

INCREASING IMPORTATION OF RICE IN GHANA: CAN THE COUNTRY TRANSFORM ITS FORTUNES IN THE RICE SECTOR?



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Prepared by the staff team of IFS, led by Dr. Said Boakye

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All views or enquiries should be channeled to:
The Executive Director, P.O. Box CT11260, Cantonments, Accra, Ghana

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Abstract

Importation of rice has been a serious issue of concern for the government of Ghana since the 1960s, due to its balance of payments, exchange rate, and food security implications. Therefore, over the years, the government has pursued a number of strategies to stem it. Yet, not only do data reveal that the strategies have failed to curtail it, they also reveal that rice importation has accelerated in recent years, making it assume alarming proportions. This is because, even though the government is generally aware of the challenges facing the country's rice sector, we find in this paper that the government's strategies are not appropriate enough to address the fundamentals of the problem. Simply put, we find that there has been a policy failure in the country's rice sector because the policies the government of Ghana has pursued in the sector are ill-suited. Methodologically, we have compared, in this paper, Ghana with Thailand and Vietnam, two major successful players in the global rice industry, in terms of the dynamics of rice import, production, and consumption. We have also examined the fundamental factors that have affected these dynamics. Additionally, we have analyzed the policies that have been pursued by the respective governments of these countries to address the fundamental factors affecting the performance of the rice sectors in these countries. These have provided us with a strong empirical understanding of the performance of Ghana's rice sector and its underlying factors in comparative terms. They have also enabled us to identify the weaknesses in the government of Ghana's policies towards the sector. Armed with these insights, we have provided recommendations, which, if adopted by the government, will not only successfully address the issue of increasing rice importation, but they will also lead to a positive transformation of the country's rice sector, making Ghana become a major net exporter of rice.

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1 Introduction

Ghana has seen sharp increases in the consumption of rice over the years, as rice has become an important staple food in the country, particularly among urban dwellers. Data from the Ministry of Food and Agriculture (MoFA) show that yearly per-capita consumption of rice increased from 12.4 kg in 1980 to 14.5 kg in 2000. In the 2000s, consumption of rice in the country began to accelerate. Therefore, by the end of 2010, per-capita consumption of rice had increased to 32 kg. And by the end of 2022, it had reached as high as 61.05 kg.

Owing to the inability of domestic production of rice to meet its consumption, importation of rice has long been an issue of concern for the government of Ghana. For instance, the Nkrumah government identified rice import to be among the top two food imports (in terms of growth from 1951 to 1961) that “had become a major factor in the worsening balance of payments situation” (Page 55, Seven-Year Plan for National Reconstruction and Development, 1963/64 – 1969/70). Also, after praising itself for having achieved a sharp growth in rice production by an average annual rate of 9.8% from 1970 to 1974, the highest growth rate among the production of cereals, and attributing this feat to “the general response of the population of Ghana to the Operation Feed Yourself Program”, the Supreme Military Council (SMC) government still lamented as follows: “In spite of the marked increases in the production of rice and maize, imports of rice between 1970 and 1974 averaged ₵12 million per annum and those of maize were ₵116,000 per annum to meet the growing demand for these crops both for human consumption and for animal feed” (Page 4, Five-Year Development Plan, Part II, 1975/76–1979/80). More recently, in its National Rice Development Strategy (NRDS, 2008–2018), the Kufuor government raised issues regarding rice importation as follows: “Ghana depends largely on imported rice to make up the deficit in rice supply. On the average, annual rice import is some 400,000 tons. The self-sufficiency ratio of rice in Ghana has declined from 38% in 1999 to 24% in 2006.”

Due to these repeated concerns about rice importation, the government of Ghana has pursued strategies over the years to try to stem it. Yet, data reveal that importation of rice continues to grow, and it has assumed alarming proportions in recent years. The questions, therefore, are as follows: (1) What specific strategies have been pursued over the years to stem rice importation in Ghana? (2) How large is import of rice and to what extent has it responded to the strategies of the government? (3) What are the causes of the growing importation of rice in Ghana despite the strategies pursued over the years? And (4) can the country transform its fortunes in the rice sector by addressing the factors that limit the sector’s performance?

The main strength of this paper is that it draws lessons from two major successful

players in the global rice industry – Thailand and Vietnam¹. This is done by comparing Ghana with these two major players since the early 1960s in terms of the dynamics of rice import, production, and consumption. It also compares Ghana with these two players regarding the factors that have affected these dynamics. This has provided us with a strong empirical understanding of the performance of Ghana's rice sector and the factors that have limited it, resulting in increasing importation of rice. The study has, therefore, enabled us to have the knowledge, understanding and confidence to propose solutions that, we believe, can help Ghana positively transform its fortunes in the rice sector.

The rest of the paper is structured as follows: Section 2 presents the government of Ghana's strategies pursued over the years to stem rice importation in Ghana. Section 3 analyzes the behavior of rice imports in Ghana compared with those of Vietnam and Thailand. Section 4 discusses the factors that have led to the growing importation of rice in Ghana, compared with Vietnam and Thailand. Finally, Section 5 provides policy recommendations.

2 Government Strategies to Stem Rice Importation in Ghana

To discourage importation of rice in Ghana, government policy has generally been directed at increasing local production of rice to substitute for its imports. However, the strategy to achieve this has been different after 2008 compared to before.

2.1 The Pre-2008 Era

Despite recognizing the problems associated with importation of rice as pointed out in the introduction, before 2008, the government of Ghana did not implement strategic plans specifically dedicated to encouraging rice production as a means of limiting its importation. However, specific projects on rice production, usually donor-sponsored, were implemented from time to time. Therefore, strategies to encourage rice production and stem its importation were implicit in general policy programs on crops or, at best, on cereals. Consequently, to encourage rice production and discourage its importation during this period, challenges facing cereal or crop production in general were to be addressed. For instance, in its seven-year development plan cited in the introduction, the Nkrumah government identified low productivity as the main challenge facing crop/cereal (and implicitly rice) production. This low productivity, according to the Nkrumah government, was due to (a) too small acreage for cultivation, (b) scarcity of water in many parts of the country, (c) poor quality of seeds, (d) limited availability of credit for farming, (e) application of poor farming technology, and (f) limited access to market in many parts of the country. For the SMC government, the challenges included: (1) reliance on the traditional land tenure system, hindering acquisition of land for large-scale commercial farming; (2) poor land preparation and cultivation methods due to

¹*Thailand and Vietnam are respectively number 2 and 3 largest exporters of rice in the world today.*

limited availability and unaffordability of agricultural machinery; (3) poor, and in many instances, unavailability of access roads to crop (and thus rice) producing areas; (4) short supply of improved and high yielding seeds; (5) weak extension services; (6) inadequate irrigation facilities, making crops (and thus rice) dependent on unpredictable rainfall; and (7) limited agricultural credit. Also, in its National Development Policy Framework (1994), the Rawlings government saw low productivity resulting from the overdependence on shifting cultivation and rainfall as the main challenge facing crop (and implicitly rice) production. And in the GPRS I and II, the Kufuor government saw the following as the main challenges facing crop (and thus rice) production, which needed to be addressed in order to ensure self-sufficiency: (i) too much dependence on unpredictable rainfall and thus limited irrigation facilities; (ii) dependence on traditional techniques of production; (iii) limited use of fertilizer; (iv) poor quality of seeds; (v) bush fires; (vi) post-harvest losses; (vii) storage, transportation and marketing problems; and (viii) limited affordable credit.

2.2 The Post-2008 Era

Since 2008, Ghana has implemented strategic plans specifically dedicated to encouraging rice production as a means of addressing its importation. Owing to the 2007–2008 world food price crisis, which caused the price of a metric ton of rice to increase from US\$313.49 in January 2007 to as high as US\$1,015.21 in April 2008², the need to sharply raise domestic production of rice in Africa was realized, both in Africa and beyond. This is because Africa was hard hit, since the continent depended on large and increasing importation of rice for domestic consumption. Consequently, Coalition for African Rice Development (CARD) was established and launched in May 2008 by the New Partnership for Africa's Development (NEPAD), Japan International Cooperation Agency (JICA), and Alliance for Green Revolution in Africa (AGRA) during the Fourth Tokyo International Conference on African Development (TICAD IV) in Yokohama. When established, CARD aimed at doubling rice production in Africa from 14 to 28 million metric tons in 10 years (from 2008 to 2018) by supporting rice development efforts of African countries through capacity development, coordination among stakeholders in the rice sector of African countries, and advocating for increased investment in the sector. Upon its establishment, CARD required member states to prepare strategies for the development of their respective rice sectors, called National Rice Development Strategy (NRDS), while providing them with facilitation and technical support.

