

# Agriculture Plus Plus : growth strategy for Myanmar agriculture

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**IDE DISCUSSION PAPER No.421**

**Agriculture Plus Plus:  
Growth Strategy for Myanmar  
Agriculture**

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**Abstract**

The development of agriculture is a main pillar of Myanmar's growth strategies. It is natural for the Myanmar government to prioritize agriculture as a source of economic growth, since it accounted for 36% of GDP, employs a majority of labor force, and generates nearly 30% of exports as of 2010. Although the agricultural share in GDP and employment usually declines as an economy grows, it is not a sunset industry in Myanmar. Methods exist for increasing agriculture's value added other than the growth of labor and land inputs. The key is to enhance three productivity measures: labor, land, and total productivity. We call this strategy "Agriculture Plus Plus."

**Keywords:** Myanmar (Burma), Agriculture, Agriculture Plus Plus, Senary Sector of Agriculture, Growth Strategy

**JEL classification:** O13, O53, Q10

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## **Introduction**

In June 19, 2012, President U Thein Sein declared that the government had entered the second phase of its reform strategy, which focused on economic development (NLM dated June 20, 2012). In the same speech, he announced four economic policies: (1) sustaining agriculture development toward industrialization and all-round development; (2) balanced and proportionate development among states and regions with equal share of budget and taxation, foreign aid, and foreign and local investment; (3) inclusive growth for the entire population; and (4) compilation of quality and accurate statistics.

It is natural and reasonable that the government prioritizes agriculture as a source of broad-based development and poverty reduction. Agriculture accounts for 36% of GDP, employs a majority of the labor force, and generates 25–30% of export earnings for Myanmar.

However, the agricultural share in both employment and GDP decreases as GDP per capita increases (Petty-Clark's Law). Syrquin and Chenery (1989) investigated the patterns of economic development for more than 100 countries during 1950–1983 and found that the share of agriculture in value added and employment declines as income level increases. Branson et al. (1998) investigated the sectoral composition of output for 93 countries during 1970–1994 and found a strong negative relationship between the agricultural share of GDP and per capita income.

This implies that agriculture alone cannot absorb Myanmar's increasing labor force, and it will not be a leading industry in the long term. What then is the role of agriculture in Myanmar's long-term economic development? How does agriculture fulfill its role?

### **1. Role of agriculture in long-term economic growth**

Myanmar is still an agriculture-oriented economy. It is rather surprising that the agricultural share in GDP had remained as high as about 60% up to 2000 (Table 1). Thereafter, it declined to 36% in 2010. The five-year plan (2011/12–2015/16) targets to reduce the agricultural share from 36.4% to 29.2%, and increase the industrial share from 26.0% to 32.1% and that of services from 37.8% to 38.7%. If this target is achieved, industry will replace agriculture as Myanmar's largest sector.

However, the decline of agricultural share in the first decade of the 2000s may be erroneous, resulting from overestimation of GDP figures. According to the official GDP, the economy recorded consecutive 12-year double-digit growth rates during FY 1999 through FY 2010.<sup>1</sup> Many economists believe that the official GDP figures had been overestimated, and that the

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<sup>1</sup> Myanmar's fiscal year starts is from April to March.

actual growth rates were much smaller. During the overestimated period, industry had grown much more rapidly (about 20% per annum) than agriculture to achieve the double-digit GDP growth rates. Therefore, the share of agriculture in GDP substantially declined in the first decade of the 2000s while that of industry increased.

Table 1: GDP by Industry

	Primary Industry				Secondary Industry			
	1980	1990	2000	2010	1980	1990	2000	2010
Myanmar	47	57	57	36	13	11	10	26
Cambodia	-	56	38	36	-	11	23	23
Lao PDR	-	61	49	31	-	15	19	27
Vietnam	50	39	25	21	23	23	37	41

