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Rethinking Agriculture Development in the Greater Mekong Subregion Countries

Abstract

The agriculture remains a strategic sector of the economy, despite the widespread decline in its share in GDP production and employment. Its development is observed as a key factor in maintaining food security, as well as reducing poverty. The GMS's agriculture is characterized by lagging growth rates in comparison with other sectors of the national economy. However, the GMS's agriculture has shown positive changes. First of all, countries in the region are following a path of intensification, so the yield has increased steadily, although its strong dependence on variable weather conditions is major risk. Much of the agricultural land in the GMS is prone to floods, droughts or both. At the same time, despite the growth in labor productivity, its increase was not significant. The structure of agricultural production has begun to change. Traditionally monoculture production, specializing in rice cultivation, is gradually diversifying into secondary cash crop production, which is helping to increase cash production and agricultural exports. Agriculture in the GMS has been shifting from traditional subsistence to modern commercial farming. Peasant farms are increasingly oriented to the regional and world markets. They begin to produce products with comparative advantages, participating in the regional division of labor. The construction of vertically integrated enterprises and value chains within the framework of the GMS is also taking place. The positive effect of integration processes is the convergence of prices on the regional agricultural market and direct impact on global consumers. This article examines the features and achievements of agriculture, as well as highlights the challenges and problems.

Keywords: *agriculture, Greater Mekong Subregion (GMS), agriculture development, agriculture productivity*

1. Introduction

The agricultural sector has traditionally occupied important positions in the economies of the Greater Mekong Subregion (GMS) countries. While its contribution has declined across the region and varies markedly, being more significant in Myanmar and Cambodia and less in Thailand, agriculture continues to have a large impact on economic development in all countries of the subregion without exception. Its role can hardly be overestimated.

Although in recent years GMS economies have acquired industrial-agrarian features and some of them have focused on creating a more forward-thinking, modern economy, the country's agricultural sector remains a crucial cog in the engine driving the country forward. With rapid development in manufacturing, service, retail and other sectors over the past few decades, the direct economic impact of the agricultural industry has been declining, although it remains a vital social backstop for rural population. Agriculture, the rice subsector, is still the dominant economic activity in many of the rural regions of the country, in places where other modernization and economic development efforts have not yet made a significant impact.

The subregion, while rapidly industrializing and urbanizing, remains predominantly rural; roughly 61% of the population, or 145 million people, live in rural areas and the vast majority are engaged in agriculture and depend on it (Ingalls et al., 2018, p. 2).

Agriculture remains a strategic sector of the economy for several reasons. First, food security is a key challenge for many Asian countries. This goal could be achieved only with self-sufficiency in agricultural products and the creation of reserves that guarantee food supply. Agriculture acts as the main production system that provides the population with food and guarantees food security. The GMS countries have achieved self-sufficiency in food production at the macro level but they face food shortages at the household level. 15% of GMS population suffer from malnutrition.

According to FAO food availability, access, utilization and stability over time have been identified as the four pillars of food security (FAO, FAOSTAT, 2021). In terms of physical accessibility, GMS countries have made tremendous progress, supported by increased production of staple food. For example, in Vietnam per capita food production has reached 525 kg/year. As a result, Vietnam was ranked among the top six countries in terms of food security and has become more resilient than most developing countries in Asia (Dao The Anh & Pham Cong Nghiep, 2020).

The results were more modest in other countries, but their success in increasing production were also very impressive. Over the past 10 years, the productive capacity of the GMS agricultural sector has made it possible not only to provide the necessary food but also to become a top exporter of several products, such as rice. This applies to Vietnam, Thailand, Myanmar, and Cambodia.

At the same time, due to persistent poverty, economic availability of food remains low. The GMS countries are challenged massively by maintenance of rural poverty. Currently, 19% of the population lives below the poverty line. Most of the poor are concentrated in rural areas. So, the development of the agricultural sector is also seen as a key factor in reducing the poverty.