2.2.1 National Rice Development Strategy I (NRDS I, 2008-2018)

Because Ghana was among the first group of 12 African countries that joined CARD in 2008 (CARD now comprises 32 African countries), Ghana immediately began to prepare its National Rice Development Strategy (NRDS). By February 2009, Ghana

²Using *Primary Commodity Prices data of the IMF*

had finished drafting the strategic document on rice development³, which covered the period from 2008 to 2018.

Ghana's 2008–2018 National Rice Development Strategy, now termed NRDS I, aimed at doubling rice production in the country during the ten-year period, in line with the CARD's Africa-wide vision. The goal, the strategic document states, was to "contribute to national food security, increased income and reduced poverty towards the attainment of self-sufficiency from sustainable rice production". NRDS I also states that the objectives were to (i) increase domestic production of rice by 10% yearly over the 10-year period; (ii) promote consumption of locally produced rice by improving quality; and (iii) promote innovation capacity of stakeholders for the utilization of rice by-products while ensuring sound environmental management practices.

According to the government, in preparing NRDS I, it took into consideration "the major constraints especially land development and land tenure arrangements, seed, fertilizer, inadequate human resource capacity, inadequate harvesting and post-harvest management technology, weak local rice marketing system and the role of Government and related agencies".

Regarding land tenure, NRDS I recognized the issue of access to land, given the nature of the country's traditional land tenure system, as follows:

"The land tenure system is a constraint to rice production in Ghana because of its general effects on both access and security. The system tends to limit the size of holdings and investments towards land improvement, especially in the lowland rain-fed ecology. There is general gender bias in favor of men in the allocation of land. The country has a large rain fed lowland ecology that is suitable for rice production but remains largely unexploited".

To address this land access problem resulting from the country's land tenure system, the government's strategy was as follows:

"Inventories will be taken of all ecologies suitable for rice production. The NRDS (Ghana Government) proposes to engage traditional rulers and/or land owners and district assemblies ahead of the development of the specific ecology for long term lease or using land as equity in the investment. Once secured, a joint public-private land investment partnership arrangement will be put in place to ensure sustainability" (Page 6, National Rice Development Strategy (NRDS I), February 2009).

NRDS I also devised strategies to address (i) the Seed System; (ii) Fertilizer Marketing and Distribution System; (iii) Post-Harvest Losses and Marketing; (iv) Irrigation and Water Control; (v) Equipment Access and Maintenance; (vi) Research and

³As I write this paper, Ghana's strategic document on the rice sector posted to the website of CARD, serving as the country's National Rice Development Strategy (NRDS), is still the February 2009 draft.

Technology Dissemination; and (vii) Community Mobilization, Farmer-Based Organizations and Management.

2.2.2 National Rice Development Strategy II (NRDS II, 2019-2030)

Having achieved estimated 93.2% of its goal by increasing rice production in Africa from 14.0 million metric tons in 2008 to estimated 26.1 million metric tons in 2018, CARD approved a second phase (CARD Phase II, 2019-2030) during its Seventh General Meeting from 2nd to 4th October, 2018 in Tokyo, Japan. The goal was to, again, double rice production in Africa to 56 million metric tons by the end of Phase II, using the “RICE” Approach – Resilience to climate change (R), Industrialization in terms of the use of mechanization (I), Competitiveness regarding the use of certified seed and improvement in post-harvest losses (C), and Empowerment in terms of improvement in household incomes and livelihoods as well as access to finance for small-scale farmers (E). Again, as a member of CARD, Ghana had to prepare its second national rice development strategy (NRDS II, 2019-2030), in line with the vision of CARD’s Phase II.

Ghana’s NRDS II, 2019-2030, prepared, again, with technical support from CARD, was completed in December 2021. The goal of NRDS II was the same as that of NRDS I, which is “to contribute to national food security, increased income and reduced poverty towards the attainment of rice self-sufficiency”. However, NRDS II projected that self-sufficiency in domestic rice production would be attained by 2024. This, the document argues, would contribute to food security in general and increased incomes of actors in the rice sector.

NRDS II states its objectives as follows: “(i) to create an enabling environment for private sector investment in the rice sector; (ii) to increase domestic production by 20% annually through the use of gender sensitive and productivity enhancing innovations for actors along the rice value chain; (iii) to improve quality of local rice to meet both domestic and sub-regional market standards; (iv) to build the capacity of stakeholders to enhance their operations; (v) to establish an efficient information management system for rice; and (vi) to create platforms for information sharing among rice stakeholders.” Thus, unlike NRDS I that had only 3 objectives as enumerated earlier, NRDS II has seven objectives. Also, unlike NRDS I that had an objective of increasing domestic production of rice by 10% annually as stated earlier, NRDS II has an objective of increasing domestic production of rice by 20% annually.

In line with the above goal and objectives, NRDS II has projected to increase domestic production of paddy rice from 925,000 metric tons in 2019 to 2,737,000 metric tons in 2024, and further to 3,801,000 metric tons by 2030. In terms of milled equivalent, NRDS II has projected to increase domestic rice production from 638,000 metric tons in 2019 to 1,779,000 metric tons in 2024, and further to 2,547,000 metric

tons in 2030. Thus, within a period of 12 years, Ghana's NRDS II aims at quadrupling rice production. To achieve the projected increase in domestic rice production, NRDS II has projected to increase total area of rice cultivation from 282,000 hectares in 2019 to 498,000 hectares in 2024, and further to 667,000 hectares in 2030. Rice yield/productivity in terms of metric tons per hectare is also projected to increase from 3.28 in 2019 to 5.50 in 2024, and further to 5.70 in 2030.

Like NRDS I, NRDS II saw Ghana's land tenure system, limited use of improved seeds, limited use of fertilizer, limited irrigation infrastructure, low soil fertility, limited access to machinery and spare parts for rice farming, limited access to credit, poor rice storage infrastructure, poor marketing system for local rice and others as the main challenges facing the rice sector. Therefore, similar to NRDS I, in the section dedicated to discussing strategies, various strategies have been presented to address (i) the Seed System; (ii) Fertilizer Marketing, Distribution and Usage; (iii) Harvesting, Post-Harvest and Marketing Issues; (iv) Irrigation and Water Control Investment; (v) Equipment Access and Maintenance; (vi) Research, Technology Development and Transfer; and (vii) Community Mobilization, Farmer-Based Organizations and Credit Management. However, relative to NRDS I, NRDS II strategies to address these issues are more elaborate, involving comprehensive actions to address each challenge, the logistic requirements needed, and projected outcomes that are expected to result from the applications of the proposed solutions. Additionally, NRDS II has designed a monitoring and evaluation framework to track progress and implementation of the strategies.

On the issue of the poor access to land due to the nature of Ghana's land tenure system, the government repeated in NRDS II the earlier quoted statement it made in NRDS I, almost word for word. What is more intriguing is that the strategy the government proposed to pursue under NRDS I regarding access to land was also repeated in NRDS II, almost word for word as follows:

"Inventories will be taken of all the ecologies suitable for rice production. NRDS II proposes government engagement with traditional rulers and/or land owners and Metropolitan, Municipal and District Assemblies (MMDAs) prior to the development of the specific ecology for long-term lease or using land as equity in the investment. Once secured, a joint public-private land investment partnership arrangement will be put in place to ensure security and sustainability in land use" (Page 26, National Rice Development Strategy (NRDS II: 2019 – 2030).

Thus, for a period of 10 years that NRDS I was implemented, the government of Ghana could not take mere inventories of ecologies suitable for rice production. It was also unable to engage with traditional rulers and/or land owners and Metropolitan, Municipal and District Assemblies (MMDAs) in order to develop the specific ecology for long-term lease or using land as an equity in investment. And these had to be repeated more than 10 years later in NRDS II, almost word for word.

