



# IMPACT OF THE ASEAN ECONOMIC COMMUNITY (AEC) ON SOCIAL FORESTRY AND FOREST PRODUCTS TRADE

**Ramon A. Razal, Anna Floresca F. Firmalino, and Maria Cristina S. Guerrero**

**NTFP-EP**

**non-timber  
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ASEAN Social Forestry Network

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## ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
AEC	ASEAN Economic Community
AEG-CITES	ASEAN Experts Group on the Convention on International Trade in Endangered Species of Fauna and Flora
AFIC	ASEAN Furniture Industries Council
AFoCo	ASEAN-Republic of Korea Cooperation in Forestry
AFTA	ASEAN Free Trade Agreement
AMAF	ASEAN Ministers on Agriculture and Forestry
AMS(s)	ASEAN member state(s)
APFC	Asia Pacific Forestry Commission
APSC	ASEAN Political-Security Community
ARKN-FCC	ASEAN Regional Knowledge Network on Forests and Climate Change
ARKN-FLEG	ASEAN Regional Knowledge Network on Forest Law Enforcement and Governance
ARKN-FPD	ASEAN Regional Knowledge Network on Forest Product Development
ASCC	ASEAN Socio-Cultural Community
ASEAN	Association of Southeast Asian Nations
ASEAN+3 /APT	ASEAN Plus Three; ASEAN member states with China, Japan, and South Korea
ASEAN-6	ASEAN subgroup of earliest members; consisting of Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand
ASEAN-WEN	ASEAN Wildlife Enforcement Network
ASFCC	ASEAN Swiss Partnership for Social Forestry and Climate Change
ASFN	ASEAN Social Forestry Network
ASOF	ASEAN Senior Officials on Forestry
CBFM	community-based forest management
CEPT	common effective preferential tariff
CF	community forestry
CFI	Community Forestry Instruction
CGE	computable general equilibrium [analysis]
CHM	Clearing House Mechanism
CLMV	newer ASEAN members; consisting of Cambodia, Lao PDR, Myanmar, and Viet Nam
DENR	Department of Environment and Natural Resources, Philippines
ERIA	Economic Research Institute for ASEAN and East Asia
EU	European Union
FAF	food, agriculture, and forestry
FAO	Food and Agriculture Organization of the United Nations

FDI(s)	foreign direct investment(s)
FLEGT	Forest Law Enforcement, Governance, and Trade program of the European Union
FSC	Forest Stewardship Council
GDP	gross domestic product
ha(s)	hectare(s)
IAF	intergovernmental arrangement on forests
INBAR	International Network for Bamboo and Rattan
IP	indigenous people
ISEAS	Institute of Southeast Asian Studies
IUCN	International Union for Conservation of Nature
LDC(s)	least developed country(ies)
MTCC	Malaysian Timber Certification Council
MU	Ministerial Understanding
MYPOW	UNFF Multi-Year Programme of Work
NFP	National Forest Policy, Cambodia
NGO(s)	non-government organization(s)
NGP	National Greening Program, Philippines
NLBI	Non-Legally Binding Instrument on All Types of Forests
NTB(s)	non-tariff barrier(s)
NTFP(s)	non-timber forest product(s)
NTFP-EP	Non-Timber Forest Products Exchange Programme
OTOP	One Tambon, One Product program, Thailand
PEFC	Programme for the Endorsement of Forest Certification
PEI	UNDP-UNEP Poverty-Environment Initiative
PIS(s)	priority integration sector(s)
PWPA	Philippine Wood Producers Association
RFD	Royal Forestry Department, Thailand
ROO(s)	rule(s)-of-origin
SFM	sustainable forest management
SMEs	small and medium enterprise(s)
SOM-AMAF	Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry
SPA	Strategic Plan of Action
SVLK	Sistem Verifikasi Legalitas Kayu (Indonesia)
TFP	total factor productivity
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFF	United Nations Forum on Forests
US	United States of America
USD	United States Dollar
WESP	UN World Economic Situation and Prospects
WTO	World Trade Organization
WWF	World Wildlife Fund

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**EXECUTIVE SUMMARY**

The advent of the ASEAN economic community (AEC) integration signals a new phase in regional efforts to forge stronger cooperation and closer relations among the ASEAN member states (AMS). The AEC's key characteristics strongly emphasize the pursuit of regional economic prosperity, to be brought about by a unified market and production base, greater competitiveness, and equitable economic development. When all three are achieved, it is hoped that this would lead to much fuller integration with the global economy.

The blueprint for AEC as a pillar of the ASEAN community understandably highlights the need for initiatives towards the freer flow of goods, services, capital, and skilled labor, emphasizing competition and protection policies, infrastructure development, and e-commerce. Less evident in the blueprint is how populations outside of mainstream economic activities such as those represented by poor and marginalized communities within forest areas can become active participants towards fulfilling the goals of AEC and consequently reap corresponding rewards for their participation.

It is in this context that the present study was undertaken in order to fill in gaps in understanding on how well-positioned the forestry sector is in general, and the communities and smallholding farmers are, in particular, vis a vis the projected changes that are planned for the region. Further, the study is designed to assess the preparedness of the forestry sector in the different AMS by examining country-based policies and programs being implemented that bear on the socio-economic concerns of forest communities and whether these would enable them to become beneficiaries of the AEC or suffer from its adverse impacts.

A close scrutiny of trade among AMS in timber and bamboo and rattan as proxy for non-timber forest products (NTFPs) was likewise done through an econometric analysis involving a gravity model to determine factors that enhance or impede intra-regional trading in these products. The results were then extended to the micro level to determine involvement of and/or impacts on social forestry stakeholders.

At the ASEAN organization itself, the inclusion of wood-based products among the 12 priority integration sector (PIS) and the special focus on food, agriculture and forestry (FAF) as a sector indicate appreciation for forestry and agriculture as essential components in the process of economic integration. Regional initiatives on enhancing trade in wood-based products include activities for increasing cooperation, joint marketing, encouraging investments, and human resource development. Specific areas of cooperation that have been identified include those on certification of timber, combating illegal trade, research and development, and technology exchanges. On the other hand, initiatives in the FAF sector have been largely directed at developing standards to ensure food safety. Efforts directed at addressing the concerns of primary forest product producers and communities that initiate value chains in the wood and forest industry are still wanting.

At the level of individual AMS, awareness about AEC among the various stakeholders in forestry is also virtually non-existent, with admissions by many stakeholders that they merely relied on media for information about it. When envisioning the 2020 scenarios for the forestry sector in their respective countries, AMS barely acknowledged the AEC integration as a significant event, except in Viet Nam which conceded that its membership in the ASEAN will bear on its domestic socio-economic conditions. Overall, policies in the various countries have elements that cater to globalization although unilateral actions such as the imposition of export bans on timber and NTFPs in Cambodia, Indonesia, Philippines, and Thailand contrasts starkly with avowed globalization goals. Restricting the export of forest product exports had been detrimental to farmers and communities, some of whom were engaged by their respective countries to contribute to forest development and management in exchange for commercial rights to forest products. Rattan collectors in Indonesia, for instance, have been severely affected by barriers to the export market, hence restricting sales to local furniture and handicraft manufacturers that procure rattan poles at very low prices.

Trade among AMS account for about 24% of total trade in the region, which makes intra-ASEAN trading as the Region's largest trading block, which is followed by China at 14%. However, products derived from the forests do not belong to the top ten commodities that are being traded, which altogether already account for 70.1% of total trade. Forest products trade has not increased, and has even declined in some products despite early initiatives to stimulate regional trade in these products.

The results of an analysis of gravity models of cross-country trade in forest products suggest that the most significant variables affecting forest products trade are GDP and population of trading partners, as generally enhancing factors, as well as distance between trading

partners, which was primarily a trade impeding factor. Length of processing time and exchange rates provided mixed results, depending on the type of products, direction of trade, and on which countries are on opposite ends of such trade. The link to communities of some of these factors, especially in relation to AEC, was explored. GDP for all AMS, for instance, is expected to increase more with AEC than without. To drive GDP growth, manufacturing in most countries is shifted toward urbanizing rural areas, thereby closing in on the forest communities. Such proximity entices migration from forest communities, mostly the more educated and highly skilled youth, leaving an ageing population behind to tend to land-based activities. At the opposite extreme, there is in-migration to the forest by less-skilled, less traditional forest settlers who threaten the forest with their unsustainable practices and cause conflicts by pursuing their own claims on the land.

Outside the variables of the models, and specific to the social forestry sector, the following are some of the anticipated changes to be brought about by AEC and their potential impacts on forest communities.

Increased awareness about AEC. The immediate impact of AEC integration upon its full implementation will be the heightened awareness about the larger ASEAN community to which each AMS belong. While there will be differences in how communities will explore the opportunities to be opened up or deal with perceived threats, consciousness of a new regional identity will gradually sink in. Communities will favorably respond when they realize that they can sell to a more expanded market, but will react negatively when markets they had used to control are now presented with other options.

Intensified demand for forest products. The liberalization of trade will result not only in a larger market to fill, but also a bigger field of competitors for materials and semi-finished products used as inputs in forest-based materials processing. Primary producers in communities supplying the raw materials may be pushed to exploit more, produce more, or to dig deeper into the forest to procure more. There will be greater use of intensive agroforestry practices to meet demand for materials, which in the long term will reduce the land's overall productive capacity.

Intensified use of forest for other uses. The bigger ASEAN market, with its more than 600 M people, will increase the pressure on forests to be used for other purposes. There will be enticements for communities to engage in production of commercially important food and food crops such as coffee, cacao, vegetables, and pineapple at the expense of forest trees and non-timber forest products. These non-traditional crops require unsuitable, intensive agricultural practices that will eventually diminish upland soil productivity. Alongside efforts

to engage communities in food production is the conversion of forestland to plantation crops such as palm oil and rubber, ventures which rank highly in the economic development models of some countries. Conflicts arise when land areas that are claimed for these purposes overlap with land belonging to communities under their traditional rights.

Wider Timber Certification. If the AMS agree on a regionally accepted timber certification scheme as a prerequisite to trade in timber among them, the short term impact is that there will initially be less legal intra-regional trade in forest products. Small hold farmers and communities linked to timber value chains will face difficulties in initially providing the documentary requirements for certified timber. Countries with existing timber certification schemes such as Malaysia and Indonesia will continue to be able to sell to other countries outside of the region, however. But there will hardly be an impact on communities that do not engage in commercial timber trade.

Combating illegal logging and trade in wildlife (both flora and fauna). If the AMS strengthen their resolve to combat illegal logging and trade, short term impacts will depend on whether or not communities tacitly allow the practice, or who are simply incapable of implementing community-based measures to address the problem. In the long term however, and possibly with external donor support, communities will have been capacitated to perform a more active anti-illegal logging role, resulting in greater community participation in this endeavor. There will be consequent improvement in stocks of threatened biodiversity species in forest communities.

Harmonization of standards (for timber products). This is not imminent in the short-term, but, in the long run, AMS will agree on common standards for timber-based and NTFP-based forest products. Once standards are in place, initially, there will be rejections of products made, especially by workers not properly trained in forest products manufacturing. In the long run, as workers are equipped with more skills, demand for products will expand and trade will open up not only within the region but outside the region as well. Harmonization will bring about capacity in many communities to produce furniture, crafts, and toys with uniformly acceptable quality and that will be able to meet volumes required of them in the more developed Northern markets. Hence, extra-ASEAN trade will likewise expand, resulting in improvement in the economic status of members of communities who have the external links (national or even regional value chains).

Further development of infrastructure and connectivity. AEC will improve connectivity through highways that crisscross several countries, particularly those in the Asian mainland. Sectors engaged in infrastructure building make no qualms about destroying forests for the

sake of development, regardless of whether communities will be displaced or adversely affected by highway construction or improvement. Reports on lewd, unprofessional actions by construction workers highlight atrocious abuses against women and children, the destruction of forests, and preponderant illegal logging and poaching. Once built, the roads will improve access to timber products and wildlife especially across borders. Other adverse impacts, especially to communities in close proximity to newly-built roads would include noise from transport vehicles, dusts, piling up of garbage thrown away from passengers of vehicles, pollution from emissions and oil leakages, and other threats to the peace and security and the sanctity of sacred groves that are part and parcel of community life.

Increased demand for ecotourism and related services. As citizens of ASEAN member states become more aware of each other and what each one can offer in terms of nature and adventure activities, intra-regional ecotourism will increase. The availability of low-budget air fares for travel within the region is another factor that will further boost regional ecotourism. There is a need for communities with special attractions or sites to offer to build capacity for hosting large number of visitors and to provide amenities for their enjoyment. Communities will also have to deal with large volumes of garbage, degradation of the ecosystem from high impact activities, and the need to protect biodiversity against illegal collection and hunting.

Freer flow of skilled labor, and research and technology exchange. Each AMS invests in educating its own pool of professionals and other practitioners who will contribute to the management of the respective country's forest resources. With AEC, adequately trained forestry professionals from countries that offer low salaries may be lured to work in the more developed economies that can afford better compensation. This will be further enhanced when a mutual recognition agreement (MRA) is forged among ASEAN members in the forestry profession. However, no such MRA is yet being undertaken in forestry unlike in the medical, architecture, and some engineering professions. For countries who will lose forestry professionals to more lucrative employment markets, there will be indirect impacts on communities that depend on forestry professionals for technical assistance on the various aspects of managing, conserving and use of forest for productive purposes. On the aspect of research and technology exchange, while this objective is clearly manifested as a priority initiative, it is not anticipated to take place in the immediate term because of intellectually property rights issues in place within research institutions as well as other requirements imposed by private and corporate donors of research funds. Civil society organizations can play a big role in this regard, by assisting in providing opportunities to farmer communities across countries to learn from each other through cross-farm visits and farmer-to-farmer interactions.

To cushion against the adverse impacts of AEC and/or to enable them to gain from potential opportunities that will open up, there is need for capacity building among communities and related stakeholders on many areas related to doing trade in a more open and bigger market. Communities should be capacitated to establish farm corporations or cooperative farms to address concerns relating to economies of scale as well as the need for new or additional investments that may not be easily accessible to individual smallholders. They must also learn to set aside surplus from current productive activities for investing in bigger ventures, or to leverage loan applications for upgrading and expansion of current productive capacities.

Relevant government agencies, civil society organizations, and the private sector can provide communities with linkages to capacity building resources and institutions. In the foreseeable future where common regional standards for various forest products (e.g., furniture and handicrafts) will be put in place, it is important for communities to align their productive capacities towards ensuring that products made can meet the requirements of a more discerning market. Communities should be guided in investing on new machineries that will result in faster turnover and more uniform product quality and on training in the areas of innovation and design and marketing of products, by highlighting their cultural significance. Successful models for capacity building efforts should be offered to forest communities through cross-border farmers' training and farm visits.

Current actions to develop a unified trade window for the ASEAN should be continued since trading times and documentary requirements figure significantly in trade flows and openness of markets. Trading mechanisms should entail simplifying procedures in order to guarantee the legality of traded products or source materials and enable greater participation by small business ventures in trade.

To enable communities to face the threats from conversion of forest lands to large scale plantation production of commercial crops such as rubber, oil palm, etc., there is need to safeguard communities by strengthening their security to their land. Government agencies championing the cause of community forestry in the respective member states need to be more aggressive in instituting reforms or in pursuing legislative action to facilitate the formalizing of claims on land by traditional forest-occupants and indigenous communities. Concerned member states must rationalize the use of land through holistic land use planning and strict enforcement of land use policies, to ensure that ecological/water balance is not hampered by indiscriminate land use conversions.

An inclusive, participatory decision making process should also be in place to avoid planning and construction of infrastructure that connect vibrant, urban markets at the end of the highways, but are oblivious to the concerns, needs, and welfare of the remote communities along which such highways run. Obtaining prior informed consent from affected communities for infrastructure projects cutting across large forest areas should be enforced, and models that plan road networks must factor in social costs in order to mitigate unwanted impacts.

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### **BACKGROUND**

The study reviews the impacts (both positive and negative) of the Association of Southeast Asian Nations (ASEAN) Community as well as the opportunities that may lend themselves to the integration of social forestry stakeholders into the mainstream of the ASEAN regional economy. It was funded through the Non-Timber Forest Products Exchange Programme (NTEP-EP) with support from the ASEAN Swiss Partnership for Social Forestry and Climate Change (ASFCC). It forms part of the second phase of ASFCC's three-year project that commenced in 2014, when the full integration of ASEAN into one community looms large on the horizon as a significant factor that will bear on regional developments in social forestry.

By 31 December 2015, it is envisioned that the ASEAN region will become one ASEAN Community that is founded on strong economic, political, and socio-cultural partnerships among the ASEAN member states (AMSs) comprising Brunei Darussalam, the Kingdom of Cambodia, the Republic of Indonesia, the Lao People's Democratic Republic (hereinafter referred to as "Lao PDR"), the Federation of Malaysia, the Union of Myanmar, the Republic of the Philippines, the Republic of Singapore, the Kingdom of Thailand, and the Socialist Republic of Viet Nam. The ASEAN Economic Community (AEC), as one of its pillars alongside the Political-Security Community (APSC) and the Socio-Cultural Community (ASCC), seeks to transform the region into a single market and production base, a highly competitive economic region, a region of equitable economic development, and a region fully integrated into the global economy. The economic aspects of integration will entail liberalization of trade among the AMSs including measures that will eliminate all tariffs and non-tariff

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<sup>1</sup> Professor, Department of Forest Products and Paper Science, University of the Philippines Los Baños, College, Laguna, Philippines and Member of the Board of Trustees, Non-Timber Forest Products Exchange Programme

<sup>2</sup> Assistant Professor, Department of Economics, University of the Philippines Los Baños, College, Laguna, Philippines

<sup>3</sup> Executive Director, Non-Timber Forest Products Exchange Programme, Masikap Ave. Extension, Quezon City, Philippines

barriers, enhance interconnectivity, and such other measures that will allow free flow of goods, services, investment, capital and skilled labor.

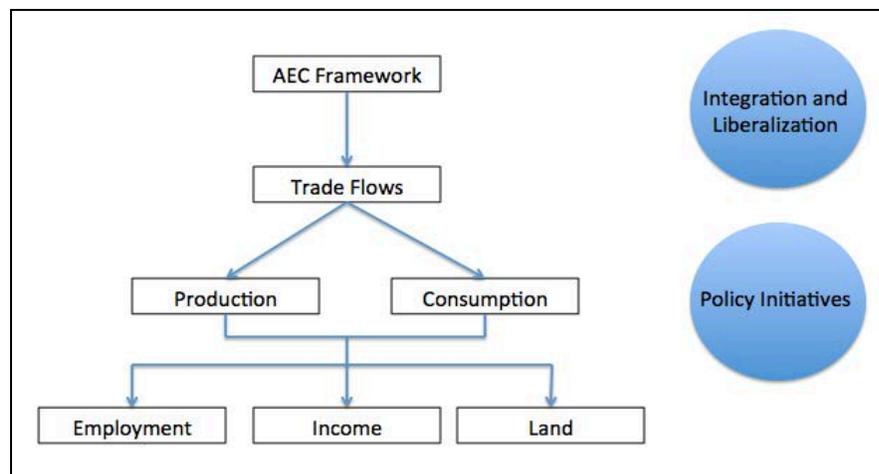
## OBJECTIVES

The main objectives of the project are to:

1. situate the different AMSs in terms of how their forestry sectors will possibly be affected by economic integration and trade liberalization embodied by the implementation of the AEC Blueprint;
2. review national level policy directives, initiatives, and efforts related to the forestry sector, particularly in relation to social forestry, that have bearing or that may be affected by the advent of the AEC;
3. evaluate the possible impacts of AEC integration on the production, consumption, and trade of timber and non-timber forest products as well as other socio-economic concerns in the ASEAN member countries, particularly on smallholders in the forestry sector;
4. recommend specific development and policy interventions that may minimize potential negative impacts or that may capitalize on possible benefits or opportunities of the AEC in the forestry sector, particularly in social forestry, based on results; and
5. disseminate the results through seminars and publications.

## FRAMEWORK AND METHODOLOGY

The analyses initially intended to follow a top-down approach, as illustrated in the following diagram:



As the diagram shows, the intended framework for the analyses assumed that the AEC would affect trade flows, as they are affected by integration and liberalization measures as well as enabling policy initiatives, which in turn would affect the levels of production and consumption in the individual economies. These were then assumed to have impacts on employment, income, and resource use.

To gain a better understanding of the integration measures and their impacts, reviews of relevant literature, including ASEAN documents, and a survey of data sources were undertaken. Visits were made to selected ASEAN member countries, including Indonesia (as the host of the ASEAN Secretariat), Cambodia, Viet Nam, Thailand, and the Philippines, to interview key informants and relevant social forestry stakeholders in order to gather data on awareness by the social forestry sector about and its readiness for the AEC, as well as to validate initial findings and guide the identification of specific development and policy interventions (see Annex A for interview guide and Annex B for list of key informants). Potential impacts on various types of forest communities in the AMSs were identified, and local as well as wider initiatives that may bear on these communities were defined.

Based on this review of the literature, it emerged that the repercussion effects of the AEC could be viewed in a direction opposite to that in the initial framework, that is, employment, output, and other resources seemed to be more significant in affecting the level of production and trade. Thus, the macro-level analysis adopted the notion of this revised causality, to the extent that results could be generated by the available data.

The assessment at the macro-level was undertaken to situate the different AMSs in terms of how their forestry sectors have been performing to provide an idea of how they may be affected by the implementation of the AEC Blueprint. In identifying the potential impacts, previous experiences of other countries in economic integration and trade liberalization were noted. Particularly for trade-related concerns, trade flows of timber products in general and social forestry goods (in this case, bamboo and rattan) in particular among the AMSs and with the rest of the world are shown for individual AMSs and for the region.

After establishing the current status of forest product trade and production as well as other economic performance measures of the individual AMSs, econometric analyses of the impacts of the different socio-economic characteristics of individual AMSs on forest product trade were conducted. Earlier estimation models were reviewed for their suitability in the analysis, considering the extent to which data were available, and an augmented gravity

model providing approximations of possible cross-country impacts on trade at the macro-level was found to address the specific circumstances of the individual AMSs in the region.

With its foundation rooted in physical laws of gravity and electrical force, the approach assumes that flow of goods is impacted by the potential capacities of the trading partners (where larger economies are expected to participate in more trade) and stimulating or restraining trade factors (Hemkamon, 2007). The standard gravity model would explain bilateral trade flows as a function of trading partners' market sizes and the bilateral barriers to trade (Hapsari and Mangunsong, 2006), which is commonly measured as a distance variable. In addition, many gravity models have been augmented to include variables that represent factors that could either facilitate or impede trade (Ekanayake et al., 2010; Koh, 2013). The approach has been criticized in the past for its inability to determine whether market shares rather than specialization causes the gravity effect, to explain how differentiated products should be analyzed, or to account for indirect trading. However, its popularity as a means to show determinants of bilateral trade has not been reduced and have led to different specifications to account for some of these limitations (Hemkamon, 2007).

In terms of model specifications, the Hausman test is used for the determination of whether to use fixed effects (FE) or random effects (RE) specifications (Chakravarty and Chakrabarty, 2014). Moreover, the use of panel data for these estimations follows the logic of previous studies to better control unobserved heterogeneity (see, for instance, Bun et al., 2007).

The estimations regarding the intra-ASEAN trade were done for each of the ASEAN member states, where the trade partners considered comprise all other AMSs. Flows of exports and imports are modeled separately as well as total trade (exports and imports), which could proxy for the openness of each particular economy. This empirical work was based on the following models:

$$\ln X_{ij} = \alpha + \beta_1 GDP_O + \beta_2 GDP_P + \beta_3 Popn_O + \beta_4 Popn_P + \beta_5 Dist_{ij} + \beta_6 RER_{ij} + \beta_7 TradTimeEx_{ij} + \beta_8 TradDocEx_{ij} + \mu_{ij}$$

$$\ln M_{ij} = \alpha + \beta_1 GDP_O + \beta_2 GDP_P + \beta_3 Popn_O + \beta_4 Popn_P + \beta_5 Dist_{ij} + \beta_6 RER_{ij} + \beta_7 TradTimeIm_{ij} + \beta_8 TradDocIm_{ij} + \mu_{ij}$$

$$\ln XM_{ij} = \alpha + \beta_1 GDP_O + \beta_2 GDP_P + \beta_3 Popn_O + \beta_4 Popn_P + \beta_5 Dist_{ij} + \beta_6 RER_{ij} + \beta_7 TradTimeEx_{ij} + \beta_8 TradDocEx_{ij} + \beta_9 TradTimeIm_{ij} + \beta_{10} TradDocIm_{ij} + \mu_{ij}$$

where  $X_{ij}$  is the export value of timber products (or of bamboo and rattan products) of country  $i$  (domestic AMS) to country  $j$  (trading partner);  $M_{ij}$  is the import value of timber products (or of bamboo and rattan products) of country  $i$  from country  $j$ ;  $XM_{ij}$  is the total trade value (sum of export value and import value) of country  $i$  to/from country  $j$ ;  $GDP_O$  is the gross domestic product of the domestic AMS;  $GDP_P$  is the gross domestic product of the trading partner;  $Popn_O$  is the population of the domestic AMS;  $Popn_P$  is the population of the trading partner;  $Dist_{ij}$  is the geographical distance between the two countries (measured as the nautical miles between them);  $RER_{ij}$  is the bilateral real exchange rate between the two countries (calculated as the nominal bilateral exchange rate multiplied by the ratio of the domestic country's CPI to the trading partner's CPI);  $TradTimeEx_{ij}$  is the trading time to export from country  $i$  to country  $j$  (measured in number of days);  $TradTimeIm_{ij}$  is the trading time to import to country  $i$  from country  $j$  (measured in number of days);  $TradDocEx_{ij}$  is the number of trading documents necessary to export from country  $i$  to country  $j$ ;  $TradDocIm_{ij}$  is the number of trading documents necessary to import to country  $i$  from country  $j$ .

GDP variables are included to capture the factors that could reflect the level of economic development in the nations that would most likely lead to positive coefficients. The population variables are included to take account of the size of the economies; smaller populations may cause more trade since the domestic market may not be able to meet demand although larger populations may offer more trading opportunities in a wider variety of goods such that the coefficients for the populations are ambiguous. The distance, as the usual proxy for transportation costs and time, is assumed to be a barrier to trade that will have an inverse relation to any of the trade measurements. Also representing restraining factors to trade, trading time and trading documents (within port) are proxies for access to markets and are expected to have negative coefficients. Depreciation in the domestic economy is expected to increase exports while appreciation in the trading partner's economy is expected to lead to increase their imports, thus the coefficients for the real exchange rate (RER) are expected to be positive for exports and negative for imports.

In line with the general significance of output levels in the trade of forest products that is eventually determined through these gravity models, an attempt to estimate possible

determinants of production levels of forest products (particularly timber products) was also implemented. However, only selected mostly trade-related variables were included in the analysis and the model was estimated using the Ordinary Least Squares method.

Two specifications of the production estimation were used, a linear regression and a double log regression, to test which of the specifications would provide better results. In addition, the regressions were run separately for timber products measured in cubic meters (rawer products) and for those measured in metric tonnes (relatively more processed products), using the pooled sample for all AMSs. The models used for these regressions can be described as:

$$FP_{ij} = \alpha + \beta_1 Forestland_{ij} + \beta_2 Employed_{ij} + \beta_3 FDI\ Inflows_{ij} + \beta_4 OER_{ij} + \beta_5 Landlocked_i + \beta_6 Island_i + \mu_{ij}$$

$$\ln FP_{ij} = \alpha + \beta_1 \ln Forestland_{ij} + \beta_2 \ln Employed_{ij} + \beta_3 \ln FDI\ Inflows_{ij} + \beta_4 \ln OER_{ij} + \beta_5 Landlocked_{ij} + \beta_6 Island_{ij} + \mu_{ij}$$

where  $FP_{ij}$  is the production of forest products in cubic meters (metric tonnes) in country  $i$  in year  $j$ ;  $Forestland_{ij}$  is the forest land area in square miles of country  $i$  in year  $j$ ;  $Employed_{ij}$  is the number of economically active individuals in country  $i$  in year  $j$  (in thousands);  $FDI\ Inflows_{ij}$  is net inflows of foreign domestic investments into country  $i$  in year  $j$ ;  $OER_{ij}$  is the official exchange rate of country  $i$  in year  $j$  (measured as the annual average in USD per local currency unit);  $Landlocked_i$  is a binary variable to indicate whether country  $i$  is landlocked, measured as 1 if the country is landlocked and 0 if otherwise;  $Island_i$  is a binary variable to indicate whether country  $i$  is an island, measured as 1 if the country is an island and 0 if otherwise.