Secondly, agriculture is a special sector of the economy, as it is highly dependent on environmental conditions that producers cannot always influence. Sometimes weather conditions cause serious deviations from average yields and thus seriously affect farmers' incomes.

Despite the serious outflow of labor from the agricultural sector, it retains an important role in ensuring employment of the population, reaching 44% in the subregion in 2019. So, the dependence of the rural workforce on agriculture for employment has not declined relative to the sector's contribution to GDP. This has resulted in widening income disparity between agriculture and non-agriculture sectors.

The agricultural sector has played an important role in accelerating and maintaining the dynamism of economic development. During the crisis years, when the export sectors of the economy were in the most vulnerable position, the role of the potential leader of economic growth in the country passed to the agricultural sector.

Despite all this, the level of agricultural production in the GMS countries remains rather low. It is characterized by an exceptionally high degree of dependence on weather conditions, rather weak diversification, and a low standard of living for the bulk of the rural population. That is why agriculture requires rethinking.

Methods and materials

The author focuses on the analysis of trends and problems in the development of the agricultural sector. The relevance of scientific research in this area stems from the strategic priority given to the agricultural sector in the modern economic development of the GMS countries, as

well as due to the need for a systematic understanding of the totality of processes and phenomena associated with the development of agricultural production.

This article is based on statistical data published by FAO, World Bank, which made it possible to track the dynamics of the production quantity, yields, agricultural lands, value added in agriculture, allowed to assess the change in productivity and trends of agriculture development.

Of great interest to the author were the publications of field studies conducted by various international and national non-governmental organizations. They contain very rare and valuable materials on the influence of the market on the budget of households and on the involvement of farms in agricultural diversification. Field studies provide an opportunity to see the problems of the village from the inside, and they provide insights into sometimes minor but crucial details of the peasantry's life that cannot be found in any of the Government's programs and Ministry's reports.

The preparation of the work also benefited from press materials containing numerous publications on economic and agrarian issues, including some of a critical nature. Among such publications we shall name the English-language newspaper "Phnom Penh Post."

Trends in agriculture development

In 2000–2020 agriculture value added has increased in all countries across the subregion. In Cambodia it has raised from 1.3 billion USD to 5.7 billion USD, in Laos – from 582 million USD to 2.7 billion USD, in Myanmar – from 2.6 billion USD to 17.7 billion USD, Thailand – from 10.7 billion USD to 44.2 billion USD, Vietnam – from 7.6 billion USD to 36.5 billion USD (Data World Bank, 2021).

At the same time, its contribution to GDP production decreased – in Cambodia from 35.9% to 22.8%, in Laos from 33.6% to 16.1%, in Myanmar from 57.2% to 22.8%, in Vietnam from 24.5% to 14.8%. The only exception was Thailand, where the agricultural sector's contribution to GDP increased rather than decreased – from 8.5% to 8.6% (Table 1). This was due to the more dynamic growth rates of other industries, in particular in manufacturing, tourism, retail and other service, which led to structural transformation.

At the same time, there was an outflow of labor force from agriculture. In 2001–2019 employment in agriculture decreased from 4.1 million to

3.2 million in Cambodia, from 13.9 million to 11.8 million in Myanmar, from 17.1 million to 12.1 million in Thailand, from 27.3 million to 21,3 million in Vietnam. Only in Laos there is a tendency to increase employment in agriculture in absolute indicators – from 1.9 million to 2.3 million (Data World Bank, 2021).

Despite the outflow of labor, a high proportion of workforce is still working in agriculture, even it has been decreasing in all countries without exceptions. The share of agriculture workers in total labor force declined from 73.4% to 34,5% in Cambodia, from 61.1% to 48,8% in Myanmar, from 81.8% to 61.4% in Laos, from 48.7% to 31.4% in Thailand, from 65.2% to 37.2% in Vietnam (Data World Bank, 2021).