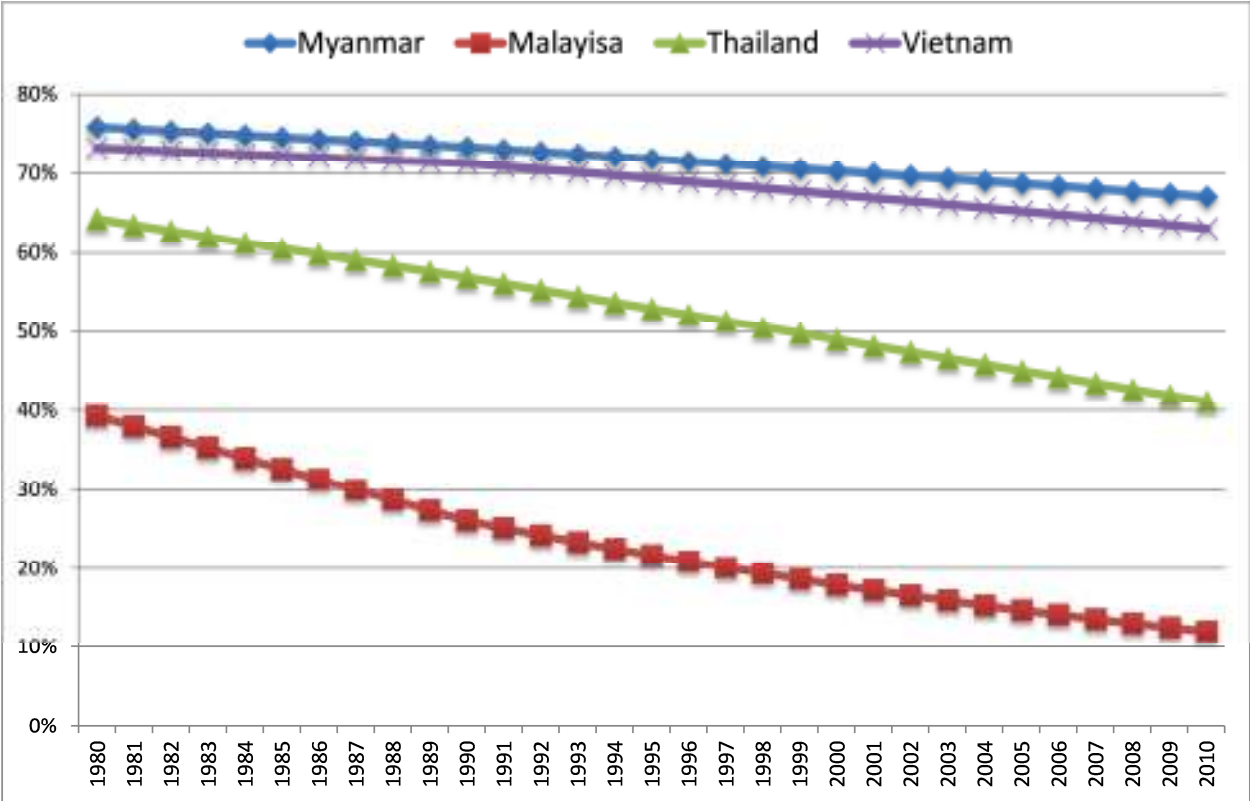
(Source) ADB, *Key Indicators for Asia and the Pacific 2011*.

Agriculture employs a majority of the Myanmar labor force. Figure 1 depicts the share of agricultural population (hereafter, AP)<sup>2</sup> in total population for selected ASEAN countries. Myanmar's AP share was 67.1% in 2010.

Based on the experiences of neighboring countries, the AP share declines as GDP per capita increases, and Myanmar follows this pattern. However, the decline in the AP share is slower than that of the agricultural GDP share. For example, Vietnam's share of primary industry in GDP declined from 50% in 1980 to 21% in 2010. In contrast, Vietnam's AP share was 73.3% in 1980 and declined only to 63.2% in 2010. Thus, for Myanmar, agriculture is expected to continue as a main employment source for the short and medium terms.

<sup>2</sup> Food and Agriculture Organization (FAO) statistics defines "agricultural population" as "all persons depending for their livelihood on agriculture, hunting, fishing and forestry. It comprises all persons economically active in agriculture as well as their non-working dependents."

Figure 1: Share of Agricultural Population in Total Population



(Source) FAO Statistics.