Forest land area, the number of employed individuals, and FDI inflows are included as proxies for land, labor, and other capital inputs that would positively affect the level of production of forest products. On the other hand, all other remaining variables are included as reflections of the additional costs of producing forest products and are expected to have negative coefficients.

Subsequently, the macro-level results were extended to the micro-level to further elucidate potential involvement and related contributions of social forestry stakeholders. The analysis relied on previous theoretical and empirical analyses as well as actual experiences to guide the identification of specific sectoral impacts, that is, how the factors found to be significant

in the macro-level assessments could affect or be affected by smallholders in the social forestry sector.

In the end, strategies to minimize negative impacts and actions to capitalize on benefits or opportunities are proposed.

The body of the report is organized as follows. Part I provides a brief overview of the ASEAN and its impending transition to an ASEAN Community. Part II provides a review of the ASEAN social forestry sector and the proposed and on-going initiatives, highlighting trade issues at the global, regional, and country levels. It also discusses the current forestry situation in the different AMSs to provide a benchmark that will be useful in future assessments of AEC impacts. Part III presents an analysis of trade liberalization cases brought about by participation of Asian countries in free trade agreements and how these experiences will bear on the forestry sector. Part IV looks at forest products production and trade in the region and puts into context the situation of social forestry stakeholders. Part V presents the relevant assessment of trade impacts and quantitative estimations afforded by the available data with discussions of the significance of these results particularly on forest communities in light of the AEC and other potential social forestry-related concerns. Finally, Part VI concludes with some recommendations on specific policy and development interventions drawn from the findings of the study.

## PART I

### **Transitioning to an ASEAN Community: An Overview**

Established in 1967 with five founding members (Indonesia, Malaysia, Philippines, Thailand and Singapore), and with five other countries joining from 1984 to 1999 (Brunei Darussalam, Viet Nam, Lao PDR, Myanmar and Cambodia), the Association of Southeast Asian Nations (ASEAN) has since been transformed into a region with vast opportunities for development and growth. Aware of the challenges that the emerging economies of neighboring China and India pose, and realizing the potential of the region to leverage these developments by being more closely bonded together through economic, political and social partnerships, the ASEAN member states (AMSs) agreed in 2003 to form the ASEAN Community.

Initially targeted to formally take shape in 2020, the transition to an ASEAN Community was advanced to 2015 by the AMS leaders during their meeting in Cebu, Philippines in 2007. According to the Cebu Declaration, the acceleration was encouraged by ASEAN's deepening relations with (its) Dialogue Partners . . . which have engaged “ASEAN as a reliable and substantive partner in the development of a larger community in the region.” Additionally, the ASEAN leaders acknowledged that there was a need to “deal more effectively with the increasing range of transboundary concerns which ASEAN faces in this rapidly changing world,” hence, the decision to advance the realization of the ASEAN Community to 2015. By such action, the ASEAN leaders took note of the presumably satisfactory progress made towards establishing the ASEAN Community through its three pillars, the ASEAN Political Security Community (APSC), the ASEAN Socio-Cultural Community (ASCC), and the ASEAN Economic Community (AEC). At the same time, the AMS leaders also acknowledged that some flexibility may be required on account of the different levels of development within ASEAN. There is a development divide to be narrowed between the ASEAN-6 (Brunei, Indonesia, Malaysia, Philippines, Thailand and Singapore) on one hand and Cambodia, Lao PDR, Myanmar, and Viet Nam (CLMV) on the other. Initiatives to address the divide include technical and development cooperation, and allowing the CLMV countries to delay the date to eliminate all tariffs for intra-ASEAN traded goods to 2015 with flexibility for extension if deemed necessary.

As an economic community, ASEAN was envisioned to deal with the global community as (1) a single market and production base, (2) a highly competitive economic region, (3) a region of equitable economic development, and (4) a region fully integrated into the global economy. All four items are considered in the AEC Blueprint as its key characteristics, each

having its own core elements to be realized through strategic areas of action as summarized by Daite (2013).<sup>4</sup> The summary is herein adopted as Table 1 as shown below.

Table 1. Key Characteristics, Core Elements, and Selected Key Strategic Areas of Action of the AEC Blueprint<sup>5</sup>

Key Characteristics	Core Elements	Selected Key Strategic Areas of Action
A. Single Market and Production Base	A1. Free Flows of Goods	<ul style="list-style-type: none"> <li>• Tariffs Reduction / Elimination</li> <li>• Elimination of Non-Tariff Barriers</li> <li>• Rules of Origin</li> <li>• Trade Facilitation</li> <li>• Customs Integration (Customs Development, ASEAN Single Window, Standards and Conformance)</li> </ul>
	A2. Free Flows of Services	<ul style="list-style-type: none"> <li>• Services Liberalization under ASEAN Framework Agreement on Services (AFAS)</li> <li>• Mutual Recognition Arrangements (MRAs)</li> <li>• Financial Services Sector</li> </ul>
	A3. Free Flows of Investment	<ul style="list-style-type: none"> <li>• ASEAN Investment Agreement (AIA)</li> <li>• Liberalization / Facilitation / Promotion / Protection</li> </ul>
	A4. Freer Flows of Capital	<ul style="list-style-type: none"> <li>• ASEAN Capital Market Development and Integration</li> <li>• Capital mobility</li> <li>• Foreign Direct Investment / Portfolio Investment</li> <li>• Current Account Transactions</li> <li>• Facilitation</li> </ul>
	A5. Free Flows of Skilled Labor	<ul style="list-style-type: none"> <li>• Mutual Recognition Arrangements (MRAs)</li> <li>• Core competency development</li> </ul>
	A6. Priority Integration Sectors	<ul style="list-style-type: none"> <li>• M&amp;E of Priority Integration Sector (PIS) roadmaps</li> <li>• Sector-specific projects or initiatives</li> </ul>
	A7. Food, Agriculture and Forestry	<ul style="list-style-type: none"> <li>• Harmonization and application of quality standards for food safety</li> <li>• Cooperation and technology transfer with international organizations and private sector</li> <li>• Market access through ASEAN agricultural cooperatives</li> </ul>
B. Highly Competitive Economic Region	B1. Competition Policy	<ul style="list-style-type: none"> <li>• Capacity building and adoption of best practices</li> </ul>
	B2. Consumer Protection	<ul style="list-style-type: none"> <li>• Establishment of the ASEAN Coordinating Committee on Consumer Protection (ACCCP)</li> </ul>
	B3. Intellectual Property Rights	<ul style="list-style-type: none"> <li>• Intellectual Property Rights Action Plan</li> </ul>

<sup>4</sup> Daite (2013) referred to the key characteristics as pillars, but the AEC Blueprint's reference to them as key characteristics will be retained to avoid confusion with the three pillars of ASEAN community, namely (1) political security, (2) socio-cultural, and (3) economic.

<sup>5</sup> Modified from Daite, 2013

Key Characteristics	Core Elements	Selected Key Strategic Areas of Action
	B4. Infrastructure Development	<ul style="list-style-type: none"> <li>• Transport Action Plan</li> <li>• ASEAN Framework Agreement on Multimodal Transport</li> <li>• ASEAN Framework Agreement on the Facilitation of Goods in Transit (AFAFGIT)</li> <li>• ASEAN Framework Agreement on the Facilitation of Inter-State Transport (FAIST)</li> <li>• Roadmaps for Integration of Air Travel Sector (RIATS)</li> <li>• Roadmap towards an Integrated and Competitive Maritime Transport in ASEAN</li> <li>• ASEAN Power Grid</li> <li>• Trans-ASEAN Gas Pipeline</li> </ul>
	B5. Taxation	<ul style="list-style-type: none"> <li>• Bilateral agreements on avoidance of double taxation</li> </ul>
	B6. E-Commerce	<ul style="list-style-type: none"> <li>• E-commerce laws / capacity building</li> </ul>
C. Equitable Economic Development	C1. SME Development	<ul style="list-style-type: none"> <li>• ASEAN Policy Blueprint for SME Development</li> </ul>
	C2. Initiatives for ASEAN Integration (IAI)	<ul style="list-style-type: none"> <li>• M&amp;E / Capacity building</li> </ul>
D. Full Integration into the Global Economy	D1. Coherent approach towards external economic relations	<ul style="list-style-type: none"> <li>• “ASEAN Centrality” in negotiations for free trade (FTAs) and comprehensive economic partnership (CEPs) agreements.</li> </ul>
	D2. Enhanced participation in global supply networks	<ul style="list-style-type: none"> <li>• International best practices and standards in production and distribution</li> </ul>

According to the AEC Blueprint, the single market and production base has two important components: (1) the priority integration sectors (PIS) and (2) food, agriculture, and forestry (FAF). There were eleven PIS initially identified in the 2004 Framework Agreement which included: (i) agro-based products; (ii) air travel; (iii) automotives; (iv) e-ASEAN; (v) electronics; (vi) fisheries; (vii) healthcare; (viii) rubber-based products; (ix) textiles and apparels; (x) tourism; and, (xi) wood-based products. A twelfth sector on logistics services was added in 2007 to include logistics-related measures that will cut across all priority sectors. On top of its being included in the FAF component, forestry as a sector will also be directly impacted by integration measures to be adopted for wood-based products, and to some extent, by measures for the rubber-based and agro-based products<sup>6</sup>.

<sup>6</sup> The designated country coordinators for wood-based, rubber-based, and agro-based products are Indonesia, Malaysia, and Myanmar, respectively.

Based on the AEC Scorecard for the years from 2008 to 2011, the ASEAN has achieved an average of 67.5% of the targets for all key characteristics (ASEAN Secretariat, 2012). Achievements have been best realized relating to the Integration into the Global Economy, which scored at 85.7% of targets, while the least achievement has been with the Single Market and Production Base at 65.9%. Relating to the poor performance in the latter, based on the assessment, less than half of the measures targeted in Food, Agriculture, and Forestry for Phase II (2010-2011) were implemented while just more than half of these measures were implemented overall for 2008-2011.

It has been recognized that the measures targeted in the AEC Blueprint have mostly been met in terms of products in the forestry sector, with almost no tariffs being implemented at present, although some non-tariff barriers (NTBs) still remain. Based on the interviews conducted, these NTBs are mostly in the form of forest certifications required by destination countries that many AMSs are still unable to provide for their products as well as other quality standards required by importers that many AMSs are unable to meet. Other examples of NTBs in the forestry sector include export bans on logs and raw non-timber forest products (NTFPs, such as bamboo and rattan) to encourage domestic processing of raw forest-based materials, logging and harvesting moratorium, and regulations such as requirements for import permits or quarantine procedures for wood or non-wood products that are deemed to harbor pests or diseases. These NTBs become important as they hinder the full integration of particular AMSs into the AEC.

## PART II

### The ASEAN Social Forestry Sector and Relevant Trade Issues

#### Global Actions on Forestry

Before delving into ASEAN-led and country-based initiatives in forestry, it will be instructive to scan the global scenario for relevant trade-related policy initiatives in the forestry sector. The *United Nations Forum on Forests* (UNFF) was organized in 2000 as the principal subsidiary organization of the UN tasked to promote “the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end.” Considered as a landmark UNFF document is the *Non-Legally Binding Instrument on All Types of Forests* (NLBI), which was adopted by the UN General Assembly in December 2007 and is implemented through the UNFF Multi-Year Programme of Work or MYPOW (2007-2015). Of relevance here is the NLBI provision under Section VI No. 7 Paragraph (g) that prescribes enhancing “bilateral, regional, and international cooperation with a view to promoting international trade in forest products from sustainably managed forests.” Likewise, it is relevant to mention that NLBI recognizes the major groups as identified in Agenda 21<sup>7</sup>, that is, “local communities, forest owners and other relevant stakeholders contribute to achieving sustainable forest management and should be involved in a transparent and participatory way in forest decision-making process that affect them.” Because the MYPOW ends in 2015, deliberations are now on-going “to inform a decision on the future of the intergovernmental arrangement on forests (IAF)” in anticipation of a post-2015 scenario of forests.

The importance of trade in forest products as well as the concomitant need to safeguard the interests of social forestry stakeholders has been enunciated much earlier than the UNFF under the so-called *Forest Principles* formulated during the 1992 Rio de Janeiro UN Conference on Environment and Development. Listed below are the provisions (Paragraphs 13 and 14) on trade contained in the document as these suggest apparent consensus that “open and free” trade in forest products, i.e., with tariff barriers and other restrictions removed, in conjunction with value-adding and market valuation of environmental costs among others, can contribute to achieving the goals of sustainable forest management. Thus,

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<sup>7</sup> The major groups include women, children and youth, indigenous people and their communities, non-governmental organizations, local authorities, workers and trade unions, business and industry, scientific and technological communities, and farmers.

13. (a) Trade in forest products should be based on non-discriminatory and multilaterally agreed rules and procedures, consistent with international trade law and practices. In this context, open and free international trade in forest products should be facilitated.
  - (b) Reduction or removal of tariff barriers and impediments to the provision of better market access, and better prices for higher value-added forest products and their local processing, should be encouraged to enable producer countries to better conserve and manage their renewable forest resources.
  - (c) Incorporation of environmental costs and benefits into market forces and mechanisms, in order to achieve forest conservation and sustainable development, should be encouraged both domestically and internationally.
  - (d) Forest conservation and sustainable development policies should be integrated with economic, trade and other relevant policies.
  - (e) Fiscal, trade, industrial, transportation and other policies and practices that may lead to forest degradation should be avoided. Adequate policies, aimed at management, conservation and sustainable development of forests, including, where appropriate, incentives, should be encouraged.
14. Unilateral measures, incompatible with international obligations or agreements, to restrict and/or ban international trade in timber or other forest products should be removed or avoided, in order to attain long-term sustainable forest management.

Alongside the provisions that focus on the value of forest to provide goods are those that pertain to involvement of communities and stakeholder participation, as well as ensuring the rights of and sharing of benefits among forest stakeholders – issues that are at the core of social forestry and that emphasize the need to view the forest for its social functions. For balance, the particular provisions are provided as follows:

Section 2.

- (d) Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labor, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.

Section 5.

- (a) National forest policies should recognize and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, through inter alia, those land tenure arrangements which serve as incentives for the sustainable management of forests.
- (b) The full participation of women in all aspects of the management, conservation and sustainable development of forests should be actively promoted.

Section 9.

- (b) The problems that hinder efforts to attain the conservation and sustainable use of forest resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the international community.

Section 12.

- (d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support and in collaboration with the people in the local communities concerned, be recognized, respected, recorded, developed, and as appropriate, introduced in the implementation of programmes. Benefits arising from the utilization of indigenous knowledge should therefore be equitably shared with such people.

As shall be shown later, however, such explicit reference to community participation, forest-dependent populations, and the social functions of forest appears to be missing in the main ASEAN Economic Community Blueprint itself. Happily, both the Strategic Plan for ASEAN Cooperation on Food, Agriculture, and Forestry (2016-2020) and the ASEAN Socio-Cultural Community Blueprint amply include measures that ensure that social forestry stakeholders in the respective countries in the ASEAN region shall not be disenfranchised of what is due them upon AEC's full implementation. However, it also remains to be seen whether individual state governments will be able to muster the political will and raise the resources needed to implement most, if not all, of the identified measures on the ground.

### **ASEAN-led Initiatives**

Measures for increasing intra-ASEAN trade in the food, agriculture, and forestry (FAF) sector and in all the priority integration sectors, which include wood-based products, are categorized into two: (1) the common measures; and, (2) specific measures. The common measures are those that generally pertain to the facilitation of trade, where improvements will redound to increased trade in all of the goods and services that will be placed in the regional market. These measures include, but are not limited to the following: (1) tariff elimination; (2) elimination of non-tariff barriers; (3) customs cooperation; (4) effective implementation of common effective preferential tariff (CEPT) scheme; (5) improvement of rules of origin; (6) development of standards and measures of conformance; (7) facilitating investments; (8) establishment of the ASEAN single window; and, (9) improvement of logistics services. As indicated earlier, logistics services has been lately elevated to a priority integration sector as it cuts across all sectors. Initiatives in the logistics sector cover measures to improve transport and communication logistics, such as enhancing multi-

modal transport infrastructure (maritime, air, rail and road freight services), to improve interconnectivity and building the capacity of ASEAN logistics services providers, among others.

Expanding the road network to improve transport interconnectivity was actually initiated by the United Nations as early as 1959, and has since been supported by many other development organizations. This land transport network will cut across most of the ASEAN member countries in the Asian mainland, from Myanmar in the west, to Thailand, Lao PDR, and Viet Nam in the east. It is designed not only to increase trade in goods and services by providing land connections to major container terminals, but also social interactions between countries and to promote tourism. Known as the Asian Highway (AH) project, the road network also covers provinces in the southern part of China and aims for direct land access to Europe. The road network includes those that are already existing, while some of the proposed roads have already been paved. The possible impact on the forest of the proposed road network is shown in Figure Annex C, where the road network is overlapped with the region's land uses. Evident in the resulting map is how the road network would affect the forest because large swaths of forestlands have to give way to road construction. There is danger, too, for accelerated degradation of the remaining forests that have become more accessible.

All PISs are governed by separate but parallel ASEAN Sectoral Integration Protocols that were signed in 2004 by no less than the highest government ministers for industry, trade, commerce, or economic planning of the respective AMS, as appropriate. Both the common and specific measures for each PIS are contained in the Roadmap for Integration of the sector, which is attached as Appendix I to the corresponding ASEAN Sectoral Integration Protocol. The roadmap assigns a responsible body to implement each identified measure and also prescribes the timeline for the completion of the measure.

The *Roadmap for Integration of the Wood-Based Products Sector* lists the specific measures designed to improve intra-ASEAN trade in these commodities<sup>8</sup> under four headings: (1) Enhancing cooperation in timber products; (2) Joint marketing and image building; (3) Investment on forest plantation and wood-based industry; and, (4) Human resource development. The identified areas for enhancing cooperation include certification of timber and wood-based products to ensure sustainability and legality of origin, combating illegal

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<sup>8</sup> Qualified wood-based products are listed in a document describing the coverage (Attachment I) of the sector, while a separate list (Appendix II referred to as negative list) is also made available for products in countries for which the tariff could not be immediately reduced to zero.

trade in forest products including endangered flora and fauna, exchange of information on wood import/export, information dissemination on the environmental consequences of forest destruction, and research and development cooperation and technology transfer on forest products. Under joint marketing and image building, the measures include launching an ASEAN public relations campaign to counter the negative publicity on tropical hardwood products, strengthening the coordination of joint strategies for better market access for ASEAN's forest products, and showcasing ASEAN wood products in furniture shows. Measures under investment on forest plantation and wood-based industry include the promotion and facilitation of joint investment, and joint efforts to encourage greater private sector participation in the ASEAN policy formulation process. To promote human resources development, AMSs agreed to cooperate in developing and upgrading design, wood processing and furniture manufacturing skills, and sharing and exchange of experts and scientists.

Earlier, it was mentioned that the Rubber-Based Products Priority Integration Sector impacts on social forestry as well. Explicitly, the *Roadmap for Rubber-Based Products* targets the development of rubber plantations in CLMV, with the ASEAN-6 providing the assistance to attain the measure. Rubber-based products are indeed important and trade in them should be encouraged to meet demands for rubber tires, gloves, and other articles of rubber needed for health delivery, transportation, physical fitness, and sports promotion. Nevertheless, proposed investments in rubber plantation development should be carefully evaluated especially in relation to how it may impact forest cover, livelihood of forest-dependent communities, and biodiversity.<sup>9</sup>

Prior to the declaration of the intent to form the ASEAN Economic Community, ASEAN cooperation in Food, Agriculture and Forestry (FAF) was under the umbrella of the Ministerial Understanding (MU) that was signed in Bandar Seri Begawan in October 1993. Note that this event preceded by many years the conception of, and the planning for, ASEAN economic integration, including the accession of CLMV into the ASEAN. Unlike the 12 PIS which have been guided by individual sector protocols and corresponding roadmaps,

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<sup>9</sup> It is relevant to mention here that currently, rubber prices are low presumably because of oversupply from large producers such as Malaysia and India. Lao PDR is currently exporting rubber to China at only about 3,000 Laotian kip per kg, as compared to 7,000 – 8,000 kip in early 2014 (1 Laotian kip = US\$.00012). It is estimated that there are already about 300,000 hectares of rubber plantation in Lao PDR but, because of low prices, some farmers are already considering to switch to other crops (Vientiane Times, January 19, 2015). An almost similar development is the inability of farmers who were encouraged by government to plant agarwood to find a market for their produce. The government drive resulted in about 10,000 hectares now planted to agarwood. Many agarwood farmers are now complaining of the lack of market and are now contemplating cutting and replacing the agarwood trees.

cooperation in the FAF to enhance trade in these products was guided by the *Strategic Plan of Action (SPA)* for 2010-2015 and, recently, by a new set of SPA for 2016-2020. For the forestry sector, the SPA was formulated through the ASEAN Senior Officials on Forestry (ASOF) under the guidance of the ASEAN Ministers on Agriculture and Forestry (AMAF) and with support from the Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF).

For ASEAN-led initiatives and accomplishments in forestry, the ASEAN Scorecard highlights the following accomplishments, which bear directly on trade in forest products: (1) implementation of the ASEAN Regional Action Plan on Trade in Wild Flora and Fauna by the ASEAN Wildlife Enforcement Network (ASEAN-WEN) and ASEAN Experts Group on the Convention on International Trade in Endangered Species of Fauna and Flora (AEG-CITES); (2) establishment of the ASEAN Regional Knowledge Network on Forest Law Enforcement and Governance (ARKN-FLEG) in 2008 to undertake policy analysis and research from an ASEAN perspective to support decisions of the ASOF on FLEG issues; (3) launching of the ASEAN Forest Clearing House Mechanism (CHM) in 2005 to promote awareness raising, information sharing, and internal discussion for ASOF activities; (4) launching of the ASEAN Regional Knowledge Network on Forest Product Development (ARKN-FPD) in Indonesia in 2012 to facilitate sharing of experiences and information on forest products development; (5) establishment of the ASEAN Furniture Industries Council (AFIC) in 1993 as a regional trade organization to promote ASEAN furniture industries; (6) the conduct of meetings, training courses, workshops, study visits, and trade industry missions; and, (7) strengthening of ties by the ASEAN-WEN with relevant international agencies.

There are also on-going efforts to develop a regional reference framework on a phased-approach to forest certification (due in 2015), with calls for action to: (1) define legality standards for timber at the ASEAN level; (2) define and finalize country specific verifiers for legal timber at AMS level; (3) transition from national standard for timber to national standard for forest certification by incorporating criteria, indicators, and verifiers from the *ASEAN Criteria and Indicators for Sustainable Management of Tropical Forests*; and, (4) develop ASEAN guidelines for Chain-of-Custody of Legal and Sustainable Timber with corresponding standards at the AMS level.

Initiatives that do not bear directly on trade in forest products have also been implemented to prepare the region's forestry sector, especially the forest-dependent communities, not only for the transition to a region-wide economy but also for them to be more disaster-risk ready. Climate change is widely acknowledged as causing previously unanticipated changes in sea levels, temperature, precipitation, and the frequency and intensity of typhoons.

Towards the goal of enabling communities to adapt to and/or to mitigate climate change impacts, subsidiary organizations within the ASEAN have been formed (with or without extra-ASEAN support) to address specific concerns as follows: (1) the ASEAN Regional Knowledge Network on Forests and Climate Change (ARKN-FCC) – to broaden the ASEAN knowledge base on forest and climate change through policy analysis, access research findings, and transfer and diffuse environmentally clean technologies pertaining to ecosystems services; (2) the ASEAN-ROK Cooperation in Forestry (AFoCo) – to facilitate cooperation, undertake projects, and translate forest policies and technologies into action to rehabilitate degraded forest land, prevent deforestation, and forest degradation in the context of SFM and under the broader scope of addressing the impact of climate change; (3) the ASEAN Social Forestry Network (ASFN) – to promote policy and practices of Social Forestry to improve the welfare of communities living within or near forest areas; and, (4) the ASEAN-Swiss Partnership on Social Forestry and Climate Change (ASFCC), which supports the implementation of the *ASEAN Multisectoral Framework on Climate Change*.

The ASFN also supports the yearly conduct of the ASEAN Civil Society Forum that started in 2012, to give “space for regional CSOs to come together, discuss, and consolidate their calls for ASEAN, through the ASFN, for more people-centered initiatives and responses to address challenges in food security, social forestry, and climate change in the ASEAN region.” The 3<sup>rd</sup> such forum held in Kota Kinabalu, Sabah, Malaysia in 2014 resulted in a consolidated set of recommendations along four themes: (1) governance mechanisms; (2) safeguards; (3) forest tenure and access rights; and (4) community economy and livelihoods. Of significant relevance to the present study are the recommendations along community economy and livelihoods, which seek to among others, strengthen the integration of value chains of forest-based products so as to improve benefits for communities, provide avenues for participation in exhibits and fairs, and increase consumer awareness of green and fair products. The CSO forum also bats for recognition of customary rights and the implementation of free prior informed consent (FPIC) as a minimum standard to safeguard indigenous forest-dependent communities against external interventions, which may be forthcoming with full AEC integration.

Despite the long list of efforts, intra-ASEAN trade in forest products has not increased – the SPA in Forestry for 2016-2020 even noted declines in some products – prompting a call for review from the ASEAN Secretariat to determine if the proposed non-tariff measures in the sector were actually more trade-impeding rather than trade-enhancing and would eventually become additional non-tariff barriers (NTBs) in the future.

It is also important to visit the ASEAN Socio-Cultural Community (ASCC) Blueprint which has for its primary goal the realization of an “ASEAN community that is people-centered and socially responsible, with a view to achieving enduring solidarity and unity among the nations and peoples of ASEAN by forging a common identity and building a caring society which is inclusive and harmonious, where the well-being, livelihood, and welfare of the people are enhanced.” Thus, parallel to developments in the economic front, there had been regional initiatives whose implementation will redound to benefit ASEAN social forestry communities. Among the many initiatives are the following: (1) enhancing support for natural disaster risk safety mechanism; (2) promoting the involvement of local community to maintain biodiversity conservation and forest health; (3) encouraging the international community to participate in and contribute to ASEAN’s efforts in afforestation and reforestation, as well as to reduce deforestation and forest degradation; and, (4) promoting the implementation of sustainable management of forest resources in the ASEAN region, eradicating unsustainable practices including combating illegal logging and its associated trade and involving communities living within and surrounding the forest for sustainability and prosperity of the people. Many of these complement those laid out through the initiatives of the various ASEAN expert working groups and bodies under the AMAF framework.

### **Status of Forest, Country-based Initiatives, and Social Forestry Issues in AMSs**

The status of forests in the AMSs is shown in Table 2, which summarizes information on the forest cover and changes in forest area between 1990 and 2010, including the quality or health of the forest (in terms of % primary forest, area of planted forest, and growing stock per hectare). Second to Brunei, Lao PDR had the highest percent forest cover as of 2010, followed by Malaysia, Cambodia, and Indonesia which still had more than 50% of land covered with forest. Most countries showed a decline in forest area, except the Philippines and Viet Nam that had posted growth in forest area during the same period. Highest deforestation rates were reported for Cambodia, Indonesia, and Myanmar, with an annual rate of at least 1% forest loss. Reforestation efforts, by planting trees and through natural regeneration, were highest in Indonesia followed by Myanmar, Malaysia, and Lao PDR, but these were not enough to offset forest loss. The volume of growing stock is highest in Indonesia because of the country’s sheer size, followed by Malaysia, with Myanmar as a far third. The growing stock per hectare is highest in Malaysia, then Brunei and Myanmar.