Table 1. Contribution of the agricultural sector to the economies of GMS countries

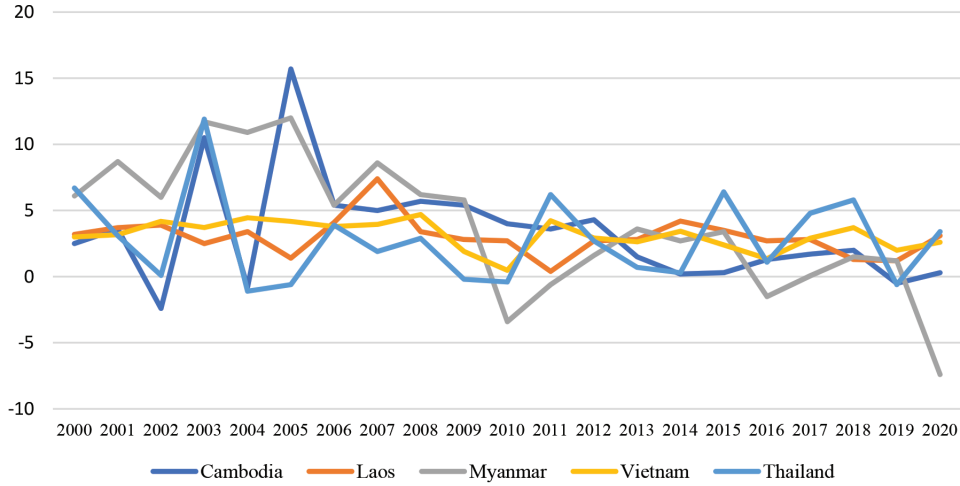
	Share of agriculture in GDP (%)		Share of agriculture in employment (%)	
	2000	**2020**	**2000**	**2019**
Cambodia	35.9	22.8	73.4	34.5
Laos	33.6	16.1	81.8	61.4
Myanmar	57.2	22.8	61.1	48.8
Thailand	8.6	8.5	48.7	31.4
Vietnam	24.5	14.8	65.2	37.2

Source: Data World Bank (September 2021).

The growth rate of the agricultural sector was marked by extreme unevenness, as well as strong fluctuations (graph 1). Since 2008–2010 growth has tended to slow. GMS agriculture found itself in the «track» of dependence on previous development and this is because the process of reorganization of the agricultural sector, which began in the late 2000s, has been slow and has not resulted in adequate and proper increase of efficiency in this sector.

The reasons for the slowdown are several, among them: unfavorable structure of the agriculture, extreme depreciation, wear and tear, obsolescence of production facilities and technologies. The growth of the agricultural sector was primarily based on labor-intensive and resource-intensive technologies, with little regard for labor efficiency.

Graph 1. Annual growth of agriculture (%)



Source: Data World Bank (September 2021).

Restructuring rice

Traditionally, in all GMS countries rice has been and remains the important agricultural crop in Cambodia, occupying 54% of GMS crop land and being the staple food of the population. Its share in the structure of cereal production varies from 77% in Laos to 92% in Cambodia (FAOSTAT, 2021).

Rice possesses vital importance to household food security and livelihoods. It's seen as the traditional basis of wealth and well-being. Rice farming is an integral part of life for most rural population. In the past decades, rice has also become a commercial crop of great importance GMS farmers, augmenting but not replacing its role in securing their subsistence.

There has been an increasing trend in the cultivation area of rice in three countries. Most significant expansion of rice land occurred in Cambodia – from 1.9 million ha to 3.0 million ha. In Myanmar and Laos land use under the rice was quite stable and there has been a minor expansion from 6.3 and 0.719 million ha to 6.9 and 0.783 million ha consequently (FAOSTAT, 2021). While in Thailand and Vietnam rice land has declined from 9.8 and 7.6 million ha to 9.7 and 7.4 million ha (Table 2).

At the same time, there was an increase in yield as a result of intensive, land-saving approaches. Average yield across the subregion has improved

from 3.0 to 4.1 ton per ha. However this pattern varies significantly across countries, being more significant in Vietnam and Laos and more moderate in other countries. For example, rice yield in Vietnam has reached 5.8, in Laos – 4.3, in Myanmar – 3.7, in Cambodia – 3.6, in Thailand – 2.9 ton per ha (Table 2) (FAOSTAT, 2021).