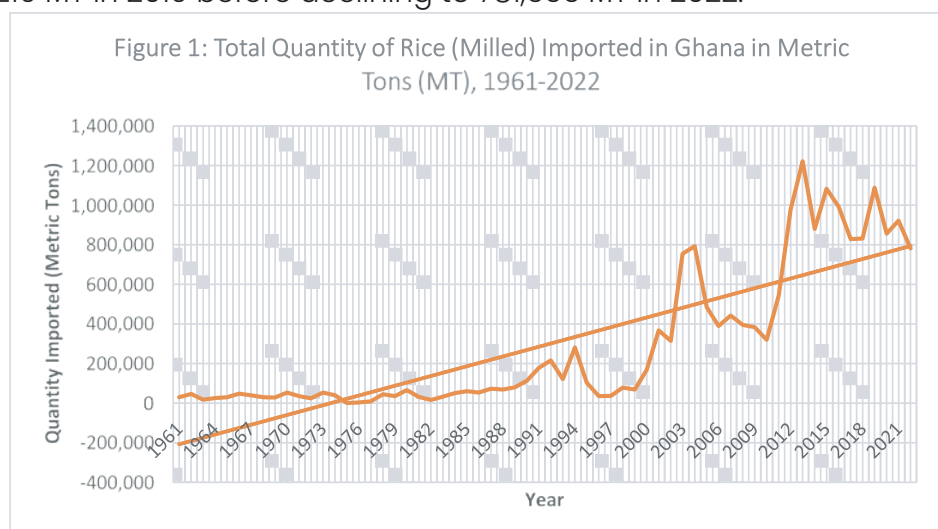
To show seriousness regarding the development of Ghana's rice sector, NRDS II proposed to set up an inter-ministerial governing body, called National Rice Coordinating Committee (NRCC). The Committee is composed of representatives from the Ministry of Food and Agriculture and its relevant agencies, Ministry of Finance, Ministry of Trade and Industry, Ministry of Local Government, CARD, a number of Research Institutes, and other agencies and organizations. Reporting to the Minister for Food and Agriculture (MoFA) through the Chief Director, NRCC has the following objectives: "(1) to harmonize the development and implementation of rice Research and Development (R&D) program and projects nationwide to improve their management; (2) to develop common strategies to address challenges and explore opportunities along the rice value chain; (3) to oversee the preparation of Rice Sector Development Policy; (4) to provide guidance for the implementation of the National Rice Development Strategy (NRDS) and other rice related programs/projects; (5) to establish an up-to-date rice database; and (6) to collaborate with sub-regional, regional, and international organizations to enhance in-country rice sector development" (Page 35, NRDS II).

3. Trend and Comparative Analyses of Ghana's Rice Imports Since 1961

3.1 Trend Analysis

Despite the long recognition of the balance of payments and thus exchange rate implications of rice imports as pointed out in the introduction, and the various policy efforts made to stem it as discussed in Section 2, importation of rice continues to increase in Ghana.

As Figure 1 shows, total import of rice in Ghana has seen a sharp increasing trend since 1961. It increased, for instance, from 30,485 metric tons (MT) in 1961 to 178,853 MT in 1991, and further to 543,446 MT in 2011. Total import of rice reached as high as 1,088,219 MT in 2019 before declining to 781,655 MT in 2022.



In fact, as shown by Table 1, apart from 1970 to 1979, which saw average import of rice decline due to the Operation Feed Yourself program of the Supreme Military Council (SMC), every period shown in the table saw increase in average import of rice.

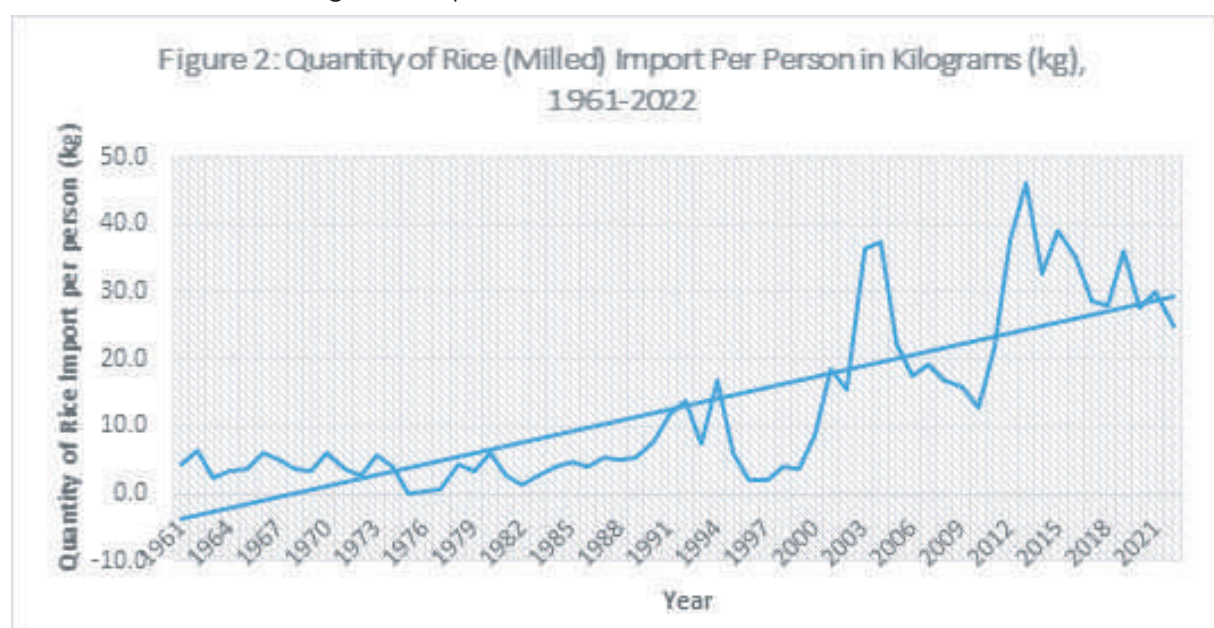
Table 1: Period Average Rice (milled) Imports in Ghana, 1961-2022

<i>Period</i>	<i>Average Rice Import (MT)</i>
<i>1961-1969</i>	<i>33,005</i>
<i>1970-1979</i>	<i>27,414</i>
<i>1980-1989</i>	<i>51,960</i>
<i>1990-1999</i>	<i>124,534</i>
<i>2000-2007</i>	<i>464,222</i>
<i>2008-2018</i>	<i>768,517</i>
<i>2019-2022</i>	<i>911,938</i>

Sources of Data: Ghana Statistical Service (GSS), 2012-2022; and Food and Agriculture Organization (FAO), 1961-2011

Thus, even Ghana's joining of the CARD initiative and the preparation and implementation of NRDS I (2008-2018) and NRDS II (2019-2030) have not been able to stem the tide of increasing rice import in Ghana. In fact, in monetary terms, import of rice averaged US\$548.0 million in the ten-year period from 2013 to 2022.

One may argue that resulting from growth in population, consumption of all food items increases. Therefore, it should not be surprising that import of rice is also increasing in Ghana. However, it is interesting to know that, as shown by Figure 2, per-capita rice imports (import of rice per individual Ghanaian on average) has also seen a sharp increasing trend. This implies that population growth is not the main driver of the increasing rice import in Ghana.



In fact, as can be seen from Table 2, apart from 1970–1979, due, again, to the Operation Feed Yourself program, every period shown in the table witnessed an increase in average per-capita rice import in Ghana.

