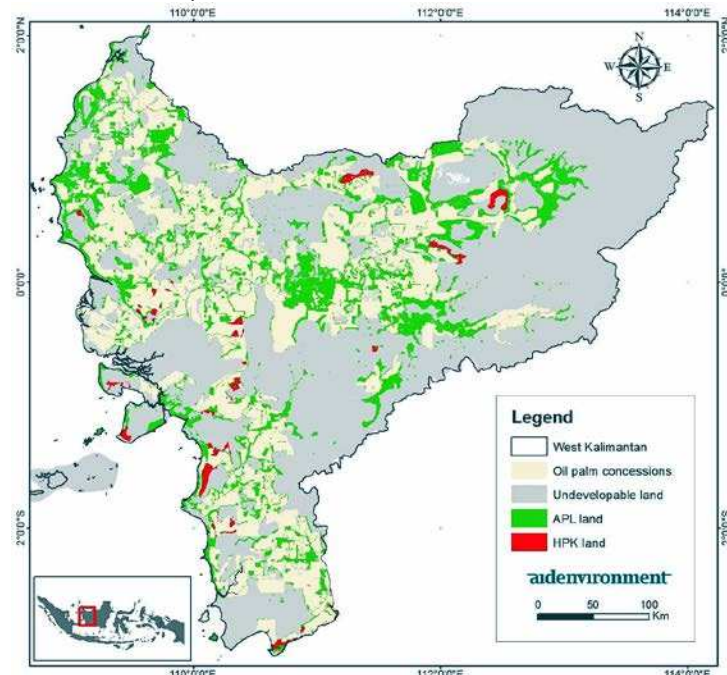
the Ministry of Agriculture found that over 90% of the affected area was unsuitable for oil palm cultivation; and the Indonesian Government declared its support to the Heart of Borneo Initiative, an effort led by World Wildlife Fund (WWF) aiming to preserve the

Figure 11.2. West Kalimantan Distribution of Oil Palm Area Planted and Production by Smallholders, 2016



Source: BPS Provinsi Kalimantan Barat, “Gross Regional Domestic Product of Kalimantan Barat by Industrial Origin, 2012-2016.

Figure 11.3. West Kalimantan Distribution of Oil Palm Area Planted and Production by Smallholders, 2016



Source: BPS Provinsi Kalimantan Barat, “Gross Regional Domestic Product of Kalimantan Barat by Industrial Origin, 2012-2016.

biological diversity and wildlife species in the border area of Kalimantan, Sabah, Sarawak and Brunei.³⁷

3. *Expansion Limitation of Palm Oil Concessions*

Of West Kalimantan's total land area of 15 million hectares, 4.2 million have been allocated to palm oil concessions. In April 2016, Indonesian President Joko Widodo declared his intention to impose a moratorium on new palm oil concessions. This moratorium followed a series of measures taken since 2009 to curb the environmental impacts of the industry, including a 2-year forest moratorium last extended in 2015. The Government of Indonesia recently amended the peatland moratorium and the Indonesian Sustainable Palm Oil (ISPO) certification system.

While the final text of the palm oil moratorium is under development, a draft version has been circulated.³⁸ Until the moratorium comes into effect, licenses can legally be granted on land classified as Other Land Use (APL) and Convertible Production Forest (HPK). Land classified as APL or HPK totals 2.6 million hectares, of which 2.2 million hectares are suitable for palm oil concessions. Moratorium restrictions reduce available land to 142,000 hectares, or 2.6 percent of the 2.2 million hectares suitable for palm oil concessions (Figure 11.3).

11.3. Project Profile for Cross-Border Value Chains

The palm oil cross-border value chain project aims to develop collaboration and an integrated industry between West Kalimantan and Sarawak in the palm oil industry. The proposed value chain is shown in Figure 11.4. The primary processing, or upstream, stages of production begin at the plantation level and proceed to the milling stage, where the oil extraction, threshing and sterilization, and certification and purification processes take place. There are high margins in the upstream market, which explains the rapid expansion of oil palm plantations and milling processes in the Kalimantan provinces in recent years. Negative environmental consequences of the milling process can be converted in Sarawak's new biofuel facilities.

In the secondary processing, or downstream, stages of production, refining and crushing occur and there is production of vegetable oils, palm kernel oil and palm kernel meal. The high value-added phases of secondary production occur at the higher stages of production in food and health-based industries, and the non-food based industry related to oleo chemicals and branded products.

Figure 11.5 shows the steps involved in the transformation of the oil palm fruit into palm oil. Most of the photos are from the authors' field visit to P.T. Buana Tunas Sejahtera Seriang Mill and the Nanga Badau border crossing into Sarawak.

1. In an oil palm plantation, there are three types of plants: (a) unproductive plants (UPP) which are not yet in their productive age, (b) productive plants (PP) which are fruit-producing plants, and (c) old/damaged plants (OP/DP) which have pass their productive age or no longer produce fruits.³⁹
2. At the palm oil mill, FFB is processed into crude palm oil (CPO) and palm kernel oil (PKO). The processing of FFB into CPO involves cooking, threshing, digestion, pressing, settling, purification, and drying. Pressing process results in a waste product (nut/fiber).
3. Further processing involves the separation of nut and fiber followed by drying, nut cracking, kernel or shell separation, drying, pressing, and filtering until PKO is produced. Byproducts obtained from this process include empty fruit bunches, fiber, shell, PKM, and effluent.

4. Crude palm oil production is largely absorbed by the oleo-chemicals and edible oil industries. There are two separate and distinct types of products made from palm oil and palm kernel oil. Both of these oils, which are mainly made up of triglycerides, are chemically and physically different from each other: palm oil is high in palmitic acid and palm kernel oil is high in lauric and myristic acids.
 - a. *Palm Oil*: There are four main uses of palm oil in food products. They consist of cooking and frying oil, shortenings, and margarine and confectionary fats. These products are in the form of both solid and liquid fat products.
 - b. *Palm Kernel Oil*: This oil is suitable for the manufacture of soaps, washing powders and personal care products.

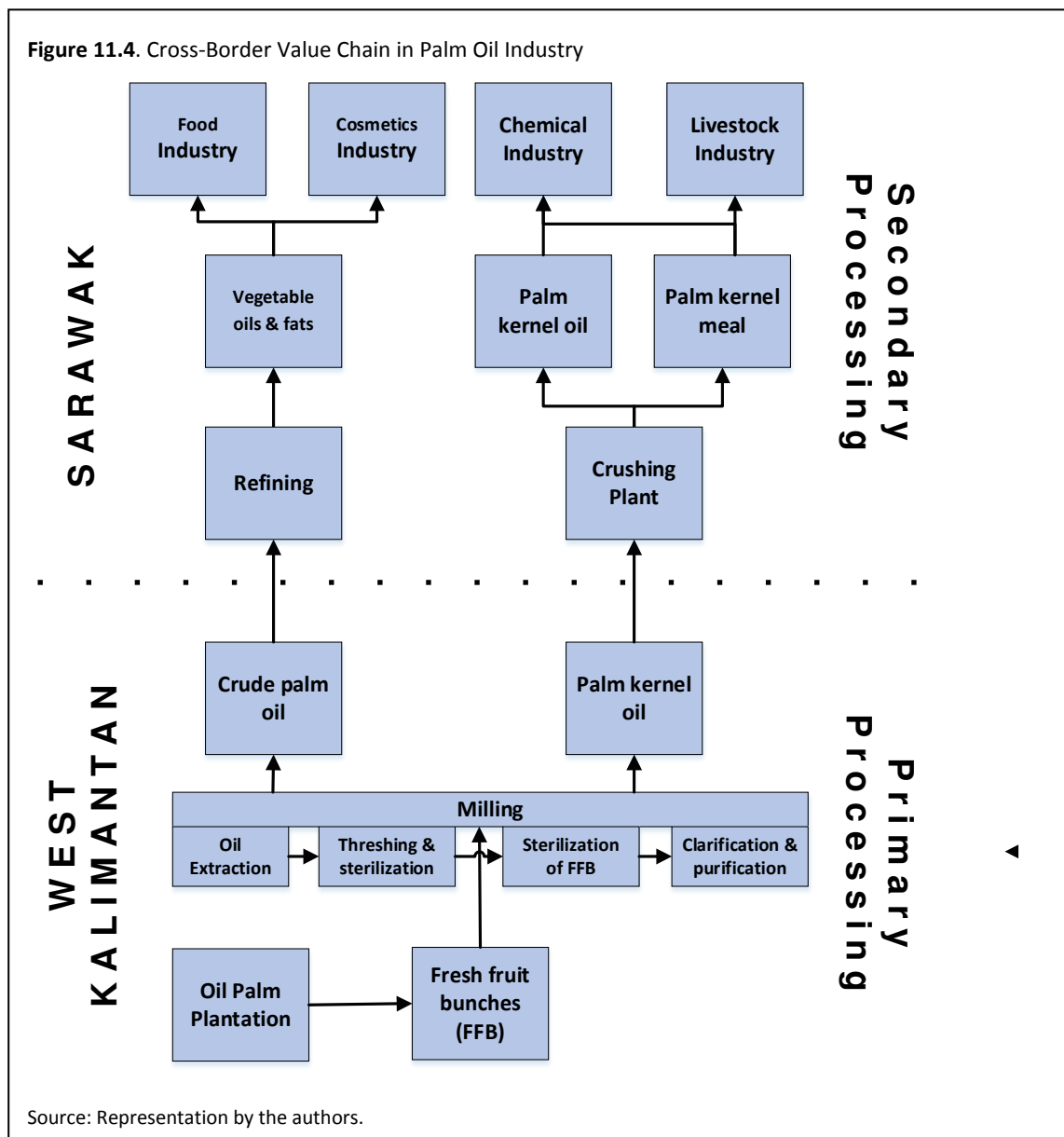
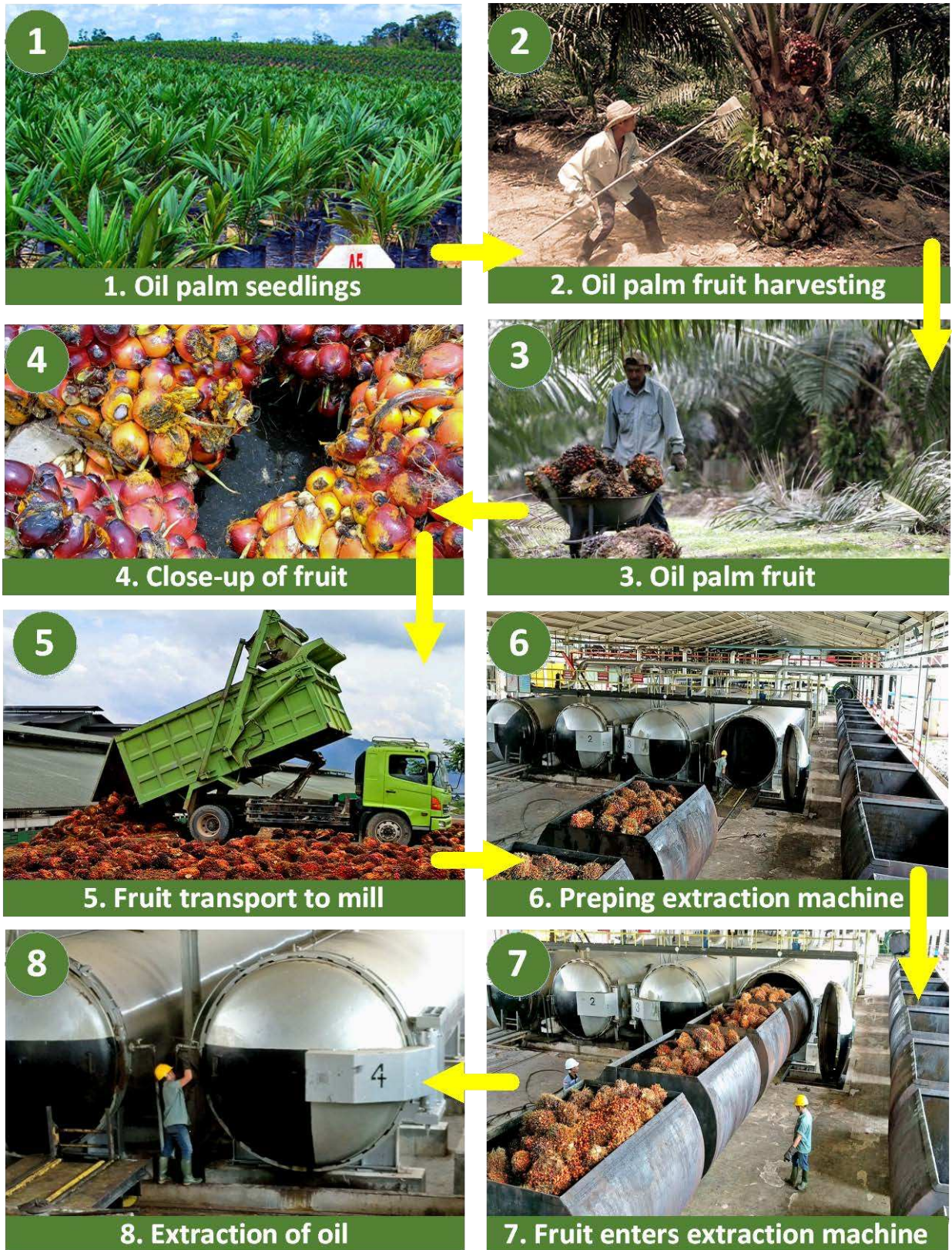


Figure 11.5. Steps in Oil Palm Processing



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Figure 11.5. Steps in Oil Palm Processing (continued)



9. Oil storage prior to shipment



10. Crude transport to Sarawak



12. Sarawak refining



11. New Nanga Badau ICQS

Sources: Oil palm seedlings photo by Yayan Indriatmoko for Center for International Forestry Research (CIFOR); harvesting photo from MY palm oil, "Msia, Indonesia reject oil palm planting curb at UN summit". 21 December 2009; and ABC News, "Palm oil is a produced all across South-East Asia because it is a sustainable, high-yield product that helps small farmers lift themselves out of poverty". 4 May 2011; Sarawak refinery photo from Sarawak Oil Palms Berhad Group of Companies; all other photos by Alisa Lord during visit to P.T. Buana Tunas Sejahtera Seriang Mill.

12. Wood Products

12.1. Rationale

Wood and wood-based articles are West Kalimantan's 3rd largest export, contributing 10% of the province's total export earnings in 2017. Although its share of exports has declined in recent years as those of alumina, rubber and crude palm oil exports have risen, innovation and diversification into new types of wood-based products has increased the value addition of pre-export processing. Nevertheless, the wood-based industry remains concentrated in four sub-sectors: (i) sawn timber; (ii) veneer and panel products, which include plywood and reconstituted panel products such as particleboard, chipboard, fiberboard, moldings and builders' joinery; (iii) carpentry for doors and windows along with panels and flooring board/parquet; and (iv) furniture and furniture components.

In Sarawak, most of the country's larger sawmills and veneer and plywood mills are in that state, as well as that of Sabah. The mills use tropical wood species to produce sawn timber, veneer, plywood and other veneered panel products. More than 55% of the plywood mills and 45% of the moldings mills are in Sarawak and Sabah.⁴⁰ Those mills are most often owned by Malaysians operating small and medium size enterprises (SMEs).

Malaysian furniture manufacturers produce a wide range of furniture from office, kitchen, bedroom, dining room, living room, upholstered furniture/sofa, outdoor and garden furniture. Furniture is made from not only wood, but also materials such as rattan, metal, fabrics, plastic, glass, marble and composite materials. Furniture manufacturers are located in Sarawak, along with Johor, Selangor, Perak and Melaka.

West Kalimantan's wood processors have expressed interest in diversifying their production to include furniture manufacturing, like those in Sarawak. Development of cross-border clusters of downstream activities and add value to their products. For collaboration to occur, however, West Kalimantan timber producers need to ensure that their logs have global certifications from either Forest Stewardship Council (FSC) or Programme for the Endorsement of Forest Certification (PEFC), similar to the certification held by most Sarawak companies. The advantage of the certification, in addition to offering cross-border collaborative opportunities, is that certified logs are valued by as much as 77% more than non-certified logs. Additionally, FSC certification adds a 100% premium on the price of timber.⁴¹

12.2. Industry Analysis

(1) Production and Exports

The wood-based industry is an important source of domestic investment and employment in West Kalimantan. Figure 12.1 shows the 2016 amount of investment as of 31 December of the year for industries in the manufacturing sector, as well as the number of projects and employment generated by those investments in the province. While the importance of the wood-based industry has decline considerably and investments now account for only 8% of the total, the industry contributes considerably to employment generation. In 2016, new investment created 6,761 jobs, or 37% of total new employment, even though the industry accounted for less than 10% of new investment.

Table 12.1. West Kalimantan Domestic Investment and Employment Generation in Manufacturing Sector in 2016

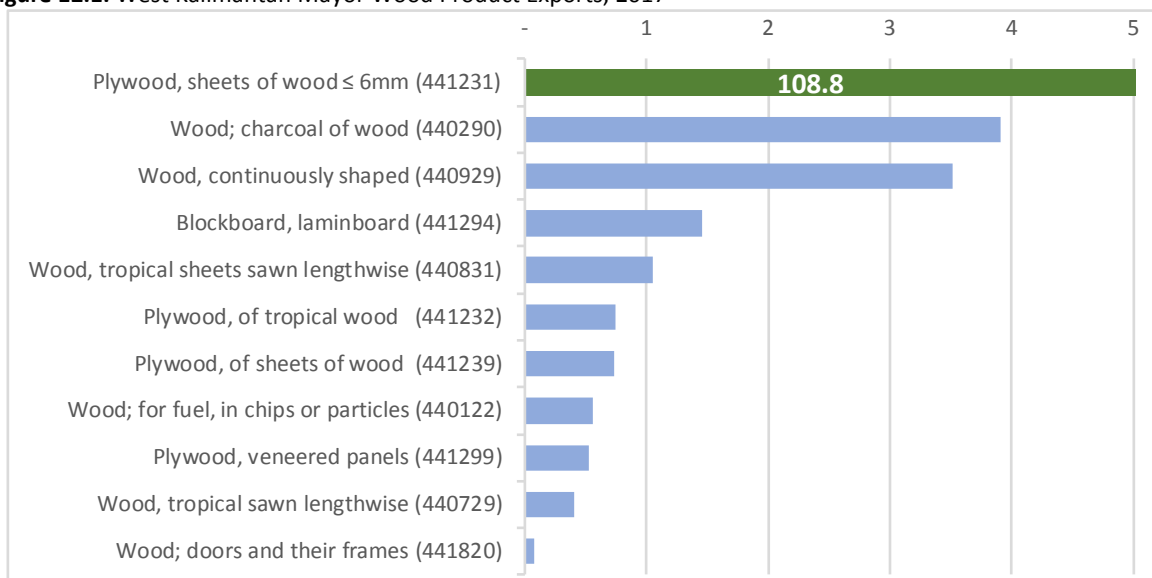
	No. of projects	Investments		Employees	
		Million US\$	Percent of Total	Persons	Percent of Total
Food	7	134.4	35%	1,035	6%
Chemical	17	111.5	29%	10,070	54%
Others	5	94.1	24%	521	3%
Woods	20	31.4	8%	6,761	37%
Non Metal	2	12.3	3%	107	1%
Basic Metal	-0	2.6	1%	-	0%
Paper	1 1	0.9	0%	25	0%
Total	52	387.2	100%	18,519	100%

Source: BPS Provinsi Kalimantan Barat, "Kalimantan Barat Province in Figures 2017" ..

In exports, Figure 12.1. shows the composition of wood and wood product exports of West Kalimantan in 2017. Plywood is, by far, the largest type of wood product export, with US\$ 108.8 million of shipments in that year. Charcoal of wood is the second largest with a much lower export value of US\$ 3.9 million, while the value of the third most important export, continuously shaped wood planks, was US\$ 3.5 million. Other significant exports, albeit of a much lower export value, are blackboard, tropical wood sheets sawn lengthwise, other types of plywood, and doors and their frames.

Wood exports of all types have been declining in recent years. Plywood exports contracted from US\$ 158 million in 2012 to US\$109 million in 2017, a nearly one-third decline in 5 years. Figure 12.2 shows the value of the major type of plywood exported and other wood and plywood exports between 2012 and 2017. All other types of wood product exports have also declined by one-third in the last 5 years.

Figure 12.1. West Kalimantan Mayor Wood Product Exports, 2017



Source: Based on data provided by Ministry of Trade Indonesia.

West Kalimantan’s wood and wood-based exports are concentrated in two major markets, Japan (47% of all exports) and South Korea (36%) (Figure 12.3). Together these two export markets absorb 83% of all shipments from the province outside of the country. Other important markets are China (6%), Taiwan (3%), India (1%) and United States (1%).

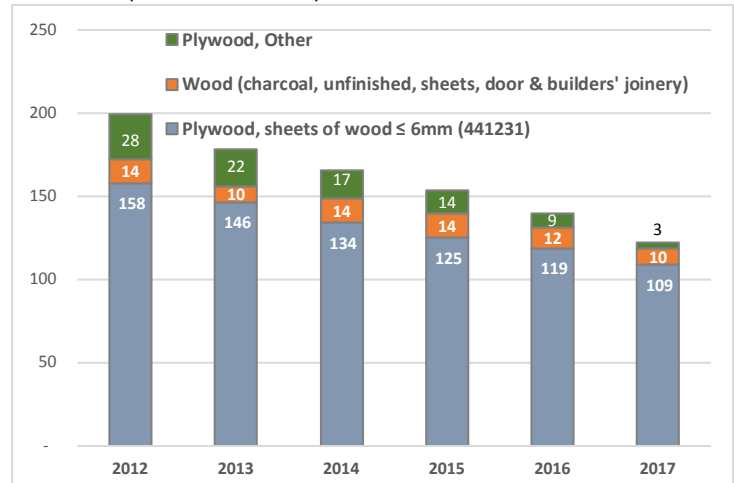
(2) Sarawak’s Need for Timber

Malaysian furniture manufacturers have given great emphasis to the finishing, design and production of higher quality products with their own-brand, mostly for the export market. Some of these companies have moved from supplying ready-to-assemble furniture to manufacturing their own designed-furniture.⁴²

While forestry has declined in relative importance, Sarawak still exports massive quantities of unprocessed and semi-processed timber products. For several years now, however, Sarawak has experienced a shortage of log supplies in the wood-based industry. Since the implementation of the Sustainable Forest Management policy in the 1990s to conserve and protect the forest resources, the continuous shortage of raw material supplies is affecting the ability of the industry to implement downstream processing.