Following the increase in land productivity or higher yields, there has been a dynamic increase in production quantity of rice. Across the GMS it has reached 112.36 million tons. It should be noted that GMS occupies a prominent place in the world rice production. It accounts for 44% of world production. However, due to the variability of weather conditions and various natural disasters, fluctuations in production were observed. The most moderate growth of production quantity was in Thailand – from 25.84 to 28.35 million tons in 2000–2019, and most significant growth was in Cambodia, where production has more than doubled – from 4.02 to 10.88 million tons (Table 2) (FAOSTAT, 2021).

Table 2. Dynamics of rice production

	Cultivated area (million ha)		Yield (ton per ha)		Production quantity (million tons)	
	2000	**2019**	**2000**	**2019**	**2000**	**2019**
GMS	26.478	27.889	3.0	4.1	85.56	112.36
Cambodia	1.903	3.001	2.1	3.6	4.02	10.88
Laos	0.719	0.783	3.0	4.3	2.20	3.43
Myanmar	6.302	6.921	3.3	3.7	20.90	26.26
Thailand	9.891	9.715	2.6	2.9	25.84	28.35
Vietnam	7.663	7.469	4.2	5.8	32.52	43.44

Source: FAOSTAT (September 2021).

The growth of production quantity made it possible not only to meet the domestic needs of the country, but also to supply products to the world market. All GMS countries are net rice exporters, and their positions in the world market are quite significant. The share of the five GMS countries in global rice exports is 39%, the main contribution of which is made by Vietnam and Thailand.

It is curious to note that the best rice in the world is grown in the GMS. For almost 10 years, Cambodia, Thailand, and Vietnam are got to be right up the top and have been sharing Best Rice awards, consistently entering the top three producers of the best rice. Their rice has become a brand, has

evolved into an intangible asset that offers rich opportunities for additional income as well as positive spillover effects in related source-product areas. For example, in Cambodia the reputation of the best, most delicious and fragrant rice in the world has also had a positive impact on the development of gastronomic tourism and restaurant business. A chain of restaurants "Malis" and "Topaz" was opened in the country, aimed not only at the domestic consumer, but also at tourists. These establishments were included in the list of the best restaurants in the country (Jackson, 2014).

With the achievement of self-sufficiency in rice, despite its strong position, the restructuring of agriculture and diversification have begun. Agricultural sectors of some countries, such as Vietnam and Thailand, are more diversified than the rest of the subregion. They are among the leading exporters of several agricultural products, not only rice. While other countries have just started the diversification path. Some households combine cultivated crops, actively experiment with new technologies, and use high-yielding varieties with a short vegetation period. Many farmers have switched from growing rice to producing cash crops, such as fruits, vegetables, rubber, and pulpwood.

Interestingly, all major cash crops had a relatively high yield growth. This indicates that crops other than rice shared the technological benefits. As well cash crops are more profitable. According to the World Bank research, the income from rice production from 1 ha of irrigated land is much lower than the income from vegetables, amounting 654 and 4862 USD / ha respectively (World Bank, 2016).

Rice cannot be the future of a country's food security. Cash crops, such as coffee, cashew and fruit, can provide greater stability and higher incomes, enabling smallholders to lift themselves out of poverty and gain access to more nutritious food (Turner, 2019).

Farmers have begun to focus more and more on the demand in neighbouring and world markets. They have launched to produce products with comparative advantages, participating in the regional division of labour. In Cambodia, for example, in mid-2000s farmers have started to cultivate cassava. Its production has increased 41-fold, from 0.33 million tons to 13.7 million tons. It is mostly exported to GMS partner countries. Thailand is the main consumer of Cambodian cassava, accounting for 60% of its exports. China ranks second and accounts 38% of Cambodian cassava export (FAOSTAT, 2021).