Table 2. Status and quality of forests in ASEAN member states

Country	Total land area (1000 has)	Total forest area (1000 has) [as of 2010]	Percent forest cover (%)	Area of primary forest cover (1000 has)	Percent primary forest cover (%)	Area of planted forest (1000 has)	Area of naturally regenerated forest (1000 has)	Volume of growing stock (million m <sup>3</sup> )	Growing stock per hectare (m <sup>3</sup> )	Annual rate of change in forest area (2005-2010) <sup>a</sup>
Brunei	527	380	72.1	263	69.2	3	114	72	190	(0.47)
Cambodia	17,652	10,094	57.1	322	3.2	69	9,703	959	95	(1.22)
Indonesia	181,157	94,432	52.1	47,236	50.0	3,549	43,647	11,343	120	(0.71)
Lao PDR	23,080	15,751	68.2	1,490	9.5	224	14,037	929	59	(0.49)
Malaysia	32,855	20,456	62.3	3,820	18.7	1,807	14,829	4,239	207	(0.42)
Myanmar	65,755	31,773	48.3	3,192	10.0	988	27,593	1,278	167	(0.95)
Philippines	29,817	7,665	25.7	861	11.2	352	6,452	223	22	0.73
Singapore	69	2	2.9	2	100	0	0	-	-	0
Thailand	51,089	18,972	37.1	6,726	35.5	3,986	8,261	283	41	0.08
Viet Nam	31,008	13,797	44.5	80	0.6	3,512	10,205	870	63	1.08

Sources: [www.mongabay.com](http://www.mongabay.com); FAO State of the World's Forest, 2014

Table 3 provides information on contemporariness of forest policy, forest ownership, and some measures of benefits derived from the forest such as value of forest removals, employment, and percent contribution of forestry to the respective AMS's gross domestic product (GDP). Countries whose specific forest laws are not more than a quarter of a century old are Lao PDR, Singapore, Cambodia, Indonesia, and Viet Nam. All others have quite antiquated forest laws which may already need to be amended or replaced with more responsive versions.

In all countries, the forest belongs to the state, although some leeway has been given to communities/private sector for management rights over the land in the Philippines, Indonesia, Cambodia, and Malaysia. Highest returns for forest product harvest, especially roundwood, were reported for Malaysia. Myanmar realized highest value for fuelwood removal, suggesting that the forest is still valuable for energy generation in that country. Employment in forestry was highest for Indonesia, followed by Viet Nam, Thailand, and Malaysia, which indicates that the forest is a prime contributor to livelihood in these countries.

In terms of forest contribution to GDP, Cambodia and Lao PDR edged out Malaysia despite the latter's advantage in having one of the most advanced technologies and highest productivity for forest products processing in the region. Cambodia and Lao PDR belong to the world's least developed economies, where the processing of agriculture and forest-based products still accounts for a relatively large share in the manufacturing industries, hence, the comparatively higher percentage contribution to GDP of forest-based enterprises. Completing the top five countries with highest % forest contribution to GDP were Indonesia and Thailand.

Information on specific country-based initiatives for most countries (especially those not visited by the team due to limited resources) were obtained from various websites and other e-sources available from the internet as well as from published printed materials.

Foremost of these was the forestry sector outlook study as contained in the individual country reports submitted to the Asia Pacific Forestry Commission (APFC). The main purpose of the forestry sector outlook study was "to provide a better understanding of the changing relationships between society and forests and thus facilitate timely policy reviews and reforms in national forest sectors." One of the specific objectives of the outlook study was "to identify emerging socio-economic changes impacting on forests and forestry" and so it was deemed relevant to consult the country reports and ascertain that the ASEAN Economic Community was viewed as an important change happening in the region.

Table 3. Forest policy, value of forest product removals, and other benefits from forest.

Country	Year of promulgation of National Forest Policy	Year of enactment of specific forest law	Ownership of forest	Holder of management rights of public forest	Value of forest product removals (2005) (million US\$)			Employment in the forestry sector (2011)*	% contribution of forests to GDP*
					Industrial round wood	Woodfuel	NTFPs		
<b>Brunei</b>	1989	1934	100% public	100% public	28	n.s.	0	2,000	0.1
<b>Cambodia</b>	2002	2002	100% public	? – public 2% - communities	-	-	-	7,000	3.2
<b>Indonesia</b>	2006	1999	91% public 9% private	43% public 57% private	-	-	-	445,000	1.7
<b>Lao PDR</b>	1991	2006	100% public	-	18	-	5	8,000	2.1
<b>Malaysia</b>	1992	1984	98% public 2% private	90% public 10% business entities	2706	-	43	210,000	2.0
<b>Myanmar</b>	n.s.	1902	~100% public n.s. – private (local, indigenous & tribal communities)	-	765	812	-	36,000	0.5
<b>Philippines</b>	1995	1975	85% public 15% private	32% public 20% business entities 47% communities	119	2	2	49,000	0.2
<b>Singapore</b>	None	2005	100% public	100% public	0	0	0	6,000	0.1
<b>Thailand</b>	2007	1941	88% public 12% private	-	n.s.	n.s.	-	235,000	0.9
<b>Viet Nam</b>	2003	1992	72% public 24% private 4% others	-	473	116	n.s.	251,000	1.7

n.s. – not specified; Sources: FAO State of the World's Forest, 2014; Forestry Sector 2020 Outlook Study Reports

A cursory look at the outlook reports indicated that, at the time of their preparation (2007-2010), most AMSs did not see the planned integration into one ASEAN community as significant enough to drive trade initiatives in the respective countries' forestry sectors. The outlook for the Philippines, Viet Nam, and Lao PDR considered globalization as a factor that would influence the future of forestry in these countries. Meanwhile, Malaysia identified production and trade in forest products as a challenge that it will have to confront towards 2020, possibly with an eye for markets far beyond ASEAN. Quite notably, Viet Nam clearly identified its membership to the ASEAN as an issue that will bear on its domestic socio-economic development, but not so much in the light of the proposed regional economic integration.

The Philippine country report mentioned the mixed impacts of the ASEAN Free Trade Agreement (AFTA, the precursor to the ASEAN Economic Community) that would reduce to zero tariffs on wood and other forest products. The country anticipates lower wood price as a result and this is seen as advantageous because the country imports 60% of its wood needs. However, because technology and machineries used by Philippine wood processing industries are behind those of Malaysia, Thailand, and Indonesia, the country's lower production efficiency would bear on its ability to compete with the more technologically-advanced ASEAN neighbors in the long term.

Aside from these principal observations, there are other developments taking place in the individual AMSs that bear on the ability of timber production industry stakeholders to participate in intra-ASEAN trade in forest products upon full implementation of AEC integration. These are discussed below for all countries, except for Brunei and Singapore, in view of the absence of a timber production industry in these two countries.

### *Cambodia*

Cambodia is concerned about its remote forests in view of the increasing demand for wood by neighboring Thailand and Viet Nam. The government has suspended all exports of raw wood in 2002 and alludes to its ASEAN ties regarding efforts to curb illegal logging as well as to address forest degradation and the loss of biodiversity (Forestry Administration Cambodia, 2010). It has recently updated its National Forest Policy (NFP) amidst the need to build capacity for sustainable forest management (SFM). The NFP now addresses poverty and the need for investment in forest resources and sets to achieve efficiency by improving technologies for extraction and processing. It has also taken measures to clarify forest tenure rights, including issues on encroachment (FAO, 2014).

The Cambodian 2001 Land Law allows the distribution of state private lands to the poor through Social Land Concessions while Economic Land Concessions (ELC) provide the mechanism for the government to enter into long-term contracts for plantation-type developments on state private lands (Dararath et al., 2011). Through these instruments, forestlands were converted to large-scale rubber plantations while land previously planted to crops such as cassava, soybean, maize and cashew were turned into small-hold rubber plantations. More recently, the government allegedly allocated land (mainly primary rainforest) to Vietnamese investors to develop rubber plantations (EJAtlas, n.d.). The land which is located in the northeastern province of Ratanakiri, is home to Cambodia's indigenous people (IP) who depend on the forest for their livelihood. These conversions have remained unabated despite farmers' suffering given the current low price for rubber.

Prime Minister Hun Sen in a speech at the closing of the Annual Conference of the Ministry of Agriculture, Forestry and Fisheries 2012-2013 and Direction Setting 2013-2014 disclosed that 1.5 M ha of land had been used for ELC of which 1.2 M ha were planted to rubber. He acknowledged government's recognition of rubber plantation as forest, which he claimed would generate employment for 1.3 M people while maintaining the forest cover. Apart from the rubber plantations, about 18,000 hectares of so-called "human-induced" forest have been established by the private sector in 2009, presumably as a result of Sub-decree 26 which encouraged private sector investment in forestry. The government through the Forestry Administration had planted more than 16,000 hectares since 1985 until 2009, while the so-called Arbor Day plantation which started in 1989 had resulted in more than 1,600 hectares forest planted as of 2009 (Forestry Administration Cambodia, 2010).

Community forestry as a forest policy in Cambodia was strengthened with the promulgation of the *Sub-Decree on Community Forestry Management* in 2003. One of its objectives is "to establish procedures to enable communities to manage, use and benefit from forest resources, to preserve their culture, tradition and improve their livelihoods." Early initiatives on community forestry (CF) started in the early 1990s and, according to Beang and Setaphal (2004), one hundred and fifty (150) community forest units had been established covering an area of 55,568 ha. Most have been implemented with support from international donors and recognized by their respective provincial forest offices. A recent assessment involving nine community forest villages in Cambodia showed that CF was effective in contributing to conservation "where the community relied on forest products for subsistence use and income" (Lambrick et al., 2014).

*Indonesia*

Considered as important factors that would influence the forestry sector in Indonesia are the distribution of the country's population, poverty, environmental issues, and its institutional and political situation (Center for Forestry Planning and Statistics, 2009). Trade in forest products is an issue when it comes to wildlife, illegal logs, and trade restriction in selected products. Curiously, the outlook study did not mention the integration of the ASEAN Economic Community as a factor that will affect the forestry sector, which reflects Indonesia's confidence about continuing its dominance in the region as far as trade in forest products is concerned. According to the Ministry of Industry Indonesia, the 2014 growth in forest products was at 5.17%, the fourth fastest after food, beverage and tobacco at 9.47%, industrial transport equipment, machinery and equipment at 6.03%, and non-oil processing industry at 5.56%. The robust growth justifies confidence by stakeholders in the sector and this was affirmed by the two respondents from the private sector who were interviewed for the study, one representing the handicrafts sector and another from the furniture sector.

Starting in January 2012, Indonesia imposed a total ban on the export of raw and semi-processed rattan to address competition from importers that produce furniture made with Indonesian rattan. A study by Myers (2015) on the implication of the ban, using a value chain approach and data on rattan production and trade not only from Indonesia but also from other countries such as the Philippines and Viet Nam, showed that the various stakeholders along the chain were differently affected by the ban. Most adversely affected, according to Myers were the rattan collectors from Sumatera, Kalimantan, and Sulawesi while the elite owners of rattan furniture factories in Java, who had the connections to cause the enactment of the ban, stood to benefit from it, along with those engaged in rattan smuggling (Myers, 2015).

Indonesia's newly-elected president, Joko Widodo, promised in his campaign to reforest 2M hectares of degraded land annually. If realized, total planting will top the 4 billion trees that former President Yudhoyono claimed to have been planted in the last 4 years (Opening remarks delivered during the Forest Asia Summit, May 5-6, 2014, Jakarta). With more than 83M ha of degraded forest, a study recommended that new planting should prioritize restoring highly degraded areas as it is the most cost-effective option, rather than the lightly degraded areas (Budiharta et al., 2014). This contravenes current policy that allows conversion of degraded lands, which are considered of low economic value by government, to oil palm plantation.

With almost 48M poor people, including customary communities living within and around forests, Indonesia devised some schemes to address the needs of these forest-dependent communities. At least six different, community-related forestland use arrangements are permitted as follows: (a) customary forests; (b) community-based forest management (CBFM) in protected areas; (c) people forest plantation (HTK) in state forest area (in production forest, both individual and collective); (d) village forests (in protected and production forests); (e) community forestry (HKm) in state forest area (protection and conservation forests); and, (f) community plantation forests, mostly in private forestland. These forest communities are allowed to access timber and non-timber forest products and environmental services within the area. By the end of 2013, some 326,000 ha or 13% of the 2.5M ha targeted for community-based forest management between 2009 and 2014 have been allocated. The program has been hampered by a slow and complicated process of obtaining permits, which is handled by 29 desks and 4 echelons of officials before reaching the national forestry minister's desk for final approval (Satriastanti, 2014). Aggravating the permitting process is the unwillingness of some local government officials to endorse applications to the national government.

Apart from certification by the Forest Stewardship Council (FSC), there is an Indonesian timber legality assurance system in place (referred to as Sistem Verifikasi Legalitas Kayu, SVLK) that enables timber producers to export their legally harvested logs, possibly to Europe and the US. Smallholding forest farmers are being assisted by NGOs to acquire SVLK certification for their timber harvest. This third-party verification system puts the Indonesian timber industry at an advantageous position relative to its neighbors in terms of accessing markets for wood products. Another benefit of the certification system is that it will make trading of illegally procured logs more difficult.

#### *Lao PDR*

Lao PDR is the only landlocked country in the region but it has its eyes set on expanding access to regional and global markets for its forest products. It has benefited from Foreign Direct Investments (FDIs) because of its least developed country (LDC) status as well as from trade, especially with neighboring Thailand and Viet Nam. On average, intra-ASEAN trade accounts for only 25% of total trade in all ASEAN countries, but Lao PDR is more dependent on its ASEAN neighbors, as 64% of its trade is intra-ASEAN (Zola, 2014). The normalization of relations with China in 1989 ushered increased trade across the Lao-China border. Lao PDR became a member of the World Trade Organization (WTO) in 2013, a move that is seen to speed up reform and accelerate economic development. However, the country has figured in rampant illegal logging and wildlife trade, mainly across borders (Gerin, 2015;

Souksavan, 2014), although the government is instituting reforms such as improving the investigative skills of the Department of Forest Inspection personnel (UNODC, 2014). With support from the UNDP-UNEP Poverty-Environment Initiative (PEI), Lao PDR is on course to implement a more stringent process of reviewing FDI in natural resources to include social and environmental benefits (UNDP-UNEP, 2013).

With assistance from the World Wildlife Fund (WWF), Lao PDR pioneered the establishment of a rattan certification and chain-of-custody scheme under the FSC. This has enabled the country to ship out to Europe a batch of locally manufactured products from rattan gathered from sustainably managed rattan forests. In addition, the exported rattan baskets also had sustainable design features, which were developed with assistance from European designers.

Government-initiated tree planting, in collaboration with the private sector and individuals had resulted in about 300,000 ha planted to trees, but targets in some provinces may not be achieved because of land allocation issues, mainly the grant of concessions for rubber, sugar cane, and other crops. A 65% forest cover is targeted in 2015, from a forest cover of almost 40% in 2009-10. The government is focusing on indigenous species such as *Pterocarpus macrocarpus*, *Dalbergia cochinchinensis*, and 'mai taekha' for its tree planting efforts. Survival rate is poor because of limited funding for maintenance.

Acknowledging the importance of involving communities in forest management, Lao PDR has allowed several modes of community-based forest management in reforestation and forest protection. These include participatory forest management, collaborative forest management, traditional forest management, and community-based forest management for ecotourism, smallholding plantation, and industrial plantation (Tong, 2009). A few International NGOs have facilitated the development of community forestry, but support from government has been lukewarm, with benefit sharing as one of the issues that hamper its development. However, official information on total area allocated for community forestry in Lao PDR could not be accessed.

The construction of the so-called ASEAN highways to connect Thailand with Viet Nam (and China) so as to facilitate trade is believed to have significant adverse effects on forests and biodiversity in Lao PDR (Kemp, 2011). Even the actual construction of the roads brought little benefit to Lao workers because Chinese construction firms which won the contract to build the roads brought their own labor force. Worse, cases of prostitution and the occurrence of sexually transmitted diseases were reported among Lao people along areas where the roads were being built (Kemp 2011). Furthermore, according to Kemp (2011),

“the extraordinary access given by the highways and rural roads has enabled the felling of trees and the unfettered poaching, bringing conditions of abject survival to the people who until now have lived off the forest.”

### *Malaysia*

Next to Singapore, Malaysia is the next most trade-oriented country in the ASEAN. It is also one of the dominant movers toward regional integration through free trade arrangements and is in fact a party to bilateral trade agreements with Japan, Pakistan, and New Zealand, not to mention the ASEAN regional free trade agreements with China, Japan, Korea, India, and Australia-New Zealand. In addition, further actions taken by the government to facilitate trade include: (a) enhancement of MyGovXchange, which was created as a platform to provide a single solution for individuals and organizations to conduct online transactions with government ministries and public-sector agencies, including registration, license application, license expansion and application for loan and grants; (b) the establishment of the SSM Enterprises Services Gateway, which enables simultaneous registration across agencies; (c) expansion of services offered by the National Single Window for trade; (d) reducing bureaucracy and streamlining procedures, i.e., reducing documentation requirements; and, (e) operation of MyExport portal, which allows businesses to access up-to-date trade information such as trade events, statistics and market alerts (*Tenth Malaysia Plan, 2010-15*). Through the plan, the Malaysian government further pledged that “Malaysian firms will be assisted to promote their products and services through specialized marketing missions, incoming buying missions, trade investment missions, and trade fairs.”

Wood and other timber-based products are considered tradable commodities and will continue to be emphasized in the country’s drive for domestic and global competitiveness and trade promotion efforts. However, sawlog production has declined and its share to agricultural production in 2010 was only 10% compared to 36.6% for oil palm (Ahmad, undated). Palm oil is also the second largest contributor to Malaysia’s exports. Meanwhile, agriculture, forestry and fisheries contribution to GDP has been declining, with a share of only 7.5% in 2010 compared to 8.9% in 2000. No wonder, palm oil is ranked second among Malaysia’s National Key Economic Areas (NKEA)<sup>10</sup>, whereas agriculture (perhaps, to include forestry and fisheries) is listed as no. 11 in the 10<sup>th</sup> Malaysia Plan.

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<sup>10</sup> National Key Economic Area (NKEA) is defined as a driver of economic activity that has the potential to directly and materially contribute a quantifiable amount of economic growth to the Malaysian economy.

Malaysia has been implementing its own national timber certification scheme, which is used as basis for exporting logs to markets that require that materials be sourced from sustainably managed forest. The Malaysian Timber Certification Council (MTCC) implements the certification system that has two components: (1) forest management certification, where a 3<sup>rd</sup> party audit leads to the issuance of certificate for forest management or a certificate for forest plantation management; and, (2) chain of custody certification, which involves a 3<sup>rd</sup> party audit of timber product manufacturers or exporters to ascertain that the timber products manufactured are sourced from forests that have been awarded the appropriate forest management certificates. MTCC had initially worked with the FSC in developing the certification process, but this collapsed due to the withdrawal of environmental NGOs from involvement in the scheme. Currently, the MTCC is a member of the Programme for the Endorsement of Forest Certification (PEFC) and bears its seal of approval (MTCC, n.d.).

Oil palm plantation development has been linked to deforestation in the 1970s to 1980s in Malaysia. However, a recent study on the proximate and underlying causes of forest cover change indicates that this may no longer be so (Miyamoto et al., 2014). Following analysis of various regression models that include data on forest cover, land use, timber production, and socio-economic variables, the authors found that poverty alleviation was the underlying cause of the change in forest area. Further, they assert that oil palm expansion contributed to poverty reduction. The decreasing poverty would purportedly result in a decline in the rate of forest cover loss in the long term (Miyamoto et al., 2014).

Land is an important economic resource in Malaysia and decisions on land use largely depend on the economic value that the land will return. However, a climate change agenda, where reforestation efforts are seen to contribute to protecting/increasing carbon stocks (such as the Central Forest Spine project covering 4.3 M ha in Peninsular Malaysia), had been launched by the government. Similarly, biodiversity is too invaluable to lose along with a forest that is fast deteriorating, so a tri-country agreement was entered into among Malaysia, Brunei, and Indonesia to undertake the Heart of Borneo project covering 6.0M ha in Sabah and Sarawak. In reforestation efforts by private companies, fast-growing tree species such as teak (*Tectona grandis*) and *Acacia mangium* represent the majority of the trees planted to regenerate forests, although *Araucaria sp.* and other minor species are also planted for diversity (Krishnapillay and Ong, 2003).

Community or social forestry is a relatively nascent concept in forest management in Malaysia, and, currently, only the states of Sabah and Sarawak have arrangements that allow communities to participate in managing forestlands. However, despite a National

Land Code and the state of Sarawak's Land Code (1957) recognizing native customary rights, not to mention earlier court decisions upholding the natives' common law rights on their land, the indigenous peoples continue to face threats and counter claims over forestlands within ancestral domains (Cultural Survival, n.d.).

In the 10<sup>th</sup> Malaysia Plan, the *Tagal* system for managing rivers was highlighted. About 190 rivers are being managed by community members who participate in protecting, conserving, and benefiting from the rivers through fishing and ecotourism activities. Malaysia credits its success to, among others, the clearly defined area of rivers, strong social hierarchy in the village, and the grant of incentives for responsible use and the meting of penalties for violations, as recognized by the Native Court (10<sup>th</sup> Malaysia Plan).

### *Myanmar*

The once isolated Myanmar is undergoing rapid transition with the end in 2011 of military rule and the assumption into office of a civilian government. Myanmar's leaders acknowledge that globalization and regionalization are happening and that there is a need for the country to increase trade and investment links. It recognizes the role that ASEAN, especially neighboring Thailand and China, can play in controlling illegal logging (Htun, 2009). There is also recognition of the need for Myanmar's cooperation in the Greater Mekong sub-region and other regional groupings to which the country belongs, to acquire technology, skills, information, experts' services, and financial resources for its development. The country plans to shift from relying on exports of primary products from natural resources (such as raw timber) to a more industrial-based economy. Myanmar already banned the export of logs starting on March 31, 2014 as a signal of its desire to achieve this shift (Myanmar Voluntary National Report, 2014).

Trade between Myanmar and the other ASEAN countries has only begun to pick up recently. In 2010, about 42.2% of Myanmar's trade was with Thailand, followed by Singapore at 8.9%, Malaysia at 2%, and smaller volumes (i.e., <1%) with Indonesia, Philippines, Viet Nam, and Brunei (Thein, n.d.). Singapore led as the biggest source of imports by Myanmar in 2004/05 at 28.9%, followed by Thailand at 9.1%, Malaysia at 3.8%, Indonesia at 3.3%, and also Viet Nam (0.6%), and the Philippines (0.3%), according to Thein (n.d.). India received the highest volume of timber exported by Myanmar in 2004/05, followed by Thailand, and then the rest of Asia. Foreign Direct Investment inflows to Myanmar belong to Thailand (22.9%), Singapore (5.2%), and Malaysia (2.5%).

The country seeks to arrest the precipitous forest degradation rate through reforestation efforts that had led to the development of tree plantations. The annual operations plan of the Forest Department includes commitments toward increasing areas subjected to artificial and natural regeneration, as well as weeding and thinning activities to increase survival of newly-planted crops. At least four types of plantations are being developed: (a) plantations of commercial purpose (for exportable wood) – 51%; (b) plantations for local supply that are planted to *Cassia siamea* and other *Eucalyptus* spp. – 27%; (c) industrial plantations (for use in plywood and paper mills) – 8%; and, (d) plantations in watershed areas – 14%. The most planted species are teak, *pyinkado*, *padauk*, and pine. As of 2005, a total of 772,854 hectares had been planted. Likewise, there had been areas planted to perennial crops such as palm and rubber as well as to woodfuel. One of the main problems encountered in commercial plantation development is the lack of seedlings from good trees, owing to over-exploitation of seed-bearing mother trees.

Community participation in forest programmes has been encouraged in the last two decades. In fact, some community forests are “owned” by local people under long-term lease agreements with the government. The inclusion of forest-based communities in managing the forest was made through the issuance in 1995 of the *Community Forestry Instruction* (CFI). Through this directive, communities can engage in establishing woodlots that can be used as sources of fuelwood; they can also plant trees and exploit forest products for food, consumer products, and for income, provided permission is granted by the government for these operations (Ministry of Forestry Myanmar, 2005). The CFI even allows forest user groups to establish, from surplus generated from marketing of forest products, business enterprises for value-added production of finished products.

### *Philippines*

As one of the original members of the ASEAN, the Philippines should have been one of the most enthusiastic in embracing the proposed economic integration by 2015. However, there seems to be a disconnect between the government agencies that take part in the negotiations and some specific industry sectors claiming to have been kept in the dark of on-going developments. In the forestry sector, the Philippine Wood Producers Association (PWPA), the largest grouping of forest-based enterprises in the country, is at a loss as to which government agency can provide its members with guidance specific to the forestry sector on preparations needed for the AEC (Personal communication with M. Vasquez, PWPA Deputy Executive Director). Another sector that is apprehensive of the AEC is the herbal medicine industry. Dr. Rainier B. Villanueva, founding President of the Chamber of Herbal Industries of the Philippines, Inc., claims that the long delay in approval by the Food

and Drug Authority and the latter's prohibition of sale of herbal products without the tag "With no approved therapeutic claims" will put the local industry at a disadvantage against herbal medicines coming from neighboring countries.

The Philippine agriculture sector, in general, is not prepared for the AEC, according to former UP School of Labor and Industrial Relations Dean Rene Ofreneo, because of divisiveness among different interest groups, the slow pace of agrarian reform, and the lack of modernization in the sector, i.e., the sector is still largely unmechanized (Lacorte, 2014). This will make it difficult for the sector to compete with the more advanced neighbors when the market is opened up. Measures taken up in agriculture largely involve the harmonization of standards and it will be disadvantageous for Philippine agricultural products if they cannot pass these standards because of poor technology.

An assessment of the Philippine preparations for the AEC and its impacts was made by Aldaba et al. (2013), as part of the Economic Research Institute for ASEAN and East Asia (ERIA) research project on the mid-term review of the AEC Blueprint in the country. Survey results on trade liberalization and facilitation, services and investment liberalization, labor mobility, and agriculture showed how implementing AEC measures can help address weaknesses that beset the private sector, especially those pertaining to the complex and inefficient bureaucracy and the country's lack of effective competition. While forestry was always lumped with agriculture and fisheries in the study, there was no real analysis of the production and trade of forestry products in the report because the authors considered export of these products as no longer significant. The authors further added that forestry as an area, "is not usually discussed in the context of regional integration but typically as a domestic concern," hence its omission from the report. In contrast, the Philippine forestry sector outlook study considers the initial stages of the implementation of AEC as beneficial because of the prospect of cheaper raw material as the country imports 60% of its wood requirements, with finished products being re-exported in the form of furniture. In the long-term, the forest industry is seen to suffer if it is unable to equip itself with more modern technology. There can also be dire consequences for the small and medium enterprises (SMEs) supplying the domestic furniture market, with the influx of cheaper and better furniture possibly from Malaysia, Viet Nam, and Indonesia.

The country's reforestation efforts are focused on the implementation of the National Greening Program (NGP), which aims to reforest 1.5 M has with 1.5 B trees from 2011-2016 (NGP-DENR, n.d.) The mission of the NGP includes food security, poverty reduction, environmental sustainability, biodiversity conservation, and climate change mitigation and adaptation, leaving out objectives that cater to helping forest-dependent industries become

more competitive in a globalizing market. According to NGP reports, the program is well on track, surpassing yearly targets of areas to be planted. Critics of the program are worried though about its sustainability, especially after the end of the term of the Aquino administration, because of the practice of changing programs when a new administration takes over as well as the lack of meaningful participation of forest-dependent communities in the NGP.