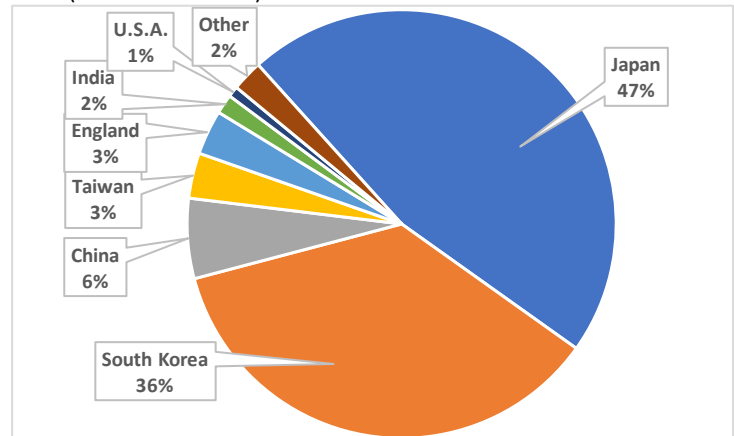
Not only are there local market shortages, but in the export markets producers must comply with requirements about the legality of timber. Japan, which is by far Sarawak’s major export market for forestry products, enacted new legislation in May 2016 under the “Law Concerning the Promotion of Distribution and Use of Legally-Harvested Timber”.⁴³ It is designed to promote the trade of legal timber, and it represents the beginning of Japan’s effort to follow the growing trend of implementing measures to prevent imports of illegal timber. Other major markets focus on the elimination of illegal timber. For example, in Europe, producers need to comply with the 2013 EU Timber Regulation (EUTR); in the United States market, imports are subject to the Lacey Act; and, in Australia, imports must comply with the 2014 Illegal Logging Prohibition Act (AILPA).

Figure 12.2. West Kalimantan Mayor Types of Wood Product Exports, 2012-2017 (million US dollars)



Source: Based on data provided by Ministry of Trade Indonesia.

Figure 12.3. West Kalimantan Destination of Wood Product Exports, 2017 (million US dollars)



Source: Based on data provided by Ministry of Trade Indonesia.

Expansion of Sarawak's wood-based products without further depleting forests can be accomplished by sourcing greater amounts of wood from West Kalimantan. The province has an abundance of raw materials that are shipped to markets with relatively limited processing. Plywood is one of the major industries and quality standards are high. Thus, there is ample opportunity for expanding the wood product industry into premium furniture and linking those value-adding activities to Sarawak's large and growing wood-based industry.

12.3. Project Profile for Cross-Border Value Chains

Both West Kalimantan and Sarawak have well-established downstream activities in plywood, veneered panels, and blockboard, and many companies have long-term contract with overseas markets for the delivery of those products. Company managers have expressed little or no interest in cross-border collaboration between similar industries from their neighboring territory. Instead, they have indicated that they would like to diversify and expand their downstream activities in high value furniture making.

The project aims to develop a cross-border value chain between West Kalimantan and Sarawak in the wood processing industry. West Kalimantan has considerable plantation forests, has developed its primary wood processing industry, and needs wood for its furniture. Malaysia is the world's 8th largest exporter of furniture, with 80% of its exports in the form of wooden furniture. The top three export markets are the United States (35% export market share), the European Union (11% of wood furniture exports) and Japan (9% of exports). It needs supplies of wood that are currently unavailable in the country. The Sarawak State Government and the Sarawak Furniture Industry Association (SFIA) actively support the furniture manufacturing industry by promoting its competitiveness in the global market.

Figure 12.4 shows a representation of a cross-border value chain in this industry. With the production of solid woods, laminated timber and veneer, and woodchips on the West Kalimantan side, the project will promote cross border clustering of company activities. In this way, the project will enable Sarawak's processing of wood moldings, furniture carpentry and particleboards to continue growing to their full potential. It will also promote downstream activities in the areas of furniture, construction materials, and overlay panels and newer bio-composite products that could be directed to markets within Indonesia and Malaysia, and to premium markets in the Middle East, Europe and the United States.

Figure 12.5 lists the steps involved in the manufacture of modular (knockdown) furniture. This type of furniture is made up of independent work surface and storage units with panels used as space dividers. It includes all modular furniture components that collectively are required to complete a workstation. The following are the steps involved in the process:⁴⁴

- (1) *Forest Cultivation and Harvesting*: Raw logs must be sourced from legal and sustainable forest concessions. In West Kalimantan, it means compliance with wood sustainability certification under the central government, where there are several national policies that form the basis of Indonesia's forest governance regime. In Sarawak, it means compliance with Malaysian Sustainable Forest Management, as well as the International Tropical Timber Organisation (ITTO).

- (2) *Transportation to Mill and Storage:* Logs are transported from the forest concession to the mill to be processed and are stored in yards that use various methods to retain the moisture in the logs.
- (3) *Debarking and Cutting of Logs:* Before the logs are cut and peeled, the bark must be removed. Mills use industrial machines to de-bark logs as they continue along the production line. De-barked logs then move on to be cut to size. The size that the logs are cut to is usually dependent on the production at the time of cutting; finished panel size and grain direction play a part in the cutting of logs. Logs are peeled using a rotary lathe. This peels the log in a manner like that of a pencil sharpener except the blade is completely parallel to the log at the time of cutting.
- (4) *Shipping to Manufacturers:* The peeled logs are shipped to the furniture manufacturer, where they are checked and measure to ensure sizes and moisture content is within requirements.
- (5) *Cutting and Molding:* Each piece of timber is carefully cross cut into lengths required. Cut timber is then bundled on pallets, which is then processed at the molding section to achieve the shapes and sizes required.
- (6) *Component Fabrication:* Molded timber is processed by different machines depending on its shape and design to acquire its features. These components are then carefully sanded to round all sharp edges and smoothen out all surfaces.
- (7) *Assembly:* Each component is assembled to form the part of the intended furniture. Joints are glued together to form a strong bond. Assembled parts are then stacked together and labeled for traceability.
- (8) *Finishing and Packing:* Assembled parts are dipped in teak oil and wiped dry to achieve the brown/teak finishing. Teak oil acts as repellent of wood destroying insects, fungicide, as well as providing some weather and ultraviolet (UV) resistant to the wood. These parts are left for a time for the teak oil to cure and dry, and are then inspected again before being packed into carton boxes.
- (9) *Delivery:* Finished products are loaded into containers according to customer's order. These containers are then shipped out to customers from all around the world.

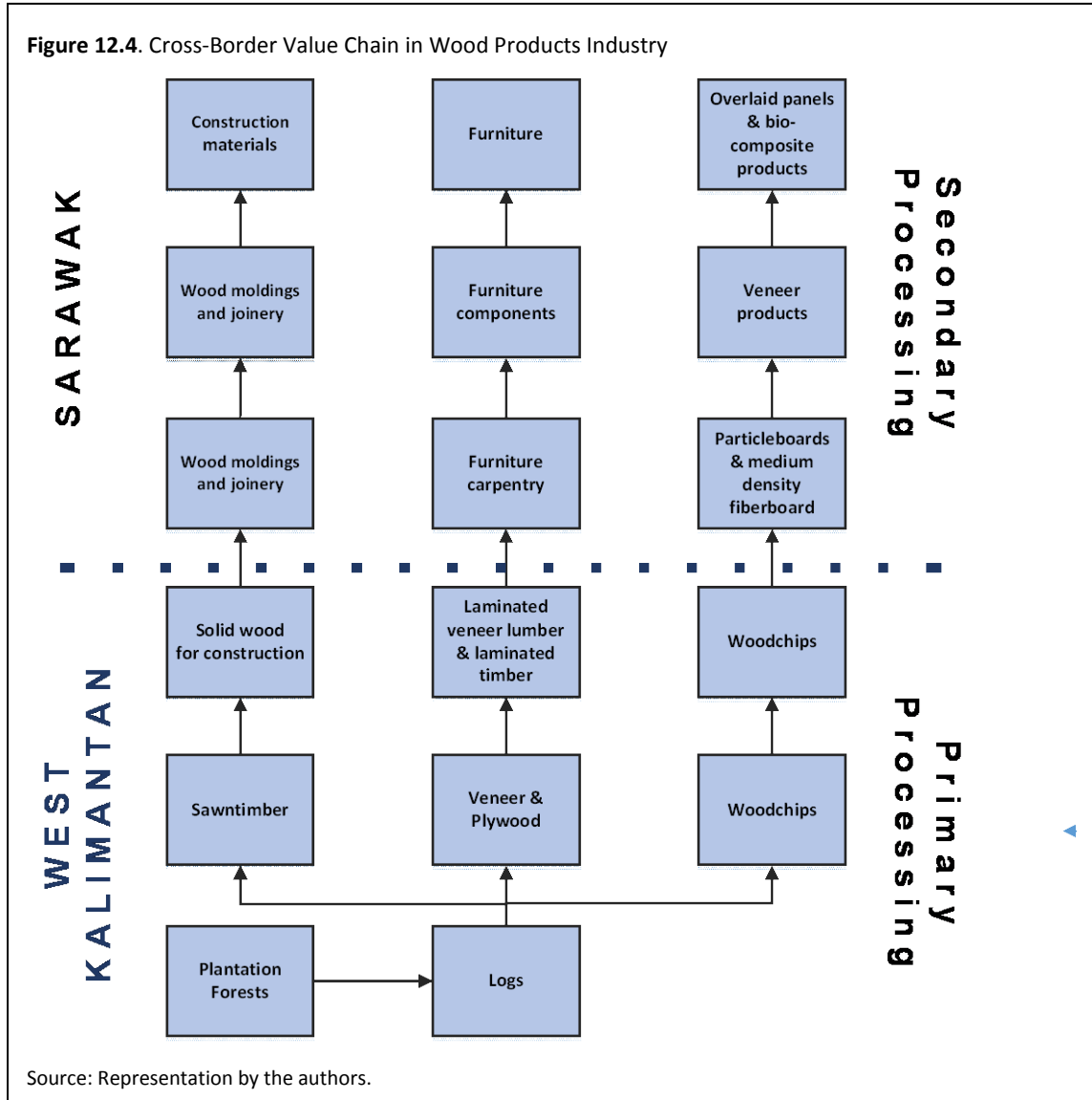


Figure 12.5. Steps in Modular (Knockdown) Furniture Manufacturing



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Figure 12.5. Steps in Modular (Knockdown) Furniture Manufacturing (Continued)



Sources: Photos number 1 to 7 from Kitronik, "Plywood: The Production Process"; photo number 8 from Spotted Owl Timber, "Hand Peeled Vigas"; and Kabjaks, "The Cabinet Manufacturing Process".

13. Fisheries

13.1. Rationale

The fisheries, or seafood, industry includes all activities concerned with capturing, culturing, processing, preserving, storing, transporting, marketing or selling fish or fish products. Enterprises in the industry carry out activities associated with wild-catch or aquaculture resources and the various transformations of those resources into products for sale. West Kalimantan's fisheries industry generated US\$ 3.8 million in 2017, down from US\$ 9.0 million in 2012. As a result, both the provincial and national governments have instituted several training and certification programs as well as numerous infrastructure projects to revitalize the industry. An important subsector being promoted is the seaweed industry. Both Sarawak and West Kalimantan are expanding their production rapidly as global demand for dietary protein has risen. However, seaweed supplies are subject to large variations and buyers have been reluctant to commit to long-term arrangements with local producers.

West Kalimantan company owners are interested in higher-value processing activities. The challenge in developing supply or value chains between West Kalimantan and Sarawak companies will be in organizing producers and linking them with both upstream and downstream activities. While such cooperation is viable, it will require investment in clustering activities and a 'champion' team to promote cross-border collaboration. The four product areas of potential collaboration are (i) crabs, other than frozen (HS 030624), (ii) prawns and shrimp, other than frozen (HS 030623), (iii) fresh or chilled whole fish (HS 030269), and (iv) fresh or dried seaweed (HS 121220).⁴⁵ Section 18.2 of this report discusses clustering methods and requirements.

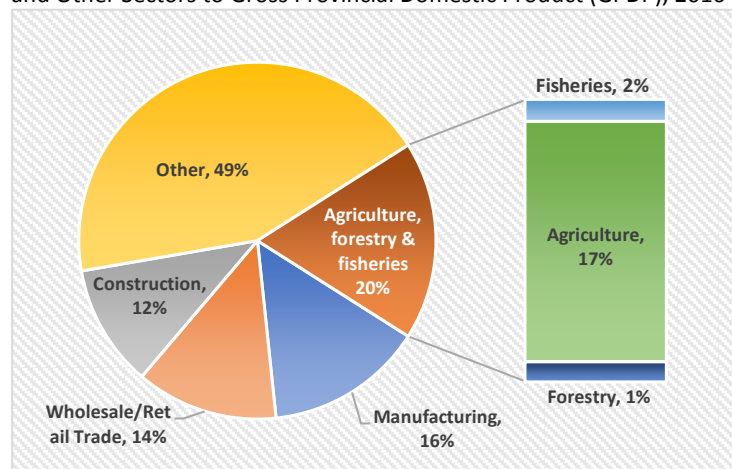
13.2. Industry Analysis

Indonesia is the second largest marine fishery producer and the third largest farmed fish producer in the world.

West Kalimantan. The fisheries industry is composed of the following five components: (i) capture fisheries; (ii) aquaculture; (iii) fish processing industry; (iv) ornamental fish industry; and (v) ship building industry.

The fisheries industry only contributes 2% of West Kalimantan's gross provincial domestic product (GPDP) (Figure 13.1). Nevertheless, the national and provincial

Figure 13.1. West Kalimantan Percentage Contribution of Fisheries and Other Sectors to Gross Provincial Domestic Product (GPDP), 2016



Source: Based on data in BPS Provinsi Kalimantan Barat, "Gross Regional Domestic Product of Kalimantan Barat Province by Industrial Origin, 2012-2016".

governments consider fisheries to be a high-priority growth industry with large, as-yet-untapped potential in the province. Within the sub-sector, the Government’s priority investment areas are ship building, fish capture and cultivation, fish processing, and cold storage facilities.⁴⁶ The province’s large and growing ship building industry and the potential for cross-border collaboration with Sarawak is treated separately in the next chapter.

(1) Government Policies

The Government’s National Fisheries Industry Acceleration Program aims to bolster growth of the fisheries industry through sustainable fishing and aquaculture, zoning of fishing areas, and supporting regulations, institutions and financing. West Kalimantan’s fishing grounds are in the Natuna Sea, which is an extensive shallow sea located around Natuna Islands that extends south to Lingga and Tambelan Archipelago. The area has large sea capture opportunities and is the largest area designated by the Government for fisheries management.

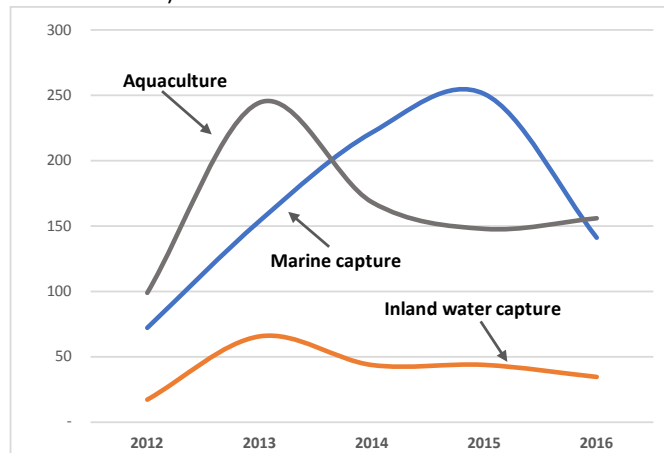
To take advantage of West Kalimantan’s sea capture and cargo shipment opportunities, the Government developing Pontianak’s seaport capacity. The plan includes revitalizing public shipyards, increasing local fishing vessel capacity, and skills training and certifications. In the regulatory environment, investment facilitating measures cover tax allowances, tax holidays, and import duty exemptions.

The following incentives are provided under Government Regulation No.18/2015: (i) 30% reduction in taxable net income from the investment, charged at 5% a year in the 6 years period; (ii) accelerated depreciation and amortization; (iii) compensation on losses that extend beyond 5 years; and (iv) 10% income tax on foreign tax dividends, or a lower rate under double taxation agreements with other countries. Tax holidays are offered to new investors, and pioneer investors, including those that build and operate fish processing facilities; and to investments of over US\$ 71 million.

(2) Production and Exports

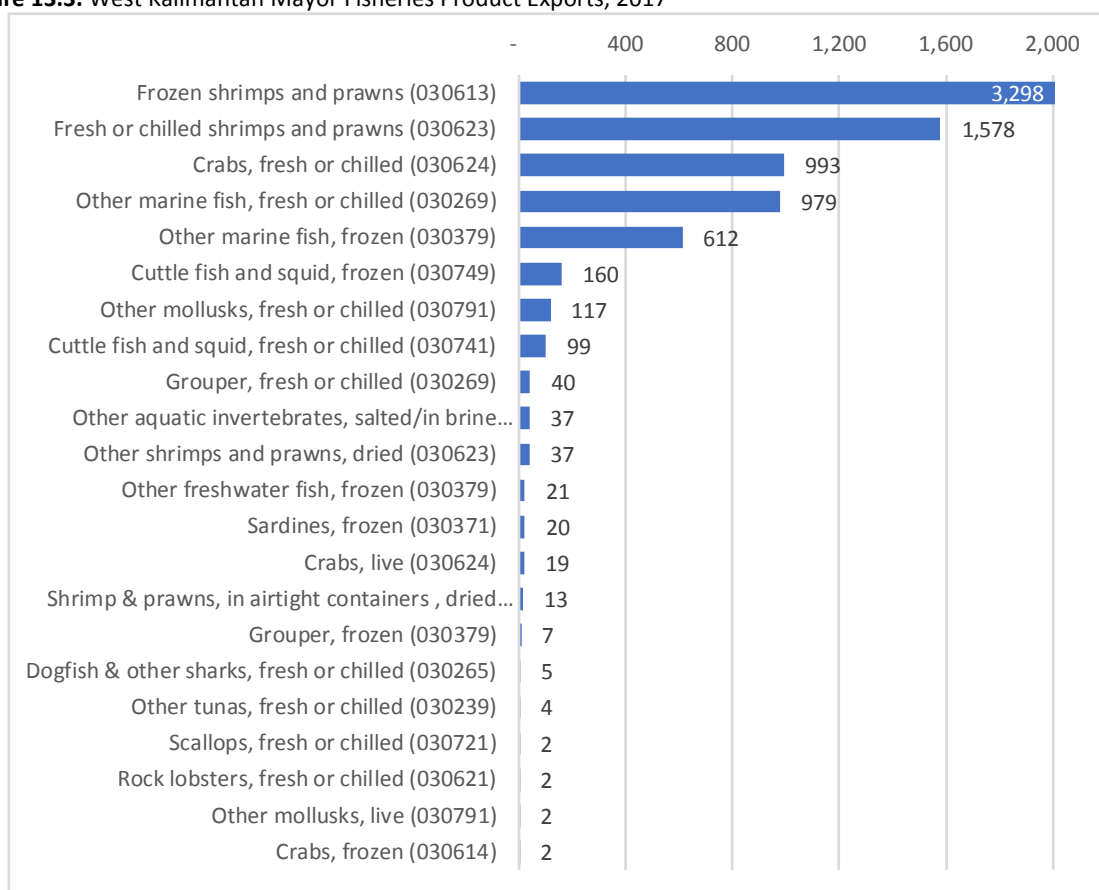
Fish and crustacean production in West Kalimantan is about equally divided between marine capture and aquaculture, while inland water capture represents about one-tenth of all fish production (Figure 13.2). Marine capture in the sea extend from small grazing species such as anchovy to large active predatory fish such as tuna, while aquaculture is the farming of fish, crustaceans, mollusks, aquatic plants, algae, and other aquatic organisms, and involves the cultivation of freshwater and saltwater populations under controlled conditions. Recent trends in these three sources of fish production indicate a stable level of inland water capture and considerable fluctuations in year-to-year marine capture and aquaculture production.

Figure 13.2. West Kalimantan Value of Fish Production, 2012-2017 (million US dollars)



Source: Based on data in BPS Provinsi Kalimantan Barat, “Gross Regional Domestic Product of Kalimantan Barat Province by Industrial Origin, 2012-2016”.

Figure 13.3. West Kalimantan Mayor Fisheries Product Exports, 2017

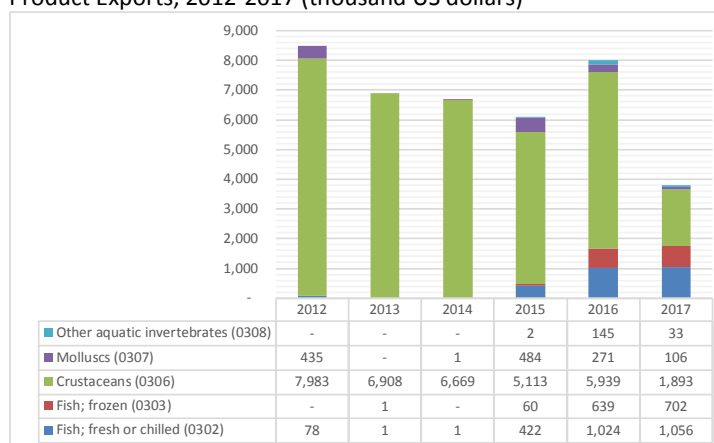


Source: Based on data provided by Ministry of Trade Indonesia.