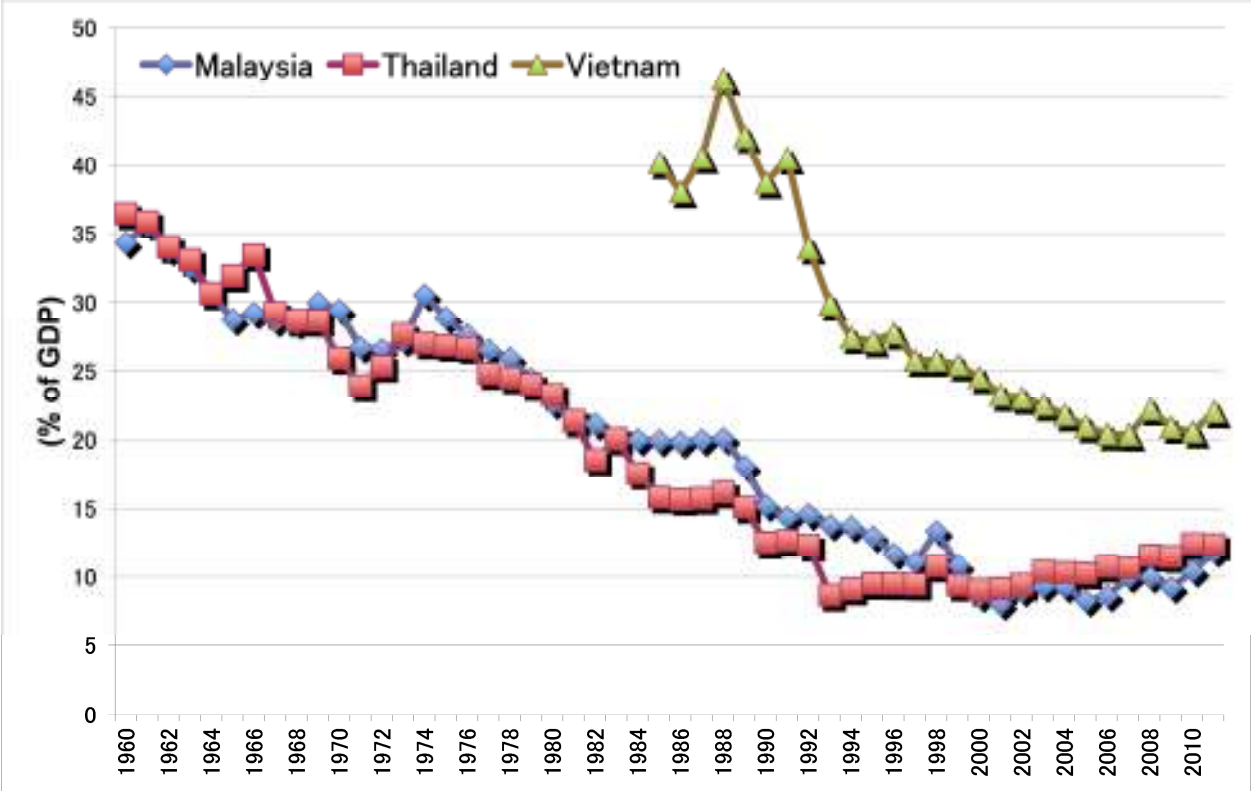
Figure 2 depicts agricultural GDP (hereafter, AGDP) share for selected ASEAN countries. For Thailand and Malaysia, the AGDP share declined from about 35% in 1960 to about 10% in the 2000s. Vietnam’s GDP share was over 40% in the late 1980s and declined to about 20% in the first decade of the 2000s. From these experiences of neighboring countries, Myanmar’s AGDP share is also expected to decline in the long term.

However, one important observation is that the AGDP share of these countries seems not to decline toward zero. In the first decade of the 2000s, the declining trend of the AGDP share was curtailed. Figure 3 shows the agriculture value added for Thailand, Malaysia, and Vietnam. Although the AGDP share declined until around the year 2000, the absolute value of agricultural value added has actually been increasing thereafter. The pace of increasing agricultural value added seems to have accelerated in the first decade of the 2000s. This phenomenon is partly because of the increasing prices of primary goods, supported by the ever-increasing world population and the economic development of large emerging countries such as China.

This trajectory means that although the relative importance of agriculture is declining in industrializing economies, agriculture is definitely not a sunset industry. Agriculture is not supposed to absorb more labor force than manufacturing and services in industrializing economies and is actually expected to release labor force to other sectors in the long term. Nevertheless, it continues to contribute to economic development by increasing land and labor