Table 2: Period Average Per-Capita Rice (Milled) Imports in Ghana, 1961–2022

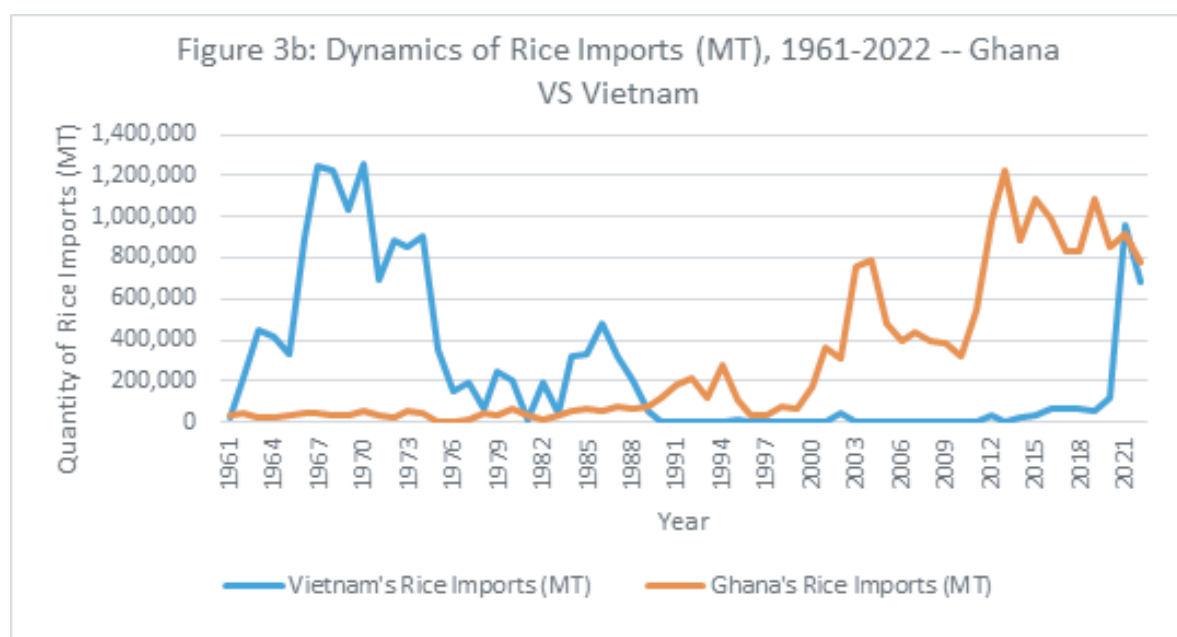
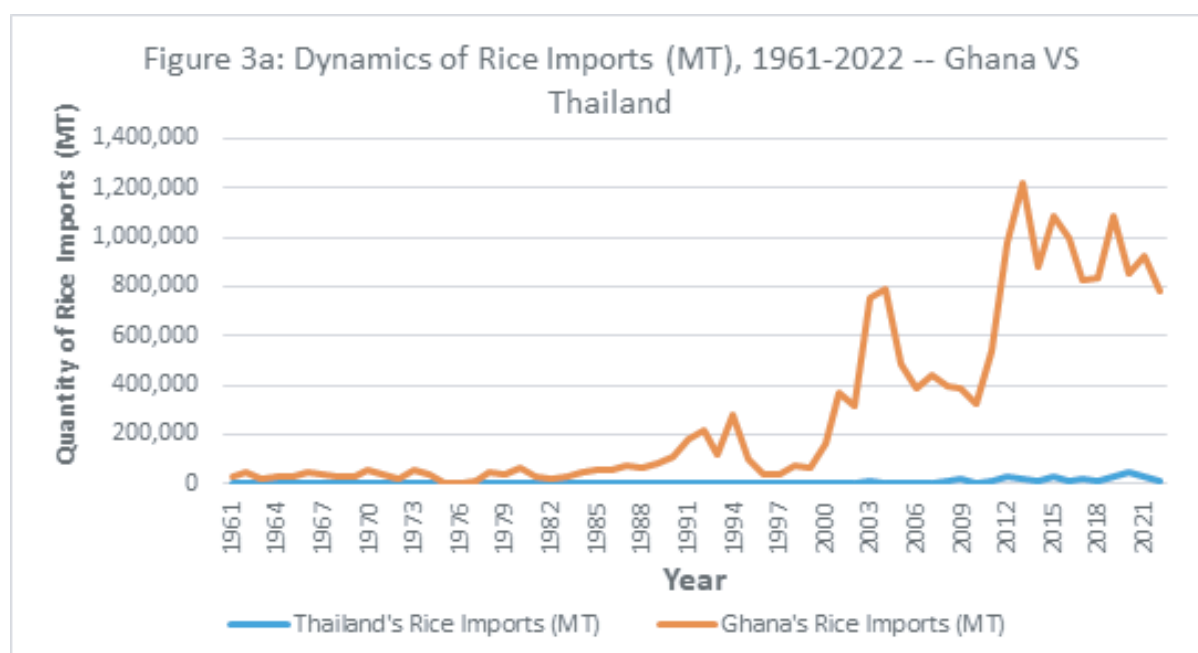
<i>Period</i>	<i>Average Per-capita Rice Imports (kg)</i>
<i>1961–1969</i>	<i>4.3</i>
<i>1970–1979</i>	<i>2.8</i>
<i>1980–1989</i>	<i>4.0</i>
<i>1990–1999</i>	<i>7.6</i>
<i>2000–2007</i>	<i>21.9</i>
<i>2008–2018</i>	<i>28.6</i>
<i>2019–2022</i>	<i>29.6</i>

Sources of Data: Ghana Statistical Service (GSS), 2012–2022; and Food and Agriculture Organization (FAO), 1961–2011

After reducing from 4.3 kg in 1961–1969 to 2.8 kg in 1970–1979, average per-capita import of rice increased to 7.6 kg in 1990–1999, and further to 21.9 kg in 2000–2007. Despite the implementation of NRDS I and II, average per-capita rice import increased again to 28.6 kg in 2008–2018, and further to 29.6 kg in 2019–2022.

3.2 Comparative Analysis

Having understood from the previous subsection that Ghana’s rice import has trended upwards since 1961, the question now is, during the period under consideration, how does import of rice in Ghana compare with those in Vietnam and Thailand, the two countries we have selected for our case study? Figures 3a and 3b depict these comparisons. While Figure 3a compares Ghana’s rice import with that of Thailand, Figure 3b compares Ghana’s rice import with that of Vietnam.



We can see from Figure 3a that, unlike Ghana, which has seen large and sharply increasing rice import since 1961, particularly in recent years (the red line), import of rice in Thailand (the blue line) has been comparatively very small throughout the entire period.

What is more interesting is the comparison with Vietnam. We can see from Figure 3b that Vietnam was importing rice in large quantities before 1989, far exceeding Ghana's rice import. For example, while Vietnam's rice import stood at as high as 1,250,000 MT in 1967 and 1,260,000 MT in 1970, Ghana's rice import stood at only 40,100 MT in 1967 and 53,428 MT in 1970. Even in 1986 when rice import in Vietnam had reduced, Vietnam imported 482,500 MT of rice while Ghana imported only 54,000 MT of rice in the same year. However, Vietnam has been able to achieve a dramatic

transformation of its rice sector starting from 1989. Indeed, while Ghana's rice import began to accelerate starting from 1989, increasing from 80,000 MT in 1989 to, for example, 1,082,674 MT and 1,088,219 MT in 2015 and 2019 respectively, Vietnam's rice imports declined in a dramatic fashion, ranging between 0 and 66,145 MT from 1989 to 2019. The question is, why was Vietnam able to achieve such an incredible reduction in rice import from 1989 to 2019 while rice import in Ghana has been increasing with such an accelerated speed starting from 1989, even though as seen above, Vietnam's rice import far exceeded Ghana's before 1989? Section 4 addresses this question.

Interestingly, for the purpose of higher earnings, Vietnamese farmers have shifted to growing high quality fragrance rice for exports since 2020. Yet, there continues to be a high demand for low cost rice for things like animal feeding, noodles and the popular Vietnamese soup dish called pho. This phenomenon has now resulted in Vietnam witnessing a sharp increase in rice imports. Therefore, the sharp increase in rice imports in Vietnam starting from 2020 as shown by Figure 3b is not the result of a poor performance of Vietnamese domestic rice sector. It is rather a reflection of the shift in rice cultivation trends in the country.

It is important to point out that importing large quantities of a commodity by a country is not the final issue, as the same commodity could also be exported even in larger quantities. Therefore, what matters most is where net export (export minus import) of that commodity stands. To begin with, it is interesting to point out that Ghana exports rice yearly. In 2022, for instance, data from the World Integrated Trade Solutions (WITS) of the World Bank showed that Ghana exported rice to 13 countries – Togo, Burkina Faso, United States, Australia, Canada, United Kingdom, Barbados, Zimbabwe, Liberia, Nigeria, France, Saudi Arabia, and Bermuda.

The question, therefore, is, what has been the nature of Ghana's net export of rice since 1961 vis-à-vis those of Thailand and Vietnam? Figure 4a shows the behavior of net export of rice by Ghana from 1961 to 2022, while Figure 4b shows the behavior of net exports of rice in Thailand and Vietnam during the same period.

We can see from Figure 4a that Ghana's net export of rice has always been negative since 1961, implying that Ghana has been importing more rice than exporting it. We can again see from the figure that, in recent years, the magnitude has generally been increasing, implying that the gap between import and export of rice in Ghana has sharply been widening in recent years.

We can see from Figure 4b that, contrary to Ghana's, net export of rice in Thailand has always been positive since 1961, implying that the country has always been exporting more rice than importing it.