Over 60% of the province’s total value of all fish and crustacean production derives from fresh, chilled and frozen shrimp and prawns (Figure 13.3). Another 12% of all earnings come from fresh and chilled crabs. The remaining 25% of fisheries production comes from a variety of sources that include fresh or chilled fish, mollusks, squid, grouper, tuna, scallops, and lobsters.

In the last five years, crustaceans (shrimp, prawns and crabs) have dominated export earnings (Figure 13.4). In 2012, for example, 94% of all foreign exchange earnings from fisheries came from crustacean exports, and it was near 100% in the next two years. More recently, other types of products have gained in importance, including fresh, chilled and frozen fish, as well as mollusks. Together these non-crustacean exports represented 25% of export earnings in 2016 and 50% in 2017.

Figure 13.4. West Kalimantan Mayor Types of Fish and Crustacean Product Exports, 2012-2017 (thousand US dollars)



Source: Based on data provided by Ministry of Trade Indonesia.

Malaysia is the leading destination of West Kalimantan's fishery export (Figure 13.6). In 2017, Malaysia absorbed 77% of all fishery exports, while Singapore accounted for another 15%. Other markets, albeit of much lesser importance, are Japan, China and Taiwan.

13.3. Ornamental Fish

West Kalimantan has in the past shipped ornamental fresh water fish to Malaysia, Singapore and Thailand. It currently sells that type of live fish to Japan. All markets are for customers who prize high-quality ornamental fish and are willing to pay premium prices for them.

The industry comprises a wide range of producers, from household operators to large-scale commercial producers. The Asian arowana, also known as the dragon fish, is believed by the Chinese to bring good luck and prosperity due to its red color and coin-like scales. The Asian arowana is the world's most expensive aquarium fish. It is a tropical freshwater fish from Southeast Asia that grows three feet long in the wild. Today, only a few Asian arowana survive in the wild, deep in the jungles of Borneo. Most are raised on fish farms.

There already exists a Malaysian-Indonesian joint venture to breed the highly-prized arowana aquarium fish in Sarawak for the export market. The joint venture involves LTT Aquaculture Sdn Bhd, Malaysia's largest breeder of freshwater fish, and Pontianak-based Sun Heng Aquarium, an established arowana breeder and exporter. The project is breeding the super-red arowana, the most highly-prized variety of arowana. The green is the most common variety while others include silver and red-tailed golden arowana. Sun Heng's arowana fish ponds in Pontianak cover over 100 acres and provide broodstock, which are a group of mature individuals used in aquaculture for breeding purposes. They also allow for the transfer of breeding technology to Sarawak under the joint-venture project.

Figure 13.5. West Kalimantan Inland and Offshore Fishing Fleets



Inland water capture fleet in Kapuas Hulu Regency, near border with Sarawak



Marine capture fleet in Sambas river, of the regency by the same name

Source: Photos by Alisa Lord.

Export of arowana required a CITES (Convention on International Endangered Species of Wild Fauna and Flora) license. There are two companies in Sarawak currently holding licenses to export the ornamental fish.

13.4. Project Profile for Cross-Border Value Chains

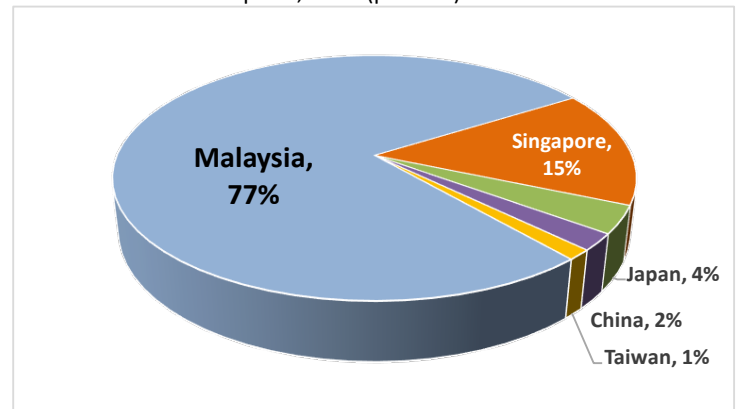
The project aims to develop a cross-border value chain between Sarawak and West Kalimantan in the fisheries industry. For Sarawak, it is in line with the Eleventh Malaysian Plan and Sarawak Structure Plan 2033. West Kalimantan’s extensive activities in the primary stages of the fisheries industry offers an opportunity to offset Sarawak’s depleted local fish stocks. Figure 13.7 shows the basic production and processing stages along the value chain for three of West Kalimantan’s and Sarawak’s major fisheries industries: marine capture, aquaculture and seaweed production.

The project will promote cross-border clustering of activities in fisheries products that focus on value-added downstream products, especially those products that are processed and packaged under internationally accepted standards. The targeted types of products include semi-refined carrageenan from locally-grown seaweeds, canned crab meat, surimi and fish meal. Surimi or fish meat paste is a new local fisheries product and is used in the making of imitation crab and lobster meats, fish balls and cakes, and other convenient, ready-to-eat seafood products.

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Figure 13.8 presents ornamental fish production in P.T. Arwana Lestari. Similar production facilities in West Kalimantan are already forming joint ventures with facilities in Sarawak to export and transfer technologies between the two territories. P.T. Arwana Lestari is located near Sentarum Lake and close to Putussibau city in the northeast regency of Kapuas Hulu. The farm produces many super-red arowanas, which originally came from Sentarum Lake. Arowana fries are now hatched and raised in controlled ponds or fish tanks. The farm has over 100 ponds, each of 12 X 50 meters in size, with 6 rooms each for reproduction. Feed is based on a combination of frogs, prawn and chicken byproducts. The company is registered with CITES and there is a strong interest by the owner to expand exports to Malaysia and other markets.

Figure 13.6. West Kalimantan Geographic Destination of Fish and Crustacean Product Exports, 2017 (percent)



Source: Based on data provided by Ministry of Trade Indonesia.

Figure 13.7. Cross-Border Value Chains in Fisheries Industry

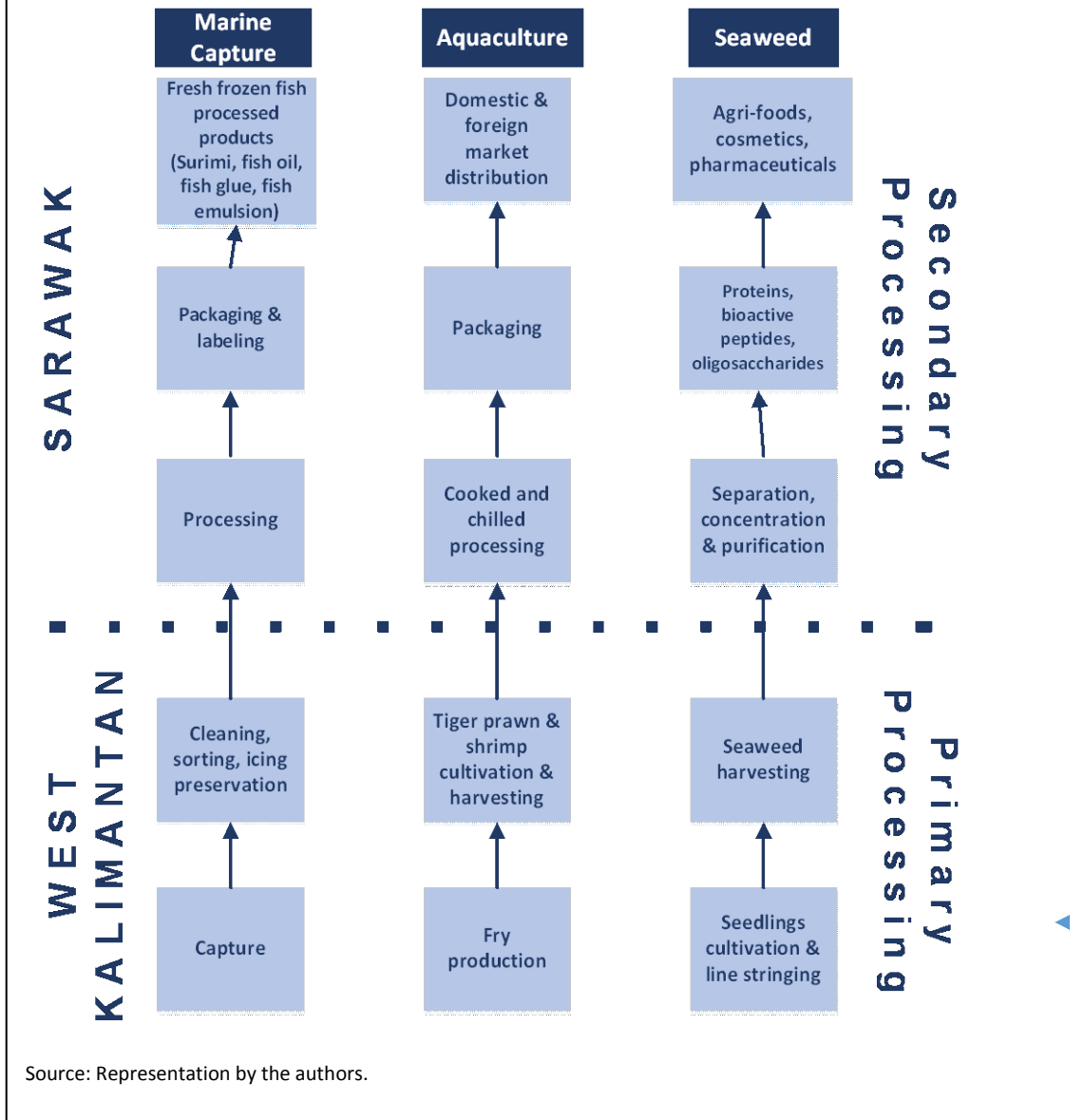


Figure 13.8. Ornamental Fish Production in P.T. Arwana Lestari



Source: Photos by Alisa Lord.

14. Ship Building

14.1. Rationale

As an archipelago nation, Indonesia has over 1,800 ports catering to industries like petroleum, fertilizer, timber and wood products, cement, and mineral extraction industries. Of these, over 100 ports are designated as commercial. West Kalimantan's large number of rivers also makes ferry transport critical to connectivity for both people and goods (Figure 14.1) The need for a wide range of ships to transport cargo and passengers is therefore substantial.

Indonesian President Joko Widodo has prioritized development and expansion of Indonesia's domestic shipbuilding industry as part of a broader effort to strengthen the country's maritime capabilities as

well as to revolutionize its domestic defense industry.⁴⁷ To that end, the Government has decreed that all government and state-owned company must procure vessels that are built locally.

In West Kalimantan, shipbuilding has traditionally been one of the leading industries of the province.

Figure 14.1. Ferry Transport in West Kalimantan.



Source: Photo by Alisa Lord.

Figure 14.2. Pontianak Sea Port



Source: Photo by Alisa Lord.

Steadfast Marine is in Pontianak and has helped advance Indonesia's maritime ambitions through transfer of technology during the complex built with the Damen Shipyards Group. Damen is a Netherlands-headquartered company with extensive experience in building vessels throughout the world. Damen is involved in ship construction as well as maintenance and repair activities. It has a wide product range, covering tugs, workboats, patrol craft, cargo vessels, dredgers, mega yachts and fast ferries. Product design and engineering are carried out in-house

and a broad range of designs is available. Moreover, West Kalimantan is one of 12 potential areas that has been identified by the Indonesian Investment Coordinating Board (BKPM) as having a high potential for shipyard investment.⁴⁸ Services include both vessel reparation and shipbuilding.

In Sarawak, shipbuilding is at an infant industry stage of development and the Government wants the state to become one of the leading growth centers for the industry. The state has 78 ship builders, specializing in building and repair of small-to-medium-sized vessels such as tugboats, offshore

support vessels (OSV), barges, anchor handlers and passenger boats. Of these, 36 are in the northern port of Miri, and another 10 are in Bintulu.

Collaboration with West Kalimantan’s ship building industry would help Sarawak to gain knowledge and technical expertise in high-tech designs for shipbuilding and its component products. The Malaysia Shipbuilding/Ship Repair Industry Strategic Plan (SBSR) 2020 establishes the framework for the country to become globally competitive in the shipbuilding and ship repair industry, especially for vessels under 120 meters. One of the SBSR strategic goals is the creation of a skilled workforce in ship building and repair. West Kalimantan has well-established companies that are in a position to share their expertise with Sarawak companies that could provide the needed component products, which are currently being imported from other supplying countries.

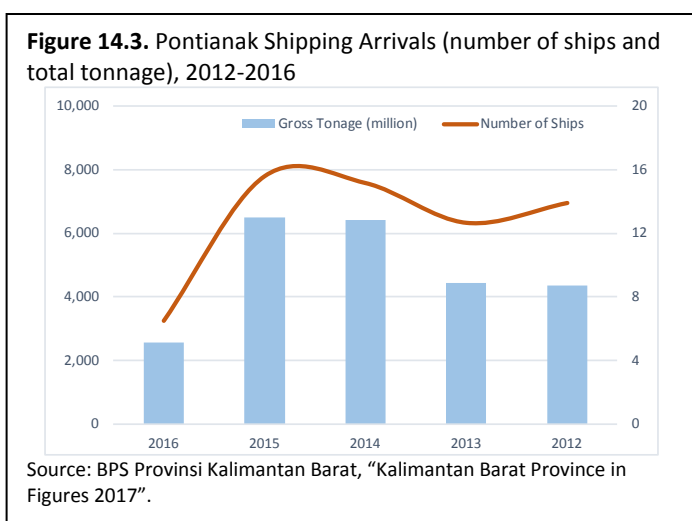
14.2. Industry Analysis

1. National Production

Indonesia’s shipbuilding industry remains relatively underdeveloped compared with those in Vietnam, the Philippines, and Singapore. Yet, in the 1980s, Indonesia was a major shipbuilder in the world market, providing ships to both foreign and domestic customers. In the 1990s, China began producing ships at a cost of US\$12,00 a ton, compared with US\$ 1,99 a ton in Indonesia, which undermined the Indonesian country’s competitiveness and caused investment in the industry to stagnate. Efforts to protect the industry worsened the situation, and the competitiveness was further undermined by (a) unfavorable fiscal policies on the shipbuilding industry, including high import duties and corporate income taxes; (b) lack of investment financing; (c) reliance on imported parts and equipment; (d) limited production capacity; and (e) need for more skilled workers with technical expertise.⁴⁹

Indonesia’s 2010 Law No. 17 on Shipping now requires all vessels operating in Indonesian waters to be Indonesian flagged.⁵⁰ Despite this cabotage law, the Indonesian shipbuilding industry has been unable to supply the various types of specialty ships required by industries. As a result, the Ministry of Transportation issued Regulation No. 22/2011, which allows certain classes of non-transportation vessels to be eligible for a three-month renewable waiver from the domestic flagged vessel requirements when there is no suitable Indonesian-flagged vessel available. The problem nevertheless remains, as the three-month waivers are often not long enough to cover the project duration.

At present, Indonesia has over 250 shipbuilders, which are mostly located in Batam, Lampung and East Java. The industry’s output is currently 800,000 dead-weight tons (DWT) for ship production, and 10 million DWT for ship repairs. Over one-half of these shipbuilders are in the Batam-Bintan-Karimun



Free Trade Zone. Lack of any duties on imported parts and equipment for the shipbuilding industry has greatly increased the competitiveness of the industry located in that area.

2. West Kalimantan Shipping

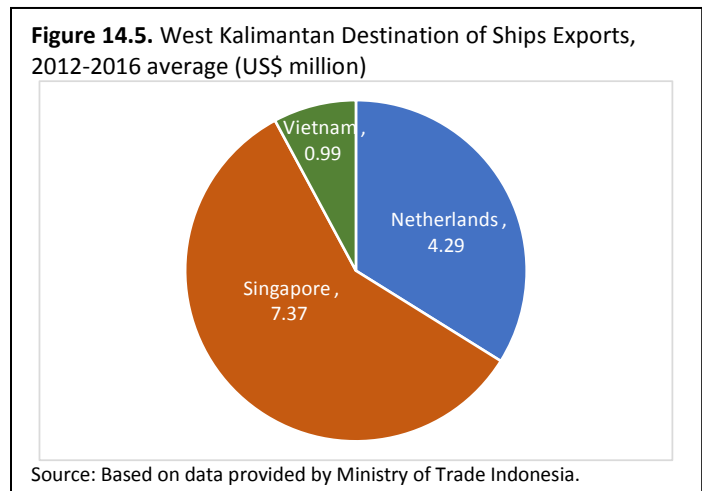
West Kalimantan has several ports along its western coast bordering the Karimata Strait and Natuna Sea. They include those in Ketapang, Pemangkat, Sintete and Singkawang. But Pontianak port dominates all others in terms of number of shipping arrivals. Figure 14.2 shows the size of Pontianak’s sea port, while Figure 14.3 presents the growth of shipping movements in that port since 2012. However, the port has limited capacity for the increasing number of ship arrivals and container storage. The Government recently announced the construction of a new port at Kijing, 95 kilometers north of Pontianak. The port will initially cover a land area of 50 to 100 hectares and have a depth of 12 to 15 meters.



PT Steadfast Marine was established in 2005 and its shipyard facility is in Batu Layang, Pontianak. It started building ships in 2007 and the following year became part of Damen Shipyard. Its operations are in an area of 56.000 square meters and are beside the Kapuas River. There are three launching skids and one slipway to support line operations. There are also four outdoor lifting supports, and all ships are designed with in-house software.

3. West Kalimantan Exports

While much of West Kalimantan’s production of shipping vessels have been directed towards the domestic market, there has nonetheless been a large volume of exports to foreign markets. Figure 14.4 shows the average annual value of exports in 2013-2017. Of the US\$ 18.0 million annual exports of ships exported annually, 55% were dredgers and nearly 20% were tug boats. Vessels for transport of persons and goods and those with working functions such as fire-fighting and floating cranes together represented 25% of all vessels directed to foreign markets.



There are three principal foreign export markets for West Kalimantan ships: Singapore, which absorbs 58% of all exports; Netherlands, 34%; and Vietnam, 8%. Malaysia was a market in the early part of this decade (Figure 14.5).

14.3. Project Profile for Cross-Border Value Chains

West Kalimantan has a well-established shipbuilding industry, as does Sarawak. However, Sarawak is interested in upgrading its industry to build larger ships with high-tech equipment. West Kalimantan companies like Steadfast Marine, has the capability and interest to expand its operations in Sarawak and provide the needed technology and know-how for that state's industry. The project aims to develop a cross-border collaboration between West Kalimantan and Sarawak in the shipbuilding industry.

Figures 14.6 and 14.7 show a value chain for the shipbuilding industry, as represented by that of Steadfast Marine in West Kalimantan. The manufacturing process for steel or aluminum vessels is similar:⁵¹

- The first stage involves consolidation of the material inputs for ship-building, including semi-worked products such as metal sheeting and sections, finished products like engines, and items for fitting-out, which vary according to the type of ship, such as petrol carrier, passenger ship or cruise ship.
- The design process is carried out within the plant and usually involves highly sophisticated and dedicated design software programs.
- Hull fabrication takes place in the naval workshop, where sheet metal and sections are used for the construction of the hull. Mechanical cutting and related operations are followed by molding of semi-worked products used for new assembly of both small and large fabrications as well as stocks. Large-scale pre-fabrication can be done both in parallel or in series with small pre-fabrication. It involves the construction of semi-worked items. They make up elements in the base structure and plating, which can then be assembled into blocks that are then used to construct the ship.
- Operations of loading and installing machinery and fitting-out can be carried out either on solid ground or after launching. These works include finishing operations and all other auxiliary services carried out with the aim of making the ship fit for navigation. Some of the most important of these are the services for dealing with flood or fire, crew or passenger facilities such as bunks and kitchens, navigational services, and services related to the distribution of electricity produced by the auxiliary generator.
- The last phase of the manufacturing cycle involves sea trials, which test the propulsion system, operability, and control equipment and safety systems for navigation. One on-board equipment is loaded, the ship is ready for delivery.