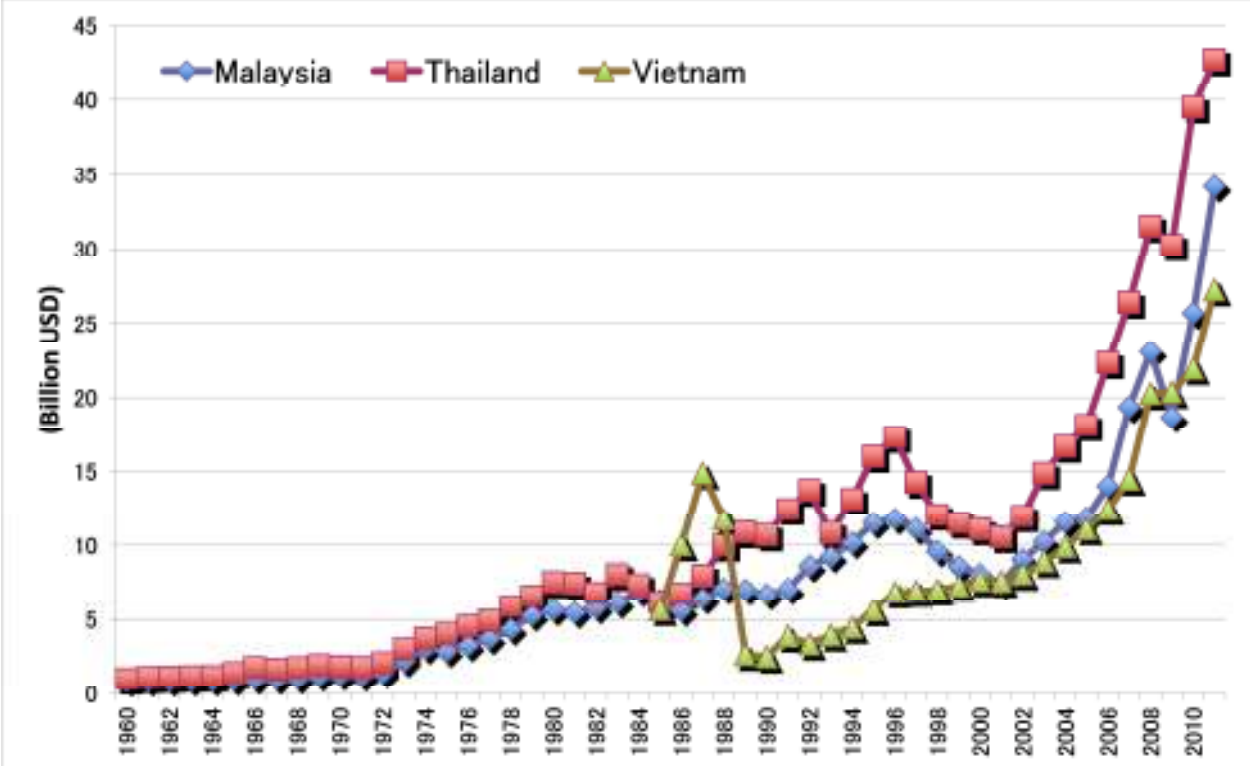
productivity. In fact, Martin and Mitra (1999) found that agricultural productivity growth was generally higher than that of manufacturing, both on average and for groups of countries at different stages of development during the period 1967–1992.

Figure 2: Agricultural GDP Share



(Source) World Development Indicators.

Figure 3: Value Added in Agriculture



(Source) World Development Indicators.

Moreover, agriculture has extraordinary capability to reduce poverty. The World Bank’s cross-country estimates show that GDP growth originating in agriculture is at least twice as effective in reducing poverty as that originating outside agriculture (WDR2008, p.6). Rural population represents roughly 70% of Myanmar’s total population, and poverty incidence in rural areas was about twice as high as in urban areas at 29% and 15% respectively, as of 2010. As a result, rural areas account for almost 85% of Myanmar’s total poverty. Thus, agriculture and its related businesses are expected to contribute strongly to poverty reduction.

Myanmar’s industrial sector remains dominated by agro-processing activities including rice milling and oil extraction. Comparative advantage will remain in primary activities such as agriculture, livestock breeding, fisheries, and agro-processing for the foreseeable future. In this situation, agricultural growth can stimulate strong growth in other sectors of the economy through multiplier effects (WDR2008, p.7). This effect explains why, for many years to come, the growth strategy for most agriculture-based economies must focus on agricultural development.

**2. How should Myanmar develop agriculture?**

Given the preceding discussion, what strategy should Myanmar adopt for the growth of agriculture? Assume the following production function for agriculture:



$$Y = Af(A_L L, A_N N),$$

where  $Y$  is output,  $A$  is total factor productivity,  $A_L$  is labor productivity,  $L$  is labor input,  $A_N$  is land productivity, and  $N$  is land input. In this case, the sources of growth are  $A$ ,  $A_L$ ,  $L$ ,  $A_N$ , and  $N$ .

Table 2 reports agricultural productivity in selected ASEAN countries. For labor productivity defined as the agricultural GDP per economically active population unit in agriculture, Malaysia's is exceptionally high at US\$11,370 per labor unit. The agricultural labor productivity seems to follow the level of economic development. Those of Indonesia, Thailand, and the Philippines are about US\$1,500 per labor unit, and those of Cambodia, Laos, and Vietnam are about US\$700–800. For Myanmar, the labor productivity is very low at about US\$300 per labor unit.

Table 2: Agricultural Productivity in Selected ASEAN Members (2009)

	(A)Agricultural GDP(million USD)	(B)Total Economically active population in Agriculture ('000)	(C) Agricultural Area ('000 Ha)	Labour Productivity (A)/(B)	Land Productivity (A)/(C)	Land per Labour (C)/(B)
Cambodia	3,484	4,895	5,555	712	627	1.13
Indonesia	82,503	49,513	53,600	1,666	1,539	1.08
Malaysia	18,646	1,640	7,870	11,370	2,369	4.80
Myanmar	5,598	18,613	12,411	301	451	0.67
Thailand	30,234	19,494	19,795	1,551	1,527	1.02
Vietnam	20,321	29,302	10,272	694	1,978	0.35
Philippines	22,019	13,336	11,950	1,651	1,843	0.90
Lao PDR	1,929	2,311	2,346	835	822	1.02
Total/Average	184,734	139,104	123,799	1,328	1,492	0.89

(Source) FAO Statistics and ADB, *Key Indicators for Asia and the Pacific*, 2011.