The Philippines deserves to be considered as one of the original countries that started implementing social forestry (and community forestry) programs, but the non-passage of a forestry law that will institutionalize community-based forest management imperils the long-term security of tenure arrangements that bestow communities with the power to “own,” conserve, manage, and benefit from forestlands. Currently, some communities participate in the NGP by being paid to plant and nurture the seedlings in NGP planting sites within areas belonging to People’s Organizations. In the long run, funds for these activities will dry up and communities will look for more sustainable income sources. There is a need to strengthen mechanisms that allow forest-based communities to benefit from the forest other than through dole-out type of compensation packages in order not to imperil the purported gains of the NGP.

The focus on achieving NGP targets has taken attention away from addressing issues important to communities dependent on the forest for their livelihood and sustenance. The decline in revenues from rattan harvests and processed products as well as the continuing depletion of almaciga resin sources have not prompted government to look more deeply into underlying causes, such as policies on access and long delays in permits, resulting in higher costs and trading inefficiencies. This does not augur well in terms of enabling the small forest enterprises’ participation in the more regionalized market.

### *Thailand*

As one of the ASEAN countries most actively engaged in both the import and export of forest products, Thailand clearly stands to further benefit from the liberalized trade to be ushered in by the ASEAN economic integration. Despite its being a net importer of roundwood, Thailand, in 2011, managed to be second only to Indonesia among the AMSs in terms of production and export of paperboard, second to Malaysia in terms of production and export of wood-based panels, and be the no. 1 sawnwood exporter in the region (Forestry Sector, ASEAN Cooperation on Food, Agriculture and Forestry, 2014). To achieve these feats, Thailand imports roundwood from Indonesia, Malaysia, and Myanmar. To clear the way for greater intra-ASEAN trade in forest products, Thailand has already established a

national single window that incorporates timber and timber products in the system which is claimed to accommodate, control and promote legal timber trade. Thailand's aggressive efforts in engaging in forest products trade is also evident in its bilateral initiatives with Lao and also with Malaysia, as Thailand looks for enhanced trade in rubberwood through information exchange on markets and prices (FPIS, n.d.)

For a country whose forest area has been diminished to only 25.3% of total land area and where environmental groups lobby strongly against further forest removal because of devastations brought by heavy flooding, Thailand's forest industry has remained robust and diversified. As noted earlier, apart from sawnwood (lumber), there are a number of companies engaged in plywood, particleboard, paper, and furniture manufacture. Although a logging ban was imposed in 1989, which stopped timber production from natural forests, such prohibition did little to dampen investments and expansion of forest-based enterprises in the country. Of course, Thailand benefited from having common borders with Laos, Cambodia, Myanmar, and Malaysia, whose log exports to Thailand flourished as a result of Thailand's logging ban. To be fair, Thailand has engaged early in reforestation work, resulting in the development of industrial tree plantations, with rubberwood accounting for more than 2.0 M has of land planted. Other species that were favored for commercial planting were teak, *Eucalyptus* sp., *Acacia mangium*, *Pinus merkusii*, and other broadleaved species such as *Dipterocarpus macrocarpus*, *Swietenia* sp., and *Hopea odorata* (FAORAP, 2009).

Thailand is also one of the earliest countries in the ASEAN to recognize community forestry as a strategy for sustainable forest management. As of 2009, 5,331 community villages have been registered with the Royal Forestry Department (RFD) but the coverage is small, at only 1.2% of total forest area (FAORAP, 2009). Community forest villages can collect wood for fuel and construction, non-timber forest products (NTFPs) for household consumption and to supplement diets or for cash income and supply to local markets. Other forms of support that local communities receive are in the establishment of small-scale plantations and the promotion of One *Tambon*, One Product (OTOP), where forest food-based products and herbal medicine coming from village enterprises are pushed to the markets with government assistance. However, the *Community Forest Bill* that will legitimize "ownership" of forestland by communities has stalled, because of suspicions that forest dependent communities are the main causes of forest destruction and that communities along the borders with neighboring countries abet illegal immigrants to become Thai citizens (FAORAP, 2009).

In addition, according to in-country non-government associations, illegal trade in the forestry sector is still a very much present transboundary crime. In fact, there have been incidences of armed conflicts with illegal loggers although the problem has since been reduced with stricter monitoring by forest rangers. The main target of these illegal activities has been rosewood, which is mainly used for furniture and other decorative purposes and whose main market is China. This has led to the establishment of a Rosewood Committee, whose mandate is to investigate the problem of the illegal trade of rosewood and provide recommendations for possible solutions, composed of, among others, personnel from the Royal Forest Department, Department of National Parks, and non-government associations such as the International Union for Conservation of Nature (IUCN).

Moreover, other private sources in the country have mentioned that potential problems may arise from recent orders of the new government. Chief among these are edicts that purport to evict forest communities and community groups from land that is to be used for plantations and the banning of the propagation of certain tree species that has caused tension with the affected communities. On the other hand, the Royal Forest Department has been receptive to discussions with the European Union regarding the legality of timber trade, the implementation of Forest Law Enforcement, Governance, and Trade (FLEGT) program and the role of civil society organizations, while other political authorities seem to be more interested and ambitious in this regard compared to the previous administration.

### *Viet Nam*

Viet Nam is among the last four countries to have joined ASEAN and is also considered to belong to the CMLV countries, which have been given until 2015 to fully implement the zero tariff on goods versus the 2010 deadline for the ASEAN-6 countries. Of the four, Viet Nam is already classified as a developing economy by the UN World Economic Situation and Prospects (WESP, as of November 2013) while Cambodia, Lao PDR, and Myanmar are still listed among the least developed economies. Structural changes in Viet Nam, especially in reforms in agriculture, enterprises, and international integration, are important factors that helped transform Viet Nam's economy (McCaig and Pavcnik, 2013).

The forest industry of Viet Nam appears to be well in a position to take advantage of the trade openness among the AMSs upon full implementation of the AEC. The country's timber export has been increasing at 20% per year and a large volume of wood chip production remains available for export. Overall, forest-based exports account for 3-4% of the country's total exports. At the same time, wood processing factories have increased in the last years, providing jobs and income for Viet Nam workers.

The resurgence of Viet Nam's forestry sector owes largely to efforts that have resulted in increased forest cover. The beginning of the forest plantation development program in the late 1990s resulted in 196,000 hectares of plantation growth being recorded in 2000. In 2013, the total forest plantation area increased to 3.2 M ha. Households contribute a big share (about 25% of total area) in forest plantation establishment. The plantations supply 60% of the wood requirement of the furniture manufacturers, while the rest of the timber is imported. ASEAN countries exporting timber to Viet Nam are Lao PDR, Malaysia, Thailand, Myanmar, Cambodia, and Indonesia. About 93-95% of the timber industry enterprises in Viet Nam are small-scale enterprises. However, the fact that Viet Nam is able to meet the large volume required by furniture importers indicates the sophistication of the supply chain mechanism for consolidating the production from these small enterprises. Rubberwood is among the raw materials used for furniture making, which is derived from plantation-grown rubber trees that are already past their latex-producing stage. The private sector in Viet Nam is also expanding its raw material base by investing heavily in rubber plantation development in Lao PDR and Cambodia. Also targeted for planting is *Acacia mangium*, the tree species that is also preferred for use by bees in honey production. Viet Nam leads in honey production and export in the region and is undaunted by efforts in Indonesia and Malaysia to increase honey production, owing to the country's claim of unsurpassed high quality of Viet Nam honey.

Community forestry in Viet Nam has been legitimized by the passage of the *Forestry Protection and Development Law* of 2004. This enabled village-level management of forests, including protection functions and harvesting of timber, which has been the focus of the community management. Other communities located in areas with potential ecotourism sites can also benefit from running businesses patronized by visitors. An estimated 4% of forestland has been allocated to communities for their protection and development.

### **General Insights and Impressions**

Until the formulation (between 2009-2010) of the country reports for the forestry sector outlook 2020, most AMSs did not consider the AEC as an event that would significantly impact on the forestry sector, except for Lao PDR, Viet Nam and the Philippines. Lao PDR, the only landlocked country in the region and consequently having a large dependence on its ASEAN neighbors, had foreseen an even larger increase in trade when the economies are integrated. Meanwhile, Viet Nam, which has investments outside of its borders, particularly in Lao PDR and Cambodia and to some extent in Thailand, anticipates being able to take advantage of the more open borders to source materials to meet the processing

requirements of its wood processing sector. In the Philippines, there are those who view forestry as a purely domestic concern, but separate assessment showed that the country would benefit from easier raw material imports as it would help ease the scarcity of timber in the immediate term, although there is a lot of catching up to do in terms of technologies for processing to enable the sector to compete with the more advanced countries. Thailand, Malaysia, and Indonesia will benefit from the AEC in terms of an expanded customer base for its processed products. In the longer term, however, supply will become a factor affecting the forestry sector's competitiveness, especially if land for growing timber becomes less available owing to expansion of concessions for palm oil, a crop that provides more economic return from land on a per area basis.

Similarly, Cambodia can benefit if it learns from the lessons of the more developed economies, that 1) conversion in the form of land concessions negatively affects forest communities, and that 2) it will do well if decisions on land allocation are balanced between responding to market forces and ensuring sustainable development of communities that are dependent on forests. There may also be a need for Cambodia to assert its sovereign rights on its natural resources (and to clamp down on corrupt officials) to minimize, if not completely eradicate, illegal cross-border trade in forest products. Meanwhile, there is a need for Myanmar to effectively manage the new openness that the country experiences, and to use its natural resources to effectively leverage negotiations with the more financially-endowed neighbors willing to finance the modernization of the country's wood processing sector.

All AMSs recognize that communities have a role to play in helping protect, conserve, and manage the forest resources. However, the extent by which communities can "own," manage, access resources of, and benefit from the forest vary widely across countries. Thus, there is need to capacitate communities to enable them to participate more meaningfully in markets, not only for NTFPs but for timber as well, if they are to benefit more fully from their contribution in reforestation efforts. Indonesia and Viet Nam lead the AMSs in terms of building such capacity among their community forestry stakeholders, with the latter even being provided support to process and market their products. Such level of certainty of being able to rely on timber they themselves planted is absent among communities in the Philippines. In Thailand and Malaysia, the governments still struggle in terms of determining how much leeway will be given to communities to access resources, much less participate in global or even regional forest products trade. All these point to the need for AMSs to exchange lessons in their experiences in engaging communities in taking greater responsibility for forest protection and development, particularly in providing incentives for them to take on these roles.



### Part III

#### **Trade Liberalization and Economic Integration in the ASEAN Region**

Because most measures relating to trade liberalization and the economic integration engendered by the AEC have been implemented only in recent years, most expectations on the potential impacts of the AEC rely mainly on previous experiences in trade liberalization and economic integration in other regions. However, some earlier liberalization and integration efforts with direct bearing on the ASEAN region have also been studied, which provide some insights on possible consequences of the integration engendered by the AEC.

According to the simulations done by Rodriguez (2008), the implementation of the Free Trade Area of the Asia Pacific (FTAAP) in the Philippines would provide net benefits in the form of higher gross domestic product (GDP) and employment and is superior to the ASEAN Plus Three (ASEAN+3 or APT, that is, the AMSs with China, Japan, and South Korea) arrangement although inferior to the removal of tariffs across regions. Moreover, most gains from the FTAAP are likely to be realized with the removal of tariffs on non-agricultural products although the largest aggregate benefits would be realized by an across-the-board removal of tariffs.

In summarizing analyses of the possible impacts of trade liberalization across various ASEAN member states and other Asian nations, Hahn and Narjoko (2010a) showed that an overall assessment of related studies support the following conclusions: (1) trade liberalization has a favorable impact on productivity growth as well as on firm efficiency in Korea; (2) trade and investment liberalization in Viet Nam, the Philippines, and India provide productivity gains; (3) the presence of multinationals positively impact productivity spillovers in Viet Nam (Thanh and Hoang 2010); (4) Foreign Direct Investment (FDI) firms in Indonesia created more jobs than non-FDI firms after the Asian 1997-1998 crisis (Aswicahyono and Wickasono 2010); and, (5) exporters tend to employ more unskilled labor than non-exporters in China. On the other hand, the same summary by Hahn and Narjoko (2010a) indicates that there is a weak link between exporting and productivity in Malaysian manufacturing (Lee 2010) and that only parts and components imported in Thailand rather than final goods can act as a market discipline mechanism in terms of the price-cost margin, that is, closing the gap between the marginal cost and the price, implying more efficient use of resources (Kahpaiboon 2010). In addition, Narjoko (2010) observed that only the more productive firms in the Vietnamese manufacturing industry survive after trade or investment liberalization. Improvement in overall industry productivity thus results, due to

the fact that these firms upgrade their technology as well as because of the higher rate of firm entry, although the less productive firms continue to use traditional technology.

Aldaba (2010), in analyzing the protection structure in the Philippines, cited the studies of Pavcnik (2000) for Chile, Fernandes (2003) for Columbia, Topalova (2003) and Chand and Sen (2000) for India, Amity and Konings (2004) and Muendler (2002) for Indonesia, Schor (2003) for Brazil, Ozler and Yilmaz (2001) for Turkey, Krishna and Mitra (1998) and Goldar and Kumari (2003) for India, and Kim (2000) as showing the positive link of trade liberalization and/or less protection to productivity performance and/or growth. However, she did also recognize that other studies showed the opposite, such as Bernard and Jones (1996) and Rodrik (1988, 1992).

Particular to the AEC, Petri et al. (2010) assert that the AEC would provide benefits similar to those of the European Union (EU) despite the less closely integrated ASEAN economies. They assert that the value of the successful implementation of the AEC to ASEAN economic welfare may likely be large, greater than completing the AFTA alone, with additional gains from stronger links with the rest of the world (such as through FTAs with East Asian neighbors, the US, and Europe). The expectation is that the AEC will engender trade growth within the ASEAN as well as with third-party countries that will cause all ASEAN members to benefit, although there is no clear income pattern to these gains.

Other studies have discussed some factors that determine the success of trade liberalization efforts. ADB and ISEAS (2013) identified compliance with non-tariff barrier (NTB) commitments, reduction of tariff exclusion lists, and simplification of rules-of-origin (ROOs) as some of the measures towards liberalizing trade and investment policies. Cuyvers et al. (2005) earlier recognized that the significant structural difference of the AEC from the EU is the absence of a common external tariff and the non-creation of a customs union or other supranational authority in the former that may impede compliance with adopted roadmaps. Ozeki (2008) acknowledged that integration in East Asia had been driven more by the production side and Soesastro (2008b) suggests that success in maintaining international competitiveness entails success in maintaining trading growth in both the global and ASEAN markets. Trade facilitation, described as decreasing trading transaction costs, as well as competition policies have also been observed to support liberalization and integration efforts (see Layton 2008, Ariff 2008, Hiratsuka et al. 2008, Hahn and Narjoko 2010b, Choi and Hahn 2010).

Lending emphasis to the forestry sector, Heino (2007) recognized that the pace of globalization in the Asia-Pacific region would exert pressure on forests within and outside

the region as the demand for wood and wood products grows. This becomes more worrisome in the case of the AEC as the only provisions in the blueprint that can be said to directly benefit farmers and fisherfolk refer to actions to combat illegal logging and fishing (Chandra and Chavez 2009). In addition, Morton and Applegate (2007) maintain that the real increase in trade of forest and wood products has been in processed products, particularly in nearly finished products such as paper, board, and wood-based panels.

Based on these discussions, it seems that the AEC will affect economic well-being mostly through raising output as it relates to trade. In addition, most trade measures engendered by the AEC do not directly focus on the forestry sector but can be applied to all goods and services that can be traded among the member states in an “economically integrated” market. Thus, it becomes important to situate the economic positions of the AMSs, particularly in the forestry sector.

## **PART IV**

### **Forestry Production and Trade in the ASEAN**

Data sources were unable to provide the value of production of forest products although production quantities were available. As reported by the FAO, forestry production and trade of timber-based products in the ASEAN is mainly composed of the following items: (1) chemical wood pulp; (2) dissolving wood pulp; (3) mechanical wood pulp; (4) newsprint; (5) pulp from fibers other than wood; (6) other paper and paperboard; (7) printing and writing paper; (8) recovered paper; (9) semi-chemical wood pulp; (10) wood charcoal; (11) wood residues; (12) fiberboard; (13) hardboard; (14) insulating board; (15) medium density fiberboard; (16) other industrial roundwood (coniferous [C] and non-coniferous [NC]); (17) particle board; (18) plywood; (19) pulpwood and particles (C/NC); (20) sawlogs and (21) veneer logs (C/NC); (22) sawnwood (C/NC); (23) veneer sheets; (24) wood chips and particles; and, (25) wood pellets. The first 11 products are reported in metric tonnes while the rest are measured in cubic meters.

In practice, forest products trade databases on timber and timber products usually pay little attention to non-timber forest products. However, based on the database of the International Network for Bamboo and Rattan (INBAR) derived from the FAO, coding of data for bamboo and rattan products includes separate categories for the following: (1) bamboo; (2) rattan; (3) bamboo shoots; (4) bamboo charcoal; (5) bamboo strips and friezes; (6) bamboo mats, matting and screens; (7) rattan mats, matting and screens; (8) bamboo plaits; (9) rattan plaits; (10) pulps of fibers derived from recovered waste and scrap paper/paperboard of bamboo; (11) bamboo basketwork and wickerwork; (12) rattan basketwork and wickerwork; (13) seats of bamboo/rattan; (14) furniture of bamboo/rattan; (15) bamboo panels; and, (16) bamboo paper articles. In the discussions that follow, these products are categorized as raw (first three products listed), semi-processed (next seven products listed), and processed (last six products listed).

Note that for all datasets included here, the values reflect figures provided by the reporting countries. Discrepancies among supposedly related statistics, particularly in the trade data, may arise out of inconsistencies of the data provided by the destination country vis-à-vis the country of origin but are mostly minor in nature.

### Production and Trade of Forest Products

Data regarding production of timber-based forest products in the individual AMSs were gathered for the period covering 1961 to 2013, where available. Computing the annual growth in the quantities of timber-based forest products, all AMSs and the ASEAN as a whole exhibited positive average annual growth rates for the whole period (see Table 4). In more recent years, however, it can be observed that production of processed products (those measured in metric tonnes) has been increasing at a faster rate than rawer products. This may indicate that the producers may now be focusing more on products with greater value added, probably because of the larger profit margins available as well as the less stringent restrictions on these types of products relative to raw or less processed products (whose exports are largely banned in most countries).

Table 4. Average annual growth rate of timber-based forest production, for products measured in cubic meters and in metric tonnes, by AMS and for ASEAN, 1962-2013 and 2004-2013

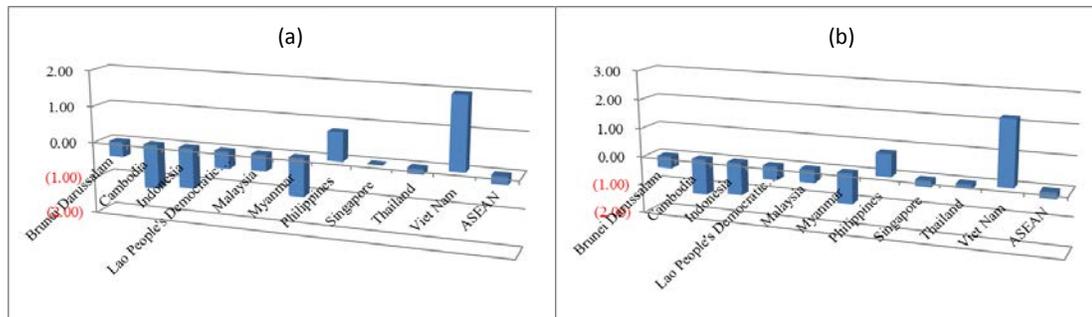
Country	Average Annual Growth Rate			
	Cubic Meters		Metric Tonnes	
	1962-2013	2004-2013	1962-2013	2004-2013
Brunei Darussalam	3.39	(0.24)	2.62	1.89
Cambodia	1.38	3.53	2.97	4.49
Indonesia	4.37	0.49	13.39	4.80
Lao People's Democratic Republic	8.57	10.34	2.56	2.20
Malaysia	3.13	(0.85)	15.70	5.66
Myanmar	2.22	1.73	4.66	8.96
Philippines	1.90	2.50	7.02	2.30
Singapore	97.85	0.00	12.25	9.96
Thailand	5.02	3.10	5.74	3.65
Viet Nam	3.86	7.61	8.59	8.85
<b>ASEAN</b>	<b>13.17</b>	<b>2.82</b>	<b>7.55</b>	<b>5.28</b>

Source of basic data: FAOSTAT, 2014

This increasing trend in forest production may indicate a related increase in the demand for wood products that Heino (2007) predicted would exert pressure on forest resources, which seems to be supported by the data on forest land area in the ASEAN region. As Figure 1 demonstrates, forest land in total and as a proportion of the total land area of the country has been decreasing in majority of the AMSs and in the ASEAN as a whole for the past twenty years. Only in the Philippines and Viet Nam has forest land area been increasing while it has remained constant in Singapore. These trends hold also for forest land as a

proportion for total land area. What all these imply is that more is being produced in a smaller area, suggesting either more efficient use or greater utilization and/or depletion of the land resource.

Figure 1. Average rate of change in forest land area, total area (a) and as a proportion of total land area (b), by AMS and for ASEAN, 1990-2010  
(Source of basic data: FAOSTAT, 2014)



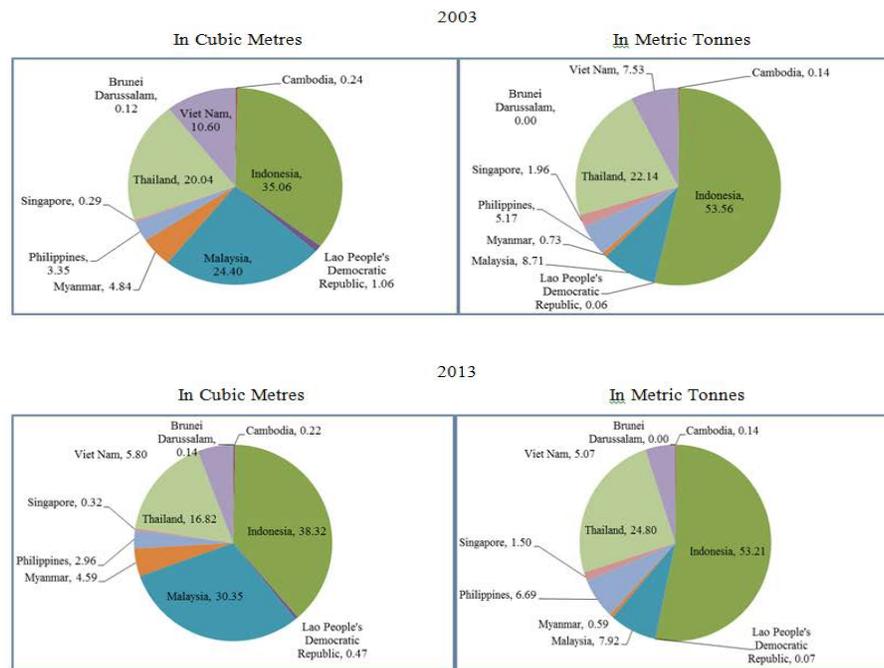
Whatever the changes made in the utilization of the land resource, the differing trends in forest land area among the AMSs would cause adjustments in the relative shares of each AMS in the total forest production of the region. Figure 2 shows the individual AMS shares in the total ASEAN forest production for the last reporting period (2013) and ten years earlier.

It can be observed that countries with the largest shares of forest land areas are those with the largest shares in the total forest production of the ASEAN, except for Myanmar (with about 15% of total forest area in the ASEAN). Indonesia obviously contributes the most to ASEAN timber-based forest production, which is not surprising as it holds more than 44% of total forest area. With its claim over almost 10% of total forest area, Malaysia unsurprisingly outdoes Thailand in production in cubic meters. However, Thailand outdoes Malaysia in production in metric tonnes, despite accounting for only about 9% of total forest area. This may indicate the preferences of each of these countries in terms of product categories, with Thailand seemingly preferring to supply more processed products.

For those countries whose forest land area were not reduced during the period, their relative share in the total ASEAN timber-based forest production generally increased over the period. Considering that almost all AMSs increased timber-based forest production over the period, this trend would indicate that the production in these countries increased

faster, except in the case of production in cubic meters in the Philippines, which is reflective of the diminished extraction of raw forest products there.

Figure 2. AMS shares in total timber-based forest production in the ASEAN, for products measured in cubic meters and in metric tonnes, 2003 and 2013  
(Source of basic data: FAOSTAT, 2014)



On the other hand, for those countries whose forest land areas were reduced over the period, relative shares of production in cubic meters mainly decreased, except for Brunei and Indonesia. For production shares in metric tonnes, the same trend held for most AMSs, except for Thailand and the Lao PDR. In both cases, production in the countries with relatively larger shares did not decrease despite their reduced forest area, probably due to the larger forest area with which they are endowed.

With the focus being on the AEC, trends in the trade of timber-based forest products will definitely be of concern. Table 5 presents the annual average growth rates of the value of trade in timber-based forest products of each AMS and the ASEAN as a whole for the period covering 1961 to 2013. Net exports were computed as the annual difference of the value of exports and the value of imports, the value of which would show whether GDP is increased or decreased by trading. On the other hand, total trade was computed as the sum of the values of exports and imports, an indication of the openness of the economy, which is

primarily the concern in implementing the AEC. Note that values of exports and imports comprise trade among AMSs as well as with the rest of the world.

Table 5. Annual average growth rate of the value of trade in timber-based forest products, by AMS and for ASEAN, 1961-2013

AMS	Growth Rate			
	Exports	Imports	Net Exports	Total Trade
Brunei Darussalam	52.25	33.95	(54.32)	32.09
Cambodia	36.65	34.89	51.93	28.08
Indonesia	23.15	12.03	33.76	16.74
Lao People's Democratic Republic	45.80	70.05	43.49	32.94
Malaysia	10.75	11.94	10.51	10.80
Myanmar	12.58	14.12	14.44	11.61
Philippines	3.94	9.89	(11.64)	5.71
Singapore	141.27	10.54	2.80	10.57
Thailand	13.56	13.38	(26.31)	12.53
Viet Nam	42.05	18.04	17.21	33.46
<b>ASEAN</b>	<b>38.20</b>	<b>22.88</b>	<b>8.19</b>	<b>19.45</b>

Source of basic data: FAOSTAT, 2014

In general, values of exports and imports have been increasing consistently for each AMS over the period, with greater annual growth in export values than in import values. It can be observed that Singapore shows the largest average increase in export values, mainly due to tremendously large increases in the values before 1964. However, omitting these extreme values, Singapore would still show an average annual increase of 11.73% while the ASEAN would depict a 25.25% average annual increase in export values, still higher than the average for import values.

In terms of the contribution of timber-based forest products to the GDP of the individual AMSs, it seems that timber-based forest product trade generally contributes to the GDP of majority of the AMSs, as shown by positive average growth of net exports. However, negative growth rates for net exports are exhibited in Brunei, the Philippines, and Thailand, which may probably indicate that most timber-based imports are used for production of domestically consumed products that may also induce GDP growth as well. Overall, net exports have been rising for the ASEAN, indicating increasing contribution of timber-based forest product trade to GDP growth in the region.

On the other hand, all AMSs exhibit increasing values of total trade, which may indicate that there is increased openness in the trade of timber-based forest products. Note that the CLMV countries are among those that exhibit the highest growth rates in total trade, probably reflecting their intention to become more integrated into the ASEAN and more open to trade with the rest of the world.

Since the concern of this study is more on how smallholders in the forestry sector would be affected by the advent of the AEC, it becomes important to further disaggregate the analysis of trends in trade of forest products to those more likely produced by these smallholders. As the smaller stakeholders usually supply products that are considered less than mainstream, the following section attempts to do that by discussing the trade in non-timber forest products.

### **Trade of Non-Timber Forest Products**

With the unavailability of data for production, this section concerns itself solely on trade in non-timber forest products (NTFPs), specifically bamboo and rattan. It should be considered however that smallholders in the forestry sector mainly produce either for household consumption or for domestic markets, such that the figures here may reflect an underestimated contribution of non-timber forest products to the overall production of the individual AMSs.