Figure 4a: Net Export of Rice in Ghana (MT), 1961-2022

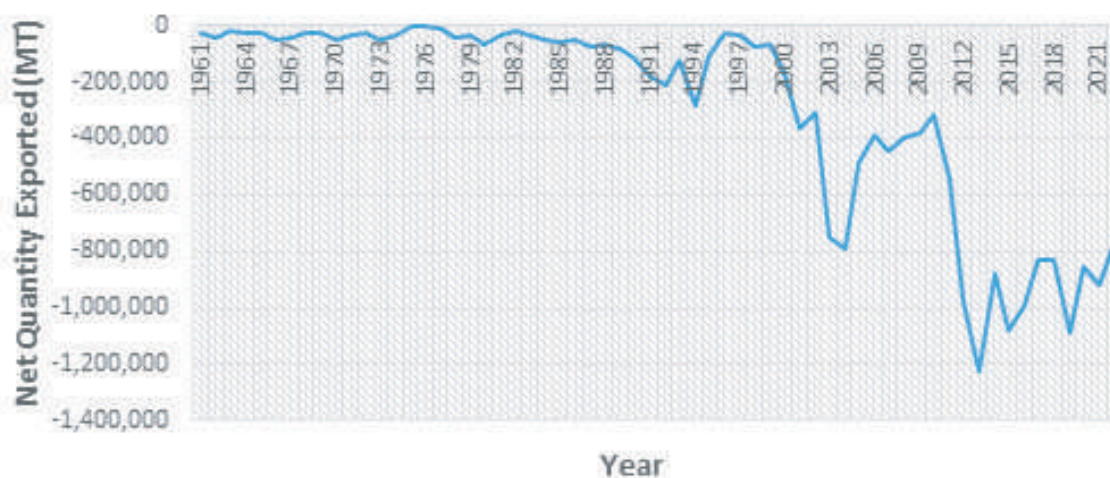
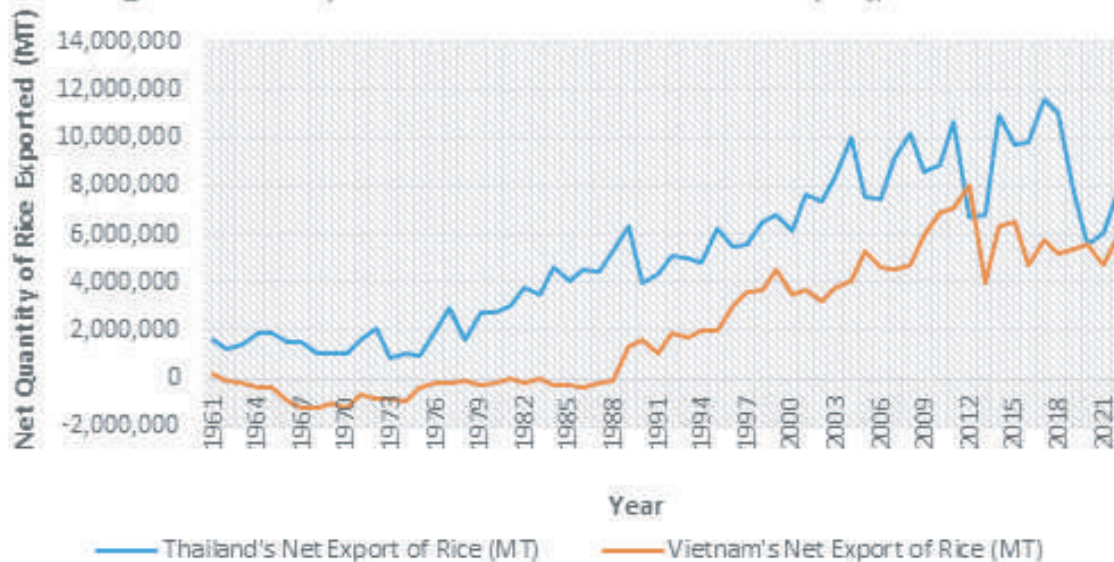


Figure 4b: Net Export of Rice in Thailand and Vietnam (MT), 1961-2022



What is more interesting is that, from Figure 4b, apart from 1984, net export of rice in Vietnam was negative from 1962 to 1988. This implies that during this period, like Ghana, Vietnam was importing more rice than exporting it. However, starting from 1989, Vietnam has been able to positively transform its fortunes in the rice sector, as net export of rice is sharply increasing. This implies that not only has Vietnam been exporting more rice than importing it, but the positive gap between export and import of rice is generally getting larger and larger. In comparative terms, while net export of rice in Ghana averaged -947,819 metric tons in 2013-2022, net export of rice in Vietnam averaged 5.4 million metric tons during the same period. This, indeed, is an incredible achievement by Vietnam in the rice sector.

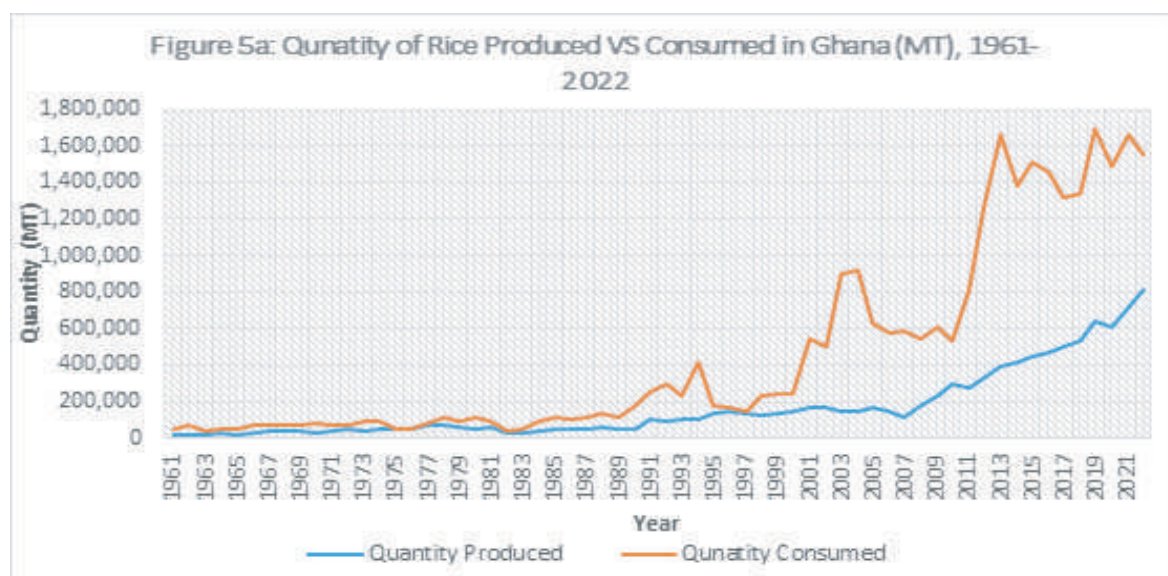
4. Causes of the Growing Importation of Rice in Ghana in Comparison with Vietnam and Thailand, with Analysis of Government Policies

What are the causes of the continuous growth in rice import in Ghana when Vietnam, for example, which was in the same predicament as Ghana regarding rice import, has been able to achieve a dramatic transformation in the rice sector, thereby becoming the third biggest exporter of rice in the world today⁴?

Two main forces are at play when it comes to the increasing importation of rice in Ghana: (1) Domestic rice production limitations, and (2) Unmet demand by locally produced rice.

4.1 Domestic Rice Production Limitations in Ghana

To begin with, consumption of rice in Ghana is growing at a fast pace, as pointed out in the introduction. Instead of this phenomenon serving as an incentive to boost domestic rice production, production of rice in Ghana continues to fall far short of consumption. In fact, the gap between domestic consumption and production of rice has also been rising at a fast pace in recent years. Figure 5a illustrates this point.



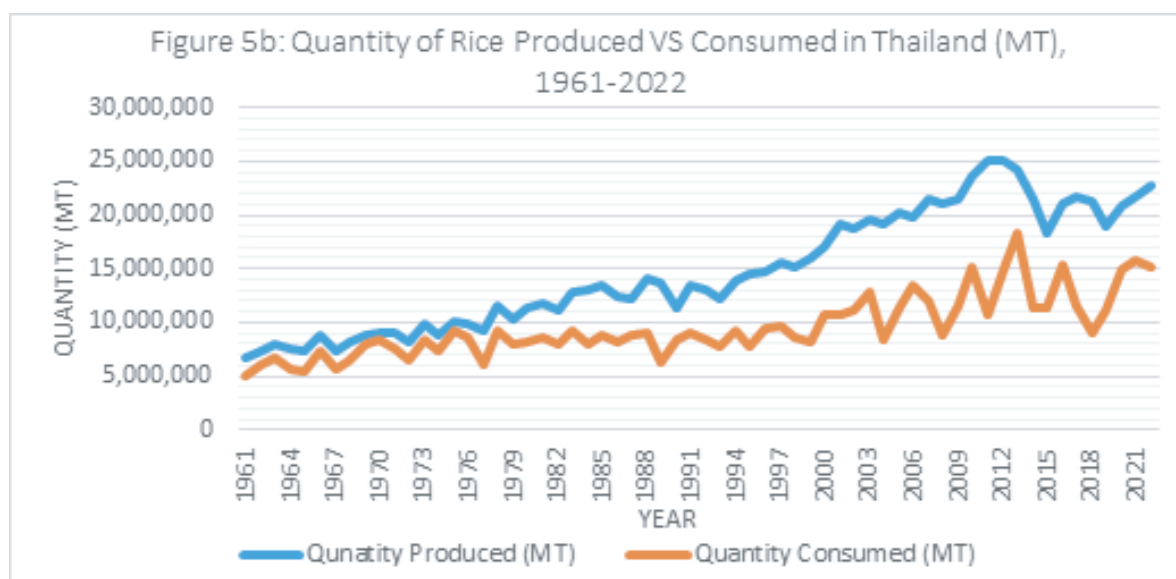
We can see from the figure that, not only has consumption⁵ of rice been always larger than its production in Ghana, the gap between them has generally been widening. In recent years, the gap has become quite alarming. This is despite the implementation of the National Rice Development Strategies I and II since 2008. Therefore, the increasing trend in rice import in Ghana is mainly caused by the increasing gap between domestic consumption and production of rice, as imports are made to fill the gap.

⁴In 2022, for example, Vietnam exported 6.56 million metric tons of rice, amounting to US\$3.2 billion.