Figure 14.6. Value Chains in Shipbuilding Industry

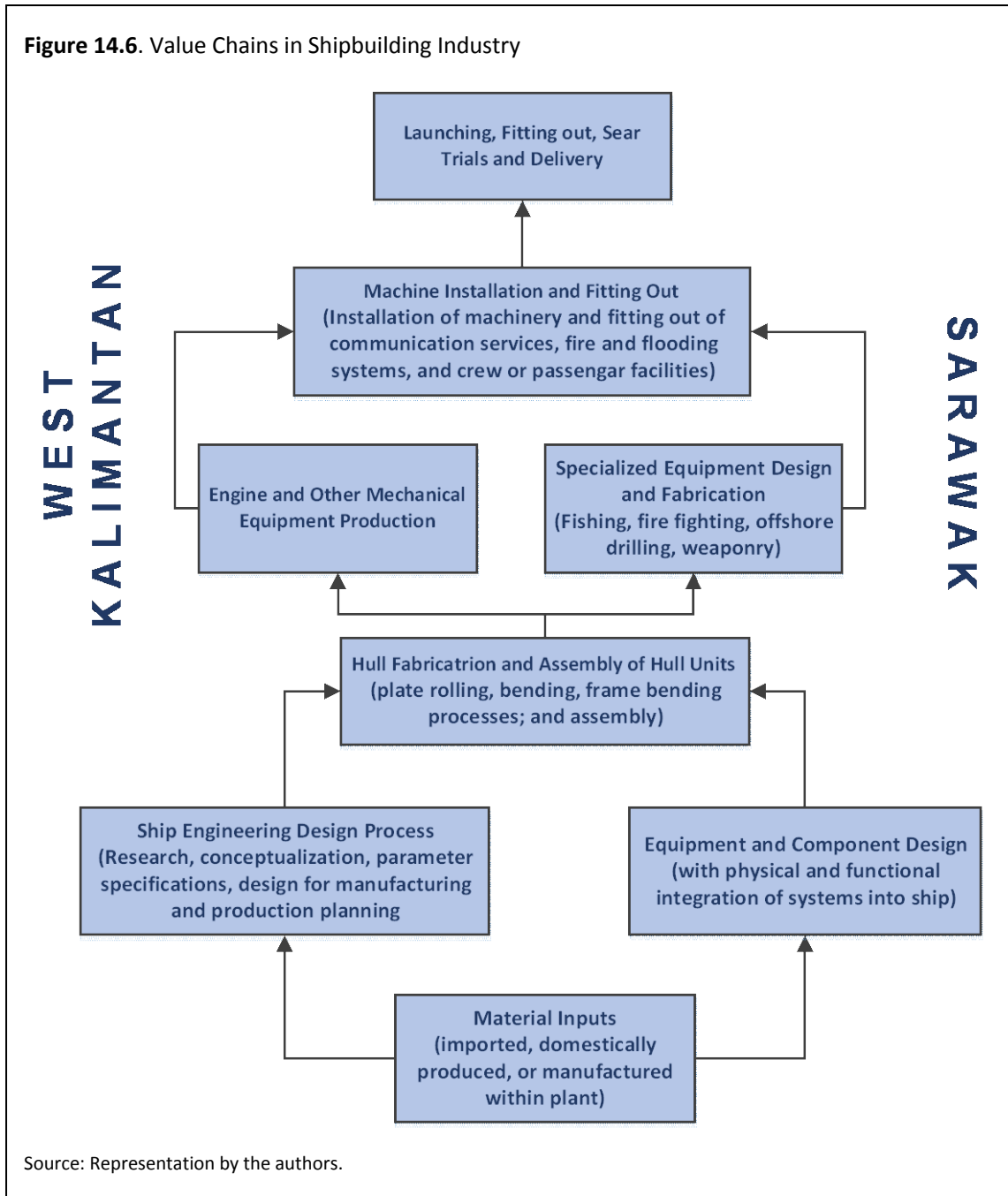


Figure 14.7. Steps in Shipbuilding Process



(Continued next page)

Figure 14.7. Steps in Shipbuilding Process (Continued)



Source: Photos by Alisa Lord.

15. Organic Agriculture

15.1. Rationale

Agriculture is the most important sector West Kalimantan's economy. The combined areas of agriculture, forestry and fisheries account for 20% of GDRP and, of that share, food and horticultural crops represent one-fourth, while plantation crops account for one-half, with the remaining one-fourth divided between forestry and fishery activities.⁵² Agriculture therefore add 15% to the province's total economic activity. Only manufacturing has a somewhat greater contribution, equal to 16%.

A dependency on subsistence agriculture using traditional farming methods that rely on expensive pesticides and herbicides has caused many of the province's households to be economically impoverished. Farmers often lack knowledge about alternative farming techniques that rely on less expensive inputs and farming techniques requiring timely interventions and weed control. At the same time, most households are unaware of market opportunities beyond their immediate surroundings, and have little or no knowledge about broader national or international market opportunities. There is also a lack of pricing information, technologies, certification, branding, networking and linkages along the value chain for processing, packaging and marketing.

Notwithstanding their importance to household incomes in the province, those agricultural products are mainly directed towards domestic markets at relatively low prices of conventional products. Of those that are exported, most are in the form of nuts. There are virtually no exports of fruits and vegetables, and only a small volume of tea and spices is shipped abroad. As a result, less than 1% of all edible agricultural products produced in the province are directed to foreign markets.

One solution is to create an integrated approach to the organic vegetable industry that takes advantage of existing agricultural resource-based activities within the subregion. Organic fruits and vegetables are one of the fastest growing food industries, with premium prices that are more than double their conventional food product equivalents. Organic prices in the large North American and European markets are more than 135% higher than conventional produce and, in some products, organic varieties are 4 times higher than their equivalent conventional varieties. Figure 15.1 shows the premium price margins for organic foods, differentiated by organic raw vegetable prices, packaged and branded organic vegetables, and manufactured organic products.

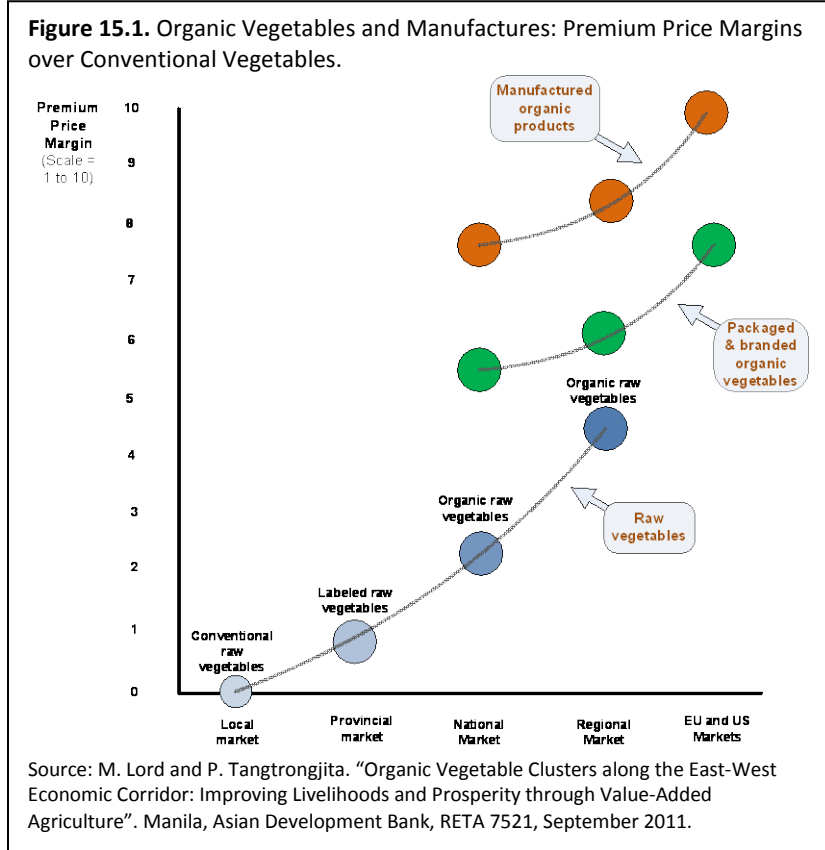
Elsewhere in Southeast Asia, organic agriculture is growing rapidly because of people's increasing concerns about excessive use of herbicides and pesticides, and the rise in the incidences of cancer in the population of the region. Much of this industry's growth in Indonesia's and Malaysia's urban centers is being spurred by supermarket prices of organic vegetables that are much higher than those of conventional produce, thereby encouraging farmers to dedicate more land to those types of products.

Finally, eco-tourism is closely related to organic agriculture. The sector is growing rapidly throughout Southeast Asia and has enormous potential for a West-Kalimantan-Sarawak partnership. The Greater Mekong Subregion (GMS) has already implemented a cross-border eco-tourism program supported

by ADB and can serve as a model program for a similar West-Kalimantan-Sarawak project. The ADB's GMS ecotourism offerings can be viewed on the following website: www.mekongecotourism.org.⁵³

There are 10 reasons why West Kalimantan should develop organic agriculture and extend those activities to cross-border trade and investment with Sarawak:⁵⁴

- (1) Many households are involved in small scale agricultural activities and many of these households still live below the poverty line.
- (2) The global food market is robust, with prices for foods having risen by over one-third each year.
- (3) Global market prices for organic vegetables are, on average, nearly 2.5 times higher than their conventional counterparts.



- (4) Prices of organic vegetables tend to be more stable than those of conventional vegetables.
- (5) Since organic farming is labor intensive, West Kalimantan has a comparative advantage in the production of organic vegetables because of its low-cost labor relative to that of the more advanced countries.
- (6) Safe food concerns are driving the rapid growth in demand for organic vegetables, not only in international and national markets but in local markets as well.
- (7) Indonesia's and Malaysia's large deficit in existing production of organic products provides a ready market for any production taking place in West Kalimantan. As a result, both governments have a strong interest in developing organically certified products for the ASEAN region and markets in Europe and the United States.
- (8) Both Governments support development of organic agriculture, and in many cases, local authorities, community leaders and international development agencies are already involved in the promotion of different organic projects.
- (9) Sarawak could offer access to international organic certification for West Kalimantan producers.
- (10) Widespread implementation of organic vegetable value chains between West Kalimantan and Sarawak could substantially improve living standards of large pockets of the local population and

thereby contribute importantly to the transformation of the West Borneo Economic transport and logistics corridor into a full-fledged economic corridor.

15.2. Industry Analysis

In West Kalimantan, there is an extensive variety of agricultural produce (Figure 15.2). However, organically produced vegetables and other types of agricultural products are limited. There is extensive interest in developing the province's organic agriculture, but those efforts are not well organized. As a result, organic products are recognized as having high value, but farmers lack adequate remuneration for any premium quality produce that they grow.⁵⁵

Organic food producers in Indonesia need to comply with the Government's Indonesian National Standard (INS) requirements to receive a certificate. The Ministry of Trade regulates the production, labelling, certification and import of organic foods under regulation passed in 2010. At present, farmers in West Kalimantan are in the process of verification to receive the certification.

International development partners are actively supporting local clusters of farmers to produce organic vegetables. Alam Sehat Lestari (ASRI), a non-profit organization, is working in Sukadana, the capital city of Kayong Utara Regency, to train farmer groups and promote organic food production. Considerable work is needed to establish a sufficiently wide farmers base necessary to produce and export organic foods from the province.

In contrast, Sarawak's organic foods are well organized. Malaysia offers the Malaysian Organic Scheme (MOS) certification, which is issued by the Department of Agriculture and is mandatory certification for farms practicing organic methods and selling the products as organic. MyGAP and myOrganic certificates are recognized and issued to farmers that meet conditions related to land, water sources and fertilizers used. As such, West Kalimantan farmer groups could supply much-needed organic products to Sarawak organic food packaging companies, who would be able to certify their products.

15.3. Project Profile for Cross-Border Value Chains

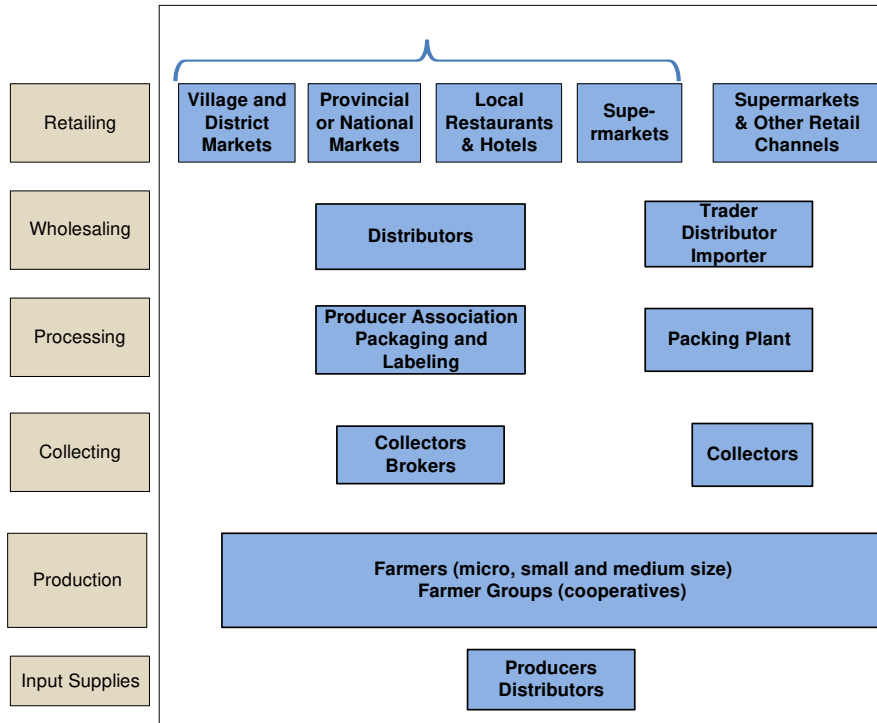
The project aims to develop a cross-border value chain between West Kalimantan and Sarawak in the organic foods industry, along with the eco-tourism sector. The proposed value chain for organic agriculture is shown in Figure 15.3. The project would (i) survey existing local, domestic and international markets for key organic products; (ii) explore opportunities for clustering of organic producers; (iii) organize training workshops for producers on requirements for national and international organic certifications; (iv) identify distribution systems for domestic supermarkets and international wholesalers; (v) help to link clusters with packaging companies; (vi) identify champions who can advance the organic foods movements across the West Kalimantan and Sarawak border; and (vii) develop eco-tourism linkages and cooperative arrangements across borders.

Figures 15.4 and 15.5 map the production activities and distribution channels for organic vegetable. The channels range from a simple *supply chain* where the products are simply transferred from the farm the consumer without any value being added to the products, to sophisticated *value chains* where the products are transformed through grading, sorting, packaging, and cool storing along the various stages of production and distribution to add value to the product during the production and distribution to the consumer.

Figure 15.2. Types of Vegetables Produced in West Kalimantan

Asparagus		Green lettuce	
Basil		Green chili	
Bitter melon		Mint	
Broccoli		Morning glory	
Cabbage		Mushrooms	
Carrots		Okra	
Chinese celery		Red chili	
Chinese Kale		Red lettuce	
Chinese Radish		Spring onion	
Choy sum		Spinach	
Coriander		Tomatoes	
Eggplants		White Aubergine	
Ginger		Yard-long bean	

Source: Montague Lord, "Mapping the Organic Vegetable Value Chain along the East West Economic Corridor". Manila, Asian Development Bank, July 2011. Online: <https://mpira.ub.uni-muenchen.de/41145/> (accessed: 27 January 2018).

Figure 15.3. Value Chain of Organic Agriculture

Source: Montague Lord, "Mapping the Organic Vegetable Value Chain along the East West Economic Corridor". Manila, Asian Development Bank, July 2011. Online: <https://mpr.ub.uni-muenchen.de/41145/> (accessed: 27 January 2018).

Input Supplies – At the initial stage of the process, the farm uses input supplies from either external sources or from within the farming process itself. For organic farming, the key external inputs are likely to be seeds and, in some cases, organic fertilizers. Often, the farm produces its own fertilizers through animal manure and the traditional methods of fermentation compost fertilization.

Production – Organic vegetables are mainly grown in small landholdings by individual households or by farm groups. The farm groups either operate under a common organic project in a cooperative structure or as contract grower groups for processing and packaging companies or supermarkets. In the most basic household-level model, the farmer either transports his or her produce to the local market or sells it to a collector, who re-sells it to a wholesaler or distributor or in the local market. There is no value added to the process because organic produce is normally sold alongside conventional produce, without any differentiation between the two. Prices received by the farmer therefore tend to be low and in line with those of non-organic products. However, the profit margin for the farmer is higher than that of farmers who use the more-costly chemical fertilizers, herbicides and pesticides. Organic farming is more labor intensive, but in West Kalimantan labor is inexpensive and relatively abundant. The only drawback is the willingness of farmers to invest more time and energy in farming practices.

Collection – Traditional collectors and brokers predominate throughout West Kalimantan. They pick up the farm produce and carry them to local or provincial markets, normally without refrigeration. The emergence of specialized and dedicated refrigeration systems has yet to emerge in the province, notwithstanding advances in the infrastructure and logistics.

Producer Groups – When farmers develop relationships with one another or with processors and distributors, they are more likely to add value to their products. The most common relationship found is in the form of producer associations. In local markets, producer associations have been able to add value to their products through safe-food certification and branding their produce. Farmers associations, operating as commercial organizations, are regular suppliers of supermarkets. The success of these associations is largely based on a combination of factors: (a) technical training on safe vegetable production; (b) efficient sourcing of input supplies; (c) collective marketing; (d) quality control; (e) labeling and branding; and, in a limited number of cases, (f) financing.

Processing – The processor normally works with preferred suppliers, either in the form of groups or through contracting farming. These arrangements ensure high-quality produce at low costs. Long-term arrangements support fair trade prices for farmers to ensure dedicated and stable supplies to the plant. The processing system is accompanied by certification services at the plant.

Wholesaling – Larger supermarkets rely on dedicated wholesalers, who provide certain products along a single supply chain. Like processors, supermarkets also tend to form long-term arrangements with farm groups or associations. It ensures that traceability along the value chain.

Figure 15.4: Mapping Activities of Core Actors in Organic Vegetable Value Chain

Farmers	Collectors	Processors	Wholesalers/Trader	Retailers
Cultivation	Collect	Categorize	Quality Control	Storage
Growing	Categorize	Cleaning	Storage	Selling
Harvesting	Store	Drying	Transport	
Cutting	Transport	Cutting		
		Processing		
		Packaging		

Retailing – The traditional vegetable outlets are village and urban markets, while modern retailing is divided into (i) supermarket and quality food stores, and (ii) restaurants and hotels. As distribution moves from domestic to foreign markets, controls over standards for quality and safety, along with ‘just in time’ deliveries rise. Exported produce is primarily directed at supermarket chains. Reductions in trade barriers, improved transport and logistics systems, and increased capital mobility have all contributed to the growth in globalized value chains. Nevertheless, export markets tend to be concentrated in a relatively few supermarket chains.

Global Markets – There are a limited number of qualified organic vegetable producers along the EWEC provinces who are able or willing to export to regional or global markets. Yet participation in global organic vegetable value chains offers the largest earnings potential for producers. As mentioned earlier, the average price of organic vegetables in the United States is more than 140 percent that of conventional produce. The products commanding the highest organic price premiums are cabbage, lettuce, onions, broccoli, and mushrooms. Global food retailers, largely in the form of multinational supermarkets, often develop their own standards for outsourcing the production of their vegetable products. They rely on efficient and standardized procurement procedures. For those farmers and processors able to acquire the necessary certifications for their products and meet the standards of those global food retailers, it means the realization of large price differentials between their products and conventional vegetables. It also opens opportunities for expanding their markets across other regional or global food retailers.

Figure 15.5. Steps in Organic Agriculture Production and Certification



Source: Photos by Alisa Lord.

16. Tourism

16.1. Rationale

The West Kalimantan Government has designated cross-border tourism as one of the province's most promising growth areas.⁵⁶ The province's geographic proximity to Malaysia places it in an enviable position since Malaysia is one of the leading sources of tourism for Indonesia.⁵⁷ Tourism also reaches into other sectors, such as construction, manufacturing and IT services, thereby producing a multiplier effect along the value chain. It is estimated that for every job in the core tourism sector there are about 1.5 additional or indirect jobs created in the tourism-related economy.⁵⁸

The tourism industry is highly competitive and West Kalimantan business leaders and government officials therefore need innovative marketing strategies to ensure the long-term advancement of their aspirations for the tourism industry. It has long been recognized that bilateral and subregional cooperation in tourism marketing strategies is needed in the light of global market competitiveness, especially to attract long-distance travelers.⁵⁹ Strategies covering cross-border marketing networks that promote neighboring territories as a single travel destination can greatly enhance their attractiveness.

The BIMP-EAGA Vision 2025 aims to deliver, as one of its major outcomes, a sustainable, well-developed and connected *multi-country* tourism destination.⁶⁰ Similarly, the ASEAN Tourism Strategy Plan 2016-2025 is grounded on regional and sub-regional collaboration of private sector operators in packaging multi-country nature, cultural and community-based tourism products and technical expertise.⁶¹ This approach is critical to development of sustainable and inclusive natural and cultural heritage products and related actions in an increasingly competitive global tourism environment.

In the case of the GMS, establishment of a cooperative mechanism has proven to be highly successful. The core strategic thrust of its Regional Tourism Sector Strategy (RTSS) is marketing and product development of multi-country tourism by stimulating demand from high-yield markets and products through joint promotional activities.⁶² The approach is based on common human resource development activities and is being implemented throughout the subregion to improve capacities in the GMS tourism sector, as well as to develop common opportunities in areas such as travel to pristine forest areas, village communities, diving destinations, and historical sites.

West Kalimantan lacks technical expertise in tourism development, as well as infrastructure to support the tourism industry. Likewise, Sarawak currently has a very modest tourism advertising and promotion budget and needs to increase those expenditures considerably if it is to attract visitors. A West Kalimantan-Sarawak tourism cooperation arrangement could help stakeholders in both territories to gain a competitive advantage and thus enhance sustainability if they package and market their various attractions more cohesively.

Development of multi-destination tourism between Sarawak and West Kalimantan would require collaboration between tourism promotion institutions and private tourism associations. There are numerous opportunities to position Sarawak and West Kalimantan as a multi-destination travel location. However, it requires a strong commitment on the part of both Sarawak and West Kalimantan government authorities to coordinate marketing, product development and investment strategies, while continuing to develop their own unique attractions.