In addition, data on the trade of the Lao People's Democratic Republic (Lao PDR) with other AMSs were limited to only a few countries and an intermittent number of years, such that a reliable time series could not be constructed. Thus, to avoid misleading estimations for the very few instances when there are data of Lao PDR, none of the data on trade with Lao PDR is included in the discussions that follow.

Moreover, although honey (and more particularly wild honey) should be considered as a significant contributor to the production and trade of non-timber products largely supplied by forest communities, it becomes impracticable to include honey statistics in the estimations that follow due to the unavailability of a time series for data on honey that are disaggregated by country and by source. For the same reason, trade in herbal/medicinal products was not included in the figures. However, implications of previous extrapolations of wild honey supply and demand from the NTFP-EP Regional Wild Honey Certification Study as well as from additional information from interviews conducted will be discussed in this section.

***Intra-ASEAN***

Table 6 shows the relative shares of the export values of bamboo- and rattan-based products among AMSs from 1989 to 2012. As the data show, Singapore and Malaysia seem to be the main destinations of these NTFPs among the AMSs, in terms of value. In fact, even Malaysia exported most of its products to Singapore just as most other AMSs, except for Cambodia that exported most of its NTFPs to Viet Nam. On the other hand, the smallest values of exports among the AMSs are received by Brunei, Cambodia, and Myanmar.

Conversely, Table 7 reveals the relative shares of the import values of bamboo- and rattan-based NTFPs among the AMSs from 1989 to 2012. The data demonstrates that the highest values of NTFP imports are generally sourced by the AMSs from Singapore and Malaysia, although certain AMSs also source much of their imports from Indonesia. On the other hand, hardly any imports are sourced from Brunei and Myanmar, although Indonesia and Thailand seem to source a substantial amount of their bamboo and rattan from the latter.

The results exhibited by the tables seem to provide confounding results as they imply that the countries that export the bamboo and rattan also import the most bamboo and rattan within the region, which is also true on the other end of the spectrum for those who export and import the least. To minimize the confusion, a look into the types of bamboo- and rattan-based products being traded among the AMSs may provide further elucidation of the results. Figures 3 and 4 depict the distribution of exports and imports of bamboo and rattan by product category for each of the AMSs and for the ASEAN as a whole.

Table 6. Average relative shares of exports of bamboo and rattan among ASEAN Member States, based on value, in percent, by AMS, 1989-2012

Country of Origin	Destination Country								
	Brunei	Cambodia	Indonesia	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
Brunei		0.00	19.97	50.28	0.00	0.00	29.75	0.00	0.00
Cambodia	0.00		0.00	11.11	0.00	0.00	16.61	12.83	59.46
Indonesia	0.77	0.39		4.54	0.40	5.15	78.34	7.62	2.79
Malaysia	2.65	0.17	3.44		0.09	2.00	88.68	2.40	0.58
Myanmar	0.00	0.00	0.00	0.00		0.00	77.47	9.38	13.15
Philippines	6.77	0.37	5.77	14.68	0.13		57.15	11.98	3.15

Singapore	7.07	1.24	21.09	28.59	2.46	17.86		18.70	3.00
Thailand	2.04	3.43	1.91	26.76	13.42	7.08	40.11		5.26
Viet Nam	0.20	0.76	1.28	24.18	0.00	3.71	53.95	15.92	

Source of basic data: INBAR, 2014

Table 7. Average relative shares of bamboo and rattan imports among ASEAN Member States, based on value, in percent, by AMS, 1989-2012

Destination Country	Country of Origin								
	Brunei	Cambodia	Indonesia	Malaysia	Myanmar	Philippines	Singapore	Thailand	Viet Nam
Brunei		0.00	5.14	44.74	0.00	2.50	44.29	3.25	0.07
Cambodia	0.00		2.00	17.61	0.00	1.51	12.66	41.02	25.20
Indonesia	0.00	0.58		6.69	12.70	7.66	59.61	6.94	5.82
Malaysia	0.00	0.03	66.01		0.50	7.11	5.47	4.38	16.51
Myanmar	0.00	0.00	18.38	2.52		0.00	68.32	10.78	0.00
Philippines	0.24	0.00	9.69	27.41	0.38		50.54	6.04	5.71
Singapore	0.00	0.31	20.50	67.02	1.65	4.00		2.19	4.32
Thailand	0.00	28.83	8.10	15.53	13.45	5.56	16.85		11.68
Viet Nam	0.00	5.47	45.43	5.97	0.28	22.06	15.29	5.50	

Source of basic data: INBAR, 2014

As the figures indicate, for the region as a whole, the least trade is in semi-processed products, i.e., bamboo and rattan that have undergone minimal processing from their raw state such as plaits or mats. For exports, most trade is in processed products, where the proportion is almost twice that of raw products. On the other hand, for imports, raw products account for the largest proportion of bamboo and rattan traded. This may indicate that AMSs import raw materials from within the region to meet the demand for their exports of processed products, implying that AMSs that are mainly bamboo and rattan processors may not be producing enough raw materials while chiefly raw material-importing AMSs are mainly growers and not processors of bamboo and rattan. This implication may further be clarified by looking at the trends by country.

Largely consistent with the regional trend, most AMSs mainly exported processed bamboo and rattan, except for Cambodia, Myanmar, and Singapore which exported more raw materials. On the other hand, most AMSs mainly imported processed bamboo and rattan from within the region, except for Malaysia, Myanmar, Thailand, and Viet Nam which imported more raw materials.

These results would suggest that the region as a whole is chiefly raw material-importing and processed product-exporting. However, to determine which countries are growers and which are processors, the export trend should be considered relative to the import trend for each individual AMS.

Figure 3. Average Shares of exported bamboo and rattan products in intra-ASEAN Trade, by product category and by country, in percent, 1989-2012  
(Source of basic data: INBAR, 2014)

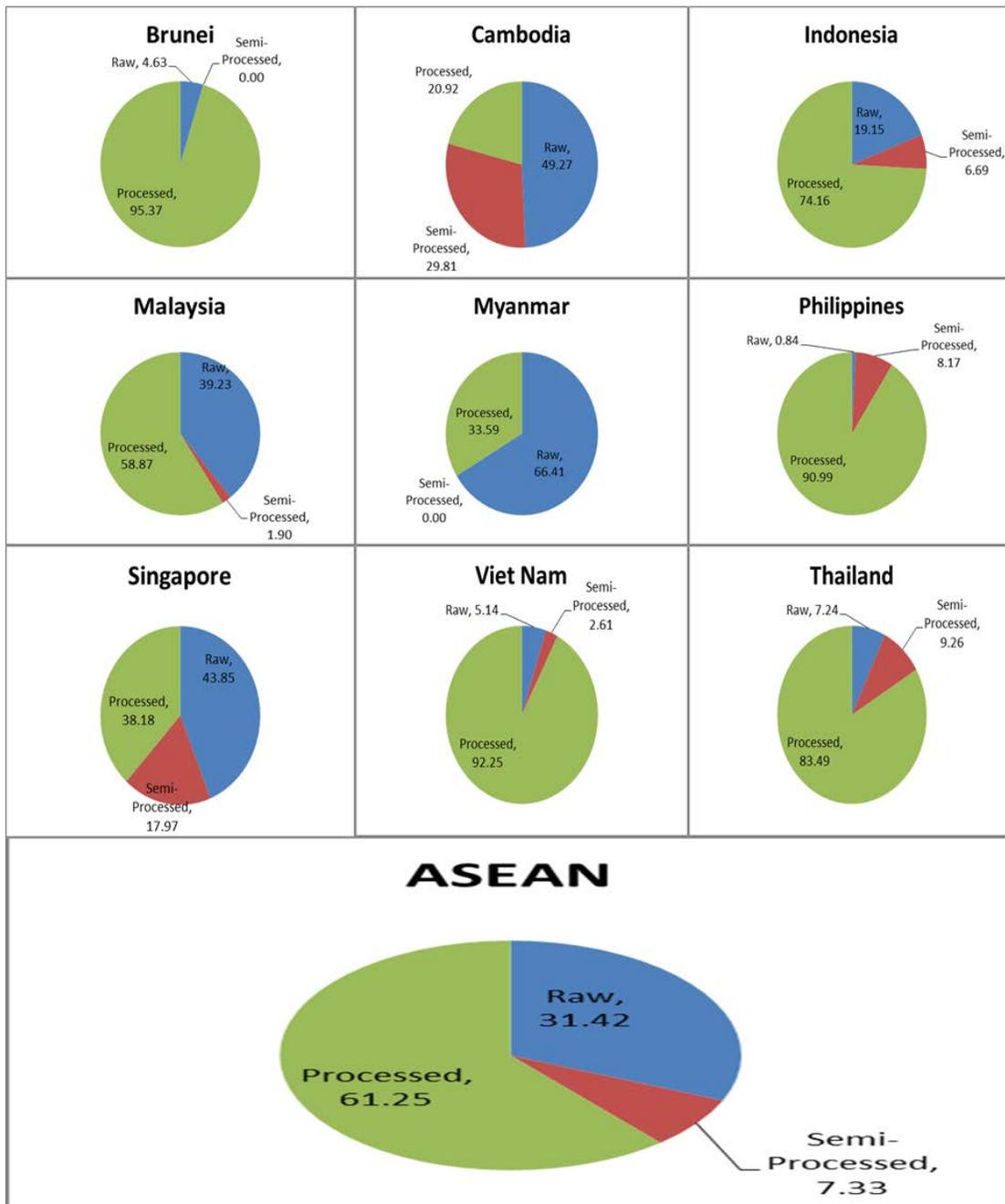
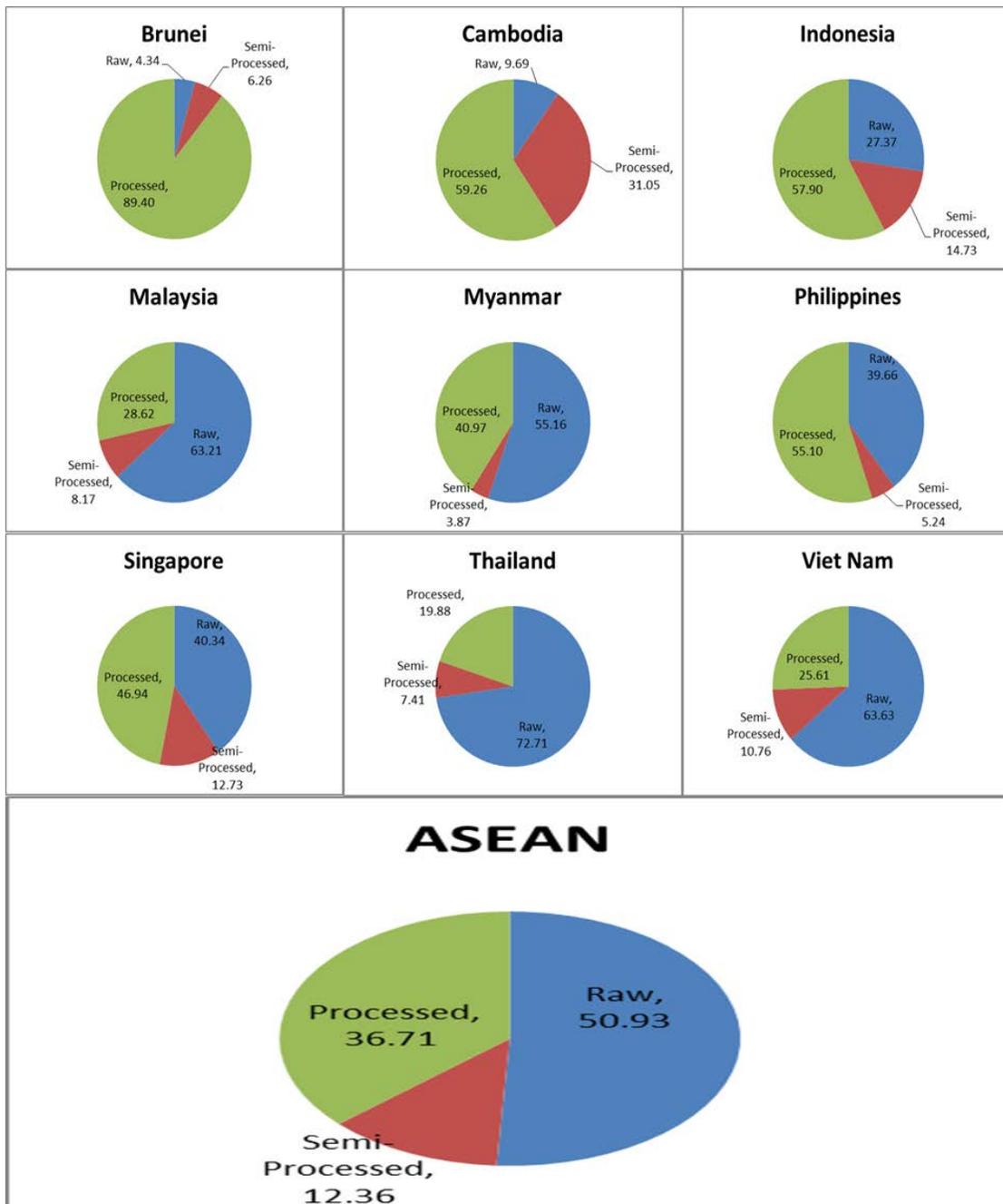


Figure 4. Average shares of imported bamboo and rattan products in intra-ASEAN Trade, by product category and by country, in percent, 1989-2012  
 (Source of basic data: INBAR, 2014)



*Cambodia* primarily exports raw and semi-processed products while generally importing processed products, implying that it is a grower rather than a processor. Similarly, exports and imports from *Myanmar* are generally raw that would imply that it is also chiefly a grower. In addition, *Singapore* exports a greater proportion of raw materials despite importing a relatively large proportion of the same and could thus also be considered a grower, although it should be considered that its total exports are valued at about 30 million USD for 2012 while its total imports are valued at about 233 million USD.

On the other hand, *Malaysia, Thailand, and Viet Nam* mainly export processed products and chiefly import raw materials, which would make them generally processors. Although the *Philippines* primarily exports as well as imports processed products, the fact that it hardly exports any raw material may indicate that it is also principally a processor.

Interesting are the cases of Indonesia and Brunei. *Indonesian* imports are more generally of a processed nature although the proportion is smaller relative to its exports, which may signify that it is a processor, mostly involved in further value addition. Relatedly, *Brunei* exports and imports mainly processed products while exporting and importing the same small proportion of raw materials and would thus appear to be generally a trader or more a processor adding value to already processed products rather than a grower.

Despite having made these classifications, all these figures only refer to trade within the region among the AMSs. Widening the horizon by considering trade with the rest of the world may further refine these categorizations of the AMSs.

### ***ASEAN with the Rest of the World***

Table 8 illustrates the distribution of bamboo- and rattan-based exports of each AMS to major regions in the rest of the world. As the table shows, hardly any exports are sent to South America. Unsurprisingly, the largest markets for ASEAN exports of bamboo and rattan are Asia, Europe, and North America, although which market is the largest may vary from one AMS to another.

Asia is the largest market for Brunei, Cambodia, Myanmar, and Singapore while Europe is the largest market for Indonesia, Malaysia, Thailand, and Viet Nam. North America is the

largest market only for the Philippines although it is the second largest market for Brunei and the third largest market for all other AMSs except for Myanmar and Singapore. Africa is the third largest market for Singapore, which is the only AMS that has any significant amount of export trade with this particular region. These trends seem to imply that Asia is the main market for chiefly raw-material exporting countries while Europe is the principal destination of the exports for processing ASEAN economies, particularly for high value processed products.

Table 8. Average relative shares of bamboo and rattan exports of ASEAN Member States to World regions, based on value, by AMS, in percent, 2003-2012

Country of Origin	Destination Region						
	Africa	Asia	Central America	Europe	North America	Oceania	South America
Brunei	0.00	86.22	0.00	0.05	13.74	0.00	0.00
Cambodia	0.00	44.38	0.00	29.70	21.41	4.51	0.00
Indonesia	1.81	24.99	0.54	49.86	17.96	4.01	0.82
Malaysia	2.73	24.09	2.27	39.09	23.70	7.27	0.84
Myanmar	0.00	96.44	0.00	3.56	0.00	0.00	0.00
Philippines	0.85	14.85	0.66	17.80	62.16	2.80	0.89
Singapore	14.52	53.43	2.89	19.12	3.97	4.00	2.06
Thailand	1.28	31.53	0.41	34.28	25.36	6.31	0.83
Viet Nam	0.67	18.96	0.32	56.59	17.99	3.53	1.95

Source of basic data: INBAR, 2014

On the other hand, Table 9 provides the distribution of bamboo- and rattan-based imports of AMSs from the major world regions. Just as with exports, hardly any trade is done by AMSs with countries in Africa, Central America, Oceania, and South America while interesting trends can be observed by considering the trade of these AMSs with Asia, Europe, and North America.

Table 9. Average relative shares of bamboo and rattan imports of World regions to ASEAN Member States, based on value, by AMS, in percent, 2003-2012

Destination Country	Region of Origin						
	Africa	Asia	Central America	Europe	North America	Oceania	South America
Brunei	0.03	88.32	0.00	7.97	3.64	0.03	0.00
Cambodia	0.00	94.96	0.00	2.01	2.54	0.49	0.00
Indonesia	0.10	82.88	0.39	11.10	4.17	1.35	0.00
Malaysia	0.00	38.67	0.00	43.49	15.29	2.49	0.05
Myanmar	0.00	18.25	0.00	0.00	81.75	0.00	0.00

Philippines	0.13	87.85	0.04	4.35	7.52	0.11	0.00
Singapore	0.17	83.42	0.01	13.38	2.10	0.58	0.34
Thailand	0.12	92.50	0.01	6.19	0.91	0.26	0.01
Viet Nam	0.01	88.85	0.00	6.44	4.54	0.14	0.01

Source of basic data: INBAR, 2014

Asia can be seen to be the largest source market for a majority of the AMSs. For Malaysia and Myanmar, Asia is only the second largest source market while imports from Europe and North America comprise the largest proportions, respectively. Relating these trends to the export trends as well as the previous discussions of intra-ASEAN trade, these results may imply that the reason for the large import contribution of the Asian region may be due to the trade of raw materials of the AMSs with the rest of Asia.

To further elucidate the propositions made above, Figures 5 and 6 illustrate the categorization of ASEAN bamboo- and rattan-based exports and imports with each of the identified world regions. As the figures show, exports from the ASEAN as a whole to the rest of the world mainly comprise processed products. While the majority of imports of the ASEAN as a whole from the rest of the world also constitute processed products, the share of raw and semi-processed products is significantly larger for imports than for exports.

Figure 5. Average shares of exported bamboo and rattan products in ASEAN trade with World regions, by product category and by region, in percent, 1989-2012  
(Source of basic data: INBAR, 2014)

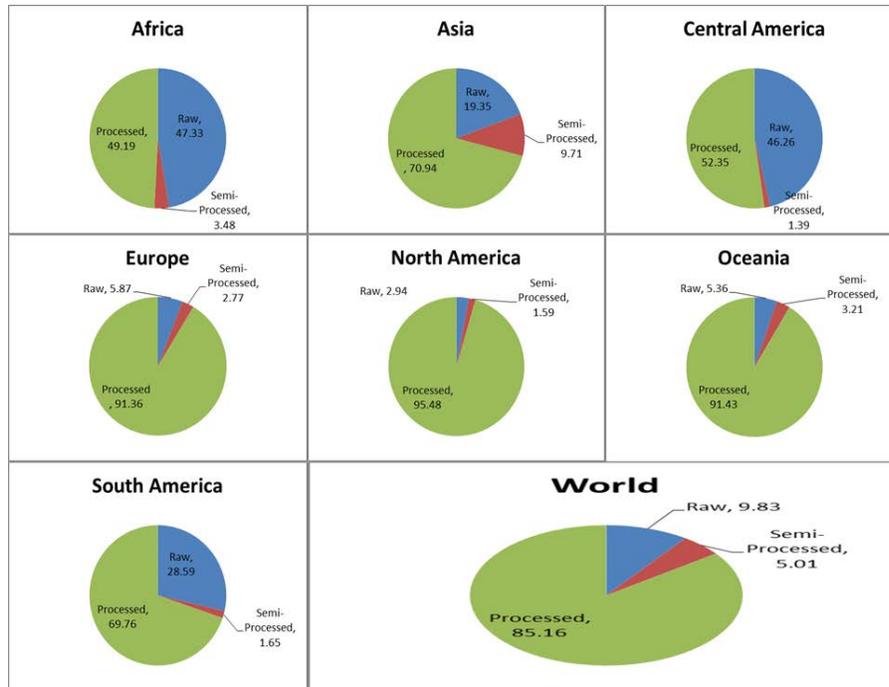
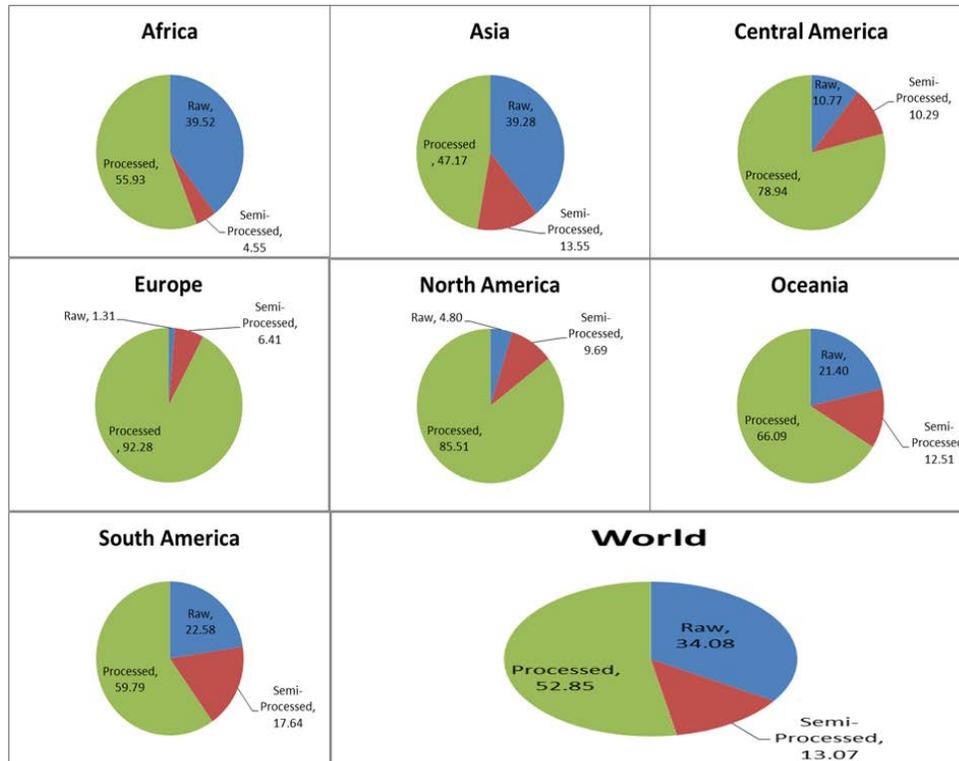


Figure 6. Average shares of imported bamboo and rattan products in ASEAN trade with World regions, by product category and by region, in percent, 1989-2012  
(Source of basic data: INBAR, 2014)



By world region, it seems that processed products are the main exports to the major markets of the ASEAN. Although the relative significance of processed products to raw materials is pointedly smaller for Africa and Central America, exports of raw materials to other regions make up a very small percentage of the trade, with total ASEAN raw material exports reaching less than 10% and ASEAN exports to the major markets of Europe and North America at significantly lower percentages.

For imports, processed products also constitute the largest proportion of traded goods, although raw and semi-processed products make up significantly larger percentages of the total imports from each world region. In particular, less than half of the imports from the Asian region are composed of processed products and only a slightly higher percentage can be observed for Africa. This could explain the greater relative importance of raw and semi-processed imports for the ASEAN as a whole, given that Asia is the main import source.

With regard to honey as an NTFP, based on the estimates from selected groups in Cambodia, Indonesia, and the Philippines in the NTFP-EP Regional Wild Honey Certification Study, total trade for the groups in the three countries amounted to 84 tons of wild honey, out of about 240 tons of association production and about 9,500 tons of estimated national production. The same study cited a Coriolis report that indicated that about 225 million USD

worth of natural honey was imported from the East and Southeast Asian regions in 2012, with the largest markets being New Zealand, Australia, and Argentina from outside the region, and Japan, China, and Hong Kong within the region. Given the estimated average prices and values of honey in the study, it could be estimated that the top three importers from outside the region were importing about 10,000 tons, while the top three importers from within the region imported about 43,000 tons in that year.

Based on an interview with a honey association in Hanoi, both Viet Nam and Thailand are also exporters of honey mainly to the United States, Europe, Japan, Indonesia, and Malaysia, although Viet Nam may be considered as the larger honey producer. According to their estimates, about 40,000 tons per year is being produced in the country with about 80% of this production being exported to the US at USD 2.50 to USD 2.80 per kilogram, which translates to a value of above 100 million USD. Although these figures do not refer exclusively to wild honey, the association estimates that the US demand for honey is about 100,000 tons per year. This would provide a large potential market for Viet Nam as well as ASEAN production, although most production in Viet Nam is estimated to be in acacia plantations.

Thus, honey could also be considered as a potentially significant contributor to NTFP trade of AMSs. Moreover, the honey market could potentially be a major source of income for smallholders in the forestry sector of ASEAN nations, particularly in line with the growth of the healthy food consumer markets that mainly require wild, natural, and/or other organically produced honey.

All these statistics seem to imply that there could possibly be significant impacts on the forestry sector in the AMSs, particularly for smallholder communities that rely on NTFP production for their livelihood. It thus becomes interesting to try to identify the potential impacts of the AEC on forest smallholders, particularly in terms of the trade and production of NTFPs, as well as the factors that could determine the extent of these impacts.

## **PART V**

### **Potential Impacts on Social Forestry and/or Forestry Smallholders**

#### **Situating Social Forestry/Forest Smallholders in the context of AEC and a Globalizing Economy**

Although the rapid economic growth in the Asia-Pacific region as well as the shift in comparative advantage in forestry from temperate developed countries to tropical developing countries has engendered significant poverty reduction, about 900 million people still earn an income of less than USD1 per day in the region (Heino, 2007; Sedjo and Beal, 2007). The persistence of this problem has implications on the forestry sector as the poor are highly dependent on forests and woodlands. According to the World Bank (2001, as cited in Lee 2007), the livelihood of about 1.6 billion people depend on forests to varying degrees, with 350 million reflecting a high degree of dependence. Thus, the poverty alleviation capabilities of forestry should be clearly understood.

Recognizing these shifts and their accompanying outcomes, forest management for sustained yield has evolved into the new framework of sustainable forest management (SFM). Combining biophysical and human dimensions, the five components of SFM include social equity, economic equity, ecosystem integrity, good governance, and extraterritorial impacts (Maini, 2007).

In line with the extraction of forest resources, revenue losses from illegal logging and associated trade in the Asia-Pacific region amount to more than USD 10 billion and have many negative social and environmental impacts for developing country governments and rural populations, necessitating the need for effective mechanisms to promote forest sustainability, particularly in governance (APFC, 2009). Dufournaud et al. (2003) made a case for a commercial logging ban in the Philippines based on a comparison of welfare loss to consumers to the benefits derived from standing trees. According to their study, the ban would protect traditional foresters more than the social foresting approach advocated by the Department of Environment and Natural Resources (DENR) of the country, a social forestry approach (with an export ban) supported by Delos Angeles and Oliva (1995, as cited in Dufournaud et al. 2003).

In addition, the Asia Pacific Forestry Commission (APFC, 2009) recognized the additional pressure to be exerted on the forestry sector by this development in line with the agricultural conversion that would be provoked by expanded populations and measures to

address rural poverty. On one hand, as a vital part of rural poverty reduction agenda in the region, the increased social mobility prompts urbanization and expanding middle-income classes thereby reducing direct dependency on forests for subsistence. On the other hand, although rural livelihoods through global forest product markets are being promoted, mechanisms seem to be biased against small-scale producers (as their perspectives are not adequately accounted for in policy formulation) and have failed to integrate many indigenous people into social safety nets, cutting them off from the economic success of the region.