Land productivity studies reveal two groups of countries. The first group comprises Malaysia, Indonesia, Thailand, Vietnam, and the Philippines, each of whose land productivity is US\$1500–2500/ha. The second group comprises Cambodia, Myanmar, and Lao PDR, each of whose land productivity is less than US\$1000. Among them, Myanmar's is exceptionally low at US\$451/ha.

The land per labor unit ratio exhibits no major differences among ASEAN countries except for Malaysia, with the highest land per labor unit (4.80 ha/labor), and Vietnam, with the lowest (0.35 ha/labor). Myanmar's land per labor unit ratio is second lowest (0.67 ha/labor).

The discussion in Section 1 suggests that we cannot rely on the growth of labor inputs ( $L$ ) because other sectors, particularly manufacturing, will absorb an increasing proportion of the labor force. Therefore, we must tap four other sources of growth.

#### a) Expansion of agricultural land ( $N$ )

Expansion of agricultural land is indeed one option. Is there any possibility of reclaiming agricultural land in Myanmar?

Myanmar's agricultural land per capita is 0.261 ha, on par with that of Thailand (0.288 ha) and Malaysia (0.282 ha), and among the highest in the populated ASEAN countries (Table 3). However, agricultural land (net area sown) is only 18% of national area, smaller than that of the Philippines, Thailand, Vietnam, and Cambodia (more than 30%) and even Indonesia and Malaysia (more than 20%).

Successive governments have attempted to reclaim new agricultural land, and the military government (1988-2011) has successfully increased the net sown area for the last two decades (Figure 4). Yet, "cultivable waste other than fallows" remains at about 8% of national territory. Thus, further reclamation of cultivable wasteland in Myanmar is possible.

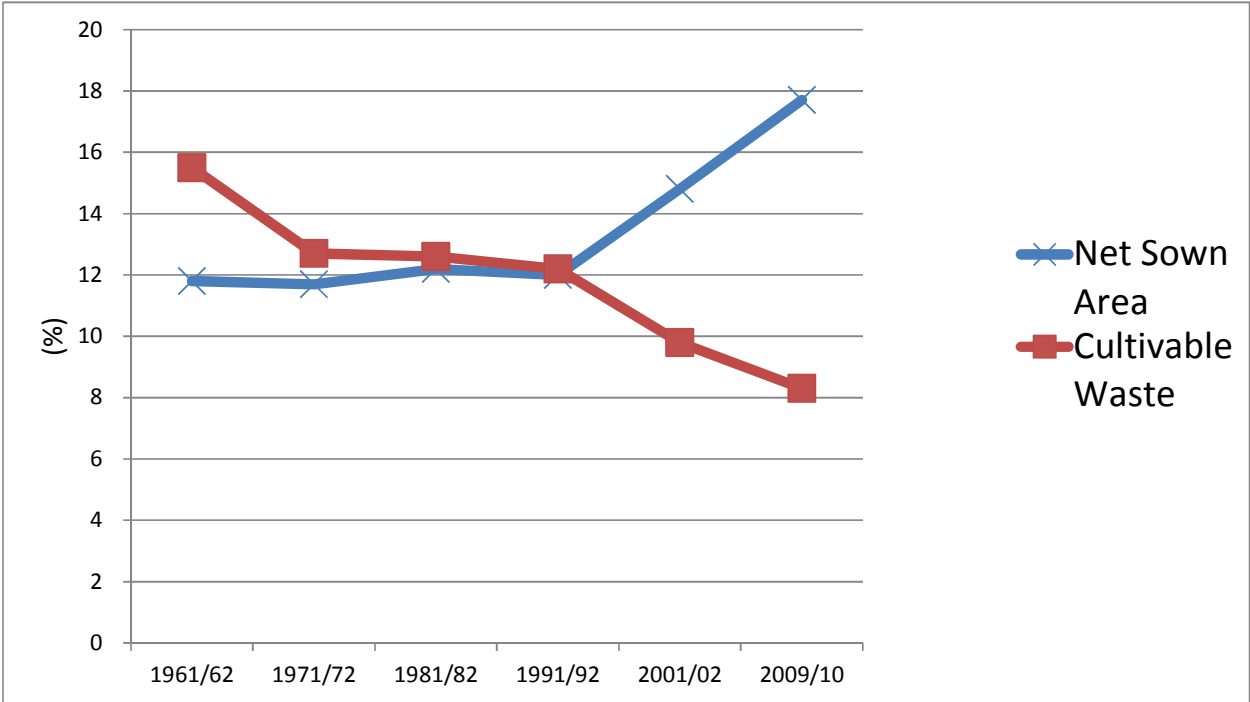
However, the frontier for reclaimable agricultural land has been disappearing in Myanmar, and expansion of agricultural land is becoming more technically difficult and financially costly. The military government implemented large-scale deep-water reclamation projects for paddy cultivation in the Ayeyarwady Delta in the early 21<sup>st</sup> century; however, these efforts largely failed. Moreover, the environmental and social impacts should be taken into account when planning the reclamation of agricultural land. Thus, we must look at the productivity improvement rather than sheer expansion of agriculture land.