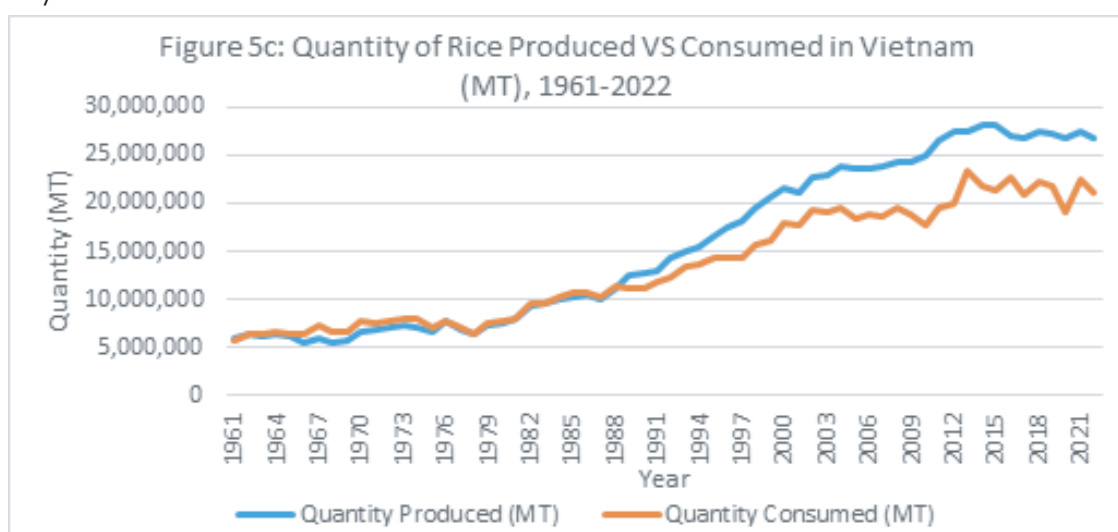
⁵Yearly rice consumption was calculated using the following formula:

$\text{Rice Consumption} = \text{Open Stock} + \text{Rice Production} + \text{Rice Import} - \text{Rice Export} - \text{Closing Stock}.$

Unlike Ghana, Figure 5b shows that Thailand has always seen domestic production of rice exceeding domestic consumption. It is for this reason that Thailand has always been an insignificant importer of rice or a major net exporter of rice.



More interestingly, we can see from Figure 5c that before 1989, consumption of rice was generally larger than its production in Vietnam, which is why Vietnam was at that time a net importer of rice. However, unlike Ghana, which has not been able to achieve any turnaround in rice production relative to its consumption since 1961, Vietnam has been able to achieve a dramatic turnaround starting from 1989, as production of rice in Vietnam has since then far exceeded domestic consumption. This is what has allowed Vietnam to become a major net exporter of rice in the world today.



The question now is, how come Thailand and Vietnam are able to produce more rice than they domestically consume, making them become large net exporters of rice, but Ghana is unable to achieve the same feat regarding rice production?

4.1.1 At the Basic Level

To answer the above question at the basic level, it should first be noted that quantity of rice produced is the product of the yield/productivity of rice (measured in metric tons per hectare of land) and the area of land harvested (measured in hectares of land). That is,

$$P = y \times H$$

Where P represents quantity of rice produced, y represents the yield/productivity of rice in metric tons per hectare, H represents the area harvested (in hectares), and x is the multiplication sign. This relation implies that, holding other things constant, the larger the yield (y), the larger the quantity of rice produced (P). Also, holding other things constant, the larger the area harvested (H), the larger the quantity of rice produced (P).

Unlike Thailand and Vietnam, Ghana is unable to produce enough rice to meet domestic consumption because both the yield (y) and the area harvested (H) have been comparatively very small since 1961 despite seeing some improvements, particularly in recent years. Table 3 presents these facts.

Table 3: Rice Yield* and Area Harvested – Ghana Compared with Thailand and Vietnam, 1961-2022

Period	Ghana		Thailand		Vietnam	
	Yield	Area Harvested (hectares)	Yield	Area Harvested (hectares)	Yield	Area Harvested (hectares)
1961-1969	1.1	37,143	1.8	6,632,444	1.9	4,804,931
1970-1979	0.9	83,100	1.9	7,866,900	2.1	5,102,802
1980-1989	1.0	72,450	2.0	9,443,999	2.7	5,692,700
1990-1999	1.8	94,025	2.3	9,275,414	3.6	6,785,240
2000-2007	2.1	120,546	2.9	10,110,741	4.7	7,427,775
2008-2018	2.6	208,851	3.0	11,074,326	5.5	7,664,132
2019-2022	3.3	327,750	2.9	10,851,413	6.0	7,245,692

Source of Data: Food and Agriculture Organization (FAO)

* The yield is in terms of paddy rice

We can see from Table 3 that after reducing from 1.1 metric tons per hectare of land in 1961-1969 to 0.9 and 1.0 metric tons per hectare in 1970-1979 and 1980-1989 respectively, average rice yield in Ghana increased to 1.8 metric tons per hectare in 1990-1999 and further to 2.6 metric tons per hectare in 2008-2018. In 2019-2022, average rice yield in Ghana increased again to 3.3 metric tons per hectare. Nevertheless, apart from 2019-2022 in which average rice yield in Ghana exceeded that of Thailand, Ghana's average rice yield is the lowest in all the periods. Indeed,

Vietnam has witnessed a very strong performance regarding rice yield, particularly starting from the 1990s⁶. We can see from the table that from 1.9 metric tons per hectare in 1961–1969, average rice yield increased to 2.7 metric tons per hectare in 1981–1989 in Vietnam. Impressively, rice yield in Vietnam increased, on average, to 3.6 metric tons per hectare in 1990–1999. After increasing further to 4.7 and 5.5 metric tons per hectare in 2000–2007 and 2008–2018 respectively, average rice yield in Vietnam jumped to as high as 6.0 metric tons per hectare in 2019–2022.

With respect to area harvested of rice, Ghana has performed abysmally poorly comparatively. After more than doubling the area harvested from 37,143 hectares in 1961–1969 to 83,100 hectares in 1970–1979 on average due to the Operation Feed Yourself program of the SMC government, Ghana has not been able to increase the area harvested of rice by the same rate again. As we can see, average area harvested in Ghana for the periods shown in Table 3 ranges from only 37,143 to 327,750 hectares. For Thailand, average area harvested of rice ranges from as much as 6.63 million to 11.07 million hectares, thereby dwarfing Ghana's values. Even though Vietnam falls below Thailand regarding area harvested of rice, its average area harvested for the periods in the table ranges from as much as 4.80 million to 7.66 million hectares, which also dwarf Ghana's values.

In short, Tables 3 demonstrates that Ghana has performed poorly in rice production, making domestically produced rice unable to meet its domestic consumption, giving rise to large imports, because it has performed very poorly in terms of both rice yield and area harvested. Even though Thailand's rice yield is moderate, it is a major player in the global rice market (currently the second largest exporter of rice in the world) because it has converted a great deal of its agricultural land to rice production. And Vietnam's drastic turnaround in the rice sector as we have severally demonstrated above is mostly due to its drastic improvement in rice yield. It has also done very well in terms of the area of rice cultivated and harvested.

One may argue that Thailand and Vietnam are able to devote larger areas of land to rice cultivation than Ghana because both of these countries have vast agricultural lands compared to Ghana. This is not the case. As we can see from Table 4, while, on average, Thailand has larger agricultural land in each period than Ghana, Ghana has larger agricultural land than Vietnam in each period.

The fact is that while, on average, Thailand has devoted ranging from 43.1% to 51.5% of its available agricultural land to rice cultivation, and Vietnam has devoted ranging from 58.8% to 92.0% of its agricultural land to rice cultivation, Ghana has devoted a paltry range of 0.3% to 2.6% of its agricultural land for rice cultivation. Thus, these tiny average ratios of Ghana's agricultural land used for rice cultivation in each period

⁶ *More specifically, this strong performance started in 1989 when Vietnam recorded 3.2 metric tons as rice yield.*

explain why areas harvested of rice in Ghana are so small in Table 3 comparatively, which has contributed significantly to the inability of the country to produce enough rice to meet domestic consumption, leading to the increasing importation of rice. ..

Table 4: Ratio of Agricultural Land Used for Rice Cultivation – Ghana Compared with Thailand and Vietnam, 1961-2021

Period	Ghana		Thailand		Vietnam	
	Agric. Land (hectares*)	Ratio Used for Rice (%)	Agric. Land (hectares*)	Ratio Used for Rice (%)	Agric. Land (hectares*)	Ratio Used for Rice (%)
1961-1969	11,700,000	0.3	12,890,333	51.5	6,324,222	76.0
1970-1979	11,770,000	0.7	16,665,100	47.2	6,600,700	77.2
1980-1989	12,251,200	0.6	20,326,600	46.5	6,804,000	83.7
1990-1999	12,979,546	0.7	21,493,900	43.1	7,380,200	92.0
2000-2007	12,476,295	1.0	22,220,375	45.5	9,655,663	77.1
2008-2018	12,298,776	1.7	22,810,178	48.5	11,200,964	68.7
2019-2021	12,562,485	2.6	23,257,300	46.5	12,369,333	58.8

Source of Data: World Development Indicators of the World Bank.