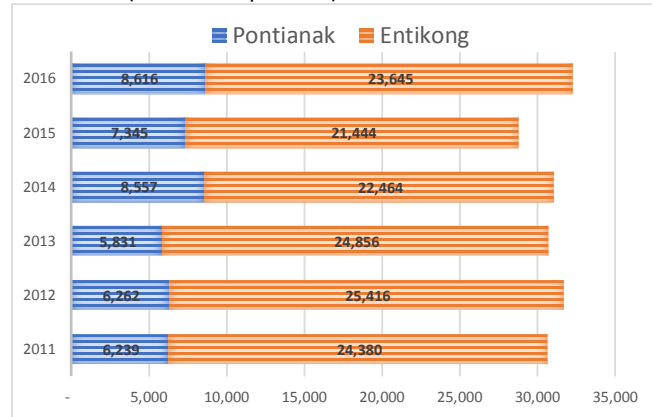
16.2. Industry Analysis

1. Tourist Arrivals

The number of tourist arrivals in West Kalimantan has average somewhat over 30,000 persons a year. Growth has been modest, averaging 1.3% a year since 2011. In fact, average growth in 2011-2015 was negative (-1.4%), with a reversal in the trend in 2016 when tourism rose by over 12%

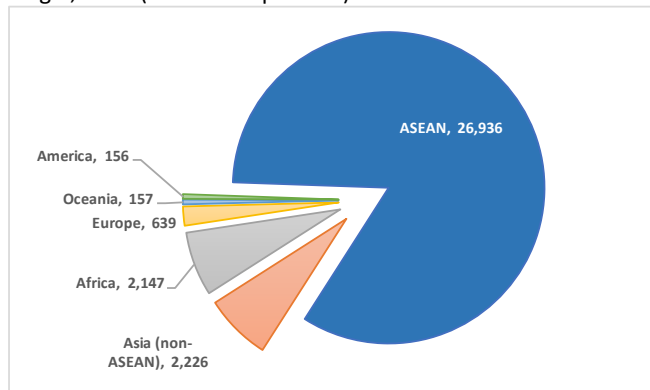
Arrivals from Sarawak through the Entikong border crossing represent for 77% of all arrivals into the province. Arrivals into Pontianak account for the remaining 23% (Figure 16.1). Nevertheless, the share Pontianak arrivals has been on the rise, with a gradual rise from 20% to 27% between 2011 and 2016.

Figure 16.1. West Kalimantan Tourism Arrivals by Entry Point, 2011-2016 (number of persons)



Source: BPS Provinsi Kalimantan Barat, "Kalimantan Barat Province in Figures 2017".

Figure 16.2. West Kalimantan Tourism Arrivals by Country of Origin, 2016 (number of persons)



Source: BPS Provinsi Kalimantan Barat, "Kalimantan Barat Province in Figures 2017".

Most tourists are from ASEAN countries, while European and American tourists are negligible. In 2016, 83% of arrivals were from ASEAN countries (Figure 16.2). Tourists from other non-ASEAN Asian countries and Africa each accounted for 7% of the total. European tourists represented 2% and those from America represented 0.5%.

2. Accommodations

There are only 31 star-rated hotels throughout the province.⁶³ Superior and luxury hotels are extremely limited. Only Pontianak and the regencies of Kubu Raya

and Kota Singkawang have 4-star hotels and, of these are three in Pontianak and there is one each in the two regencies. The same places also have 3-star hotels, and there is also one each in the regencies of Bengkayang and Ketapang.

Overall, foreign tourists remain in hotels for less than 3 days, though they generally stay longer than 3 days. The reason is that travelers change hotels as they move around the province to visit different types of attractions.

3. Tourist Activities

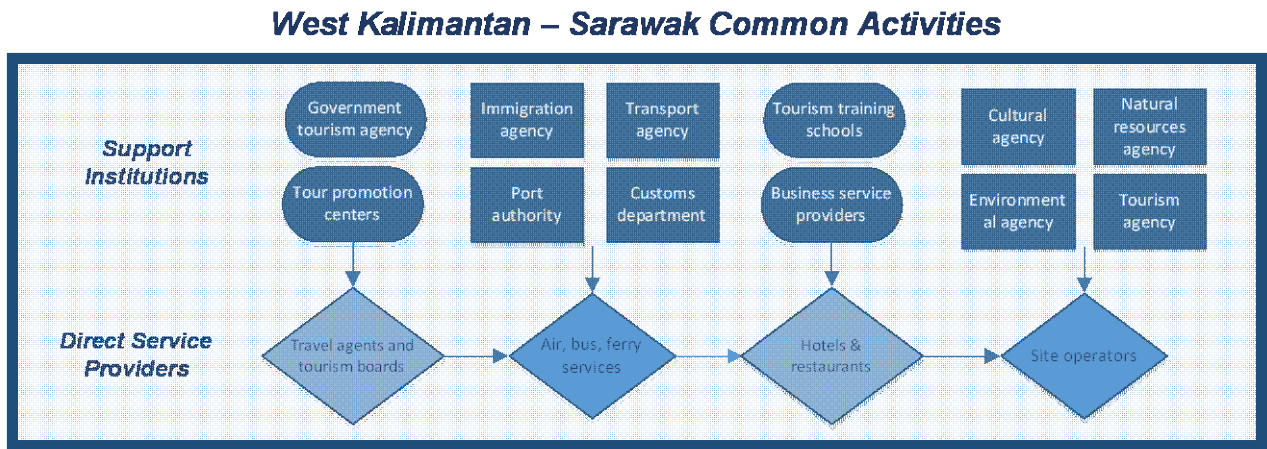
West Kalimantan's tourism sector focuses on nature- and culture-based tourism. There are three National Parks in the province: Danau Sentarum, Betung Kerihun, and Gunung Palung. Both Danau Sentarum and Betung Kerihun are in the northeast area of the province, near to Sarawak.

- *Danau Sentarum National Park* protects one of the world's most biodiverse lake systems, located in Kapuas Hulu Regency. It is in the upper Kapuas River tectonic basin some 700 kilometers upstream from the delta. The basin is a vast floodplain, consisting of about 20 seasonal lakes, freshwater swamp forest and peat swamp forest. Approximately half of the 1,320 km² park consists of lakes, while the other half consists of freshwater swamp forest. There is a rich fish fauna with around 240 recorded species, including the *Asian arowana* and *clown loach botia*. There are also 237 bird species that have been recorded, including the *Storm's stork* and *great argus*. Of the 143-mammal species in the park, 23 are endemic to Borneo including the *proboscis monkey*. There is a relatively large population of endangered orangutans present in the park. The 26 reptile species include the *false gharial* and *estuarine crocodile*. The lakes support a large traditional fishing industry. The western part of the upper Kapuas floodplain is inhabited by almost 20,000 people, 88% of which are Malay fishermen. About 3,000 people live in about 20 village enclaves within the Park.
- Betung Kerihun National Park is a national park covering 8,000 km² in Kapuas Hulu Regency, along the Malaysian border. There has been a proposal to form a World Heritage site named the *Transborder Rainforest Heritage of Borneo* in combination with the 2,000 km² Lanjak Entimau Wildlife Sanctuary in Malaysia. The park largely consists of two ecoregions, two-thirds of which is mountain rain forest, and the remaining one-third of which is lowland rain forest. In the lowland forests the dominant emergent trees are dipterocarp species and, in the higher altitude, they are oak and chestnut trees. There are 97 species of orchid and 49 species of palm that have been identified in the Park. There are also 300 species of bird, 25 of which are endemic to Borneo; 162 fish species; and 54 mammals that have been identified. The park is home to the endangered *Bornean orangutan* and seven other primate species. Several Dayak tribes live in the park. There are 12 villages surrounding the park, 2 of which are located inside the park and 6 are adjacent to the park boundary. The village people live from hunting, collecting non-timber forest products and subsistence farming based on a pattern of shifting cultivation.
- Gunung Palung National Park is in the west-central regencies of Ketapang and Kayong Utara. The 900 km² park is notable for its diversity of habitat types, ranging from mangrove and freshwater swamp forest, to lowland alluvial forest, and to mountain forest. It has a diversity of wildlife that includes orangutans, Bekantan and hornbills.

16.3. Project Profile for Cross-Border Value Chains

The project would provide technical assistance for the development of a cross-border value chain for the tourism industry. The aim of the project would be to develop two-way tourism between Sarawak and West Kalimantan is shown in Figure 16.3. It would bolster collaboration between the West Kalimantan Provincial Government and Sarawak State Government, and create an enabling environment for the 'support institutions' shown in the figure.

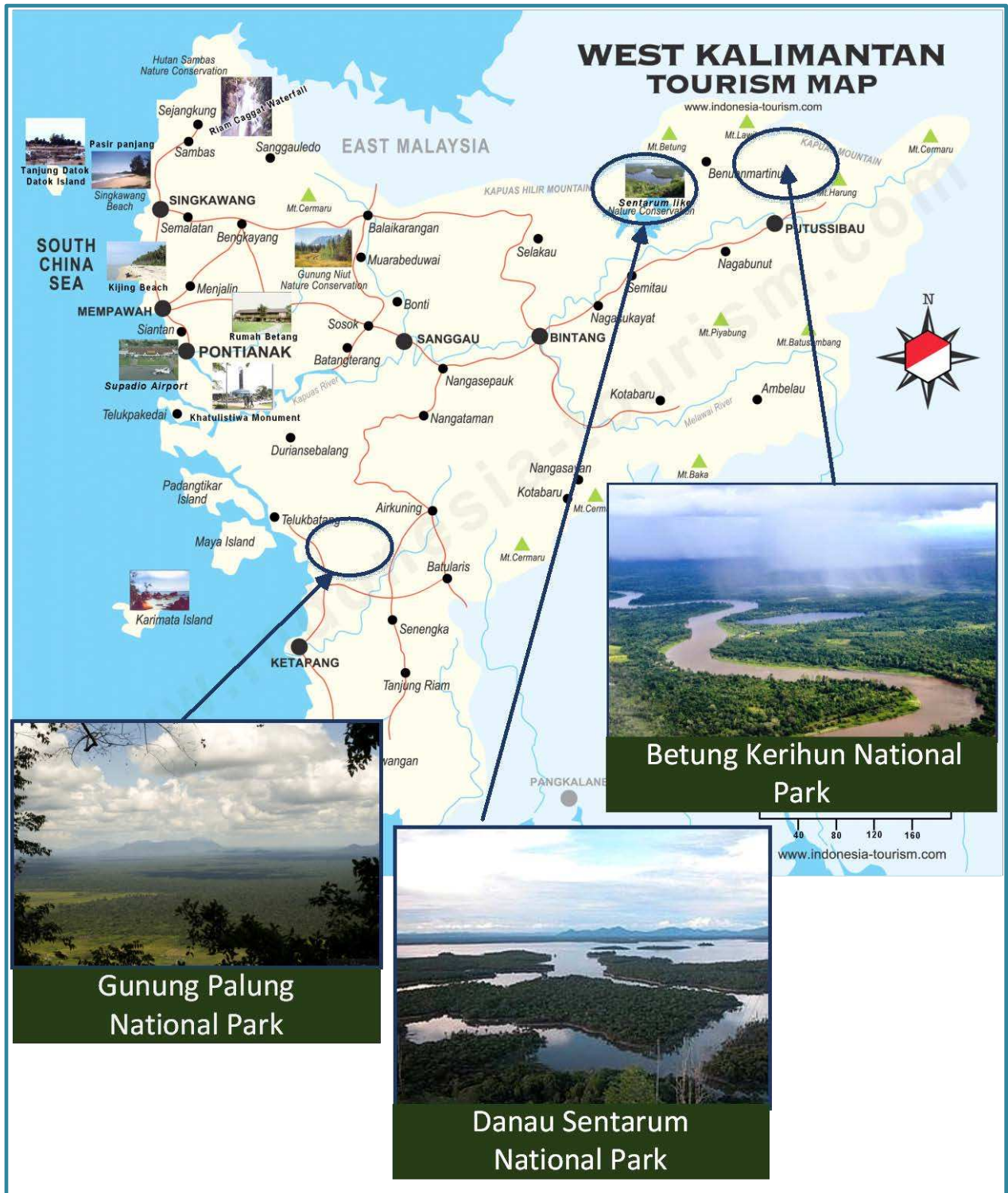
Figure 16.3. Value Chain of Multi-Destination Tourism



Source: Representation by the authors.

The project would support the operations of champion individuals or institutions to promote the clustering of activities on both sides of the border to initially support development of supply chain arrangements, and later the possible integration of company activities across borders in more formal value chain production and distribution activities.

Figure 16.4. West Kalimantan Tourism Map



Sources: Map by Indonesia-Tourism.com; Betung Kerihun National Park photo by icnesia,pilgrim; Danau Sentarum National Park photo by Forest and Plantation Office of Kapuas Hulu and German GIZ; and Gunung Palung National Park photo by <https://writingfornature.wordpress.com/tag/gunung-palung-national-park/>.

PART VI. PROGRAM DESIGN

17. Design

17.1. Geographic Coverage

Figure 17.1 shows the geographic area in West Kalimantan covered by the border economic area. It extends well beyond the regencies bordering Sarawak, or those where the border crossings are located. Instead, it extends to all northern and central regencies. The reason is the relatively large number of industries where there exist opportunities for one-way (traditional) and two-way (intra-industry) trade that are located throughout the province. Only in the most southern regency of Ketapang have businesses not developed sufficiently close relationships with those in Sarawak to warrant trade and other cross-border relationships.



17.2. Industry Drivers

The analysis in Part V of this report indicates that there are 8 leading industries with strong potential for expansion of cross-border exports to Sarawak. Whether they are economically viable is a question that will be addressed in the next part of this pre-feasibility study. The present list is based on the province's economic analysis (Part II), government programs and priorities (Part III), and the comparative advantage and competitiveness of exports (Part IV).

The industry coverage is the major determinant of the border economic area's geographic delineation. In 7 of the 8 industries, the establishment of cross-border value-chains is the motivation for collaboration between the two territories. This type of production sharing arises from efforts to exploit either differences in factor endowments or possible scale economies of production activities. In the West Kalimantan–Sarawak context, the spatial concentration of industries along the border region combines the traditional growth area model of trade and investment, based on comparative advantage and complementarities, with one based on scale economies from clustering of production activities.

Clustering of industries across the neighboring territories therefore allows producers to bypass the need to handle the entire production process, and instead concentrate on processing stages. Segmentation of production activities permit the exploitation of differences in factors of production between West Kalimantan and Sarawak, and they generate economies of scale and 'cross-hauling' or two-way trade between the neighboring territories, thereby increasing the competitiveness of border industries in regional and global markets.

Under the West Kalimantan integrated border area program, transnational company alliances in complementary upstream or downstream activities will allow Sarawak companies to expand their access to much needed raw materials, while West Kalimantan companies will gain access to much-needed technologies with which to add value to their products.

Hence, the potential benefits from strategic alliances between Sarawak and West Kalimantan industries are compelling: they can expedite entry into new markets, expand access to skills, technologies and product diversity, and help to share fixed costs and resources.

In one industry, tourism, the driver for collaboration is based on horizontal integration of markets and cost-savings from joint promotion of services offered jointly by both West Kalimantan and Sarawak. This model has proven successful throughout the world. It involves collaboration in (a) cross-border travel facilitation; (b) air, ground and water transportation connectivity; (c) positioning and branding to reach major tourist generating markets; and (d) development of innovative tourism products, including joint tourism fairs and collaborative marketing operations. The more advanced the integration system is, the more opportunities will be generated for tourism.

Figure 17.2. Geographic Coverage of West Kalimantan Integrated Border Economic Area

Industry		Project Profile
Bauxite & Alumina		A cross-border value chain would take advantage of West Kalimantan's closeness of its bauxite and alumina supplies for Sarawak's smelter refineries, and promote knowledge sharing and technical expertise to improve West Kalimantan's production efficiency and international competitiveness.
Rubber		The proposed cross-border value chain would create economies of scale, provide Sarawak's rubber manufacturing operations with much-needed rubber supplies, and promote cross-border investment opportunities for West Kalimantan in rubber manufactures.
Palm Oil		A cross-border value chain would develop collaboration and an integrated industry in the palm oil industry, provide Sarawak's palm oil manufacturers with needed oil palm supplies, and provide knowledge-sharing and technologies to potential palm oil manufacturing investors in West Kalimantan.
Wood Products		The project aims to develop a cross-border value chain in the wood processing industry to take advantage of West Kalimantan's locational advantage of its plantation timber for Sarawak's wood furniture industry, and promote investment in West Kalimantan's downstream activities.
Fisheries		A cross-border value chain would create economies of scale and direct West Kalimantan's extensive activities in primary stages of the fisheries industry towards helping to offset Sarawak's depleted fish stocks, while promote downstream activities in marine capture, aquaculture and seaweed production.
Ship Building		The project aims to establish a cross-border value chain in the shipbuilding industry to create scale economies, promote cross-border investments, and help Sarawak ship builders to construct large ships through shared knowledge and technologies with West Kalimantan ship builders.
Organic Fruits & Vegetables		The project aims to develop a cross-border value chain between West Kalimantan and Sarawak in the organic foods industry, along with the eco-tourism sector, promote clustering of small producers, provide West Kalimantan with international organic certification, and link producer clusters with packaging companies.
Tourism		The project aims to develop two-way tourism between West Kalimantan and Sarawak, encourage joint promotion of that culture and wilderness-based tourism for international travelers to the region to improve competitiveness through reduced advertising costs and promotion of multi-destination tourism.

Source: Photos by Alisa Lord, except photo of rubber trees and worker from Verité (online: <https://www.verite.org/project/rubber/>).

17.3. Key Components

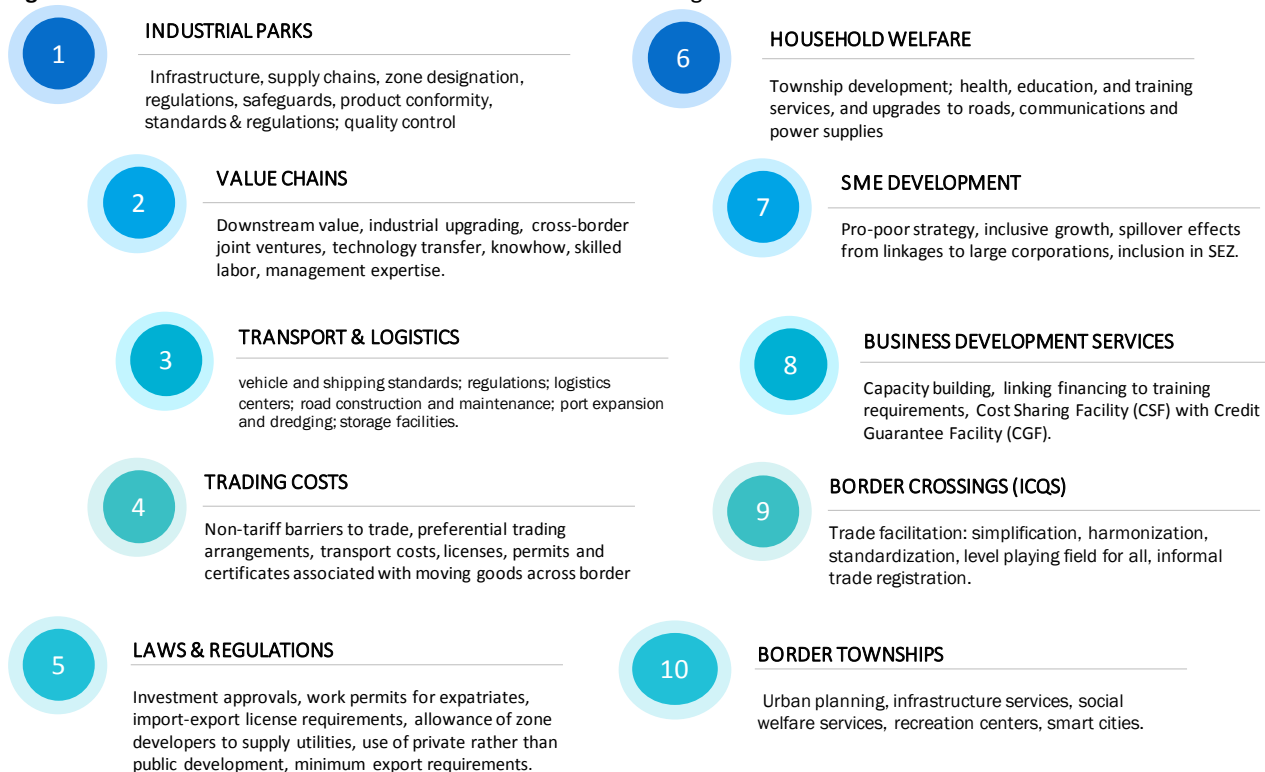
The West Kalimantan border economic area needs hard and soft infrastructure to support the cluster of production activities (Figures 17.3):

- (1) *Industrial Parks.* As a core component of the border economic area, industrial parks are able to attract business and manufacturing activity by providing integrated infrastructure in one location. And concentrate dedicated infrastructure in a delimited area to reduce the per-business expense of that infrastructure. That infrastructure includes roadways, high-power electric supplies, high-end communications cables, large-volume water supplies, and high-volume gas lines. Special incentives and a tax-friendly environment are usually given to companies located within the parks.
- (2) *Cross-border value chains.* The introduction of value chains in the border area provide opportunities for industrial upgrading. Companies operating in the area can increase their participation in regional and global value chains both by expanding the import content of their products (foreign value added) and by generating more downstream value through goods and services for intermediate use in exports to neighboring territories. Upstream and downstream links in the value chain also serve to build local area capacity and generate positive results for the local economy by growing local infrastructure and supporting socio-economic service for workers and their families.
- (3) *Transport and logistics.* By its very nature, the border economic area represents an integral part of subregional integration schemes, namely, the West Borneo Economic Corridor and the greater BIMP-EAGA area. Transport and logistics is an important determinant of the systems' competitive environment and is largely affected by infrastructure, the institutional framework, service providers, and shippers and consignees. The performance of these four dimensions in the systems is often measured by time and cost of transporting goods and people relative to other transport channels and routes.⁶⁴
- (4) *Trading costs:* The costs of moving goods and people along the corridor system are an integral part of the ability and willingness of companies to locate in the border area. Those costs are no longer dominated by tariffs since the ASEAN CEPT-AFTA and other multilateral and regional preferential arrangements greatly reduced their incidence. In fact, tariffs generally account for no more than 10% of direct and indirect costs associated with factors other than transportation. In contrast, non-tariff measures (NTMs) now account for as much as 90 percent of trading costs. Those NTM costs include the costs of complying with a myriad of licenses, permits and certificates associated with moving goods across border. They affect not only the international competitiveness of businesses in the border area, but also the ability of enterprises to understand the complexity of those measures and participate in regional and global value chains. For that reason, factors affecting trade and transport costs at the West Kalimantan-Sarawak border crossings have large implications for the ability to attract investors, and the types of industries that can be drawn to the area.
- (5) *Legal and regulatory framework.* An important part of the attraction to the border economic area is the simplification of the regulatory regime that usually accompanies the establishment of designated area. Streamlining the regulatory process covers the investment approval process, work permits for expatriates, import and export license requirements, provisions for

services such as commercial and professional activities, allowance of zone developers to supply utilities to the zone, use of private rather than public development or a public-private partnership for development, and the relaxation of minimum export requirements.