Table 3: Agricultural Area, National Area, and Population of Selected ASEAN Members (2009)

	(A) Agricultural Area ('000 Ha)	(B) National Area ('000 Ha)	(C) Population ('000)	A/B	A/C
Myanmar	12,441	67,659	47,601	18.4%	0.261
Malaysia	7,870	33,080	27,949	23.8%	0.282
Thailand	19,795	51,312	68,706	38.6%	0.288
Vietnam	10,272	33,105	86,901	31.0%	0.118
Indonesia	53,600	190,457	237,414	28.1%	0.226
Philippines	11,950	30,000	91,703	39.8%	0.130
Cambodia	5,555	18,104	13,978	30.7%	0.397
Lao PDR	2,346	23,680	6,112	9.9%	0.384

(Source) FAO Statistics.

Figure 4: Land Use in Myanmar



(Source) Central Statistical Organization (CSO), *Statistical Yearbook*, various numbers.

**b) Enhancing labor and land productivity ( $A_L, A_N$ )**

We assume three kinds of productivity: labor productivity ( $A_L$ ), land productivity ( $A_N$ ), and total productivity ( $A$ ). First, we discuss land and labor productivity. As Table 2 reports, agricultural labor productivity in Myanmar is US\$301/person, the lowest among Southeast Asian countries. It is less than half of Vietnam’s and less than one fifth of Thailand’s. Land productivity in Myanmar is US\$451/ha, which is also the lowest among the ASEAN countries.

To investigate production volume rather than value, let us focus on rice, Myanmar’s most important crop. Table 4 reports land productivity on the basis of the production and area of rice paddy in 2010. The rice yield of Myanmar is 4.12 ton/ha, average for East Asian countries, with room for improvement, but not particularly low.

However, let us adopt a skeptical view toward the statistics for Myanmar as shown in Table 4. If we use the United States Department of Agriculture (USDA)’s data for Myanmar, Vietnam’s average yield of rice is nearly twice as high as Myanmar’s in 2008, although two sets of data show major discrepancies in rice yield for Myanmar (Kubo 2013, Figure 2). Again, accurate data is required for analyzing agricultural productivity.

The widening yield gap between two countries might be attributable to technological change rather than the changes in their rice pricing policies. In fact, Myanmar rice farmers have less

elaborate irrigation facilities and lower-performing High Yielding Varieties (HYVs) compared to their Vietnamese counterparts (Kubo 2013).

It seems obvious that we must enhance Myanmar's land and labor productivity. The typical method of enhancing land productivity is irrigation and proper use of fertilizer. Myanmar's government must develop a comprehensive plan for improving irrigation and distributing fertilizer among farmers. The typical method of enhancing labor productivity is mechanization, which also requires a comprehensive plan.

Table 4: Paddy Production and Area (2010)