Relating to small-scale producers, although recognizing the importance of competition policies, Ariff (2008) cautioned against rigid competition laws and suggested the need for flexible competition laws that accommodate the special needs of small businesses in line with innovative horizontal and vertical arrangements. In addition, Milo (2013) acknowledged the potential opportunities for small and medium enterprises in the global production networks through subcontracting and outsourcing arrangements with large corporations and multinational corporations.

In terms of the potential impacts of this liberalization on employment, Das (2010) warns that technology linkages arising from trade liberalization that may yield higher productivity gains may actually lead to lower demand per unit of output production unless there are scale expansion possibilities. Moreover, in an analysis of China's manufacturing firms, Zhang (2010) noted that the share of skilled labor (defined as senior high school and/or college level education) in total employment is higher for exporting and foreign-invested firms. However, in examining forestry sector employment, Sedjo and Beal (2007) have found increasing employment in subtropical and tropical areas despite decreasing overall (that is, global) forestry employment due to labor productivity increases.

The gaps in relation to these concerns in the AEC Blueprint are significant particularly in cooperation areas related to private sector linkages, agricultural cooperatives, research and development, and technology transfer (Briones and Israel 2012, Daite 2013). Partnership arrangements among government agencies, sectoral bodies, business associations, and civil society have yet to be formed where clear criteria for the involvement of the nongovernment stakeholders are set (Soesastro 2008a). The forestry sector should integrate and synergize with a wide stakeholdership in communicating its relevance to priority area concerns such as climate change, energy, and economic and national development (APFC 2009).

In line with these concerns and the overall roadmap for the ASEAN Community, considerations of the ASEAN Socio-Cultural Community (ASCC) should also be taken into account. Some key principles reflecting the ideals of the ASCC as potential guideposts have been identified by De Castro (2009) as the following: (1) focus on people; (2) implementation is a shared responsibility; (3) strengthening social dialogue is key to deeper partnership and promotes a sense of ownership; (4) implementation requires clear accountabilities; and (5) operate within a regional perspective.

### **Quantifying Determinants of AEC Impacts on the Social Forestry Sector**

This section presents some previous econometric analyses of other industries or regions related to the study concerns here. The discussions that follow intend only to identify additional variables that should be considered in the analyses that will be done for this study, beyond those that basic economic theories would provide, or possible measures that can be used for the identified variables.

Relating to increased liberalization, Rajan (2008) investigated the factors that would determine foreign direct investment (FDI) flows using a gravity model framework. In his analysis, FDI inflow to the host economy was seen to be a function of the Gross Domestic Product (GDP) of the host and source economies, similarity of languages, geographical distance between the host and source economies, and other control variables influencing FDI outflows.

On a wider scale, Petri et al. (2010) analyzed the probable welfare gains from the AFTA and the AEC in monetary terms and as a percentage of GDP for the ASEAN member states, their trading partners, and the world using a Computable General Equilibrium model. The scenarios considered in their analysis include the elimination of remaining intra-ASEAN tariffs, a horizontal reduction in trade costs of 5% of trade values, increased FDI inflows to levels expected of “model” countries, and bilateral free trade agreements.

In terms of the benefits from trade, Das (2010) analyzed the factors affecting the total factor productivity (TFP) in Indian industry. In the econometric analysis, trade and investment liberalization effects are captured by imports and foreign equity participation, respectively. Specific variables include royalties, import penetration ratio, employment (denoted by wage rate), research and development expenditures, imports of capital goods, imports of raw materials, export-to-sales ratio, and export incentives.

In relation to further impacts, Zhang (2010) examined firm-level share of skilled labor in total employment. The variables considered in the investigation include capital intensity (to capture capital-skill complementarity), output (to control for scale effects), FDI, computer intensity (proxy for firm technology), exporter characteristic, and industry and provincial considerations.

### ***Estimation of possible determinants of impacts of AEC on Forestry***

In terms of the econometric analyses for this study, data availability limited the ability of this research to fully implement comprehensive models. A computable general equilibrium (CGE) analysis would have been ideal but impracticable in this analysis, given resource constraints. While analyses at the country-level were attempted, based on the survey of data sources and confirmed by key informants, the econometric analyses had to resort to unbalanced panel data. In addition, based on the literature cited above, consumption projections were no longer attempted as most of the impacts are driven by supply-side considerations such that consumption could be considered to be affected more by the “pull” rather than “push” demand factors.

In line with these concerns, the identification of possible determinants of how the AEC could impact the trade of forest products in the ASEAN, with particular emphasis on bamboo- and rattan-based products to represent NTFPs, made use of a gravity model of trade. Gravity models have been widely used to explain international bilateral trade flows among nations and many of these have been used to study the regional economic integration in the ASEAN (see, for instance, Amin et al., 2009; Hemkamon, 2007; Okabe and Urata, 2013; Taguchi, 2011) although none have been found to look at the particular case of forest products and particularly non-timber forest products.

The following sections discuss the results of these estimations. First to be discussed are some trends and values of the explanatory variables considered followed by the results for estimations of the gravity models using the trade values of timber-based forest products and of bamboo- and rattan-based products, as a proxy for NTFPs. The estimations of bamboo and rattan production will then be discussed, in line with the results of the gravity models.

### ***General Performance of ASEAN Nations***

Table 10 summarizes some relevant financial statistics of the 10 AMSs considered in the study, where growth rates shown are averages for the years from 1962 to 2013 for which data are available.

Table 10. Values and averages for Gross Domestic Product, Foreign Direct Investment Inflows, and Official Exchange Rates, in USD and in percentages, 2013 and 1962-2013.

Country	Gross Domestic Product		Foreign Direct Investment Inflows		Official Exchange Rate		Inflation
	2013 (USD)	Growth (%)	2013 (USD)	Growth (%)	2013 (USD)	Growth (%)	Average
<b>Brunei</b>	16,111,135,789	13.47	895,000,000	51.27	0.79925	1.82	1.75
<b>Cambodia</b>	15,249,684,397	6.71	1,345,044,252	30.62	0.00025	(9.38)	71.08
<b>Indonesia</b>	868,345,645,449	13.07	23,286,844,586	22.04	0.00010	(7.07)	10.81
<b>Lao PDR</b>	11,141,187,664	8.72	426,667,686	61.94	0.00013	58.87	12.63
<b>Malaysia</b>	312,435,494,621	10.41	11,582,675,744	245.23	0.31737	0.13	4.18
<b>Myanmar</b>			2,254,603,972	155.29	0.00107	(2.59)	15.13
<b>Philippines</b>	272,017,377,292	7.97	3,663,921,995	7.54	0.02356	(4.96)	7.83
<b>Singapore</b>	297,941,261,088	12.59	63,772,316,791	29.76	0.79917	1.82	2.90
<b>Thailand</b>	387,252,164,291	10.24	12,649,747,952	29.18	0.03255	(0.54)	4.60
<b>Viet Nam</b>	171,391,820,360	13.78	8,900,000,000	607.50	0.00005	(14.13)	7.24

Source of Basic Data: World Development Indicators Database

As the table shows, Indonesia exhibits the highest Gross Domestic Product (GDP) for the year 2013, with the third highest average growth rate for the period of 1962-2013. Viet Nam shows the highest growth rate of GDP among the AMSs, followed by Brunei. On the other hand, Lao PDR exhibits the lowest GDP and the third slowest average growth. The lowest average growth rate is exhibited by Cambodia, with the second lowest GDP for 2013, followed by the Philippines, which has the fifth largest GDP. Despite these observations, all AMSs exhibited positive average growth rates for the period.

In terms of Foreign Direct Investment (FDI) inflows, the statistics show that all AMSs exhibited positive growth in FDI inflows, where Singapore followed by Indonesia received the most foreign investments for 2013, while Lao PDR and Cambodia received the least inflows. However, it is interesting to note that the Viet Nam and Myanmar, countries that have newly opened their economies, are among the countries that exhibited the fastest average growth in FDI inflows while the Philippines showed the slowest growth, averaging

even less than a third of the FDI growth rate in Indonesia, the country with the second slowest growth rate.

Data also indicate that majority of the AMSs exhibited depreciations, negative growth in the official exchange rates (measured as USD per local currency unit), on the average for the period. Brunei, Singapore, and Malaysia showed the highest OERs against the US dollar among the AMSs and all showed average appreciations although Lao PDR exhibited the largest growth in value of its currency. However, those countries that had their currencies appreciate are also the economies with the lowest average inflation rates, which may indicate that their real effective exchange rates (a measure of the purchasing power parity of currencies) may not have deviated much from the changes for the other currencies.

All these measurements will be used later to explain the trade flows of timber products and bamboo- and rattan-based products but these may also be affected by the factors of production in the economies. Thus, Table 11 summarizes other relevant statistics considered for the 10 AMSs, particularly in the estimation of production determinants. Growth rates are again averages for the years from 1961 to 2013 for which data are available.

Table 11. Values and growth rates for population, employment, and forest land.

Country	Population		Employment		Forest Land		Forest Area in Total	
	2013 (estimate)	Growth 1962-2013 (ave, %)	2013 (estimate)	Growth 1962-2013 (ave, %)	2010 (‘000 hectares)	Growth 1990-2010 (%)	2010 (ave. % of total land)	Growth 1990-2010 (ave, %)
Brunei	418	3.09	201	3.21	380	(7.99)	72.11	(0.42)
Cambodia	15,135	1.85	8,219	2.92	10,094	(22.02)	57.18	(1.24)
Indonesia	249,866	1.97	126,896	2.59	94,432	(20.34)	52.13	(1.13)
Lao PDR	6,770	2.21	3,571	2.73	15,751	(9.03)	68.25	(0.47)
Malaysia	29,717	2.45	13,378	3.02	20,456	(8.58)	62.26	(0.45)
Myanmar	53,259	1.72	31,666	2.02	31,773	(18.98)	48.64	(1.05)
Philippines	98,394	2.51	42,675	2.72	7,665	16.67	25.71	0.77
Singapore	5,412	2.26	3,009	3.05	2	(4.29)	2.86	0.00
Thailand	67,011	1.68	38,518	1.49	18,972	(2.95)	37.14	(0.15)
Viet Nam	91,680	1.93	49,780	2.13	13,797	47.56	44.50	1.96

Source of Basic Data: FAOStat Database

As the table shows, Indonesia shows the largest population and the largest number of employed individuals, which may partially explain the large GDP the country exhibits. On the other hand, it is interesting to note that Singapore with the second lowest population and employment figures exhibited the fourth largest GDP among the AMSs. Furthermore, all economies show positive growth in both population and employment over the period.

In terms of forest land, Indonesia again shows the largest endowment among the AMSs. However, Brunei, Lao PDR, and Malaysia showed the largest proportion of total land area utilized for forest production. More interesting is the fact that the forest land and the land area reserved for forestry activities grew on the average for the period in Viet Nam and the Philippines, while it decreased for all other AMSs except Singapore, where forest area did not change but its percentage to the total decreased. This last observation can be explained by the reported increase in the land area of Singapore, which seems to have been increased for purposes other than forestry.

Although growth projections for these variables have yet to be determined in the advent of AEC, assuming that existing growth trends continue, these observations may prove useful in explaining trends in forest product trade and production. To see whether this will hold true, the next section discusses the estimations of determinants of trade in total forest products and bamboo and rattan as proxy for NTFPs.

### ***Trade of Timber Products and Bamboo and Rattan Products***

Table 12 summarizes the results for the estimations of the gravity models for timber-based forest products for nine of the ASEAN member states and for bamboo- and rattan-based products (representing NTFPS) of six of the AMSs. Only significant variables and the directions of their estimated relations to the particular trade component are shown (see Annex D for coefficients and standard deviations). The unavailability of time series for certain explanatory variables for Myanmar could not allow running trade estimations of timber products and bamboo and rattan products for this particular AMS. Additional unavailability of time series data for Brunei, Cambodia, and Lao PDR also disallows trade estimations for bamboo and rattan products in these particular AMSs. This is followed by discussions of the results of the different gravity models for each individual AMS.

Table 12. Results of regressions on Gravity Models for trade of timber products and bamboo and rattan products

Country	Timber Products			Bamboo and Rattan Products		
	Exports	Imports	Total Trade	Exports	Imports	Total Trade
<b>Brunei</b>	GDP <sub>0</sub> (+) POP <sub>0</sub> (+) TTimeEx (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (+) TTimeIm (-)	GDP <sub>0</sub> (+) POP <sub>0</sub> (+)			
<b>Cambodia</b>	GDP <sub>0</sub> (+) TTimeEx (+) TDocEx (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeEx (+) TTimeIm (-) TDocEx (+)			
<b>Indonesia</b>	GDP <sub>0</sub> (+) GDP <sub>p</sub> (+) POP <sub>0</sub> (-) RER (+) TTimeEx (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeIm (-)	GDP <sub>p</sub> (+) POP <sub>0</sub> (-) Dist (-) TTimeEx (-)	GDP <sub>0</sub> (+) RER (+) Dist (-) TTimeIm (+)	GDP <sub>p</sub> (+) Dist (-) RER (-) TTimeEx (-) TTimeIm (+)
<b>Lao PDR</b>	GDP <sub>p</sub> (+) RER (+)	GDP <sub>0</sub> (+) TTimeIm (+) TDocIm (-)				
<b>Malaysia</b>	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeEx (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeIm (-)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-)	POP <sub>0</sub> (-) RER (+) TTimeEx (-)	GDP <sub>p</sub> (+) POP <sub>0</sub> (-) RER (-) TTimeIm (-)	GDP <sub>p</sub> (+) POP <sub>0</sub> (-) TTimeEx (-)
<b>Philippines</b>	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeEx (-)	TTimeIm (+) TDocIm (-)	TTimeEx (+) TTimeIm (-)	GDP <sub>0</sub> (-) POP <sub>0</sub> (+)	GDP <sub>p</sub> (-) Dist (+)	GDP <sub>0</sub> (-) POP <sub>0</sub> (+)
<b>Singapore</b>		GDP <sub>0</sub> (+) POP <sub>0</sub> (-)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeEx (+) TTimeIm (+)	GDP <sub>p</sub> (+) POP <sub>0</sub> (-) POP <sub>p</sub> (-)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) POP <sub>p</sub> (+) RER (+)	GDP <sub>p</sub> (+)
<b>Thailand</b>	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeEx (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeIm (+)	GDP <sub>0</sub> (+) POP <sub>0</sub> (-) TTimeIm (+)		GDP <sub>p</sub> (+) Dist (-) TDocIm (+)	GDP <sub>p</sub> (+) Dist (-) TTimeEx (+) TTimeIm (-)
<b>Viet Nam</b>	GDP <sub>0</sub> (-) GDP <sub>p</sub> (+) POP <sub>0</sub> (+) RER (+) TTimeEx (+)	GDP <sub>0</sub> (+) TTimeIm (-)	GDP <sub>0</sub> (-) POP <sub>0</sub> (+) TTimeEx (+) TTimeIm (-)	GDP <sub>0</sub> (-) RER (+) TTimeEx (+)	GDP <sub>0</sub> (-) POP <sub>0</sub> (+)	GDP <sub>0</sub> (-) POP <sub>0</sub> (+)

*Brunei*

For Brunei, only trade in total forest products was estimated. Based on the coefficients of determination, the gravity models seem to do better at estimating imports and total trade than for exports of timber products.

As the table shows, both its own GDP and its own population exhibit positive or direct relations to the trade flows of Brunei. For the population variable, this relationship may indicate that the population growth is able to provide more manpower to produce more timber products for export, as well as increased demand for timber products that may have to be imported, both of which would increase the country's total trade.

In terms of its own GDP, the increase in imports may be a result of the increased incomes engendered by a higher GDP that would again lead to increased demand for forest products, some of which may have to be imported. On the other hand, since no causality has been established, the direct relationship between own GDP and exports may imply either an increase in GDP resulting from increased timber product exports, which in turn indicates the significance of the contribution of the forestry sector to overall economic production, or the significance of greater overall economic activity to increasing timber product exports. Both these trends would also denote greater openness of the economies, as reflected by increased total trade (see, for instance, Soudis 2009).

In addition, trading times seem to have distinct effects on exports and imports. The results imply that, consistent with a priori expectations, longer processing times negatively affect the amount of timber products imported by Brunei, while longer export processing times positively affect timber products exports of Brunei. The former observation may simply be a reflection of the effect of implied higher transaction costs of trading while the latter may be due to the belief that these longer processing times imply that transactions are being implemented through the proper channels, where the impression of the legality of the trading in these timber products serves to increase the acceptability of these exports to other AMSs. In previous studies, faster processing seems to imply that corrupt officials are paid off to facilitate the process (see, for instance, Soudis 2009), which may further increase costs and/or imply that there are deficiencies that have to be overlooked. These may simply reflect a difference in the values or standards of Brunei as a receiving nation, and of the destination countries to which it sends its exports. That is, that Brunei is not as concerned with the legitimacy or legality of its imports compared to its trading partners.

### *Cambodia*

Because of data limitations, only trade in timber products was estimated for Cambodia. Based on the coefficients of determination, the gravity models seem to do well in estimating all types of trade flows. The results show that the explanatory variables can explain about 93% of the changes in exports and imports of timber products of Cambodia while about 98% of the changes in total trade can be explained by the variables included in the model.

Results of the regressions show that Cambodia's own GDP has a direct relation to the level of timber product exports, imports, and total trade. As discussed earlier, increased incomes that may be engendered by the higher GDP may lead to greater demand for timber products, which may partially be addressed by greater imports. Without a test for direction of causality, the greater levels of timber product exports that come with higher levels of GDP may imply either the significance of the forestry sector as a contributor to the economy, or the weight that increased overall economic activity exerts on timber product exports. Based on these positive relations of GDP to imports and exports, the increased total trade resulting from higher GDP levels would be expected, denoting greater openness engendered by greater overall economic production.

The own population variable significantly relates to imports and total trade in timber products of Cambodia, positive for the former and negative for the latter. As expected, a larger population is seen to result in greater imports of timber products, which may result from the larger demand a larger population begets. On the other hand, although own population did not figure significantly in the export model, the lower level of total trade related to a larger population may indicate a lower level of exports due to the fact that the larger demand resulting from the larger population may be allowing less domestically produced timber products from being exported, where the decrease in exports is greater than the increase in imports such that total trade decreases.

In terms of trade facilitation, processing times and documentary requirements were shown to be significant only for timber product exports and total trade. Export processing time and documents are shown to be positively related to both exports and total trade, while import processing time exhibits an inverse relation to total trade. Total trade increases with shorter import processing time, most likely due to the higher level of imports that result from lower transaction costs. On the other hand, similar to the discussion for Brunei, the greater level of exports and total trade engendered by longer export processing times and a greater

number of documentary requirements, may reflect the greater value that Cambodia's trading partners place on protocols to ensure the legality or legitimacy of the exports to them. This in turn increases the acceptability of the products and consequently the demand for them.

### *Indonesia*

All gravity models were estimated for Indonesia, where results showed that the models estimating timber product trade performed better than the models for bamboo and rattan trade. Based on the coefficients of determination, the variables included in the gravity models for timber product trade were able to explain about 85% to 88% of the variations in the various types of trade flows, while the explanatory variables for the gravity models for bamboo and rattan trade were able to explain 72% to 75% of the changes in the different trade flows.

Results show that the own GDP variable had a significantly positive relation to all types of timber product trade flows and to bamboo and rattan imports. This would imply that timber product exports, imports, and total trade as well as bamboo and rattan imports, would increase with higher levels of GDP in Indonesia. As discussed in previous sections, increased incomes that may be engendered by the higher GDP may lead to greater demand for all types of products that may partially be addressed by greater imports, while the greater levels of exports that come with higher levels of GDP may imply either the sector's contribution to overall production, or the significance of increased overall economic activity on the sector's exports, both of which contribute to increased total trade and greater openness.

The trading partner's GDP is shown to have significant positive relations to exports of timber products and bamboo and rattan products, as well as to total trade of bamboo and rattan. These would imply that an increase in the GDP of a trading partner is related to an increase in the exports of timber products, as well as in the exports and total trade of bamboo and rattan products, probably due to the greater demand that results from the increased incomes that may be implied by the higher GDP levels.

Significantly negative relations between the own population and all trade flows of timber products as well as exports of bamboo and rattan have been found. It could be presumed that an increase in the population would denote more manpower to domestically produce timber products such that fewer imports are necessary. On the other hand, although the larger population may denote greater domestic production, the population growth may also

indicate a greater domestic demand for timber products, bamboo and rattan such that fewer products are available for export causing exports and total trade to decrease.

In terms of the proxies for trading costs, the bilateral real exchange rate appears significant for different trade flows, while the distance between Indonesia and its trading partner appears significantly negative for bamboo and rattan exports and imports. As expected, the farther away a trading partner is, the larger the transportation costs and thus the fewer the exports and/or imports. On the other hand, the RER is shown to be positively related to timber product exports and bamboo and rattan imports, while it is negatively related to bamboo and rattan total trade. The latter two trends are expected since an increase in the RER, which denotes an appreciation of the domestic currency, would imply that it is cheaper for domestic citizens to buy foreign goods such that imports would increase and thus total trade will decrease. However, the direct relation of the RER to timber product exports implies that exports would increase as the currency appreciates and exports become relatively more expensive. Similar to previous discussions, since the direction of causality has not been established, this trend could be explained as a result of either the cost of the exports not increasing enough to dampen demand, or the increase in the demand of exports increasing relative prices.

Regarding trade facilitation, export processing times are shown to be significantly positively related to timber product exports and negatively related to bamboo and rattan exports and total trade, while import processing times are significant negatively related to total trade in timber products and positively related to bamboo and rattan imports and total trade. The inverse relations are as expected; as transaction costs of trading increase, implied by longer processing times, the less trade would be undertaken. On the other hand, as discussed earlier, the direct relations may imply that longer processing times may be seen as assurances of proper protocols and consequently better confirmation of the legitimacy/legality of the transactions such that longer processing times lead to greater transaction values. In this case, it seems that Indonesia is relatively more concerned with the propriety of products entering their markets rather than of those exiting, particularly for bamboo and rattan.

#### *Lao PDR*

For Lao PDR, only trade in timber products was estimated, where no significant variables were found for the gravity model for total trade. Based on the coefficients of determination, the gravity models for timber product exports and imports seem to do well

at estimating the trade flows, with the explanatory variables able to explain about 87% and 84% of the changes in the respective dependent variables.

For exports, only the GDP of the trading partner and the real exchange rate variables appear significant, both positively related to the value of timber product exports. The direct relation between a partner's GDP and timber product exports would imply that an increase in the GDP of the trading partner may indicate higher incomes and thus greater demand for exports. On the other hand, the positive relation between the currency appreciation and timber product exports denote that an increase in the real exchange rate would increase exports, which is counterintuitive unless it is considered that the value of the Lao Kip is so small relative to all other ASEAN currencies that an increase in the relative prices brought about by the increase in the real exchange rate would not have enough impact to dampen the demand for its products in the world market.

In the case of its timber product imports, the variables that were shown to be significant are the own GDP, import processing time, and import documentary requirements. Own GDP is shown to have a direct relation to imports, which is expected if it is assumed that higher GDP would engender higher incomes, and thus greater demand for timber products that can partially be addressed by imports. The negative relation between imports and the number of documents needed for importation is also as expected, since more documentary requirements increase the transaction costs, and are thus a disincentive for trading. However, import processing time is shown to have a positive relation to imports, which would imply that longer processing times encourage more imports. If previous explanations are applied, this could be seen as the incentive effect of ensuring proper protocols are followed, where the discrepancy between the impacts of time and documentary requirements may just show the partiality against greater physical effort to ensure legitimacy/legality of the imports.

### *Malaysia*

All gravity models were estimated for Malaysia, where the performance of the gravity models for bamboo and rattan trade flows seem to be more consistent although less significant than the gravity models for timber product trade. Based on the coefficients of determination, the explanatory variables in the gravity models for bamboo- and rattan-based products are able to explain about 57% to 63% of the changes in NTFP trade flows, while the variables included in the gravity models for timber products are able to explain about 73% to 97% of the variations in timber product trade flows.

Results show that the own GDP variable had a significantly positive relation to all types of timber product trade flows. This would imply that timber product exports, imports, and total trade would increase with higher levels of GDP in Malaysia. As discussed in previous sections, increased incomes that may be engendered by the higher GDP may lead to greater demand for forest products that may partially be addressed by greater imports, while the greater levels of exports that come with higher levels of GDP may imply either the significance of the contribution of the forestry sector to overall production, or the stimulus that increased overall economic activity provides for exports of the forestry sector, both of which would contribute to increased total trade that reflects greater openness.

Similarly, the GDP of the trading partner is shown to be significantly positively related to bamboo and rattan imports and total trade. Although a partner's GDP is expected to affect exports more than imports, these may indicate that the greater production leading to the greater GDP in a partner country may cause an increase in their supply of forest products, such that more products are available for importation by Malaysia, or that the greater demand for imports by Malaysia causes the increased production and GDP in its partner, where either reason would lead to increased trade openness.

The own population variable is significantly negatively related to all trade flows. This would imply that an increase in the own population of the country would lead to decreases in the exports, imports, and total trade of timber products, bamboo and rattan. As previously discussed, the negative relation to imports is expected since a larger population would denote a larger manpower pool and greater domestic production, and thus the need for fewer imports. On the other hand, although the larger population may lead to greater production, it also indicates a greater domestic demand for products that may result in fewer product export opportunities. Both of these trends would cause the decrease in total trade.

Trade processing times are negatively related to almost all trade flows, except for timber product exports, for which export processing time is positively related, and total trade in timber products, where they are not significant. The negative relations of processing times to imports, exports or total trade are as expected since longer processing times imply higher transaction costs and are thus deterrents to trade, while the positive relation of export processing time to timber product exports may indicate that trading partners of Malaysia are concerned with the legitimacy/legality of the products they are importing, such that they are willing to endure the necessary procedures although they may take up more time.

The most counterintuitive result for this AMS is the positive relation of the real exchange rate to bamboo and rattan exports and its negative relation to bamboo and rattan imports. This however may be explained such that, in the absence of a test for the direction of the causality, the greater levels of exports as well as the lower levels of imports, may be causing the entry of relatively more foreign currency into the Malaysian economy, thus appreciating its currency. On the other hand, if the previously-computed growth rates are to be believed, the Malaysian Ringgit has been appreciating very slowly such that it may not be enough to dampen the demand for Malaysian exports and to encourage more imports.

### *Philippines*

All gravity models were estimated for the Philippines, where results show that the gravity models for timber product trade flows performed better than the gravity models for bamboo and rattan trade flows. Based on the coefficients of determination, the explanatory variables in the gravity models for bamboo and rattan are able to explain about 52% to 58% of the changes in NTFP trade flows, while the variables included in the gravity models for timber products are able to explain about 70% of the variations in timber product imports and total trade, as well as about 80% of the changes in timber product exports.

The own GDP variable is shown to positively affect the timber product exports while it negatively affects bamboo and rattan exports and total trade. The former observation could imply that greater overall economic activity may be increasing the production of forest products such that more products are being exported. On the other hand, the latter result may indicate either that the higher incomes implied by the greater GDP may be causing a greater domestic demand for bamboo- and rattan-based products such that fewer products are available for export, or that the heightened economic activity of the country is shifting resources away from bamboo and rattan that may cause less production and fewer exports of these products, both of which in turn may cause the decrease in total trade of bamboo and rattan products.

On the other hand, the GDP of the trading partner is only significant to bamboo and rattan imports, where a negative relation is shown. This would imply that bamboo and rattan imports of the Philippines would decrease when the overall economic activity of a trading partner decreases, which is expected since the lower GDP may imply less production and thus fewer exportable products in the partner country.