*The source data on agricultural land were in square kilometers but I converted them to hectares.

4.1.2 At the Fundamental Level

The fundamental question now is, why is it that Ghana's rice yield is so low comparatively, while at the same time the country is unable to devote considerable share of its agricultural land for rice production, leading to such a low domestic rice production? Since of the two rice giants, it is Vietnam that has performed better with respect to rice yield, we shall compare Ghana's situation with that of Vietnam when answering the question about the causes of the low rice yield in Ghana. However, when answering the question about the causes of the inability of Ghana to allocate enough agricultural land for rice production, we shall compare Ghana's situation with situations in both countries.

(A) Causes of the Low Rice Yield in Ghana Compared with Vietnam

With respect to the low rice yield in Ghana compared with Vietnam, the following factors, resulting from the ways they are handled by government policies, are the main fundamental causes:

(i) Lower Fertilizer Use:

Fertilizer use is widely understood to play a significant role in determining rice yield per hectare of land. Relative to Vietnam, fertilizer use in Ghana for rice cultivation is way too low, which is a major cause of the comparatively lower rice yield in Ghana.

Table 5 illustrates this point. However, before we consider the table, it should be pointed out that, unlike for Vietnam, there are no crop-specific data on fertilizer use for Ghana. Therefore, the data in Table 5 are for general application of fertilizer to crops in both countries. By using this, we assume that application of fertilizer on rice cultivation follows the general pattern of application of fertilizer on cultivation of other crops.

Table 5: Fertilizer Use (Kilogram Per Hectare of Arable Land) – Ghana VS Vietnam, 1961-2021

Period	Ghana	Vietnam
	Fertilizer Use (KG/ha of Arable Land)	Fertilizer Use (KG/ha of Arable Land)
1961-1969	0.8	20.2
1970-1979	7.8	50.4
1980-1989	6.9	70.2
1990-1999	4.0	216.2
2000-2007	10.2	341.8
2008-2018	24.2	408.2
2019-2021	42.5	450.4

Source of Data: World Development Indicators of the World Bank

We can see from Table 5 that, in recent years, fertilizer use has seen a good improvement in Ghana, increasing from 10.2kg per ha of arable land in 2000–2007 to 24.2kg and 42.5kg per hectare of arable land in 2008–2018 and 2019–2021 respectively. This helps to explain the improvement in rice yield in Ghana in recent years, as we saw in Table 3. Nevertheless, we can see from the table that fertilizer use in Ghana pales in comparison to that of Vietnam. Average fertilizer use in Ghana in 2019–2021 has not even reached the level achieved in Vietnam as far back as 1970–1979. In fact, in 2019–2021, average fertilizer use in Vietnam reached as high as 450.4 kg per ha of arable land. It is, therefore, no wonder that rice yield in Vietnam is much larger than that in Ghana.

Vietnamese rice farmers are able to apply so much fertilizer to rice cultivation because over 70% of fertilizer currently used in Vietnam is produced domestically by mostly state-owned enterprises (SOEs) using subsidized inputs. This makes fertilizers readily available to rice farmers and at comparatively low prices. Domestic fertilizer production in Vietnam began as far back as the 1960s. Indeed, “in 2010, the government [of Vietnam] established a scheme to industrialize and modernize the fertilizer industry by promoting the establishment and upgrade of fertilizer factories. The government also plans to construct 22 regional distribution centers, each with a capacity over 30–35,000 MT. Although there has been some liberalization, most fertilizer is produced by a small number of SOEs and all urea and NPK fertilizers are subject to a government monitoring and stabilization program” (Thang, 2014). According to Dung (undated), there are currently more than 800 chemical fertilizer plants in Vietnam, which, for instance, produced 7.92 million tons of fertilizer in 2021.

Unlike Vietnam, Ghana does not produce any chemical fertilizer domestically. All chemical fertilizers used in Ghana are imported, making price of fertilizer comparatively very high in Ghana. Even though the government of Ghana distributes imported fertilizer to farmers (including rice farmers) at subsidized price, the quantity involved is way below what rice farmers need. Additionally, the government's fertilizer distribution program is reported to be embroiled in corruption and politicization. On corruption, Asante and Mullard (2021), for instance, write as follows: "However, after six years of the [fertilizer] subsidy program, Fearon et al. concluded that the program had been inefficient. This was despite a total of 202.5 million Ghanaian cedi (GHS; about US\$53.1 million) being invested in it. Moreover, the government's implementation of the subsidy provided many opportunities for both political and bureaucratic corruption." On June 14, 2021, Jonas Nyabor of Citi News also reported online as follows: "The Peasant Farmers Association of Ghana (PFAG) is lamenting the growing incidents of fertilizer smuggling in the country. According to the association, the development is affecting the production of various commodities, especially rice... Mr. Nyaaba [Head of Programs and Advocacy of PFAG] expressed concern that in some instances, local authorities aid in the smuggling of subsidized fertilizer meant for local farmers to neighboring countries, including the Ivory Coast." On politicization, it is reported that subsidized fertilizers are largely distributed by officials to farmers who are connected to the party of the government in power. For instance, in a study on the Fertilizer Subsidy Program (FSP) in the Sissala West and Lambussie districts, Nkegbe and Sekyi (2018) state as follows: "Discussants in the FGDs in the Sissala West district revealed that most farmers thought the fertilizer was for only the ruling political party members. This actually discouraged non-party members to participate in the programme." This biased distribution of subsidized fertilizers becomes severer during election years. This denies many poor Ghanaian rice farmers fertilizers they need for cultivation, leading to poor yields.

(II) Smaller Use of Certified Rice Seed for Planting in Ghana Relative to Vietnam

The use of high quality rice seed, in terms of high disease and pest resistance, high drought resistance, high level of varietal and genetic purity, low moisture content, high rate of germination, etc., is critical for ensuring high yield. Due to this, governments usually establish seed research institutions to ensure that high yielding seeds are developed. Also, to ensure that it is high quality/yielding seeds that are used by farmers for planting, governments normally put in place quality assurance and certification systems for seeds. Therefore, like other crops, the level of use of certified rice seed by rice farmers in a country is an important determinant of rice yield in that country. Rice yield is therefore smaller in Ghana than in Vietnam, as demonstrated earlier, partly because Ghanaian rice farmers use limited ratio of certified rice seeds for planting compared with the ratio used by Vietnamese rice farmers. This point is elaborated below.

In Ghana, before 1990, the seed industry was dominated by the public sector.

However, as part of the Structural Adjustment Program (SAP), the private sector was made to take over the production and marketing aspects of the country's seed industry. The government of Ghana was made to concentrate on the creation of the enabling environment and provision of support services for the seed industry. Consequently, the Ghana Seed Company (GSC), which was established in 1979 and which had been tasked to produce and market seeds to farmers, was disbanded in September 1989 (National Seed Policy, 2013).

Ghana's seed system comprises formal and informal sectors. In the formal sector, improved seed varieties are developed, certified, produced and marketed. The public sector's involvement in the formal seed sector is in terms of the government providing funding for seed research and development, ensuring quality control and carrying out seed certification. However, the actual production, distribution and marketing of certified seeds in the formal sector in Ghana are now carried out by only private sector entities. The informal seed sector on the other hand relies on farmers' saved seeds from harvests, which are exchanged among relatives and friends or purchased from local markets. "Although seed production [in the informal sector] follows a similar process as the formal system, there is little regard for quality control and genetic purity" (Nikoi, 2022). In May 2013, the government published a national seed policy. The main objective of the policy is to "support the development and establishment of a well-coordinated, comprehensive and sustainable private sector-driven seed industry through systematic and strategic approaches which would continuously create and supply new improved varieties for use by farmers and, further, support successful seed production, certification, marketing and seed security systems which will form the basis for food security and support the overall development of the agricultural sector" (Page 31, National Seed Policy, 2013).

Despite the above developments in Ghana's seed sector, planting of certified rice seeds (and, of course, seeds of other crops) by farmers is very limited, as the informal sector still dominates the country's seed industry. For example, in a technical report prepared for the National Seed Trade Association of Ghana (NASTAG), Lydia Nikoi (2022) points out that only 3% of the total cultivated rice lands in 2015 was supplied by seeds from the formal system, implying that the seeds were certified ones. The remaining 97% of the rice lands in that year was supplied through the informal sector, which implies that the seeds were uncertified. It is important to point out that due to the limited availability of locally produced certified rice seeds in Ghana, significant amounts are imported annually into the country. For instance, in 2021, 5,016 and 12,917.9 metric tons of certified rice seeds were respectively imported and produced in Ghana (Mbaya et al., 2022). Thus, of the total certified rice seeds supplied in Ghana in 2021, 28.0% was imported.