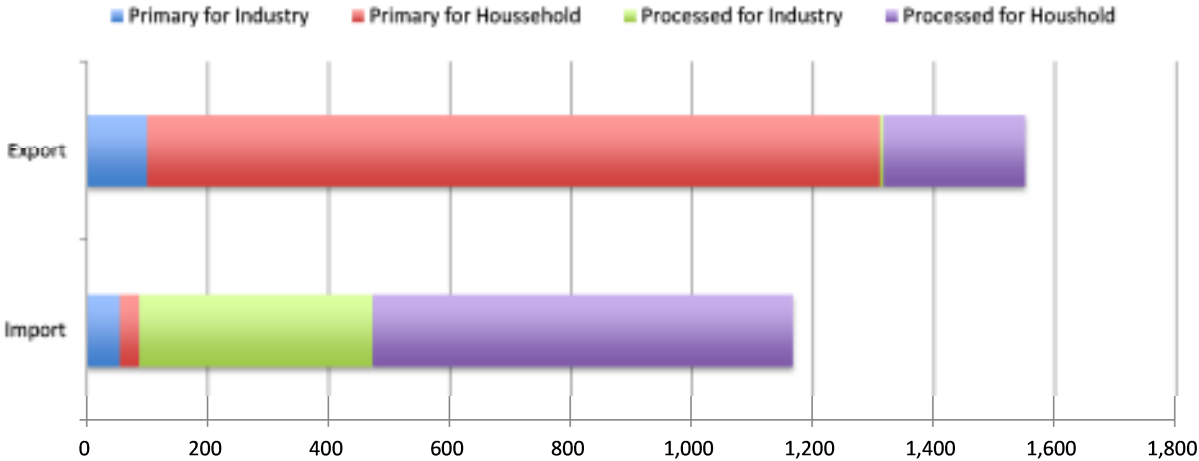
	(A) Production (Ton)	(B) Area(Ha)	A/B
South Korea	6,136,300	892,074	6.88
China	197,212,010	30,117,262	6.55
Japan	10,600,000	1,628,000	6.51
Vietnam	39,988,900	7,513,700	5.32
Indonesia	66,469,400	13,253,500	5.02
Myanmar	33,204,500	8,051,700	4.12
Malaysia	2,548,000	673,745	3.78
Philippines	15,771,700	4,354,160	3.62
Lao PDR	3,070,640	855,114	3.59
Cambodia	8,245,320	2,776,510	2.97
Thailand	31,597,200	10,990,100	2.88

(Source) FAO Statistics.

### **C) Enhancing total productivity (A)**

We also address the enhancement of total agricultural productivity. Two methods exist. One is to switch to higher quality products and a higher degree of processing. Currently, Myanmar exports low-quality agricultural produce (Figure 5). For example, the Thai white rice price is nearly double that of low-quality Myanmar rice in international markets. Myanmar is also an importer of food, particularly processed foods. To change this situation, we need quality seeds, farm management, improvement in post-harvest system, processing, and marketing to provide high-quality agricultural products.

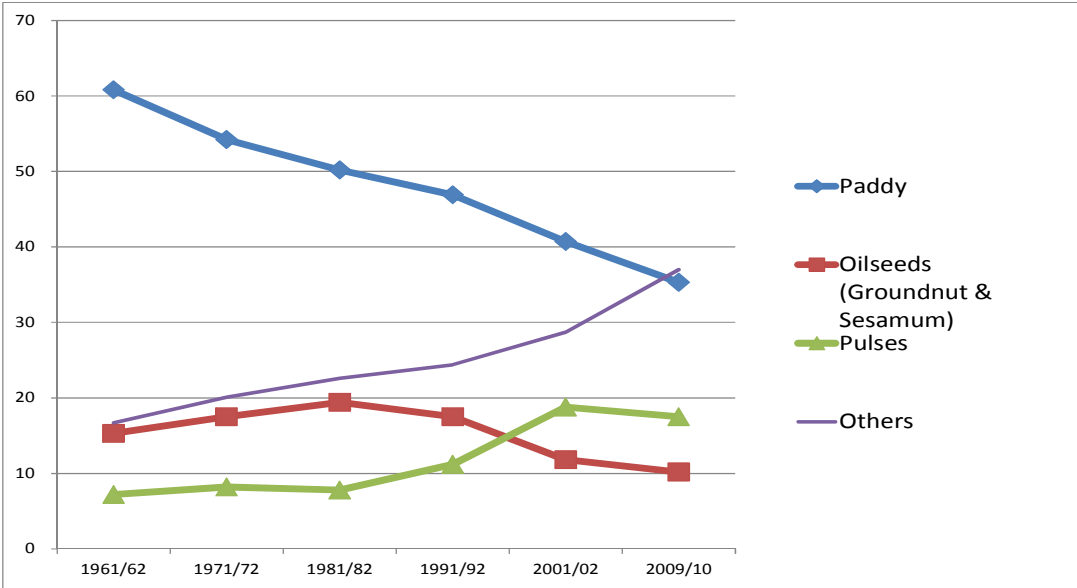
Figure 5: Myanmar’s Food Export/Import (2010: Million USD)



(Source) UN Comtrade.

The other method is to diversify the crops according to market demand. The share of rice in sown acreage has continuously declined since the 1960s (Figure 6). Myanmar’s agriculture is no longer rice dominated but more diversified. The share of pulses in sown acreage increased in the 1990s because of exports, mainly to India, but stagnated in the first decade of the 2000s. The share of oilseeds (groundnut and sesame) in sown acreage has declined in the last two decades because of palm oil imports from Malaysia and Indonesia. The shares of others such as rubber, sugarcane, cotton, maize, fruit, and vegetables have continuously increased since the 1960s. Livestock and fisheries also offer huge potential. Given that the rice production remains self-sufficient, Myanmar’s agriculture has more room to diversify into higher value-added crops and food according to market demands.