- (6) *Household Welfare*. What differentiates the border economic area from other types of economic zones is its strategic integration into the development of the surrounding area. Along with improvements in social and economic conditions, local development incorporates township development; health, education, and training services, and upgrades to roads, communications and power supplies.
- (7) *SME development*. A pro-poor strategy for inclusive growth in the border area will require a degree of government intervention to cultivate growth of SMEs. Typically, large businesses are given preferential treatment in investment incentive schemes. But those types of businesses require backward supply linkages and sub-contracting relationships with support services that can be provided by local SMEs. Those relationships can create knowledge spillovers and financing opportunities that are mutually beneficial to both large and small enterprises. For these opportunities to occur, however, local and national government authorities need to ensure that there exists a level playing field for small and medium size local firms and large businesses, for example, in the ability to access goods from international suppliers on a tax or duty-free basis, or their ability to supply large businesses at the same competitive terms as foreign suppliers. Additionally, SMEs are usually located outside the physical industrial hub, and regulations and procedures may restrict purchases by large businesses located in the zone of locally produced items outside the zone. Duty-drawback schemes can be extended to SMEs outside the zone to enable direct and indirect exporters based outside the zones to access production inputs on a duty-free basis.
- (8) *Business development services*. The role of the private sector in the development of the border area will progress rapidly when increased spatial interaction takes place among enterprises. There are three stages in the process:
- At a first stage, efforts focus on enterprises located in the dedicated industrial zone. Those efforts should extend beyond the management and administration of incentive programs and policies and provide capacity-building in areas that form part of specific value chains identified in the area's development strategy.
 - At the second stage, business development service (BDS) centers are established to provide skills and expertise in basic business practices and core areas of expertise for the targeted value chains. Services provided by the BDS center cover (a) *trade-related technical assistance* for commercial development activities supporting trade finance, business support services, e-commerce, and public-private sector networking; and (b) *trade-related capacity building (TRCBs)* to increase productive capacity through business development and activities aimed at improving the business climate, privatization, and assistance to key sectors and subsectors.
 - At the third stage, development of subregional business development services takes place through a Cost Sharing Facility (CSF) with Credit Guarantee Facility (CGF).⁶⁵ The CSF is a fund normally managed by the BDS center that provides matching grants to businesses using their services. To overcome resistance by small businesses to pay for the services, the business portion of the cost is taken from a part of loan offered to

Figure 17.3. Soft and Hard Infrastructure for West Kalimantan Integrated Border Economic Area



Source: Representation by the authors.

the businesses. Those loans are supported through a CGF that selectively backs loan applications by SMEs to commercial banks. The financial guarantee agency is normally represented by a commercial insurance company acting as a guarantor to the borrowers. Under this mechanism, a direct relationship is created between the guarantor and the borrower since the former needs to assess loan applications and selects the ones to be guaranteed. This process reduces the probability of moral hazard on the part of the commercial bank during the screening process.

(9) *Border Crossings*: The three ICQ facilities in the border economic area are at Nanga Badau in Kapuas Hulu Regency; Aruk in Sambas Regency; and Entikong in Sanggau Regency.

(10) *Border Towns*:

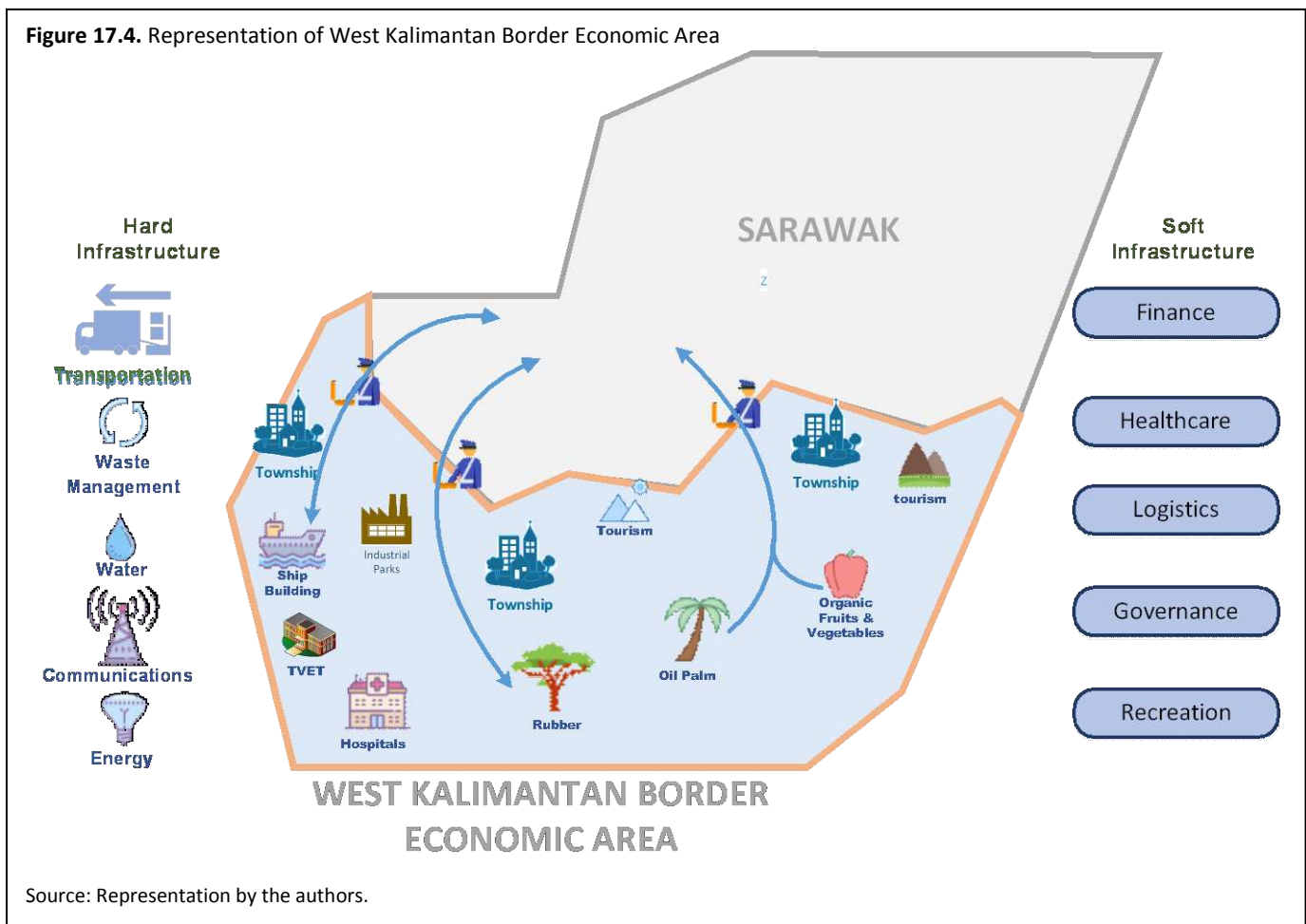
- *Kapuas Hulu Regency*: Putussibau is on the Kapuas River and has a population of about 12,500 people. It is the seat and economic center of the regency. It is located near the Malaysia border and is 300 kilometers from the Sarawak capital, Kuching. Putussibau is a market town serving the sparsely-populated region, with the West Putussibau sub-district covering 4,122 square kilometers and having only 31,000 inhabitants. Its proximity to Danau Sentarum and Betung Kerihun national parks make it a local center of ecotourism.
- *Sintang Regency*: The town of Sintang is the seat of the regency and it also lies on the Kapuas River. Places of interest include Kelam Hill (Dark Hill), Baning Forest, Bukit Baka and Bukit Raya National Park, and Dara Juanti Museum (Sintang Palace). It is

about 395 km from Pontianak, and it can be reached either overland (by bus) about 8 hours, or through Kapuas River (by boat) in 20-48 hours.

- *Sanggau Regency*: The town of Sanggau is the capital of the regency and is 142 kilometers from Pontianak.
- *Bengkayang Regency*: The town of Bengkayang is the seat of the regency and it is located 225 kilometers from Pontianak. Most of the population is indigenous Dayaks.
- *Sambas Regency*: The town of Sambas is the capital of the regency. Much of the population in Sambas is of Melayu Puak, Melayu Sambas, Chinese or Dayak origin. There are many traditions and customs that the Melayu community maintains.

17.4. Representation for West Kalimantan

Figure 17.4 brings together the industries and soft and hard infrastructure components for the West Kalimantan border economic area.



18. Implementation

18.1. Concept and Objectives

The *West Kalimantan Integrated Border Economic Area* reflects the principles and objectives laid out in Indonesia's multi-border development program.⁶⁶ Its design concept, summarized in Table 18.1, underscores the need to take a broad approach to its infrastructure components and geographic coverage, and a sequenced approach to its implementation strategy and level of cross-border collaboration.

Table 18.1. Synthesis of Parameters for the West Kalimantan Integrated Border Area Development Program

Border Economic Area Concept	Objectives	Components
<ul style="list-style-type: none"> ○ <i>Clusters of activities</i> covering the operation of network of inter-connected businesses and associated institutions spread over a wide geographic area. ○ <i>Varying degrees of collaboration across borders</i>, either operating independently or together through quasi-formal or formal mechanisms. ○ <i>Cross-border networks of productive activities</i> to produce goods and services in specific industries. ○ <i>Well-defined goals selected from a broad spectrum of development options</i>, with clearly delimited goals. ○ <i>No one size fits all</i>, since each area has diverse needs and socio-economic characteristics. 	<ul style="list-style-type: none"> ○ <i>Alleviate poverty</i> and improve well-being of households in border area. ○ <i>Lower income inequality</i> of West Kalimantan province with that of others in Indonesia. ○ <i>Accelerate economic growth</i> of the target area. ○ <i>Exploit complementarities</i> with neighboring foreign territory of Sarawak state and promote cross-border value chains, trade and investment. ○ <i>Attract population into border regions</i> to reverse agglomeration trends and congestion in Indonesia's major urban centers. 	<ul style="list-style-type: none"> ○ Industrial estates and SEZs. ○ Transport and logistics. ○ Trade and transport facilitation. ○ CIQS facilities. ○ Border townships. ○ Business Development Service (BDS) centers. ○ Health and education. ○ Public utilities. ○ Regulatory framework. ○ Border and behind-the-border trading costs.

Source: Authors' adaptation of Indonesia's Multi-Integrated Border Area Development Program to West Kalimantan.

The border economic area consists of a network of activities that seek to promote cross-border trade and investment and encourage the economic and social development of a relatively large area near the border. What will determine the border economic area's success is its proximity to upstream activities, relevance to the specific context in which it is introduced, the effectiveness of the program design and implementation, and its ongoing management. Experience shows that the long term, sustainable success of border economic areas has been associated with their integration into the strategic development plans of bordering countries, along with improvements in local and regional social and environmental conditions, and the provision of capacity building and training of the workforce as a means of attracting high value-added service and manufacturing activities into the area.⁶⁷

18.2. Forming Clusters

West Kalimantan's integrated border area development program relies on value chains that build on collaborative networks of business activities, which are often referred to as 'clusters'. To succeed, those clusters must accommodate local business styles and practices. Much of the technical assistance needed for the program must be directed towards cultivating business relationships in the context of Asian interests in building professional trust and mutually beneficial cost-sharing activities leading to common goals. This style of doing business contrasts sharply with the Western model of competitive tendering, formal procedures, and contracts. It is based on informal relationship-based business practices. For that to occur, personal interactions over time are necessary. The role of cluster leaders then become one of organizing those interactions and creating a growing trust among participants.

Building clusters within West Kalimantan is important. But for cross-border value chains to succeed, those clusters need to extend across territorial boundaries. In cases such as bauxite, alumina and aluminum production, joint ventures between companies can readily occur because the number of participants is relatively low. In the case of fisheries, organic vegetables, and other activities involving large numbers of producers, the establishment of clusters across time will take dedication and focus on the part of cluster leaders. The process cannot be rushed.

There are three key elements in the cluster. First, there must be *spatial or geographic proximity* of producers in the cluster. Second, the *size* of the production group must be sufficiently large for it to have adequate resources or operating capacities. Thirdly, there must be a *formal institutional structure* that provides a sustainable and cohesive networking arrangement between the cluster members. If these two elements operate effectively, then the *competitiveness* achieved from collaboration and business networking will be greater than if the participants operated separately and independently of one another.

Cluster Types: There is a general lack of standardization of definitions and coverage of clusters. While *geographic clusters* refer to locational groupings, *sector clusters* are associated with businesses operating in the same commercial area. There are also *horizontal clusters* that group businesses sharing the same knowledge, financial or physical resources, and *vertical clusters* where participants operate along the same supply chain.

Terminology: The term 'business cluster' is often used interchangeably with 'economic cluster', 'competitive cluster', and 'industry cluster'. The economic rationale dates to the early 1900s when the term 'agglomeration' was used to describe the localization of firms in the same area.

Cluster Components: Key relationships of a business cluster are shown in Figure 18.1:

- *Value chain participants:* The individuals and businesses that directly deal with the products by engaging in production, processing, and distribution.
- *Public and private service providers:* The individuals and entities that support the functioning of the chain by providing transportation, packing and handling, certification, and financial support.
- *Technical assistance support agents:* Government institutions, NGOs and international development organizations that undertake support activities and interventions to foster value

chain development by providing capacity strengthening, market information, advisor services like business planning or the creation of partnering arrangements.

- *Institutional framework:* The institutional and regulatory conditions impacting on the development of value chains.

Example of Application to West Kalimantan’s Organic Food Development: The application of business clusters to West Kalimantan organic vegetables value chains is intended to achieve the following three objectives:

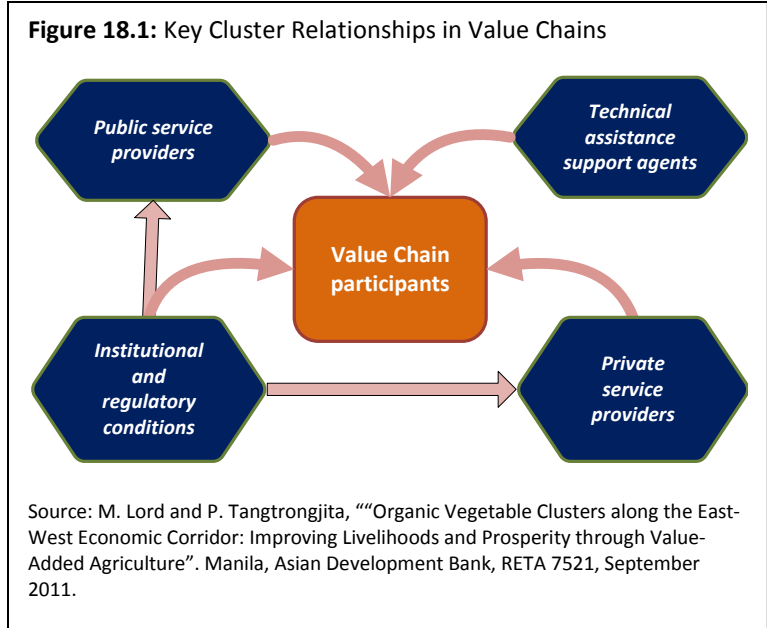
1. Foster the conversion of conventional agricultural farming to organic production, and thereby enable the generation of *high value-added activities*.
2. Promote linkages among micro and small-scale producers, and thereby improve their *competitive position within the value chain*.
3. Spur the development of agricultural activities affecting the majority of West Kalimantan population either directly or indirectly, and thereby enable the transformation of the West Borneo Economic Corridor transport and logistics corridor into a *full-fledged economic corridor*.

What Makes a Cluster Successful?

Businesses that have common challenges and opportunities can collaborate to overcome problems, achieve efficiencies, and penetrate markets that would otherwise be outside the reach of individuals.

A comprehensive review of cluster-based approaches identified the following ten characteristics in a successful cluster:¹

- (a) Identification of the value chain
- (b) Geographic proximity of producers
- (c) Critical mass of knowledge and productive resources
- (d) Shared interests and common drives
- (e) Clear vision and mission
- (f) Organizational framework
- (g) Broad representation of cluster members



¹ Montague Lord et al. “An Assessment of Cluster-Based Approaches”. USAID: Promoting Competitiveness in Practice. Available: www.value-chains.org/dyn/bds/docs/254/USAID-Mitchell-Clusters.pdf

- (h) Strong leadership
- (i) Regular meetings
- (j) Productive projects and programs

These characteristics underscore the paramount importance of collaboration. It follows then that people are crucial to that collaboration. Successful clusters are those that have key individuals performing the following functions:

- *Champion*: Critical to the success of a cluster is the individual that promotes the group by spending a great deal of time in the field getting to know individual participants, identifying collaborative projects, mobilizing the relevant stakeholders, and organizing networking events. The 'Champion' can be a leader from the producing community, buyer, or government agency.
- *Cluster Steering Committee*: Composed of individuals who are responsible for establishing the cluster and creating the business plan, the 'Cluster Steering Committee' are responsible for implementing its strategy and action plan (SAP) and ensuring that the actions of the cluster are directed towards meeting its objectives and goals.
- *Cluster Production Leader*: Knowledge transfer by a 'Production Leader' having expertise in production methods, supply chains, and marketing and distribution channels is central to the success of the production group. The resulting intra-business learning process allows individual members of the group to add value to their production and access premium markets.

Steps in Forming a Cluster

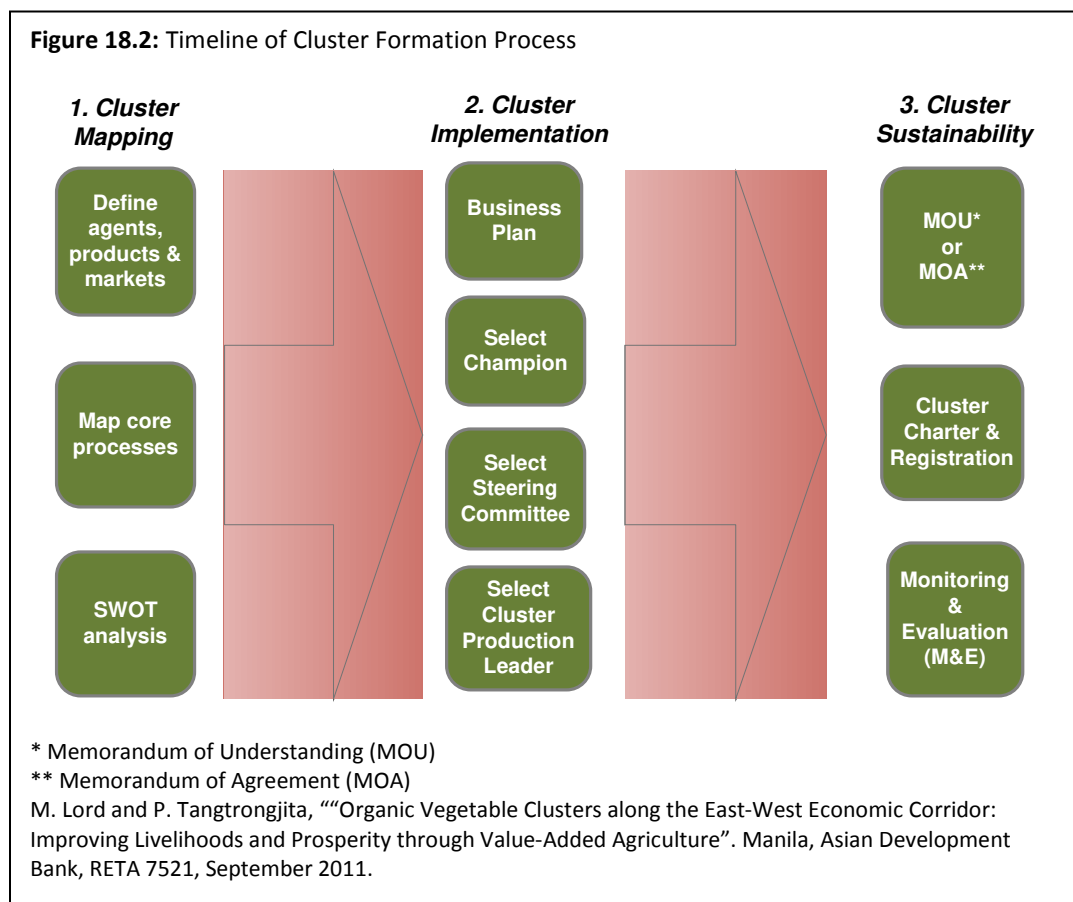
There is a sequence of steps involved in the design and implementation of a business cluster having the successful characteristics mentioned in the previous section. These steps are summarized in Figure 18.2 and described below.