The own population variable is significantly related to timber product exports as well as to exports and total trade of bamboo and rattan products, where the relation is negative for

the first and positive for the latter two. For the latter, the larger population is seen to result in greater exports probably because the greater population may lead to more labor resources in the bamboo and rattan sectors such that there is more production and more products available for export, which also naturally leads to greater total trade that implies greater trade openness. On the other hand, the negative relation of population growth to timber product exports may indicate that the larger population causes greater domestic demand for forest products, which leaves fewer products available for exports despite possibly higher production by the greater number of workers.

Proxies for trade facilitation are shown to be significant only for timber product trade flows. For exports of forest products, export processing times are shown to negatively relate to the level of exports, which would imply that longer processing times discourage exports. On the other hand, import processing times are positively related to imports, which may imply the previously discussed incentive to ensure proper protocols, although documentary requirements for importation negatively relate to the level of imports, which may show a partiality for time over physical requirements. Moreover, total trade is shown to be positively related to the export processing time, and negatively related to import processing time. These results must however be considered in light of the dropping of the documentary variables in the total trade, probably implying that the effects of these processing times are outweighed by the impact of the related documentary requirements, such that exports increase and imports decrease with longer processing times. These further imply that the trading partners are relatively more concerned with the legitimacy/legality of forest products than the Philippines.

Another counterintuitive result for this AMS is the positive relation between bamboo and rattan imports and the distance to the trading partner. However, considering that the farthest AMSs from the Philippines are Indonesia, Malaysia, and Myanmar, this direct relation may simply indicate that more bamboo- and rattan-based imports are being sourced from these countries rather than distance being a specific concern in trade decisions.

### *Singapore*

Similar to Malaysia, all gravity models were estimated for Singapore, where the performance of the gravity models for bamboo and rattan trade flows seem to be more consistent, although less significant than the gravity models for timber product trade. However, the bamboo and rattan models for Singapore perform relatively better than those for Malaysia. Based on the coefficients of determination, the explanatory variables in the

gravity models for bamboo and rattan products are able to explain about 81% to 88% of the changes in bamboo and rattan trade flows, while the variables included in the gravity models for timber products are able to explain about 78% to 95% of the variations in timber product trade flows. However, no significant variables were found for the case of timber product exports.

The own GDP variable is found to be significant and positively related to timber product imports and total trade as well as bamboo and rattan imports, while the GDP of the trading partner is found to be significant and positively related to bamboo and rattan exports and total trade. The first observation would indicate that increased overall production in Singapore comes with increased imports that may probably result from the increased demand for timber products and bamboo- and rattan-based products engendered by the increased incomes that the increased economic activity may imply. On the other hand, increased GDP of a trading partner would lead to increased exports by Singapore, if the rise in overall economic activity of the trading partner translates to higher incomes and demand for products in that economy that may be addressed by increasing imports from Singapore. All these changes would then lead to more total trade and greater trade openness.

For own population, it is found to be significantly and negatively related to timber product imports and total trade as well as to bamboo and rattan exports and imports. These imply that an increase in the population would lead to fewer imports of both timber products and bamboo- and rattan-based products, probably due to the fact that more people can now produce the products demanded by the larger population such that there is reduced need to import. In terms of bamboo and rattan exports, the inverse relation to own population may indicate that the greater demand of the greater number of people leaves fewer products available for export despite the possibly greater production of bamboo and rattan products. Related to these, the positive relation of the population of the trading partner to bamboo and rattan imports, and its negative relation to bamboo and rattan exports follow the same arguments, such that the greater domestic production of the trading partner implied by the greater number of productive workers will increase imports, and decrease exports of bamboo and rattan products by Singapore.

As a proxy for trading costs, the real exchange rate is shown to have a significant positive relation to bamboo and rattan imports that would imply that imports of bamboo- and rattan-based products increase with currency appreciation in Singapore. This result is as expected since an appreciation of the Singapore Dollar translates to relatively less expensive foreign products, which encourages more imports. In addition, export and import processing times as proxies for trading transaction costs also have significant positive

relations to total trade of timber products. Although seemingly counterintuitive, these may be explained as before, that the longer processing times encourage exports and imports based on the notion that the longer processing times ensure that transactions go through the proper channels, providing cause to trust the legitimacy/legality of the products.

### *Thailand*

For Thailand, all gravity models were estimated although no significant variables were found, and the model itself did not appear to be significant for bamboo and rattan exports. The gravity models for timber product trade seemed to perform better than the gravity models for bamboo and rattan trade flows. Based on the coefficients of determination, the explanatory variables in the gravity models for bamboo and rattan products are able to explain about 67% and 77% of the changes in bamboo and rattan imports and total trade respectively, while the variables included in the gravity models for timber products are able to explain about 90% to 98% of the variations in timber product trade flows.

In terms of GDP variables, the own GDP is shown to be significant and positively related to timber product trade flows while same can be said for the GDP of the trading partner to bamboo and rattan imports and total trade. These indicate that greater overall economic activity fosters greater production and demand that increase exports and imports, that in turn increase total trade and encourage greater trade openness.

On the other hand, increases in the own population seems to lead to decreases in exports and imports of timber products, which in turn decrease total trade. These may indicate that the greater population provides more labor for timber production such that timber-based production increases and fewer imports are needed, while there are fewer products available for export possibly due to the greater domestic demand for timber products.

In terms of the proxies for trading costs, distance is found to be significantly negatively related to bamboo and rattan imports and total trade, while trade processing times and documentary requirements are generally positively related to the trade flows. For the first, this result is as expected since farther distances that have to be travelled usually translate to higher costs, which are disincentives for trade. On the other hand, the fact that export and import processing times as well as the number of documentary requirements for importation and exportation have direct effects on the level of timber product and bamboo- and rattan-based product exports, imports, and total trade (except for an inverse relation of import processing time on total trade of bamboo and rattan) would imply that Thailand may be equally concerned with the legitimacy/legality of both its exports and imports, which

could be implied by the longer processing times and the greater number of required trade documents.

### *Viet Nam*

All gravity models were estimated for Viet Nam, where results again show that the gravity models for timber product trade flows performed better than the gravity models for bamboo and rattan trade flows. Based on the coefficients of determination, the explanatory variables in the gravity models for bamboo and rattan products are able to explain about 49% to 63% of the changes in bamboo and rattan trade flows, while the variables included in the gravity models for timber products are able to explain about 94% to 98% of the variations in timber product trade flows.

The own GDP variables are shown to be significantly and negatively related to all trade flows except for a positive relation for timber product imports, while the GDP of the trading partner is shown to be significant for only timber product exports, with a positive relation. As previously discussed, the generally inverse relation between the own GDP and exports could imply that the greater demand in the economy may lead to fewer products being available for export, while that between own GDP and bamboo and rattan imports could indicate that the greater production leads to a reduced necessity to import. The positive relation of own GDP to timber product imports is as expected since it can be assumed that the higher incomes engendered by greater GDP leads to greater demand, which can be partially addressed by imports. Similarly, the direct relation between the trading partner's GDP and timber product exports would denote that the greater GDP translates to higher incomes, and thus greater demand in the trading partner such that there is a need for them to import more and for Viet Nam to export more.

In this case, the own population variable shows significant positive relations with timber exports and total trade as well as with bamboo and rattan imports and total trade. For the exports, this would imply that growth in the population translates to greater production by the greater number of productive individuals such that more products are available for export. On the other hand, for imports, the result implies that an increase in the population raises demand for bamboo- and rattan-based products and would thus necessitate more imports. These increases in exports and imports then extend to increases in total trade.

Similar to Malaysia, a counterintuitive result is the positive relation of the real exchange rate to exports of both timber products and bamboo and rattan products. This however may be explained such that, in the absence of a test for the direction of the causality, the

greater levels of exports may cause the entry of relatively more foreign currency into the economy thus appreciating its currency. From another perspective, this estimate could also be a result of the value of the Viet Dong being so small relative to other ASEAN currencies that an increase in the relative prices brought about by the increase in the real exchange rate would not have enough impact to dampen the demand for its products in outside markets.

Finally, export processing times are shown to positively affect the level of exports and total trade of timber products as well as bamboo and rattan exports, while import processing times are negatively related to imports and total trade of timber products. The latter result is as expected if processing times are considered as costs of trading, while the former result could indicate the value placed on guarantees of legitimacy/legality of traded products by the trading partners of Viet Nam. As a whole, these results would indicate that Viet Nam may be more concerned with proper protocols in relation to their exports over their imports.

All these results show that different factors can significantly affect the value of trade in forest products and, in particular, bamboo and rattan (as proxies for NTFPs) in the various AMSs. However, generally, production in the economy seems to be one of the more significant determinants of forest product and NTFP trade. As the forestry sector should be considered as an indispensable contributor to overall economic output and ultimately forest product and NTFP trade, it would be instructive to attempt to assess the significance of other factors on the production of forest products.

#### *Production of Forest Products*

Table 13 summarizes the results of the regressions to model timber production, as a general proxy for forest production, based on a pooled sample of data for the various AMSs. The first two columns show the results for the linear specification, attempting to estimate production level changes, while the last two columns show results for the double log specifications, demonstrating growth rate changes.

For products measured in cubic meters (that is, rawer products like logs and sawnwood), the model does well in estimating the levels of production, with an  $R^2$  that indicates that about 64% of the production variations can be explained by the variables in the model. For this specification, foreign direct investment (FDI) inflows and the official exchange rate (OER, measured as USD per local currency unit) do not seem to significantly affect the level of forest production in the ASEAN economies.

Table 13. Results of Ordinary Least Squares Regression on Production Data

Variable	Levels		Growth	
	Products (CuMt)	Products (MT)	Products (CuMt)	Products (MT)
Forestland	0.7048*** (0.057)	0.0119 (0.135)		
Employed	- 229.7635*** (71.877)	132.0624*** (16.305)		
FDI Inflows	0.0002 (0.000)	0.00004* (0.00002)		
CPI	148,536*** (35,541.44)	39,063.86*** (5,377.025)		
OER	- 2,793,604 (5297651)	1,574,309** (718541.3)		
Landlocked	- 0.0000001*** (2,623,372)	2,040,741*** (486,123.5)	0.7823*** (0.2609)	1.8526*** (0.2676)
Island	- 3,205,405* (1,701,102)	-723,683.8** (349,585.2)	0.4386*** (0.1639)	0.3258** (0.1366)
In Forest land			0.5246*** (0.0383)	- 0.0797** (0.0369)
In Employed			0.1660** (0.0827)	1.4762*** (0.0989)
In FDI Inflows			0.5843*** (0.0674)	0.5291*** (0.0730)
In CPI			- 0.11742 (0.0842)	0.2787*** (0.0091)
In OER			0.1372*** (0.0279)	0.1159*** (0.0265)
<b>Observations</b>	190	190	185	185
<b>R<sup>2</sup></b>	0.6432	0.8258	0.8184	0.9158
Note: Standard errors are in parentheses while *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.				

The coefficients for forest land area and the dummy variables for country characteristics are significant and exhibit the expected signs. Based on previous studies, countries characterized as being landlocked or island nations seem to engender higher costs of production, which may be a disincentive for greater production. As the results show, this notion is proven true in the case of the production of relatively rawer forest products, with the negative coefficient for these variables. The positive coefficient for forest land area simply implies the direct relation between forest production levels and the amount of land available for use in this type of production.

On the other hand, the coefficients for the employment and the consumer price index (CPI) seem to be inconsistent with expectations. The positive coefficient for CPI implies that as the general price level in the economy increases so does the level of forest production.

However, if it is assumed that forest products contribute significantly to trade in the economy and the relations found through the gravity model estimations hold true, then an increase in the domestic CPI will appreciate the bilateral real exchange rate while at the same time increasing exports (the latter more likely causing the former), possibly encouraging greater production. In terms of the negative coefficient for employment, this result implies that forest production levels will decrease with an increase in the number of employed persons in the economy. This would indeed seem inconsistent unless it is determined that the forestry sector is not one of the industries or sectors benefitting from the improved employment opportunities, and may in fact be suffering from worker migration into probably more profitable industries, which would then decrease production levels.

Since forest products measured in metric tonnes are mainly processed products, it should not be surprising that forest land area does not appear to be a significant indicator of forest production levels in the model specification relating to these products. This specification actually performs better than the previous model, where about 83% of the variations in forest production levels can be explained by the variables included in the model.

The coefficients for employment and FDI inflows are significant and consistent with expectations. The positive coefficients would imply the direct relations of these variables to production of processed forest products, which is not surprising given the expected increase in productive resources brought about by the greater labor resources out of the larger number of economically active individuals and the greater capital resources brought about by larger FDI inflows.

Positive coefficients are also estimated for the CPI and the OER, which are basically inconsistent with theoretical expectations if these are to be considered as direct costs of doing business. However, the positive coefficient for CPI may be explained as above, such that the higher CPI could appreciate the currency as exports are increasing, which in turn will provide a market for additional production. On the other hand, the increase in the OER (that would indicate an appreciation of the currency) would make imports relatively less expensive, providing greater opportunities to access raw materials that may lead to greater forest production. Since the products considered here are generally processed products, the higher OERs could translate to cheaper and more imports of raw materials that could increase production (that is, processing) activities, which would not be too far off in regard to AMSs that usually import raw materials and export processed forest products.

In terms of the country characteristics considered, the negative coefficient of the island variable is consistent with the notion that production costs are larger in island nations and would thus deter greater production. On the other hand, the positive coefficient for the dummy variable indicating landlocked nations having higher production levels may seem inconsistent with expected results, although it could be argued that since the production in this discussion mostly comprises processing activities, these nations may have enough land resources to establish the required processing plants that will probably allow greater production of these products measured in metric tonnes.

The models using the double log specifications seem to perform better than the linear models, with about 82% of the variations in the growth of production of forest products measured in cubic meters, and about 92% of the variations in the growth of production of forest products measured in metric tonnes being explained by the variables in the models. In addition, it is only the CPI variable in the model estimating production of raw forest materials that does not appear to be significant.

The coefficients for employment, FDI inflows, and OER are significant and positive for both specifications. These would imply that the growth in the number of economically active individuals in the economy as well as the growth in FDI inflows, directly relate to the increase in raw as well as processed forest products. In the case of the OER, increasing OERs, which imply appreciation of the currencies, could lead to production growth if they translate to decreasing costs of importing raw materials.

Similarly, the dummy variables for the country characteristics are both positive for the two models, which would imply that the growth rates of production for both raw and processed products increase whether the producing countries are landlocked or island nations. Although previous studies indicate that landlocked or island nations have lower levels of production because of higher transaction costs, these studies did not estimate the effects of these country characteristics on production growth, such that these relations should not be viewed as being inconsistent with expectations. In fact, it should be observed that although all coefficients are positive, the coefficients for island nations are lower than for landlocked nations.

On the other hand, the coefficients of forest land area exhibit opposing signs in the two models, while the coefficient for the CPI, which is significant only for the model concerned with processed products, is positive. The latter result would indicate that increases in the CPI would lead to higher growth in the production of processed forest products. This may be explained by the increased exports that accompany the appreciation of real bilateral

exchange rate (as the gravity model estimations show), as well as the decreased costs of imported raw materials, both of which could encourage greater production. The positive relation of forest land area growth to the growth of production of raw materials should be obvious. Higher production growth results from the provision of more resources, which should highlight the need to monitor land conversion particularly for agricultural use. The negative coefficient for forest land area growth in the model dealing with the production growth of processed products should also not be surprising if it is taken into account that the land resource necessary for growth in this sector is land to establish processing plants, and not more land to grow raw materials.

In general, the production estimations clearly show that both resource endowments as well as inherent country characteristics will affect the production of forest products in the ASEAN. Exhibiting mainly direct relations to the levels and growth of production in the forestry sector, these factors should be monitored in line with any changes that would be triggered by preparations toward the full implementation of the AEC.

### ***Broader Impacts on ASEAN as a Region***

All the variables included in the estimation models here proved to be significant in particular cases of trade flows, production changes, and nations. To provide a better context in which to discuss the way forward for the ASEAN, a summary of the broader impacts of the individual variables on timber product, and bamboo and rattan trade (as a proxy for NTFP trade), as well as on forest production levels and growth is provided.

In terms of the individual variables affecting trade of timber products and bamboo and rattan products, own GDP of an AMS as well as the GDP of its trading partner generally positively relate to the trade flows, implying that greater economic activity in either the home country or in a partner economy would increase exports, imports, and/or total trade of all types of forest products. On the other hand, the population of a trading partner shows significance only in Singaporean bamboo and rattan trade flows, while the own population of an AMS is generally negatively related to trade flows of other AMSs, implying that population growth does not translate to greater exports, imports, or total trade of all types of forest products for most of the ASEAN.

Although some results run counter to the general trend, distance has been shown to largely be negatively related to trade flows, indicating that trade is deterred as the distance for which products have to be transported increases. As similarly expected, the bilateral real exchange rate is positively related to imports in general, implying that a currency appreciation will increase imports. However, positive relations between the real exchange

rate and exports are also found, which are counterintuitive unless it is accepted that the direction of the causality is reversed, rather that the increase in exports causes the currency appreciation.

With regard to transaction costs of trading, the differences among the AMSs become more apparent. Based on the results, Indonesia seems to be the most concerned with the legality of its imports, while Singapore and Thailand seem to be the nations concerned with the legitimacy of both its exports and imports. For all other AMSs, the value placed on following proper protocols when an AMS imports seems to be lower relative to the significance of the procedures to ensure legality/legitimacy of exports for their trading partners.

Overall, specific for bamboo and rattan, trade is affected by not only variables within the control of the domestic country, but also by variables determined outside its economy. In Indonesia, the more significant variables seem to be the GDP of its trading partners as well as the proxies for trading costs, where coefficients indicate direct relations to total bamboo and rattan trade. For Malaysia, its own population as well as its real bilateral exchange rate and export processing times, appear to significantly determine bamboo and rattan trade openness, where the unexpected inverse relation between its population and trade openness may indicate a tendency to rely on its own resources as the economy gets bigger, that is, becoming self-sufficient in bamboo- and rattan-based products. The Philippines seems to exhibit a reliance on the increased demand for bamboo and rattan products arising from an increase in its population, while Thailand seems more reliant on the economies of its trading partners to increase bamboo and rattan trade. Singapore exhibits behavior that also seems to be more reliant on the economies of its trading partners, where the population and production in the partner economy have significant and generally direct relations to bamboo and rattan trade values. For Viet Nam, its own GDP seems to inversely relate to trade openness in bamboo and rattan products, while its population is directly related to bamboo and rattan trade values; where the first result could be taken to indicate that increased production in the economy may involve increased bamboo and rattan production, while the second result would additionally indicate the greater demand for bamboo- and rattan-based products being addressed by increased imports.

For production, most of the variables exhibit positive relations to forest production levels and growth, whether for relatively rawer products (those measured in cubic meters) or for relatively more processed products (those measured in metric tonnes). This implies that in general, an increase in forest production or in the growth rate of its production would result from an increase in forest land area, employment, FDI inflows, official exchange rates, or

the CPI. In addition, island nations exhibit lower forest production levels and growth rates compared to landlocked nations.

All these discussions should make clear that the AEC will have possibly significant impacts on the forestry sector, and in particular, the sector's smallholders. Although the specific impacts of AEC on these factors cannot be determined with certainty at this time, it is generally expected that productivity will be enhanced, particularly for larger firms with economies of scale. In addition, with the single ASEAN market envisioned by the AEC, which may in turn result in stronger individual economies among the AMSs (probably in the form of greater FDI inflows and closely-moving exchange rates and inflation rates), trade of the ASEAN with the rest of world will no longer consider trading by individual AMSs, but rather will be modeled as trade with a single trading block. Because the economic landscape will definitely be altered by the full implementation of the AEC, measures to adapt to the changing conditions, as well as to mitigate adverse impacts should be put in place, particularly to safeguard smallholder communities in the affected economies.

## PART VI

### The Outlook for Social Forestry Under the AEC

Social forestry as exemplified by communities living within or adjacent to the forest is at the core of strategies that ASEAN members have avowed to pursue in line with promoting ASEAN cooperation in forestry. These cooperation measures in turn would contribute more meaningfully to achieving both the economic community, and even more especially, the socio-cultural community blueprints that account for two of the three pillars of the one ASEAN Community.

As mentioned, the ASEAN scorecard that monitored progress in achieving the targets under the various pillars and areas of cooperation indicated that the different countries and the ASEAN as a whole have implemented almost all measures in most cases, with a few countries lagging only in less than half of the proposed measures. If such an assessment is correct, then the ASEAN in general and the forestry sector in particular, will be operating by 2015 in an environment where there are almost no borders across member states in the region. What will these changes mean to the communities living within and near the forest?

Interviews with forestry bureaucrats and industry stakeholders from Indonesia, Thailand, the Philippines, and Viet Nam, among others, revealed that there are varying levels of awareness, understanding, and concern regarding the ASEAN Economic Community (AEC). Awareness ranged from not knowing at all about AEC to learning about AEC from media releases about this event. For those who have some knowledge about it, respondents displayed positive or neutral views of the AEC (that is, AEC will generally have positive to no impacts on the forestry sector). Such impressions of AEC impacts can be explained by the very little intra-ASEAN trade in the forestry sector, and/or because of the provision of very little official information on the likely effects of the AEC on the forestry sector among the associated groups.

The present study scanned the environment for changes that will take place in the region, given the assessment of initiatives in the ASEAN scorecard and the strategic plan of action (SPA) for the forestry sector from 2010-2015 and the newly crafted SPA for 2015-2020. Along with the statistical estimations done in the study, the following projections of possible impacts in the forestry sector are presented, giving special attention to the forest communities.

Based on the estimations, in terms of the overall production and trade in the forestry sector, growth in the sector would be brought about by growth in the GDP and the populations of the individual economies, as well as decreasing transaction costs of forest products trade, factors that can be considered to fall under the general control of the domestic economy. For the particular case of NTFPs, growth of and trading by the social forestry sector in each individual AMS is affected by different variables, where these factors encompass those that are under the control of the domestic country, as well as those that rely on the conditions of its trading partners.

Thus, the freer movement of both resources and outputs in the region will definitely have implications on the factors that affect the level of forest production in the individual AMSs. Specifically, economically active individuals and capital will be able to move more freely among the AMSs, possibly providing impetus for greater forest production, which will likely lead to more openness of both timber and NTFP trade. In addition, the more integrated ASEAN economies may cause closer movements of prices, as well as exchange rates that may also boost trade of forest products as well as NTFPs. Moreover, mechanisms related to AEC integration such as the ASEAN Single Window will address the issues that have been raised regarding trade processing times and documentary requirements, including guarantees of product certification.

However, this expected small increase in the trade among the AMSs should be considered with caution, particularly in the case of social forestry or forest smallholders. Aside from the resulting import competition, Melitz (2002, as cited in Aldaba, 2010) indicates that increased trade exposure also encourages the entry into the market of more exporting firms. Although this does generate an aggregate productivity gain, the reallocation of market shares is towards more efficient firms and generally leads to the exit of the least productive firms. This last point is acutely significant in light of the conditions available to smallholders in the forestry sector.

Outside of the statistical estimations, the likely scenarios and changes that will take place and will bear on social forestry stakeholders come December 31, 2015 are as follows:

Increased awareness about AEC. The immediate impact of AEC integration upon its full implementation will be the heightened awareness about the large ASEAN community to which each AMS belongs. While there will be differences in how communities will explore the opportunities to be opened up or deal with perceived threats, consciousness of a new regional identity will gradually sink in. Communities will favorably respond when they realize that they can actually sell to a more expanded market, thereby gaining access to

consumers of other nationalities without the hassle of voluminous trading permits and other requirements. On the other hand, communities will react negatively when markets they had used to control are now presented with several other options, where their own products may find it difficult to compete especially if the alternatives come with better quality and more affordable prices.

Freer flow of skilled labor, and research and technology exchange. Each AMS invests in educating its own pool of professionals and other practitioners who will contribute to the development and management of the respective country's forest resources. With AEC, adequately trained forestry professionals from countries that offer low salaries may be lured to work in the more developed economies that can afford better compensation. This will be further enhanced when a mutual recognition agreement (MRA) is forged among ASEAN members in the forestry profession. However, no such MRA is yet being undertaken in forestry unlike in the medical, architecture, and some engineering professions. For countries who will lose forestry professionals to more lucrative employment markets, there will be indirect impacts on communities that depend on forestry professionals for technical assistance on the various aspects of organizing, managing, conserving, and use of the forest for productive purposes.

On the aspect of research and technology exchange, while this objective is clearly manifested as a priority initiative, it is not anticipated to take place in the immediate term because of intellectual property rights issues in place within research institutions, as well as other requirements imposed by private and corporate donors of research funds. However, these restrictions are not insurmountable, as shown by previous efforts to enable Cambodian resin gatherers to learn technologies on more sustainable resin tapping practices and processing from scientists at the Philippine Forest Products Research and Development Institute (FPRDI), through the mediation of the Non-Timber Forest Products Exchange Programme. This suggests that regional civil society organizations have a big role to play when AEC is fully in place, by assisting in providing opportunities to farmer communities in one country to learn from the R&D products in others, or through cross-farm visits and farmer-to-farmer interactions among different member states.

Further development of infrastructure and connectivity. AEC will improve transport connectivity through highways that crisscross several countries, particularly those in the Asian mainland. Some sectors engaged in infrastructure building make no qualms about destroying forests for the sake of development, regardless of whether communities will be displaced or adversely affected by highway construction or improvement. Reports on lewd, unprofessional actions by construction workers highlight atrocious abuses against women

and children, the destruction of forests, and preponderant illegal logging and poaching. Once built, the roads will improve access to timber products and wildlife especially across borders. Other adverse impacts, especially to communities in close proximity to newly-built roads, would include noise from transport vehicles, dusts, piling up of garbage thrown away by passengers of vehicles, pollution from emissions and oil leakages, and other threats to the peace and security and the sanctity of sacred groves within the forest that are part and parcel of community life.

Intensified demand for forest products. The liberalization of trade will result not only in a larger market to fill, but also a bigger field of competitors for materials and semi-finished products used as inputs in forest-based materials processing. Primary producers in communities supplying the raw materials may be pushed to exploit more, produce more, or to dig deeper into the forest to procure more. There will be greater use of intensive agroforestry practices to meet demand for materials, which in the long term will reduce the land's overall productive capacity.

Intensified use of forest for other uses. The bigger ASEAN market, with its more than 600 M people, will increase the pressure on forests to be used for other purposes. There will be enticements for communities to engage in production of commercially important food and food crops such as coffee, cacao, vegetables, and pineapple at the expense of forest trees and non-timber forest products. These non-traditional crops require largely unsuitable, intensive agricultural practices that will eventually diminish upland soil productivity. Alongside efforts to engage communities in food production is the conversion of forestland to plantation crops such as palm oil and rubber, ventures which rank highly in the economic development models of some countries. Conflicts arise when land areas that are claimed for these purposes overlap with land belonging to communities under their traditional rights.

Wider Timber Certification. If AMS states agree on a regionally accepted timber certification scheme as a prerequisite to trade in timber among them, the short term impact is that there will initially be less legal intra-regional trade in forest products. Smallholding farmers and communities linked to timber value chains will face difficulties in initially providing the documentary requirements for certified timber. Countries with existing timber certification schemes such as Malaysia and Indonesia will continue to be able to sell to other countries outside of the region, however. There are communities, who by choice, do not engage in commercial timber trade especially if such trade will engender further exploitation of timber from within their domain. Timber certification efforts must ensure that the rights of these communities are respected.

Combating illegal logging and trade in wildlife (both flora and fauna). If AMSs strengthen their resolve to combat illegal logging and trade, short term impacts will depend on whether or not communities tacitly allow the practice, or who are simply incapable of implementing community-based measures to address the problem. In the long term, however, and possibly with external donor support, communities will have been capacitated to perform a more active anti-illegal logging role, resulting in greater community participation in this endeavor. There will be consequent improvement in stocks of threatened biodiversity species in forest communities.