Figure 6: Sown Acreage by Crop in Myanmar



(Source) Central Statistical Organization (CSO), Statistical Yearbook, various numbers.

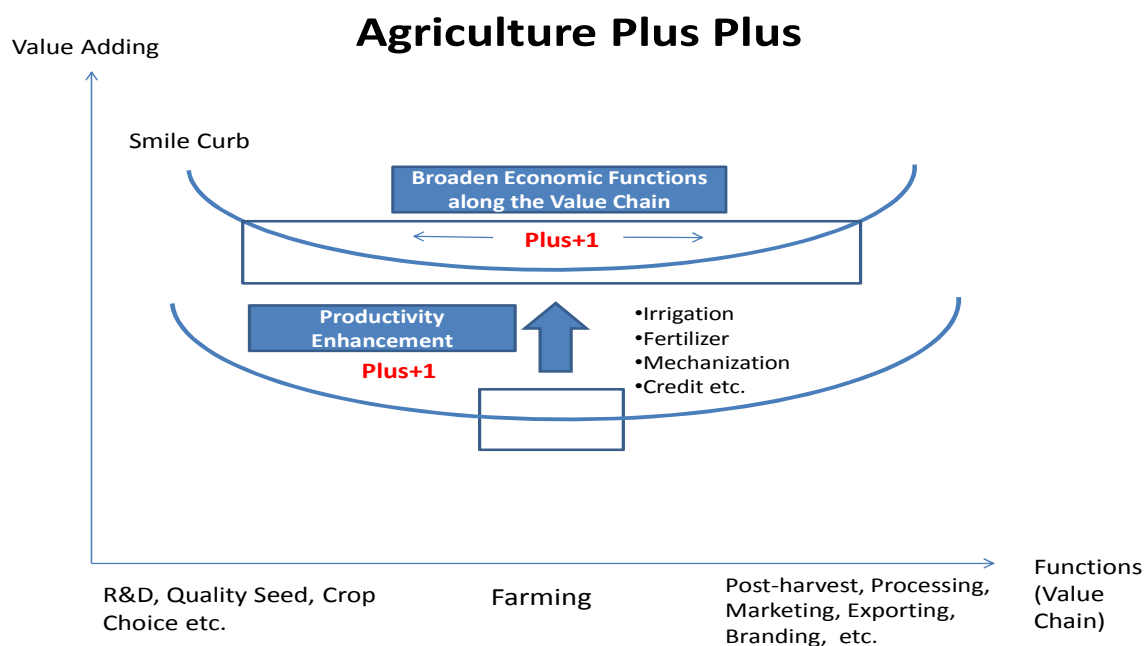
### 3. Agriculture Plus Plus

Summing up the preceding discussion, we have two ways to produce greater value from agriculture: (1) enhancement of land and labor productivity and (2) broadening economic function along the value chain. We call this strategy “Agriculture Plus Plus” after Malaysia’s “Manufacturing Plus Plus,” the concept of which was coined in the Second Industrial Master Plan (IMP2) for 1996–2005 (MITI 1995).

The main thrust of Malaysia’s “Manufacturing Plus Plus” has been its focus on attracting manufacturing facilities of higher value-added products and moving along the value chain of production toward higher value-added activities by emphasizing R&D and after-production activities such as services, distribution, and marketing.

Because any economic policy deemed appropriate at one time or for one country may not be appropriate at another time or for another country, Myanmar should modify Malaysia’s success scenario. While Malaysia’s “Manufacturing Plus Plus” can act as a role model, Myanmar could envision an “Agricultural Plus Plus” strategy for itself. Thus, this strategy targets moving along the value chain of production from farming to higher value-added activities such as R&D and post-harvest businesses including distribution and marketing (one plus). In addition, it shifts the entire value chain to a higher level through productivity-driven growth (the second plus) (Figure 7).

Figure 7: “Agriculture Plus Plus”



(Source) Authors.

For inter-industrial relations, “Agricultural Plus Plus” plans to connect the agricultural (first) economic sector to the manufacturing (second) and service (third) economic sectors, thus enables creation of the senary sector (integration of the primary, secondary and tertiary sectors). In this manner, agricultural development will contribute to more inclusive economic growth overall.

### **Concluding remarks**

Although the agricultural sector will not be absorbing more labor force in the long term, it is definitely not a sunset industry. Methods exist to increase agriculture’s value added other than the growth of labor and land inputs. The key is to enhance three productivity measures: labor, land, and total productivity. We call this strategy “Agriculture Plus Plus.” We need to expand this broad concept to more concrete and comprehensive action plans. This action is a challenge for both the Myanmar government and the private sector.

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