The construction of vertically integrated enterprises and value chains within the framework of the GMS is also taking place. As studies show,

the efficiency of agricultural production increases significantly due to new organizational and economic forms of production, including vertically integrated enterprises and associations, capable, with the assistance of the state, to implement a coordinated innovation policy, long-term investments, technical re-equipment and infrastructure development on their territory.

So, diversification contributes to increasing profits, efficiency of agricultural production, improving food security and stability, and therefore improving the living standards of the rural population.

2. The main features of the technological method of agricultural production

Many areas of the subregion are characterized by high demographic pressure on land and, as a result, small size farms become the main production unit. The need to save land determined the parameters of economic growth in the agricultural sector. Land-saving technology, as the basis for technological transformation of agriculture, has contributed to the substitution of the land resource by the labor force resource, as well as material resources of industrial origin by repeatedly introducing into the production cycle the factor of land fertility and wasps of new methods of cultivation, using high-yielding varieties, fertilizers, insecticides, herbicides, allowing to increase yields. Thus, the need to save land resources caused the intensification of agricultural production, which is necessary to increase the yield of the product.

The productivity of the land, first of all, is provided by a significant level of consumption of chemical fertilizers, which tends to increase. Use of fertilizers has more than doubled in some countries and achieved high rates in others. In Vietnam, for example, the rate of use of fertilizers reached 252 kg / ha, which is significantly higher compared to other major agricultural producers. Vietnam significantly exceeds the level of fertilizer consumption compared to its neighbors in the region. In Thailand, which is the second largest exporter of rice, it was 117 kg / ha, while in Cambodia, the eighth largest exporter of rice, it was only 33 kg / ha (FAOSTAT, 2021). But the dynamics in the region shows growth. Likewise, herbicides are widely used, and their use is also growing.

The GMS countries did not ignore the achievements of the Green Revolution. High-yielding varieties and hybrids of the main agricultural

crop, rice, were also widely introduced. The most common varieties are (IR50404, VND95-20, OM576, VD20) with a short growing season, which are actively used in the rice bowls and allow up to 2–3 harvests per year (Dao The Ann & Thai Van Tinh, 2020).

Irrigation made a significant contribution to development, which also strengthened the land productivity. The share of irrigated land has significantly increased, but the main contributor to this process in the region was Vietnam. The share of irrigated land in Vietnam reached 69%, the highest rate. Cambodia has also made tremendous progress (Cammarota, 2019). Cambodia's irrigation systems have been accessible by about 62% of total farmland throughout the country (Khmer Times, 2020). In Laos it was estimated that the irrigation area covered around 31% of arable land (Sengsourivong, Ichihashi, 2019, p. 4).

So, the GMS countries have entered the biological and chemical stage of agricultural intensification, in which the main effect is manifested in an increase in land productivity (for example, there is an intensive increase in productivity due to the use of new technologies of irrigated agriculture, the use of mineral fertilizers and the use of high-yielding seeds).

Agricultural production has steadily increased in all countries of the GMS. And the main reason was the yields growth. Although the yield picture is very diverse by crop, direct comparisons are difficult to make given the differences in growing conditions, resource use patterns, seed varieties, but we can see the clear upward trend (Table 2).

3. Challenges in GMS agricultural sector

Despite significant successes in increasing production volumes, the most urgent economic task and the main indicator of success – a radical increase in labor efficiency in the agricultural sector – has not been solved. In 2019 in Vietnam, it was 1251 USD, in Cambodia – 1494 USD, Myanmar – 1697 USD, and in Thailand – 3288 USD per worker (Data World Bank, 2021). Labor productivity in agriculture, viewed from a macroeconomic perspective, is in fact increasingly lagging the changing average national productivity.

So, the problems in agriculture can be pointed out. The first is a dominance of rice, monoculture structure. Due to the lack of statistical data, it seems impossible to provide accurate estimates of labor efficiency in various sectors of the agricultural sector, but it can be assumed that there is a noticeable gap

between them. Rice cultivation is characterized by low labor productivity, its rate is noticeably lower than the average for the agricultural sector. At the same time, given the predominance of rice in the structure of agricultural land and the number of employees, the conclusion suggests itself that rice growing makes a negative contribution to increasing labor efficiency.