Harmonization of standards (for timber products). This is not imminent for timber-based products in the short-term, but in the long run, AMS will agree on common standards for timber-based and NTFP-based forest products. Once standards are in place, initially there will be rejections of products made, especially by workers not properly trained in forest products manufacturing techniques. In the long run, as workers are equipped with improved skills, demand for products will expand and trade will open up not only within the region but outside of the region as well. Harmonization will bring about capacity in many communities to produce furniture, crafts, and toys with uniformly acceptable quality, and that will be able to meet volumes required of them in the more developed Northern markets. Hence, extra-ASEAN trade will likewise expand, resulting in improvement of the economic status of members of communities who have the external links to national or even regional or global value chains.

Increased demand for ecotourism and related services. As citizens of ASEAN member states become more aware of each other and what each one can offer in terms of nature and adventure activities, intra-regional ecotourism will increase. The availability of low-budget air fares for travel within the region is another factor that will further boost regional ecotourism. There is a need for communities with special attractions or sites to offer to build capacity for hosting large number of visitors, and to provide amenities for their enjoyment and comfort. Communities will also have to deal with large volumes of garbage and the degradation of the ecosystem from high impact nature activities and the sheer volume of humans disturbing the natural environment. Communities will also be confronted with the need to protect biodiversity against illegal collection and hunting, or through sale of such products by their own community members cashing in on the presence of visitors with money who may take fancy of the unique plant and animal diversity in the ecotourism sites.

Part VII

**Concluding Remarks and Recommendations**

By all measures, there is no more stopping the transition of the ASEAN region into one ASEAN Economic Community by 2015, and with it, the full implementation of all initiatives designed to transform the region into a globally competitive single trading block. Less than a year before this important milestone, an anxious forestry sector in individual member countries does not seem to be as upbeat as those in central governments who have been involved in the long preparatory and implementation phases prior to December 31, 2015. Left out from most of the planning surrounding the AEC, and with little direction coming from leaders of the respective country-based forestry sectors on how to gear up for AEC, it is but understandable for stakeholders in the sector to be apprehensive of its possible impacts.

Following the discussion on anticipated changes to be brought about by AEC, such as those arising from horizontal measures designed to facilitate trade and the flow of goods and services in all priority integration sectors and the specific measures intended for wood-based products and the FAF sectors, we put forward recommendations that will enable social forestry stakeholders to cushion their respective communities against adverse impacts or take advantage of opportunities that are offered by the planned changes.

One specific measure that should be considered in line with these potential impacts of the AEC is capacity building among communities, as well as government regulators in many areas related to trade in a more open and bigger market. For communities, they should be capacitated to establish farm corporations or cooperative farms. Enhancing capacities in this regard would address concerns relating to economies of scale, as well as the need for new or additional investments that may not be easily accessible to individual smallholders. Other possible areas for capacity building are on being able to set aside surplus from current productive activities for investing in bigger ventures, or to leverage loan applications for upgrading and expansion of current productive capacities.

In the particular case of the relevant government agencies, the provision of linkages to capacity building resources for forest communities, as well as more involvement in the instigation of community efforts should be the main concerns. Success in these endeavors would promote greater production, as well as continued participation of smallholders in the industry, that is, increased output and sustained employment in the sector, which are factors that would improve prospects for forest product trade. Other than government, the

private sector and civil society organizations can also be instrumental in providing capacity building and/or outright business opportunities to communities. It is foreseeable that common standards for various forest products (e.g., furniture and handicrafts) will become the norm in the near future. It is important for communities to align their productive capacities towards ensuring that products made can meet the requirements of a more discerning market. Communities should be guided in investing on new machineries that will result in faster turnover and more uniform product quality. Other possible training opportunities for community members in the areas of innovation and design and marketing of products, by highlighting their cultural significance, should also be available.

In addition, in light of the limited commercialization of the products of smallholders, greater accessibility of smallholders to both the local and foreign markets should be encouraged. For instance, Viet Nam is growing its herbal industries, such as for medicinal products and essential oils, with the help of community-based activities. In Thailand, the Pred Nai community-led efforts led to the rehabilitation of their mangrove areas, creating new and sustainable commercial opportunities for their smallholders. These could serve as models for the capacity building efforts that can be offered to other forest communities.

Moreover, since trading times and documentary requirements figure significantly in increased trade flows and openness, current actions to develop a unified trade window for the ASEAN should be continued. The development of these trading mechanisms should involve simplifying procedures to guarantee the legality of traded products or source materials in order to further streamline the requirements and processes that would facilitate greater trade.

To enable communities to face the threats from conversion of forest lands to large scale plantation production of commercial crops such as rubber, oil palm, etc., there is need to safeguard communities by strengthening their security to their land. Government agencies championing the cause of community forestry in the respective member states need to be more aggressive in instituting reforms, or in pursuing legislative action to facilitate the formalizing of claims on land by traditional forest-occupants and indigenous communities. Concerned member states must rationalize the use of land through holistic land use planning and strict enforcement of land use policies, to ensure that ecological/water balance is not hampered by indiscriminate land use conversions.

An inclusive, participatory decision making process should also be in place to avoid planning and construction of infrastructure that connect vibrant, urban markets at the end of the highways, but are oblivious to the concerns, needs, and welfare of the remote communities along which such highways run. They cause irreparable damage not only to the forest and other physical assets within the community, but more so to the social and cultural values of the people along such road networks. There should be prior informed consent from affected communities, and for models that planned these road networks to factor in the social costs in order to provide due compensation or mitigate unwanted impacts.

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## **APPENDIX A. Interview Guide for Key Informant Interviews**

1. What would you say are the more important forest products/industries (including processed/finished products such as wood furniture) in the country in terms of:
  - a. trade volume?
  - b. trade value?
  - c. employment generation?
  - d. investment attraction?
  - e. resource use?
2. How would you describe production and trade of non-timber products relative to that of timber industries? What significance should be emphasized in developing (or expanding) non-timber industries (say, in terms of employment opportunities and other non-profit considerations)?
3. What do you foresee will be the major impacts of the ASEAN economic community integration to the forestry sector (impacts on production of forest products; on forest communities and their livelihoods/incomes; on employment; on forest cover; and on marketing and consumption of forest products (both timber and non-timber forest products) – within Viet Nam, and on trade with other ASEAN countries, and even outside ASEAN)?
4. How will the smallholders (and small and medium-scale enterprises) in the forestry sector be affected by the AEC as compared with large companies?
5. Have any major changes or steps been taken in these industries to address issues related to advent of the AEC, aside from the elimination of any existing tariffs? That is, do any non-tariff barriers still exist in the forest industries, in terms of:
  - a. protection policy (specifically the type and consistency over time of these policies)?
  - b. trade facilitation (such as bureaucratic difficulties involving border agencies and customs clearances)?
  - c. quality and safety management standards?
6. Has your organization issued any national level policy directives, initiatives, or implemented efforts related to the forestry sector, particularly in relation to social forestry, which have a bearing on the advent of the AEC?
7. In relation to the AEC, have forest industries adopted special arrangements, such as undertaking strategic alliances and joint approaches with the private sector? If so, why were these arrangements put in place and what feedback has been received regarding these mechanisms?
8. Has the country strengthened the efforts to combat illegal logging and its associated trade as well as forest fire and its resultant effects?
9. In relation to reducing protectionism (if it is an objective) and improving output, have any productivity enhancing efforts been taken in certain industries? Has the country undertaken collaborative research and technology transfer with other ASEAN member states?
10. What is the status of linkages among cooperatives in the forestry sector, if any?

## **APPENDIX B. List of Contacts/Key Informants**

### **Cambodia**

Jeremy Ironside, SEA Program Consultant for the McKnight Foundation

Femy Pinto, Executive Director (former Country Coordinator), Non-Timber Forest Products – Exchange Programme (NTFP-EP)

### **Indonesia**

Alexander C. Chandra, Southeast Asia Coordinator, Trade Knowledge Network (TKN)

Andri Gilang Nugraha, Assistant Deputy Director, Office of DG for International Trade Cooperation, ASEAN Secretariat

Amir Panzuri, Director, The Foundation for the Development of the Indonesian People's Handicraft Producers (APIKRI)

Jusupta Tarigan, Country Coordinator, NTFP-EP Indonesia

Andang Wahyu Triyanto, Chairman, Asosiasi Mebel Kayu dan Rotan Indonesia (Indonesia Furniture Association)

Wiratno, Director, Kementerian Kehutanan Direktorat Bina Perhutanan Sosial

Djatismiko Bris Witjaksono, Deputy Director General/Director for ASEAN Cooperation, ASEAN Secretariat

Zulviri Yenni (Ovie), Head of Section, Office of DG for International Trade Cooperation, ASEAN Secretariat

### **Philippines**

Maila Vasquez, Deputy Executive Director, Philippine Wood Producers Association

Rainier Villanueva, founding President, Chamber of Herbal Industries of the Philippines, Inc.

### **Thailand**

Marta Caruda, Programme Officer, Natural Resources and Environment Sector, European Union Delegation

Saisunee Chaksuin, National Coordinator, Mangroves for the Future (Thailand)

Chalermchai Chotikamas, Director, Division of Mangrove Protection, Department of Marine and Coastal Resource

Panee Denrungruang, Director, Forestry Research and Development Bureau, Royal Forest Department (RFD)

Martin Greijmans, Senior Program Officer, Livelihoods and Markets, RECOFTC- The Center for People and Forests

David Gritten, Senior Program Officer, Capacity Development and Technical Services, RECOFTC- The Center for People and Forests

Boonsuthee Jeravongpanieh, Forest Certification Office, Royal Forest Department (RFD)  
Watinee Khumcharoen, Forest Products R&D Division, Royal Forest Department (RFD)  
Tasane Pattanaseree, Head, Forest Products R&D Division, Royal Forest Department (RFD)  
Christian Rivera, Research Associate, Capacity Development and Technical Services,  
RECOFTC- The Center for People and Forests  
Komsan Rueangritsarakul. Technical Forest Officer, Community Forestry Management  
Bureau, Royal Forest Department (RFD)  
Janalezza Esteban Thuaud, Regional Knowledge Management Officer (Asia), Mangroves for  
the Future (Thailand)  
Ronnakorn Triraganon, Manager, Capacity Building and Technical Services, RECOFTC- The  
Center for People and Forests  
Poonsri Vanthongchai, Technical Officer, Non-Timber Products from Mangrove, Department  
of Marine and Coastal Resource  
Chamlern Paul Vorratnchaiphan, Country Representative, International Union for  
Conservation of Nature (IUCN) Thailand

**Viet Nam**

Delia Catacutan, Country Coordinator, International Center for Research in Agroforestry  
(ICRAF) Viet Nam  
Phung Huu Chinh, Chairman of the Board, Mountainous Bee Development Joint Stock  
Company (MBDC)  
Le Van Cuong, Vietnamese Academy of Forest Sciences (VFAS)  
Luu Tien Dat, Department of Science, Technology and International Cooperation, Ministry of  
Agriculture and Rural Development (VNFOREST)  
Tran Thanh Hai, Deputy Director-General, Agency of Foreign Trade, Ministry of Industry  
Trade  
Nguyen Tien Hai, Social Forestry Specialist and ASFCC-II Project Manager, World Agroforestry  
Centre (ICRAF Vietnam)  
Vu Duy Hung, Vietnamese Academy of Forest Sciences (VFAS)  
Dinh Ngoc Minh, Deputy Director General, Agricultural Economy Department, Ministry of  
Planning and Investment  
Nguyen Ton Quyen, Vice President –Secretary General, Vietnam Timber and Forest Product  
Association  
Tran Duy Ruong, Vice Director, Vietnamese Academy of Forest Sciences (VFAS)  
Hoang Lien Son, Director, Vietnamese Academy of Forest Sciences (VFAS)  
Nguyen Nam Son, Forest Development Department, Ministry of Agriculture and Rural  
Development (VNFOREST)

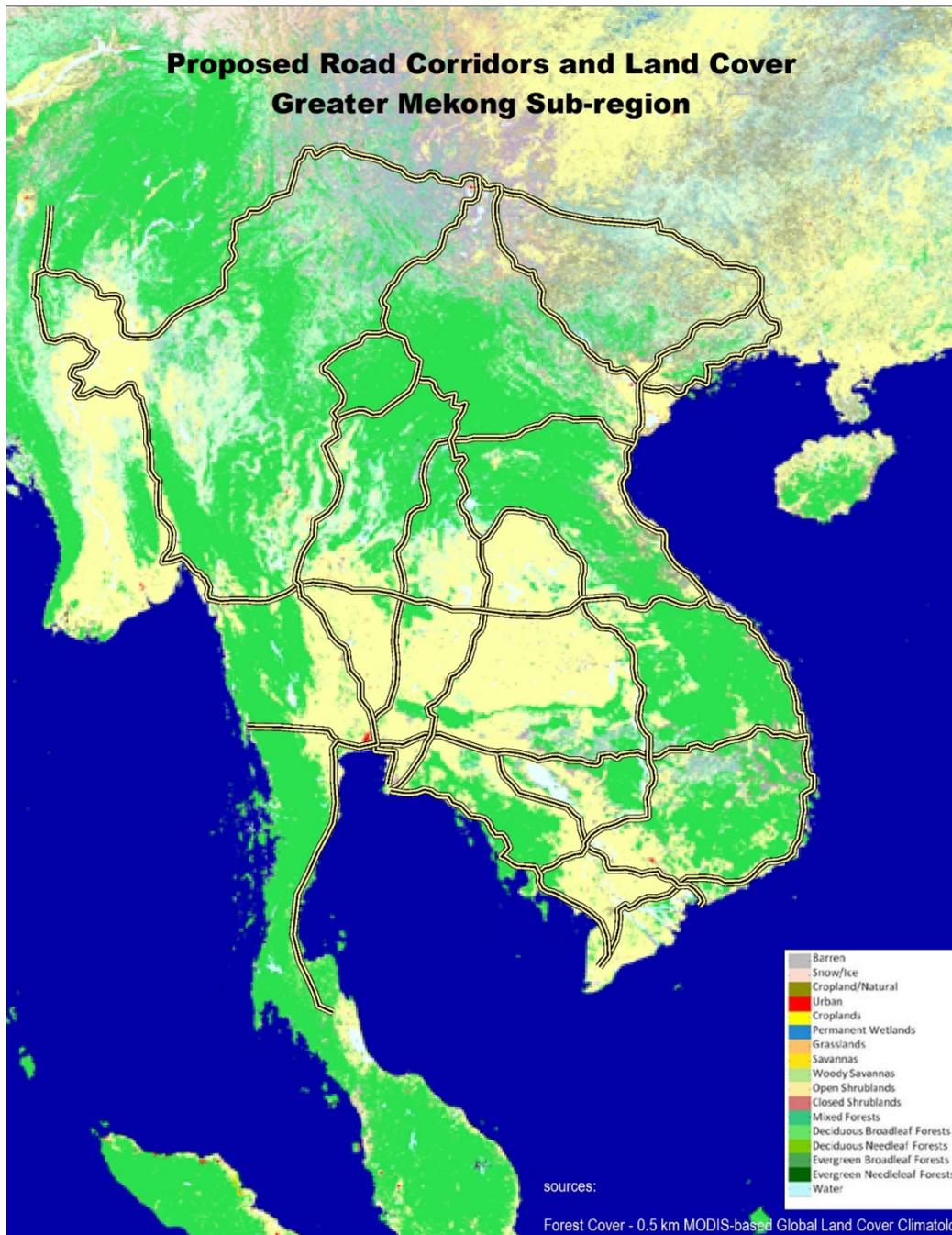
Dang Quang Thuyen, Forest Internationalization Department, Ministry of Agriculture and Rural Development (VNFOREST)

Le Ninh Tuyen, ASEAN Forestry Network, Ministry of Agriculture and Rural Development (VNFOREST)

Le Quang Trung, Vietnamese Academy of Forest Sciences (VFAS)

Hoang Duc Viet, Vietnamese Academy of Forest Sciences (VFAS)

**APPENDIX C. Proposed road network in the Mekong Region and location of forests in the ASEAN member states in mainland Asia including provinces in southern China. (overlay of road network over forest cover courtesy of Forester Arnan Araza).**



Source: Broxton, P.D., Zeng, X., Sulla-Menashe, D., Troch, P.A., 2014a: A Global Land Cover Climatology Using MODIS Data. J. Appl. Meteor. Climatol., 53, 1593–1605. doi:<http://dx.doi.org/10.1175/JAMC-D-13-0270.1>(road network), Ironside, J. (personal communication)

**Appendix D. Results of Regressions on Gravity Models**

Table D.1. Results of regressions on Gravity Models for exported forest products

Variable	BRN [RE]	CBD [RE]	IND [FE]	LAO [FE]	MAL [RE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [FE]
GDP <sub>o</sub>	2.79*** (1.025)	1.727** (0.775)	0.788*** (0.123)	-0.573 (0.803)	0.665*** (0.066)	0.726*** (0.1970)	0.706 (0.574)	2.179*** (0.117)	-0.633*** (0.314)
GDP <sub>p</sub>	0.015 (0.119)	0.006 (0.045)	0.430*** (0.011)	1.341*** (0.341)	0.000 (0.007)	0.002 (0.017)	0.004 (0.047)	0.000 (0.007)	0.526*** (0.155)
Pop <sub>no</sub>	18.94*** (4.833)	5.249 (4.474)	-7.442*** (1.398)	7.708 (6.670)	-3.083*** (0.410)	-9.251*** (1.455)	3.048 (2.693)	-36.161*** (3.854)	31.977*** (6.051)
Pop <sub>np</sub>	-0.0131 (0.129)	-0.003 (0.034)	-0.126 (0.475)	-1.053 (1.679)	-0.000 (0.007)	-0.001 (0.018)	-0.003 (0.042)	-0.000 (0.006)	-0.260 (0.765)
Dist	-0.0140 (0.557)	0.000 (0.061)			0.000 (0.008)	-0.005 (0.084)	0.000 (0.475)	-0.000 (0.013)	
RER	-0.004 (0.429)	-0.000 (0.012)	0.126** (0.055)	0.535*** (0.190)	-0.000 (0.002)	-0.000 (0.006)	-0.001 (0.014)	-0.000 (0.002)	0.490*** (0.111)
TradTimeEx	5.956*** (1.480)	1.594*** (0.227)	0.607** (0.173)	0.002 (0.354)	0.272** (0.087)	-5.378*** (0.494)		0.505*** (0.131)	1.322* (0.736)
TradDocEx		4.089*** (0.261)		-5,017,808 (0.749)				-0.158 (0.117)	
<b>Observations</b>	56	63	63	72	63	63	63	63	63
<b>R<sup>2</sup></b>	0.3016	0.9316	0.8577	0.8787	0.7264	0.7988	0.7767	0.9844	0.9898
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.									

Table D.2. Results of regressions on Gravity Model for imported forest products

Variable	BRN [RE]	CBD [RE]	IND [RE]	LAO [RE]	MAL [RE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [FE]
GDP <sub>o</sub>	0.617*** (0.201)	1.107** (0.437)	1.298*** (0.249)	3.542** (1.655)	1.233*** (0.074)	-0.120 (0.303)	0.993*** (0.215)	2.763*** (0.157)	0.743* (0.381)
GDP <sub>p</sub>	0.001 (0.024)	0.002 (0.033)	0.009 (0.027)	0.001 (0.088)	0.000 (0.008)	0.004 (0.026)	0.004 (0.017)	0.000 (0.009)	0.015 (0.032)
Pop <sub>no</sub>	4.757*** (0.748)	5.201** (2.398)	-7.500** (3.099)	-2.661 (14.172)	-3.391*** (0.461)	2.750 (2.247)	-1.808* (1.008)	-78.994*** (5.167)	1.309 (5.811)
Pop <sub>p</sub>	-0.001 (0.026)	-0.001 (0.025)	-0.007 (0.023)	-0.002 (0.079)	-0.000 (0.007)	-0.003 (0.026)	-0.003 (0.016)	-0.001 (0.008)	-0.012 (0.027)
Dist	-0.001 (0.112)	0.000 (0.045)	0.005 (0.052)	0.002 (0.099)	0.000 (0.009)	-0.007 (0.124)	0.000 (0.018)	-0.001 (0.017)	-0.019 (0.059)
RER	-0.000 (0.009)	-0.000 (0.009)	-0.002 (0.009)	-0.002 (0.029)	-0.000 (0.003)	-0.001 (0.009)	-0.00 (0.005)	-0.000 (0.003)	-0.004 (0.010)
TradTimelm	-0.790*** (0.301)	-0.066 0.199	-0.399 (0.378)	3.495*** (0.805)	-0.122* (0.074)	2.869*** (0.480)		0.443*** (0.076)	-3.877*** (0.704)
TradDoclm		0.772 (0.593)		-4.144*** (1.117)		-5.161*** (0.580)		0.064 (0.046)	
<b>Observations</b>	56	63	63	72	63	63	63	63	63
<b>R<sup>2</sup></b>	0.9029	0.9374	0.8766	0.8449	0.9660	0.6970	0.8399	0.9028	0.9391
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.									

Table D.3. Results of regressions on Gravity Model for total forest products trade

Variable	BRN [RE]	CBD [RE]	IND [RE]	LAO [RE]	MAL [RE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [RE]
GDP <sub>o</sub>	1.158*** (0.227)	2.911*** (0.256)	1.120*** (0.157)	0.980 (0.742)	0.841*** (0.065)	0.066 (0.243)	0.913*** (0.165)	2.453*** (0.094)	-0.479* (0.275)
GDP <sub>p</sub>	0.003 (0.026)	-0.002 (0.014)	0.005 (0.016)	0.011 (0.039)	0.000 (0.007)	0.004 (0.020)	0.003 (0.013)	0.001 (0.006)	0.006 (0.020)
Pop <sub>no</sub>	6.643*** (1.212)	-13.236*** (1.819)	-8.592*** (1.922)	0.712 (6.320)	-3.172*** (0.403)	-0.110 (1.799)	-0.182 (0.773)	-56.931*** (3.119)	31.239*** (4.714)
Pop <sub>np</sub>	-0.002 (0.028)	0.001 (0.011)	-0.004 (0.014)	-0.008 (0.035)	-0.000 (0.006)	-0.003 (0.021)	-0.003 (0.012)	-0.000 (0.005)	-0.005 (0.017)
Dist	-0.003 (0.122)	0.000 (0.19)	0.004 (0.032)	-0.005 (0.044)	0.000 (0.008)	-0.007 (0.099)	0.001 (0.014)	-0.001 (0.010)	-0.008 (0.037)
RER	-0.001 (0.009)	0.000 (0.004)	-0.001 (0.006)	-0.002 (0.013)	-0.000 (0.002)	-0.001 (0.007)	-0.001 (0.004)	-0.000 (0.002)	-0.002 (0.006)
TradTimeEx	0.011 (0.611)	5.059*** (0.402)	0.157 (0.199)	0.804 (1.388)	0.094 (0.086)	116.762*** (14.790)		0.187* (0.109)	5.540*** (0.956)
TradTimeIm	0.739 (0.615)	-4.836*** (0.491)	-0.613** (0.249)	-1.116 (1.469)		-58.753*** (7.368)		0.263** (0.102)	-5.896*** (0.754)
TradDocEx		1.899*** (0.089)		1.481 (2.422)					
TradDocIm		0.521 (0.397)							
<b>Observations</b>	56	63	63	72	63	63	63	63	63
<b>R<sup>2</sup></b>	0.8769	0.9883	0.8684	0.8723	0.8890	0.7037	0.9467	0.9803	0.9835
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.									

Table D.4. Results of regressions on Gravity Model for exported non-timber forest products

Variable	IND [RE]	MAL [FE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [FE]
GDP <sub>o</sub>	2.461 (3.763)	1.496 (1.581)	-6.908** (3.072)	1.117 (2.342)	3.726 (4.474)	-10.846*** (3.923)
GDP <sub>p</sub>	1.336*** (0.366)	0.540 (1.262)	0.820 (0.667)	1.542*** (0.417)	-2.169 (2.150)	-3.402 (2.156)
Pop <sub>no</sub>	-76.238* (13.171)	-18.355* (9.973)	55.596** (25.771)	-24.516** (11.399)	102.417 (188.4043)	164.516 (100.935)
Pop <sub>p</sub>	-0.193 (0.313)	-2.500 (6.031)	-0.184 (0.657)	-0.626* (0.373)	-22.493 (19.001)	4.234 (8.314)
Dist	-2.820*** (0.720)		0.454 (3.439)	-0.328 (0.452)		
RER	-0.167 (0.113)	3.214*** (0.743)	0.136 (0.235)	-0.005 (0.128)	0.491 (1.477)	2.851** (1.411)
TradTimeEx	-9.956** (3.692)	-6.581*** (1.936)	12.035 (8.351)		0.386 (4.778)	20.661** (9.838)
TradDocEx					3.241 (4.274)	
<b>Observations</b>	48	50	51	56	56	51
<b>R<sup>2</sup></b>	0.7218	0.5727	0.5256	0.8086	0.0008	0.6228
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.						

Table D.5. Results of regressions on Gravity Model for imported non-timber forest products

Variable	IND [FE]	MAL [RE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [RE]
GDP <sub>o</sub>	9.221* (5.313)	2.100 (2.688)	4.243 (3.562)	6.172** (3.103)	0.761 (4.526)	- 24.197*** (7.516)
GDP <sub>p</sub>	- 7.075 (4.338)	1.335*** (0.436)	- 2.770*** (1.064)	- 1.028 (0.698)	1.450*** (0.506)	0.082 (0.571)
Pop <sub>no</sub>	- 60.630 (59.625)	- 32.866** (16.260)	0.406 (29.216)	- 29.718** (14.721)	- 141.179 (173.558)	364.160*** (124.691)
Pop <sub>p</sub>	1.127 (11.019)	- 0.333 (0.441)	0.238 (0.316)	3.356*** (0.907)	0.168 (0.417)	0.229 (0.536)
Dist		0.404 (0.556)	10.441*** (3.529)	- 2.943*** (0.454)	- 4.455*** (0.978)	1.476 (0.983)
RER	2.849** (1.263)	- 0.198** (0.098)	0.147 (0.094)	0.304** (0.118)	- 0.102 (0.153)	- 0.067 (0.190)
TradTimelm	18.277*** (5.109)	- 2.816** (2.816)	6.242 (5.936)		- 1.999 (1.869)	19.272 (13.573)
TradDoclm			- 0.791 (6.421)		2.066* (1.141)	
<b>Observations</b>	33	43	40	41	49	35
<b>R<sup>2</sup></b>	0.7280	0.6254	0.5239	0.8292	0.6727	0.4871
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.						

Table D.6. Results of regressions on Gravity Model for total trade of non-timber forest products

Variable	IND [RE]	MAL [RE]	PHL [RE]	SIN [RE]	THL [RE]	VNM [RE]
GDP <sub>o</sub>	- 6.723 4.082	1.281 1.034	- 6.222** 3.017	- 0.616 2.170	- 0.504 3.340	- 10.362** 1.0785
GDP <sub>p</sub>	1.514*** 0.353	0.927* 0.504	0.698 0.854	1.905*** 0.535	1.126*** 0.327	0.813 0.709
Pop <sub>no</sub>	- 23.091 51.610	- 21.044*** 6.234	51.1429** 24.688	- 15.061 10.470	- 17.851 128.328	127.835* 72.241
Pop <sub>p</sub>	- 0.314 0.302	0.088 0.494	0.273 0.892	- 0.597 0.482	- 0.067 0.276	- 0.026 0.615
Dist	- 2.727*** 0.693	- 0.316 0.901	- 0.129 4.989	- 0.791 0.637	- 3.035*** 0.563	- 0.940 1.378
RER	- 0.228** 0.109	0.179 0.192	0.289 0.318	- 0.050 0.169	- 0.015 0.104	0.170 0.234
TradTimeEx	- 6.866* 3.806	- 4.835*** 1.472	26.582 168.519		8.992*** 3.307	1.430 12.912
TradTimeIm	9.337** 4.739		- 6.835 83.773		- 6.448** 3.089	9.209 10.657
<b>Observations</b>	48	54	51	56	56	51
<b>R<sup>2</sup></b>	0.7513	0.6600	0.5858	0.8656	0.7698	0.5941
Notes: Panel data models used for each particular case are in brackets. Standard errors are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level of significance, respectively.						