Step 1: Cluster Mapping. In the case of the West Kalimantan, production activities of the cluster should take place along the *geographic area* traversed by the Corridor. Agriculture-related activities (e.g., organic foods, rubber, oil palm) is the most appropriate *sector* to target as a means of transforming the West Kalimantan into an economic corridor because most of the population in the area is directly or indirectly involved in activities related to that sector.

The process of gathering information about the cluster is similar to the mapping of the value chain, but with a focus on the interrelationships among cluster members. At this stage it is useful to conduct some form of SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis or benchmark analysis of the cluster's interrelated branches along the value chain. That information focuses attention on important issues that need to be addressed. It is also useful for the design of the business plan (step 3) and for monitoring and evaluating the cluster's performance and sustainability.

The selection of a cluster is largely based on four factors: (a) the interest and willingness of producers to work together towards a common goal; (b) a sufficiently large knowledge and production resource base; (c) actual or potential linkages with downstream value-added activities; and (d) strong public or private support services. It is also useful to identify factors that drive success in a business cluster. These cluster drivers are used as reference points in the assessment of the cluster's competitive position.

Value Chain Analysis. One of the most important parts of cluster building is the mapping of downstream suppliers of inputs and upstream customers, along with supporting services for organic vegetables in West Kalimantan. Part V of this study provided a detailed mapping of the core production and distributions processes, agents and products involved in those processes, support services, and markets and associate pricing structures.²



Step 2: Design Implementation. The cluster must have a clearly defined vision and strategy and action plan to achieve that vision. Relationships must also be clearly laid out and management and organizational matters well specified. A business plan is therefore a useful tool to consolidate information about the cluster. Guidelines for the business plan are as follows:

1. *Cluster Vision.* It is important to develop a consensus view or *vision* for the cluster to keep key cluster individuals and groupings focused on their ultimate objectives.
2. *Products and services.* Consolidation of planting activities by cluster members is critical to the achievement of a mass of products for delivery to targeted markets. In the initial stages of

² Montague Lord and Pawat Tangtrongjita, "Mapping the Organic Vegetable Value Chain along the East West Economic Corridor". Prepared under the project supervision of Rattanatay Luanglatbandith, Regional Cooperation Economist, Thailand Resident Mission, Asian Development Bank, July 2011.

the cluster design it will be useful to map out the types of products and services provided over time.

3. *Target Activities.* A set of achievable activities over clearly defined time-periods will provide the basis for annual planning and programming activities, as well as for ongoing monitoring and evaluation activities.
4. *Implementation Action Plan.* At the onset, it is useful to identify specific roles and responsibilities of cluster members in the context of the cluster organization and management, marketing strategy, financial management, relationships with private and public support and other services, monitoring the cluster's progress, and ensuring completion of tasks assigned.
5. *Key Individuals and Groupings.* Critical to the success of the cluster are the people that will help to drive the cluster and implement the action plan.
 - *Champions* are responsible for promoting the cluster and organizing networking events. There can be a single champion for the producer group, or different champions for producer and buyer groups, and government, academic and donor support groups. Champions can also provide help to collect production and market information and engage in consultations with public and private support groups, along with NGOs and other development partners.
 - *Cluster Production Leaders* provide expertise in production methods, supply chains, and marketing and distribution channels. Their role is central to the success of the production group. Cluster production leaders can also help to provide targeted technical assistance for training,
 - *Cluster Steering Committee* is responsible for implementing the strategy and action plan. The committee should be formally structured and convened on a regular basis to map out the production and distribution activities. Its members should include value chain representatives and public and private supporting agencies.

Step 3: Cluster Sustainability. It is important to build on the momentum after the initial policy dialogue takes place to formalize the cluster and establish regular performance reviews. Formalization of the cluster normally takes place through a memorandum of understanding (MoU) or a memorandum of agreement (MoA). That document sets out the objectives of the cluster, its goals, the constitution and management of the cluster, financial matters supporting cluster activities, and reporting responsibilities by members. The cluster should also have a charter and be registered with the public authorities to ensure that it benefits from public sector support and operates as a registered business. Finally, it is important to monitor the cluster's progress as a means of determining whether it is operating as a profitable business concern that meets the goals and objectives of its members.

18.3. Implementation Strategy

The *core implementation strategy* consists of sub-projects, programs, policies and institutional initiatives that are designed to achieve the following objectives:

- enhance cross-border trade and investment;
- improve connectivity;
- implement cross-border value chains;
- develop the private sector, especially linkages between SMEs and large companies;
- promote meso programs and policies that advance human development in the areas of health, education and security;⁶⁸ and
- ensure sustainability of the environment and management of natural resources.

In the operational context, it is again important to emphasize that the border economic area extends well beyond conventional special economic zones located in narrow physically defined, often in secured areas with a single management and administration. The West Kalimantan border economic area covers broad networks of activities spread over large geographic areas, with activities that are closely interconnected with one another.

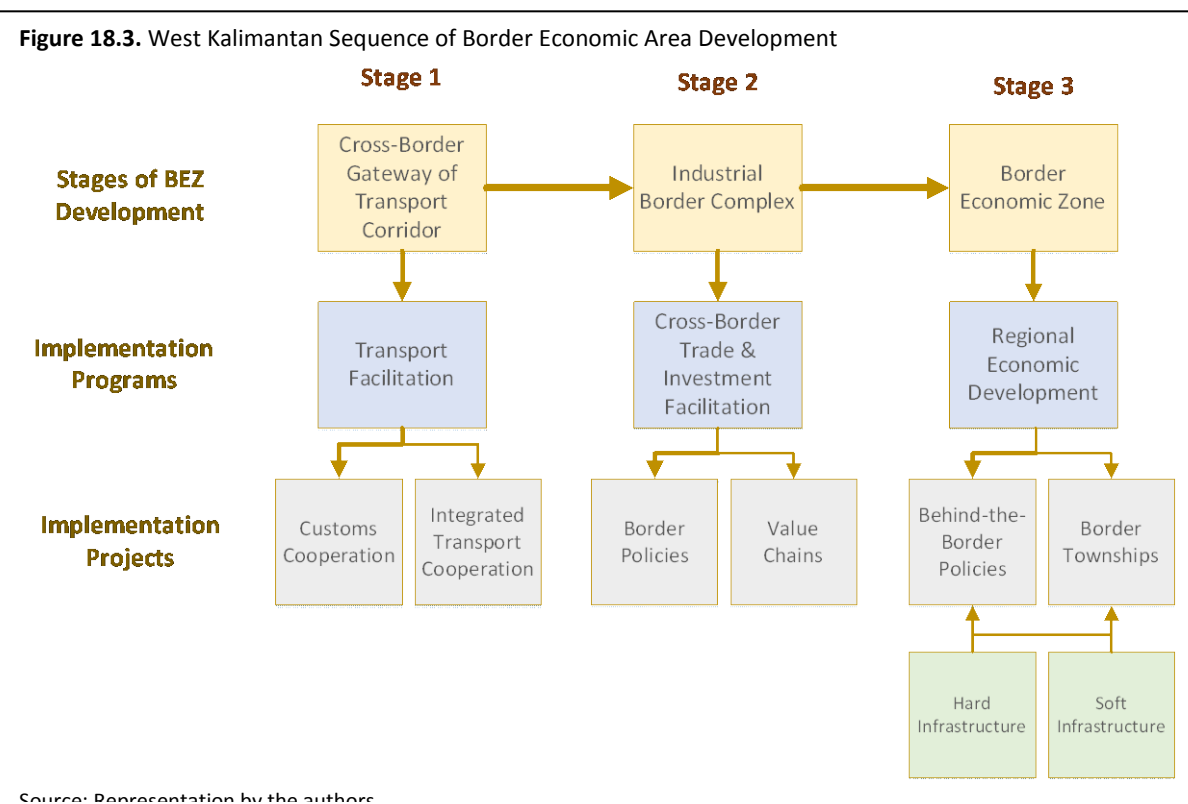
18.4. Sequencing Strategy

The transformation of border economic regions from border checkpoints into economic areas will largely depend on how border commerce is elevated to a certain level of socio-economic development in the areas. Since the movement of goods and people along those corridors involves transnational cross-borders, development of border regions will require an integrated spatial planning approach that goes beyond purely provincial or national policies. Moreover, development of one side of the border is, sooner or later, likely to be conditional on trading conditions along both sides of the border. Figure 18.3 shows the stages of the transformation of border checkpoints into border economic areas.

- *Stage 1: Cross-Border Gateway of Transport Corridor:* Initially, cross-border gateways represent soft and hard infrastructural investments along priority corridors that aim to accommodate transport activities between West Kalimantan and its neighboring countries. As such, the corridors are viewed as transport axes in which infrastructural measures are intended to reduce trading costs and travel time. Reduced costs and time traveled, in turn, increase the competitiveness of companies using the corridors to deliver their products to intermediaries or end-users. At this stage, the focus is on transport facilitation through customs cooperation and integrated transport projects between the border economies.
- *Stage 2: Industrial Border Complex:* The next level of border area development involves improvements in spatial interaction among cross-border economic activity. These so-called cross-border supply chains, and value chains with them, are delimited areas having the following characteristics: (a) integrated infrastructure in a designated location; (b) raw material or component supplies originating from cross-border sources; (c) provision of hard and soft infrastructure that includes transport, high-power electric supplies, high-end communications systems, large-volume water supplies, and possibly high-volume gas lines; (d) eligibility for investment incentives; and (e) localized environmental controls that are specific to the needs of the industrial area. At this stage, the focus is on the development of systems to organize activities and resources involved in moving products or services from supplier to customer by transforming natural resources, raw materials, and components into

finished products, using cross-border value chains to interconnected activities between bordering countries.

- Cross-border supply chains create new opportunities for trade and investment. The result is an enlargement of markets and the creation of circumstances where value can be added through spatial interactions along the corridor. For the private sector, these activities center on their participation in value chains, while for governments, business associations and international development institutions, facilitating and enabling initiatives take the form of



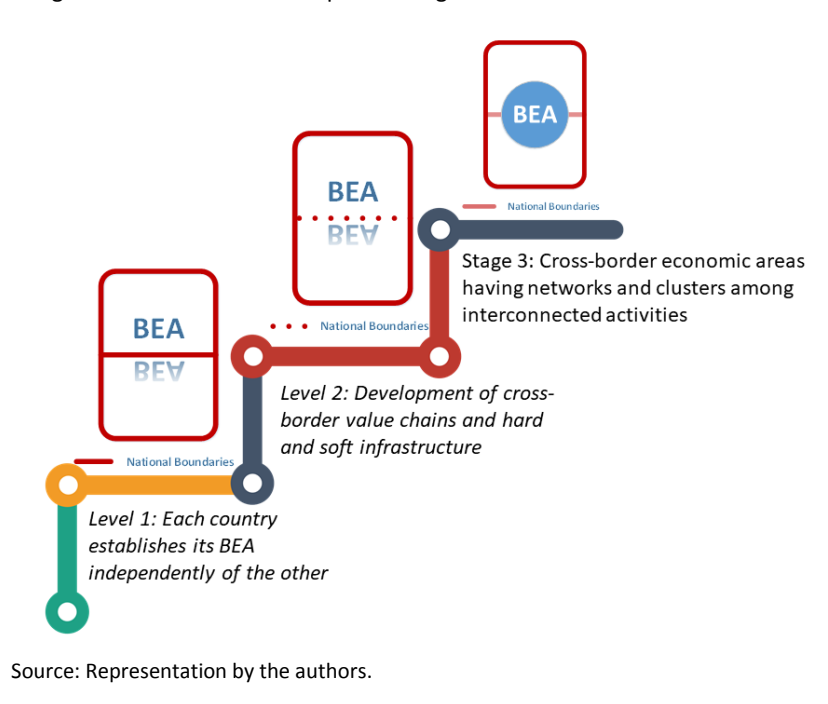
improvements in the production or export quality infrastructure to ensure that the products originating from different sides of the border meet the standards required of domestic or foreign markets.⁶⁹ In this context, it is useful to view trade and investment facilitation as involving actions needed to get products to intermediaries, and production or export quality infrastructure as the standards required by the intermediary or end-user, or those established by domestic or foreign governments.⁷⁰

- *Stage 3: Border Economic Zones:* This stage involves the development of networks and clusters among interconnected activities within the geographic location that extend well beyond the industrial complex to include all aspects of spatial planning and development of hard and soft infrastructure for people living in the border region. These activities cover development of (a) the industrial zone, including soft and hard infrastructure and related fiscal incentives; (b) transport and logistics infrastructure to facilitate movement of goods and people along corridor systems; (c) development of cross-border value chains to coordinate activities between bordering countries that have a direct impact on the local economy, employment and income and create opportunities for regional development through (i) industrial development policies that target cross-border value chain tasks; (ii) establish an

enabling framework for cross-border trade and investment; and (iii) develop local production capabilities and training of the local workforce. To that end, border economic area developers need to jointly plan and implement the spatial distribution and functioning of industrial zones; customs, immigration, quarantine and security (CIQS) facilities; transport and logistics systems; governance capacity; public utilities; learning centers; townships; recreational facilities; and healthcare infrastructure.

The role of the private sector in the development of the border economic area will progress rapidly if economic corridors reach the stage where increased spatial interaction among enterprises is significantly enhanced. Trade in goods and mobility of people along the West Borneo Economic Corridor could therefore become a major driver for promoting cross-border investment in activities that add value to the production of goods. Support in the form of (a) trade related-technical assistance for trade development activities supporting trade finance, business support services, e-commerce, and public-private sector networking; and (b) trade related capacity building (TRCB) activities to increase productive capacity through business development and actions aimed at improving the business climate, privatization, and assistance to key sectors and subsectors. Finally, the participation of micro and small size enterprises (MSEs) are an essential part of the process of converting the current transportation corridors into an economic corridor. One proven mechanism is through the integration of MSEs into subregional value chain activities; another is the development of subregional business development services along the corridors, supported by a Cost Sharing Facility (CSF) with Credit Guarantee Facility (CGF).⁷¹

Figure 18.4. West Kalimantan Stages of Cross-Border Collaboration under Integrated Border Area Development Program



18.5. Stages of Collaboration

Differences in the degree of collaboration between bordering countries give rise to a structured and phased approach to its development. Unilateral actions are associated with the initial stages of development (Figure 18.4). At subsequent stages, collaboration gradually increases through formal and informal agreements between bordering nations like Indonesia and Malaysia until the final stage

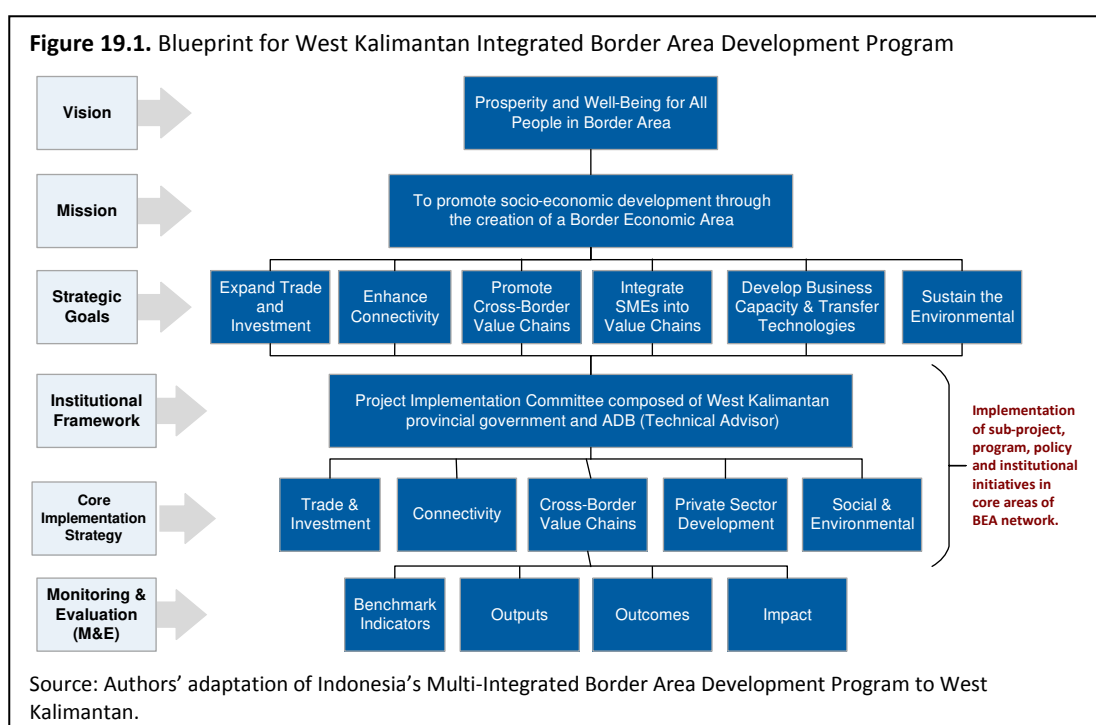
is reached in which two geographic areas like West Kalimantan and Sarawak may establish an area with common regulations and incentives. At this final stage, the broad range of soft and hard infrastructure needed in the common territory requires close institutional collaboration for the joint planning and management of trans-boundary flows of goods and services, as well as movement of people.

19. Strategic Framework

19.1. Blueprint

The blueprints for the West Kalimantan Integrated Border Area Development Program provide clear articulation of strategic priorities and goals with action plans and assessment measures. Figure 19.1 provides a visual representation of the strategic plan.

Vision and Mission Statement: What the program seeks to accomplish (*Vision*) is a holistic socio-economic development that brings widespread prosperity to the border area. How it will reach that overarching goal (*Mission*) is to give explicit recognition to the interconnectedness of cross-border trade and investment with other socio-economic components that achieve their welfare enhancing goals only by reference to the whole interconnected development of the border economic area.



Strategic Priorities: Because of the close interconnectedness of program components, the *Strategic Goals* of the program give equal weight to the cluster of activities to expand trade and investment, enhance connectivity, promote cross-border value chains, integrate SMEs into those value chains, develop business capacity, transfer technologies across borders, and ensure environmental sustainability. In specific applications, however, the weights assigned to each of these components may change, based on the preference ordering of different stakeholders.

Institutional Framework: Program implementation arrangements establish a hierarchy of responsibility for distinct management functions to ensure that overall project implementation proceeds seamlessly and promptly. The provincial government of West Kalimantan should act as the Secretariat for the project, while the ADB would provide technical advice and support when requested. The Government should also seek to collaborate with the Sarawak State Government when necessary. The West Kalimantan Provincial Government should be responsible for managing

the operational aspects of the project and carry out day-to-day oversight. To facilitate communication among the different agencies within the provincial government, a Project Implementation Committee or Task Force should be created.

Monitoring and Evaluation: The monitoring and evaluation (M&E) system developed to track border economic area progress and performance should adopt standard procedures such as the logical framework or a results framework, based on recommendations of the Project Implementation Committee. As a minimum, the M&E system should contain benchmark indicators that identify conditions at the start of the border economic area implementation process, and appropriate indicators for outputs, outcomes and impact. Those indicators should be comprehensive, insofar as they cover all the project components, and they should be based on quantitative and qualitative information that reflects current or existing conditions in each component and the overall project.

19.2. Master Plan

The master plan provides an action-oriented strategy that guides the transformation of West Kalimantan's trade and investment with Sarawak into one of the main driving forces for its economy (Figure 19.2). To achieve this transformation, an integrated approach that encompasses both core and supporting soft and hard infrastructure is a necessary but not sufficient condition. Infrastructure is needed to promote commercial activities. But it must be accompanied by a new mindset for both public and private stakeholders; one that shifts from an inward-looking development strategy to one that (a) facilitates collaboration between government officials across borders, and (b) promotes openness and transparency between industry-wide businesspersons to help forge alliances across borders.

In line with Indonesia's overall interests and West Kalimantan's specific concerns, the targets of the border area development program are as follows:

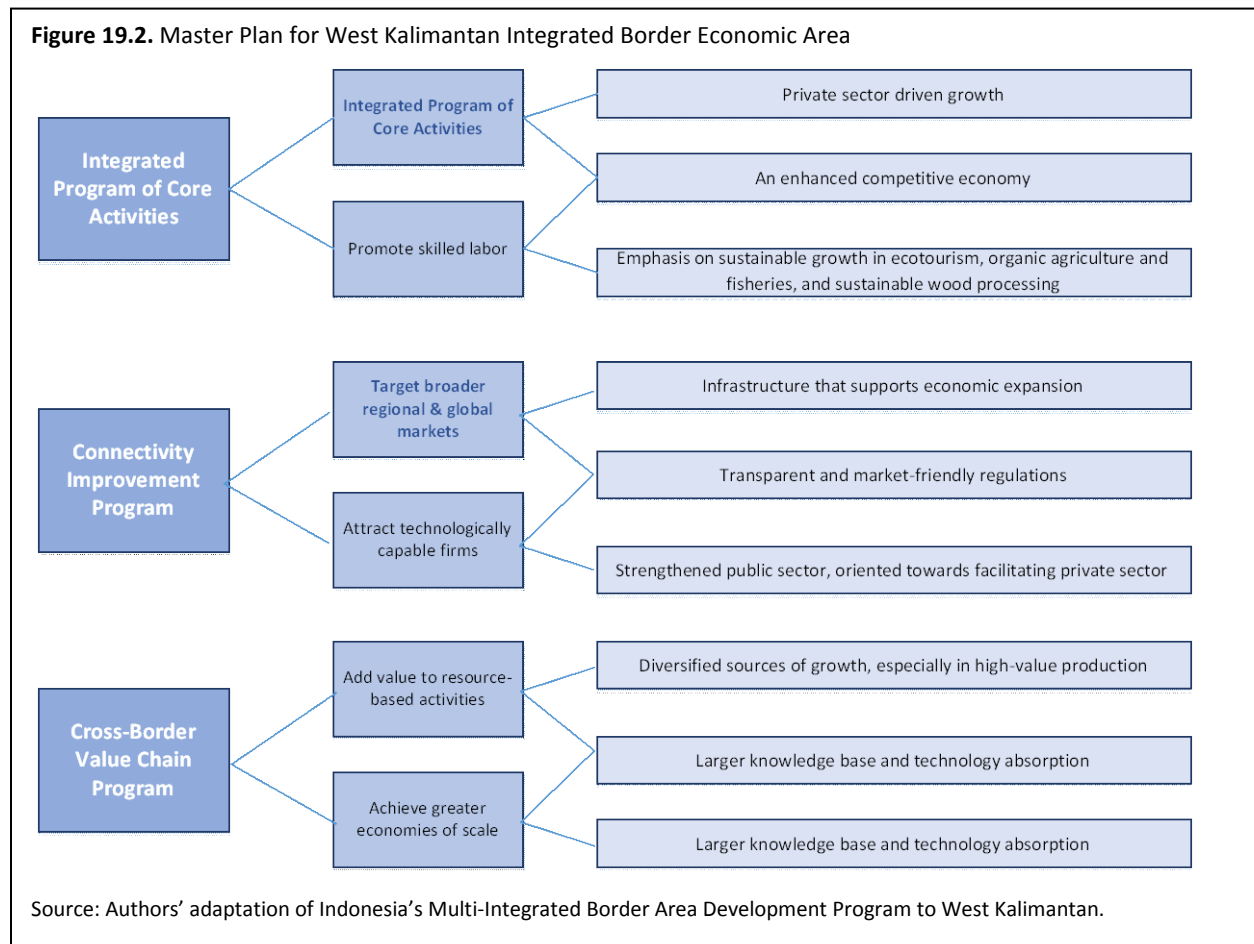
- Add value to resource-based activities by moving production into high value activities;
- Expand productivity;
- Achieve greater economies of scale from clustering;
- Attract technologically capable firms;
- Target emerging regional markets in Asia as well as the Middle East; and
- Promote skilled labor.