Moreover, the increase in rice production reduces the marginal use of resources to produce other crops. Most of the irrigated land is used for rice cultivation, which complicates the production of other more productive and highly profitable crops.

Second is high dependence on weather conditions. Due to water scarcity during the dry season, agricultural productivity is low in Cambodia and northeastern Thailand and moderate in Laos and the central highlands of Vietnam. In the most fertile area, the Mekong Delta, farmers can get up to three harvests a year. The introduction of modern water-saving technologies allows more efficient use of water, which is a limiting factor in plant growth in the dry season.

Third, the size and fragmentation of agricultural plots have had a negative impact. Small agricultural land often consists of three, four or many other tiny plots, sometimes separated by considerable distances, which affects the efficiency of labor. The degree of fragmentation differs by GMS countries and is higher in Vietnam, in particular in the Red River Delta and northern mountainous regions than elsewhere. Fragmentation is more pronounced for land with permanent crops than land used for permanent crops, forestry or aquaculture.

The small form of organization of production prevents the use of new technologies and methods of production, including more environmentally friendly ones. Land productivity comes to the fore and is achieved through the use of input resources. As a result, agriculture is placing significant and growing pressure on natural resources.

The fourth problem is overuse of natural resources. Rising use of land, water and chemical fertilizers has accelerated deforestation, biodiversity loss, land degradation, water pollution and increased greenhouse gas emissions. The consequences of active deforestation are becoming more and more evident, including the loss of soil cover, erosion, landslides.

Extremely negative consequences also arise from the excessive use of chemicals, such as fertilizers, insecticides and pesticides in crop production, and antibiotic therapy in livestock and aquaculture production. Farmers are risk averse and focus on maximizing yield rather than increasing efficiency and lowering costs for higher financial returns.

In the agricultural sector, the trend of the «costly» economy is growing, which leads to high production costs. At the same time, GMS specialization in inexpensive raw agricultural production of low or medium quality determines the low cost. Almost all GMS countries with only exception of Thailand exports unprocessed agricultural production. This results in excessively large losses of gross product and negative economies of scale.

The agricultural sector of GMS countries also has weak ties with industry, is insufficiently vertically integrated into the country's economic system, which complements each other for development. It remains a production base of poor quality agricultural raw materials with low competitiveness. Most of GMS's agricultural products are exported raw, unprocessed, accounting for example in Vietnam for over 80% of export turnover. The competitiveness of agricultural products remains low due to low variety, low quality, lack of brands on the market, identification labels, and traceability of goods.

Along with the economic indicators that revealed kind of developmental bottleneck and the "dead end" of economic progress in the agricultural sector of GMS countries, serious threats were manifested by the aggravated environmental problems and climatic changes caused to a certain extent by the intensive development model.

It can be said that at present the model of GMS countries is functioning at the limit of its capabilities, since the degradation of natural resources begins to have a noticeable effect on the net profit of farms.

The image of the GMS village has changed significantly over the past decades. At the same time, the main objectives of improving the well-being and standard of living of the rural population have been implemented unevenly and at a slower pace than in urban areas. For example, in Vietnam recent surveys show that the incomes and living standards of the majority of farmers, although increasing, are still low. At the same time, living costs are rising, so that the actual saving capacity of rural households remains very low. 40% of rural households have no savings. The rate of rural poverty is 6.4 times higher than urban poverty. Despite its significant decline, a sizeable proportion of the rural population remains very vulnerable to poverty, as a large proportion of the population is concentrated at the bottom of the income distribution scale.

The situation is similar in other countries. In Cambodia, for example, three quarters of the population is still classified as nearly poor, just above the poverty line. Thus, the poverty rate is very sensitive to where the poverty line is drawn. A drop in the daily income of farmers by only

0.30 USD will cause an increase in poverty, because of which at least about 3 million people will be below the poverty line (World Bank, 2017).