These targets are to be achieved through the following channels:

- ♦ Private sector driven growth;
- ♦ An enhanced competitive economy;
- ♦ Strengthened public sector, oriented towards facilitating private sector activity;
- ♦ Infrastructure that supports economic expansion;
- ♦ Transparent and market-friendly regulations;
- ♦ Knowledge and technology absorption;
- ♦ Promotion of training for a high-skilled work force;
- ♦ Diversified sources of growth, especially in high-value production and service-oriented activities; and
- ♦ Emphasis on sustainable growth in ecotourism, organic agriculture and fisheries, and sustainable wood processing.

Implementation of the plan includes 3 main programs that contain core projects. The programs are as follows:

- (1) *Integrated program* of core activities;
- (2) *Connectivity improvement program* facilitating two-way trade and cross-border value chains; and
- (3) *Value-chain development program* promoting upstream and downstream collaboration along the supply chains of key industries.



PART VII. NEXT STEPS

20 Project Appraisal

20.1. Monetized Cost-Benefit Analysis

The next part of this pre-feasibility study will look at the economic viability for each of the 8 leading industries identified in this report. While necessary to the conceptualization process, the identification of possible growth industries for the border area is not sufficient to justify investment decisions. We need to know whether the monetary benefits from any additional investments would outweigh their monetary costs.

Since none of the 8 projects are mutually exclusive of one another, they can all be individually appraised. If, however, there are limited public funds to support all projects, then the selection of projects can be carried out from the project ranking based on calculated net benefits.

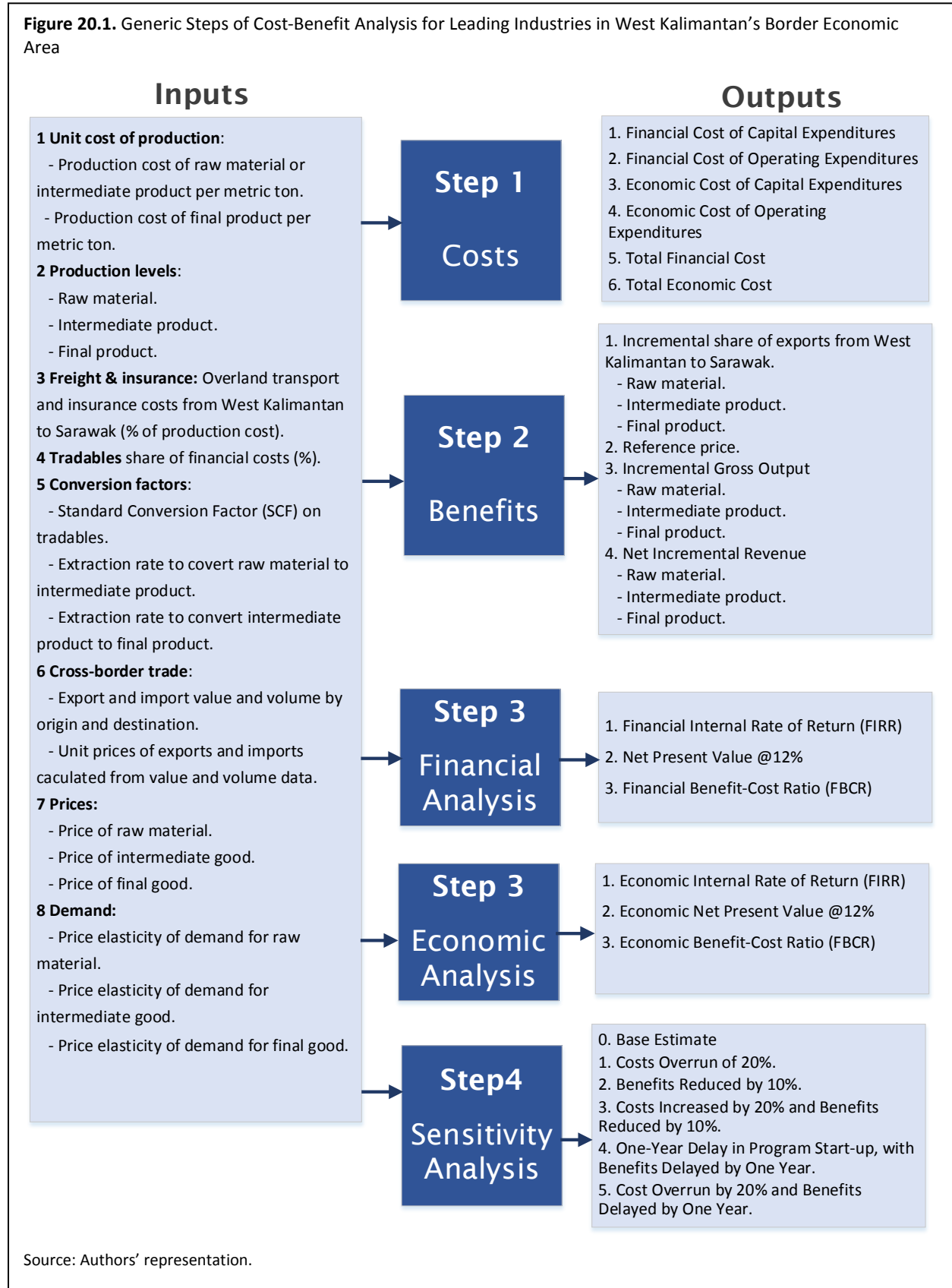
The traditional approach to quantifying a project's viability involves cost-benefit analysis. It calculates the monetized costs and benefits of a project to determine whether it is worthwhile. The basic principles are that (a) money is the common unit of measurement to determine a project's economic viability; (b) the monetary unit is expressed in its current value, so that any future money associated with the project needs to be discounted to arrive at the present value of the future value of that money; and, hence, (c) the net benefit of a project is the sum of the present value of the benefits over the life of the project less the present value of its costs. This last calculation involves impact analysis, whereby net benefits are measured with and without the project.

Figure 20.1 shows the data and assumptions needed to calculate costs, gross and net benefits, and possible risks. Costs are generally easier to identify than benefits. Total costs consist of capital expenditures plus operating expenses. If we know unit output costs and the anticipated volume of output with the project, it is straightforward to calculate the monetized costs of the project.

Benefits are equal to the market price of the project's product multiplied by the increase in consumption occurring from the expansion in cross-border activity. While the concept is straightforward, identification and measurement is not always easy.

- First, the area covered by the project will determine whether there are distributional effects of benefits. If a project redistributes production from one region of the border economic area to another, then there can arise offsetting effects. If, however, a project in the border area redistributes production from Sarawak to West Kalimantan, then those redistribution effects are excluded since the project area is limited to the area within West Kalimantan.
- Second, a project can have both primary and secondary impacts within the border economic area. But only the primary impact should be measured to avoid double counting benefits. An example is when an industrial zone raises property values for households around the area and the accompanying road infrastructure reduces travel time. If the property value increase is used to measure the benefits of a project, then it is unnecessary to also include the benefits from the road infrastructure. The property value increased because of the road infrastructure. So it is unnecessary to include both. Otherwise, inclusion of both the increase in property values and better road access would give rise to double counting.

Figure 20.1. Generic Steps of Cost-Benefit Analysis for Leading Industries in West Kalimantan’s Border Economic Area



- Third, double counting can also occur because different measurements of the same benefit can be made using different approaches. There are three approaches to measuring benefits, similar to those used in the measurement of gross domestic product (GDP). The first is the expenditure approach, based on spending on all final goods and services; the second is the income approach, based on incomes to the factors of production; and the third is the output approach, based on summing the value of sales of goods and services, adjusted for intermediate goods purchased. Whichever approach is adopted should be consistently used throughout the calculation.

Practical issues in cost-benefit analysis are examined more closely in the next part of this pre-feasibility study. Since the 8 projects cover a wide range of sectors, it is useful to examine how the generic methodology in Figure 20.1 needs to adopt to specific characterizations of each industry.

20.2. Non-Monetarized Project Appraisal

The West Kalimantan border economic area program seeks to address broad socio-economic development goals. As such, it needs an integrated rather than piecemeal approach to its design and operation. Best international practices suggest an all-inclusive approach to the development of the border area, taking into account interconnected cluster developments in the area. This approach would give rise to the type of integrated approach to border development that the Government of Indonesia has prioritized.

In practice, financial limitations can prevent the adoption of a comprehensive approach that simultaneously implements all projects in the program. When that situation occurs, a prioritization of projects could produce practical benefits otherwise not available in an all-inclusive approach. But it might, by its inherently limited approach, be unable to achieve the full benefits from scale economies that could otherwise be derived from a comprehensive approach to border development.

Under the circumstances, projects need to be prioritized according to the preferences of different stakeholder groups. Those interests can, for example, reflect the socio-economic welfare of households, local commercial entities, multinational companies, local and national public authorities, or the development agenda of international development institutions. It would be inappropriate to simply prioritize projects according to their monetary returns since they are unlikely to reflect those stakeholder preferences. A weighted sum would be better, but there are many ways to weight project returns and the method selected needs to be justified. Fortunately, economics provides a way to reflect stakeholder preferences that is both theoretically and empirically sound.⁷²

Each project discussed in this report has characteristics that benefit stakeholders in various degrees. Stakeholders are therefore likely to prefer certain projects because they have more of the characteristics that benefit them than others. Those characteristics consist of the following:

- | | | |
|------------------------------------|--------------------------|-----------------------------------|
| • Commercial viability | • Knowledge transfer | • SME development |
| • Livelihood improvement of locals | • Integrated value chain | • Border township development |
| • Use of cheap unskilled labor | • Poverty alleviation | • Healthcare access |
| • Use of existing skilled labor | • Industrial estate | • Technical training |
| • Raw materials access | • Fiscal incentives | • Transport and logistics upgrade |

20.3. Project Prioritization Methodology

In the next part of this study, we prioritize stakeholder preferences and rank the monetarized results for the projects by those preferences. Here we summarize the steps involved in quantifying stakeholder preferences for the West Kalimantan border economic area:

1. Rate project characteristics for each site, based on a structured questionnaire containing a Likert Scale (normally 1 to 5).
2. Determine the form of stakeholder's utility function for preference ordering (normally a Cobb-Douglas function, as discussed in the Technical Annex to this chapter).
3. Establish a baseline solution for the aggregation of project features, based on a neutral preference ordering in which the parameters are all the same and sum to unity.
4. Determine hypothetical or actual preferences based on surveys of stakeholders, classified by major stakeholder groups (public officials on both sides of border, local population, large investors, and others).
5. Assign weights to the parameters of the utility function that reflects the preference ordering of the major stakeholder groups.
6. Calculate the overall ratings and interpret results of different stakeholder groups.

20.4. Stakeholder Groups

For the West Kalimantan border economic area program, we consider three groups of stakeholders with different preference orderings for the prioritization of projects. The following describes the preference orderings of the three groups and their decision process:

- *Stakeholder Group A – Neutral preferences among projects:* In this case, the stakeholder group does not have to be compensated for changes in the amount of a project's characteristic by another one. The stakeholder group could, for example, represent the interests of public authorities that want to develop commercial activities and improve the livelihoods of the local population in ways that extend beyond possible commercially related gains.⁷³
- *Stakeholder Group B – Commercially oriented preferences for projects:* This stakeholder group prefers to develop those aspects of a project that support commercial activity along the border. The stakeholder group may be composed of large multinationals interested in exploiting cheap labor and abundant raw materials along the border area to improve their competitiveness.
- *Stakeholder Group C – Social welfare maximizing preferences of projects:* This stakeholder group prefers to develop those features that support the social and economic well-being of the population located along the border. The stakeholder group could represent development partners and non-government organizations (NGOs) with a mandate to reduce poverty and promote socio-economic development of low-income areas.

20.5. Project Ratings

Ratings are based on stakeholder perceptions. Table 20.1 presents them for the 8 projects that make up the existing program. The numerical values are based on a scale from 1 (low) to 5 (high) for each of the project characteristics. They are based on discussions held with West Kalimantan stakeholders.

Strong commercial interest exists in the bauxite and alumina, ship building, wood products, palm oil, and tourism. Livelihood improvements occur mostly in organic foods, fisheries, rubber and eco-tourism. Organic foods are more likely to alleviate poverty than other projects. SME development is closely associated with fisheries, organic foods, and tourism. Also noteworthy is the knowledge transfer that is especially associated with ship building, palm oil, organic foods, and rubber (downstream industries).

Table 20.1. Ratings of Project Characteristics for West Kalimantan (Scale from 1 (low) to 5 (high))

	Alumina	Rubber	Palm Oil	Wood Products	Fisheries	Ship Building	Organic Foods	Tourism
Commercial viability	5	5	5	4	5	5	5	5
Border township development	2	4	3	3	3	2	3	2
Fiscal incentives	4	3	4	2	3	5	4	4
Healthcare access	4	3	2	2	2	5	1	3
Industrial estate	2	4	5	4	3	2	2	2
Integrated value chain	5	4	5	5	3	3	4	5
Knowledge transfer	5	3	5	2	3	5	5	3
Livelihood improvement of locals	4	4	3	3	5	5	5	4
Poverty alleviation	4	5	2	2	4	4	5	4
Raw materials access	5	5	5	3	4	5	5	3
SME development	2	4	3	3	5	3	5	5
Technical training	4	3	3	2	4	5	5	4
Transport and logistics upgrade	5	3	4	4	4	4	4	4
Use of existing cheap labor	3	5	5	4	4	3	5	3
Use of existing skilled labor	5	3	3	2	3	5	3	4

Source: Elaborated by the authors.

Technical Annex

The preference ordering of a group of representative stakeholders (for example, development partners, multinationals, small businesses, local communities) can be represented by a *utility function* that takes the following form:

$$U(X_1, \dots, X_n) \quad (20.1)$$

Where U represents utility, X is the group of projects numbered from 1 to *n*. For example, X_1 can represent the gain obtained from the 'industrial park' feature of the project, denoted X_2 the gain obtained from the 'value chain' feature, and so forth.

Utility is an abstract measure of benefits obtained from a stakeholder group. Since it cannot be measured directly, it is inferred by 'revealed preferences' that are observed by the compensation that needs to be offered to the stakeholder for substituting one feature for another. We can represent the rate of substitution between two features in such a way that the stakeholder is indifferent between the two as long as that stakeholder is compensated by an amount *d* for the difference between X_1 and X_2 :

$$X_1 = dX_2 \quad (20.2)$$

If substitution among project features takes place in the form of a *Cobb-Douglas utility function*, then the utility (or benefits) derived from the project features by a particular stakeholder can be measured according to the following preference ordering:⁷⁴

$$U(X_1, \dots, X_n) = X_1^\alpha X_2^\beta \dots X_n^\omega \quad (20.3)$$

The values of the parameters is such that $\alpha + \beta + \dots + \omega = 1$, that is, the sum of all the parameters equals unity.

This relationship describes an *indifference curve* for a stakeholder because it expresses equal levels of gains for the stakeholder from various combinations of the features. In other words, there is not a single 'optimal' value of a project feature such as an fiscal incentives within specific cluster. Instead, when forming part of a cluster, fiscal incentives can be different, as long as they are *compensated* by changing the values of other features. Therefore, various combinations of features can form a cluster, as long as they provide a stakeholder with the same value of overall gains from the cluster.

For example, consider a cluster with only two project features having values of 3.5 and 4.5 respectively. Let $\alpha = 0.4$ and $\beta = (1-\alpha) = 0.6$. Then the indifference curve is represented as follows:

$$U(X_1, X_2) = 3.5^{0.4} * 4.5^{0.6} = 4.1 \quad (20.4)$$

The gains of the cluster for the stakeholder is equal to 4.1 on an overall rating scale ranging from 1 to 5. The stakeholder is indifferent between how much of a project feature, X_1 he receives, as long as he is compensated for any changes in its size by variations in the amount of X_2 he receives, so that his total benefits equal 4.1 for all combinations of X_1 and X_2 .

The rate of substitution among cluster categories underlies much of the analysis in feasibility studies. They essentially extend equation (20.3) to the application of optimization analysis. In the case of border economic zones, the optimization problem involves determining the size of each project

features by valuing each of them and estimating the optimal amount of the combined cluster categories for the stakeholder group, given a budget constraint.

Since the parameters α , β , ..., ω represent the weights of the corresponding features preferred by the stakeholder, we can use equation (20.3) to calculate the overall results of the features values derived from the survey or other type of assessment for alternative border areas by assigning values to those parameters that would characterize the stakeholder's choices for them.

ENDNOTES

¹ The spectrum of possible goals for the border includes, among others, economic growth of the target areas, the alleviation of income inequality among geographic areas, attainment of political and social stability within an area, or the alleviation of poverty and general improvement of well-being of households in the border region

² Asian Development Bank (2004), "Prioritizing Strategic Directions for BIMP-EAGA". Manila. Available: http://books.google.co.th/books?id=NiOWAQAAMAAJ&source=gbs_navlinks_s.

³ The ADB defines five sequential steps: (a) elaboration of regional cooperation strategy or country partnership strategy; (b) preparation; (c) approval; (d) implementation; and (e) completion and evaluation. The World Bank defines six steps: (a) identification; (b) preparation; (c) appraisal; (d) negotiation; (e) implementation and supervision; and (f) evaluation. Sources: ADB, "Project Cycle". Available: <https://www.adb.org/site/disclosure/public-communications-policy/cycle>; and World Bank, "The World Bank project cycle". Available: <http://documents.worldbank.org/curated/en/696601478501928227/pdf/109412-BRI-WBG-PUBLIC-date-04-01-1993-The-World-Bank-Project-Cycle.pdf>.

⁴ While published comparisons of expectations versus actual performances are nearly non-existent, The World Bank in 1978 listed 109 operations in which a quarter had cost overruns of 25% or more, one-tenth had cost overruns of 50% or more. Approximately half had time overruns of 25% or more and approximately one-third had time and cost overruns of 50% or more.

⁵ For a review of terminology, see M. Lord and P. Tangtrongjita, *Border Economic Zones in Thailand: A Practitioner's Guide*. Bangkok, Chulalongkorn University Press, 2016.

⁶ C.R. Harvey, *Hypertextual Finance Glossary*.

⁷ For details, see Wikipedia, "Lanfang Republic". Online: https://en.wikipedia.org/wiki/Lanfang_Republic (retrieved 28 November 2018).

⁸ R., *Historical Atlas of Indonesia*. Co-published by the University of Hawaii Press (Honolulu) and New Asian Library (Singapore), 2000. Online: <http://people.duke.edu/~charvey/Courses/wpg/glossary.htm> . (retrieved 27 November 2017).

⁹ This material draws from Wikipedia, "Indonesia–Malaysia border". Online: https://en.wikipedia.org/wiki/Indonesia%E2%80%93Malaysia_border (accessed: 9 November 2017).

¹⁰ Wikipedia, "Pontianak incidents". Online: https://en.wikipedia.org/wiki/Pontianak_incidents (retrieved 28 November 2018).

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per unit of foreign currency. As an extension, the real effective exchange rate (REER) measures the average relative strength of the local currency, and it is calculated as the weighted average of RERs, where the weights are the value of imports from and exports to a given partner country i divided by total imports and total exports of the home country.

Formally the real effective exchange rate is defined as $e^r_t = [e^n_t(P^f_t/P_t)]$ where e^n is the nominal exchange rate, P^f is the foreign currency price of goods purchased abroad, and P is the domestic price level. A rise in e^r represents a real *devaluation* in a fixed exchange rate system, and a *depreciation* in a flexible exchange rate system, which can be brought about by either a rise in the nominal exchange rate e^n , or a rise in the relative price of foreign goods (equivalent to a relative fall in the price of domestic goods). Conversely, a fall in e^r represents a real *revaluation* under a fixed exchange rate system, and an *appreciation* under a flexible exchange rate system. The fall is associated with either a drop in the nominal exchange rate e^n or a fall in relative prices of foreign goods (equivalent to a rise in relative prices of domestic goods).

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