With this financial capacity, it is very difficult for households to not only invest in expanding production, improve their skills or cope with weather disasters and epidemics, but also maintain food stability. Thus, the slow improvement of the living conditions of the rural population and rural poverty severely hamper the development of the agricultural sector.

4. Conclusions

The agricultural sector in GMS countries has demonstrated a number of achievements. Agricultural practices, technologies and mechanization of production have been introduced in the agricultural sector, significantly increasing land productivity and, as a result, yields and production quantity. Its transformation and growth have helped to lift millions of people out of poverty, improve the living standards of the population, ensure food security and ensure stable and large supplies to the world market.

However, they have revealed a number of difficulties along with their enormous results. Having achieved the growth of yields, production and exports, the GMS countries has not achieved a corresponding increase in efficiency and product quality. Substantial transformation of the productivity potential of the land used has failed to liberate economies of scale from the gin bottle. The quantitative increase in agricultural production and land productivity has been accompanied by negative consequences for the natural resource base of the agricultural sector, compounding the problems of preserving land potential and maintaining ecological balance, threatening the possibility of sustainable growth in the agricultural sector. Thus, "in order to grow, agriculture must learn to conserve." So, despite significant progress a number of problems persist and are increasing in agriculture, making rethink of agriculture.

References

Cammarota K. (2019), *Agriculture in Vietnam: On the road to development. The Borgen Project*, https://borgenproject.org/agriculture-in-vietnam/

Dao The Anh & Pham Cong Nghiep (2020), *New Challenges for Food Security in Vietnam. Food and Fertilizer Technology Center for the Asian and Pacific Region*, https://ap.fftc.org.tw/article/2547

Dao The Ann & Thai Van Tinh (2020), The Cross Border Trade in Rice from Cambodia to Vietnam, in: R. Cramb (ed.), *White Gold. The Commercialization of Rice Farming in the Lower Mekong Basin*, Singapore.

Data World Bank (2021), https://data.worldbank.org

FAO, FAOSTAT (2021), http://www.fao.org/faostat/en/

Ingalls M.L., Diepart J.-C., Truong N., Hayward D. et al. (2018), *State of Land in the Mekong Region*, Centre for Development and Environment, University of Bern and Mekong Region Land Governance, Bern, Switzerland and Vientiane, Lao PDR, with Bern Open Publishing.

Jackson W. (2014), Rice masters and farmers on the growth of Cambodia's 'white gold', *Phnom Penh Post*, 21 March, https://www.phnompenhpost.com/7days/rice-masters-and-farmers-growth-cambodia%E2%80%99s-%E2%80%98white-gold%E2%80%99

Policy Brief. *Food security*. FAO (2006), Issue 2, http://www.fao.org/fileadmin/templates/faoitaly/documents/pdf/pdf_Food_Security_Cocept_Note.pdf

Sengsourivong B. & Ichihashi M. (2019), Effectiveness of Irrigation Access on Sticky Rice Productivity: Evidence from Lao PDR, *Sustainability*, Vol. 11, 5839.

Turner J. (2019), More Than Rice: The Future of Food Security in Vietnam, 25 July, https://news.climate.columbia.edu/2019/07/25/actoday-vietnam-rice-food-security/

Water from Cambodia's irrigation canals accessible by 62% of total farm land (2020), *Khmer Times*, 01 July, https://www.khmertimeskh.com/50739924/water-from-cambodias-irrigation-canals-accessible-by-62-of-total-farm-land/?__cf_chl_managed_tk__=pmd__h.DNPTnMwvyJwwwjn53ENgQTa01uzX5a_fNFe2bOpo-1632124510-0-gqNtZGzNA1CjcnBszQg9

World Bank (2016), *Vietnam Development Report 2016. Transforming Vietnamese Agriculture: Gaining More from Less*, Hanoi.

World Bank (2017), *Cambodia – Sustaining strong growth for the benefit of all*, Washington, D.C.: World Bank Group.