Indeed, the government of Ghana is aware that the strategy of complete reliance on the private sector for the production, distribution and marketing of certified seeds in Ghana is not working, which is giving rise to the outcome described in the previous

paragraph. For instance, on Page 24 of the National Seed Policy (2013), the government of Ghana wrote as follows:

“As part of actions under the Economic Recovery Programme (ERP), the Government of Ghana adopted the privatization option and dissolved the Ghana Seed Company (GSC) in September 1989, paving the way for a new Ghana Seed Programme in which the private sector would take over the commercial components of the seed industry while the public sector would continue its responsibility for the activities having a service nature. It was expected that the private sector would usher in a period of efficient, widespread and profitable seed programme. The realization of that goal has been slow. Today less than 5% of Ghanaian farmers are able to access certified seeds from approved sources. Increasingly, farmers are sliding back to the age-old practice of on-farm seed saving, a practice which has a potential of reducing farm productivity across the country and reversing the food security gains made in the past.”

Despite this realization by the government of Ghana that the privatization option adopted as part of the Economic Recovery Program is not producing the desired results in the country's seed industry, the government of Ghana is still sticking with it. This is incredible.

Vietnam's seed system also comprises formal and informal sectors. However, Vietnam's rice seed industry has seen sharp improvements, particularly in recent years, as a wide variety of rice seeds with fast improving quality are cultivated by rice farmers. Dan Viet Newspaper, for instance, reported on June 1, 2024 as follows: *“According to the Department of Crop Production (Ministry of Agriculture and Rural Development), from June 2014 to December 31, 2019, there were 119 rice varieties recognized as national varieties, which are still being commercialized into production. From January 1, 2020 to now (May 28, 2024), there are a total of 267 rice varieties recognized under the Law on Crop Cultivation, of which 152 varieties are recognized for circulation.”*

It is important to point out that Vietnam continues to import large quantities of rice seeds from China. However, an important feature of Vietnam's rice seed sector is that, although the government of Vietnam has allowed private-sector (including foreign companies) participation in the rice seed industry since 1986, unlike Ghana, public sector entities, Vietnam's National Seed Company and Provincial Seed Companies, are actively involved in the production, distribution and marketing of rice seeds to farmers (Dam et al., 2019). This, indeed, has ensured that rice farmers in Vietnam are able to have easy access to certified rice seeds at affordable prices. Therefore, over 80% of rice seeds currently cultivated in Vietnam are certified ones.

(III) Limited Availability of Irrigation Facilities for Rice Farming in Ghana

Widespread availability of irrigation facilities is crucial to ensure high rice yield. The reason is that rice is a very water-intensive crop. Therefore, the failure of seasonal rains to fall on time and in expected volumes implies the failure of rice farms, leading to low yields. To maintain high rice yield, therefore, alternative water supply through irrigation development is critical.

Ghana has abundant surface water and groundwater suitable for massive irrigation development. According to Food and Agriculture Organization (2005), Ghana has irrigable land potential of 1.9 million hectares. Yet, irrigation development in Ghana is currently very low. As Table 6 shows, from 2015 to 2021, the largest total area under irrigation in Ghana stood at only 228,792 hectares, and this was recorded in 2016. As a share of total arable land, this 2016 figure translates into only 5.1%.

Table 6: Total Area Under Irrigation as a Share of Total Arable Land in Ghana, 2015-2021

	2015	2016	2017	2018	2019	2020	2021
<i>Tot. Arable Land (ha)</i>	4,468,617	4,516,874	4,568,130	4,613,387	4,661,644	4,709,900	4,708,900
<i>Area Under Irrig. (ha)</i>	221,000	228,792	222,003	222,978	223,009	226,909	226,909
<i>Share Under Irrig. (%)</i>	4.9	5.1	4.9	4.8	4.8	4.8	4.8

Sources of Data: (1) MoFA (data on total area under irrigation); and (2) World Development Indicators (data on total arable land)

Ghana has three ecologies for rice farming – rain-fed lowland, rain-fed upland and irrigated ecologies. The poor nature of irrigation development in the country has limited the area of land that can be put under the irrigated ecology, even though, according to the government of Ghana, this ecology has the highest rice yield in the country. In fact, irrigated ecology covers only about 10% of total cultivated rice area in Ghana (Government of Ghana, 2019). This has, therefore, significantly contributed to the overall low rice yield in Ghana.

In contrast, over the years, the government of Vietnam has paid a great deal of attention to irrigation development as a means of improving food (especially rice) production and yield. Consequently, as high as 65.8% of the total arable land in Vietnam is equipped with irrigation systems. Therefore, in Vietnam, rice is mostly cultivated in irrigated areas. For instance, of the total rice area cultivated in Vietnam in 2016, as high as 89.5% was in actively irrigated area (Tuan et al., 2022). This is a major reason why rice yield in Vietnam is very high. In fact, although before 2008, the fee the government of Vietnam charged farmers for using its irrigation facilities was already low, since 2008, the government has waived irrigation fees for most farmers as a means of encouraging them to cultivate water-intensive crops like rice (phu, 2023).

(IV) Lower Degree of Mechanization of Rice Farming Operations in Ghana

Mechanization of rice farming operations – land preparation, planting of seeds/seedlings, clearing of weeds, application of fertilizers, application of pesticides and harvesting – has been found to have a strong positive impact on rice yield. This is because, relative to human labor, machines work with greater efficiency and precision on rice fields, which lead to improved productivity and yield. It is also important to point out that machines enhance large-scale rice production, making rice farmers enjoy economies of scale, leading to reduced average cost of production and improved profitability.

Compared to Vietnam, mechanization of rice farming activities is much limited in Ghana. This phenomenon, therefore, is a significant contributing factor to the observed lower rice yield in Ghana than in Vietnam. For instance, Armah and Aboagye (2020) find that out of 143 rice producing districts in Ghana they studied, as high as 67% is classified as being at ‘low level’ in terms of mechanization of rice farming activities. This is because these rice farms use basic farming tools such as cutlass, hoe, and sickle. The authors further found that only 6% could be classified as being at ‘advanced level’ with adequate access to modern farm equipment and machinery, which include power tillers, tractors with both primary and secondary tillage implements, seed drill equipment, transplanters, boom sprayers, combine harvesters, reapers and threshers.

In contrast, in a study on rice production in the Mekong Delta region of Vietnam, where about 55% of rice production in Vietnam takes place, and more than 90% of Vietnamese rice export is from, Matsubara et al. (2020) find that major working processes for rice cultivation, including land preparation, fertilizer application, chemical application, and harvesting, have been mechanized in the Mekong Delta region. With respect to land preparation, for instance, the authors find that power tillers or tractors cover land preparation work almost 100% in the Mekong Delta. And with respect to harvesting of rice, they find that 99.4% and 99.0% of farmers in the region use combine harvesters during winter-spring and summer-autumn cropping seasons respectively, while 64.9% of farmers use combine harvesters during autumn-winter cropping season.

Mechanization of rice farming operations in Ghana is very low due to (i) mechanization policy instability, and (ii) small demand for agricultural machinery services due to the limited availability of irrigation facilities, which limits investment in mechanization.

On mechanization policy instability, the government of Ghana has implemented inconsistent policies on farm mechanization over time. After independence, the state took an active role in the provision of mechanization services to farmers. With land preparation being the main focus, the Nkrumah government imported a number of tractors into the country. For instance, in a period of 3 years, the number of tractors in Ghana more than doubled from 1,000 in 1961 to 2,234 in 1964, which

caused the number of tractors per 100 km of arable land to increase from 5.9 in 1961 to 13.1 in 1964, according to data from World Development Indicators (WDI) of the World Bank. Most of these tractors were used under state-run tractor-hiring schemes, which served land preparation needs of farmers at discounts. This scheme continued until the 1980s. Diao, Takeshima and Zhang (2020) reports that during this period, the Ministry of Food and Agriculture typically owned and operated about 1,500 tractors in its 32 district mechanization stations in the Savannah Zone, providing plowing services at subsidized prices. However, due to the Structural Adjustment Program (SAP), which the government of Ghana implemented starting from the late 1980s under the auspices of the IMF and the World Bank, the state-operated tractor hiring scheme collapsed, leaving the tractor importation, the tractor hiring scheme and the farm mechanization process in general in the hands of the private sector. By the middle of the 2000s, it was generally recognized (including by the government of Ghana) that the privatization of farm mechanization process in Ghana had failed. In fact, the number of tractors per 100 km of arable land in Ghana reduced to only 4.5 in 2005 from 13.1 in 1961 as pointed out above. Consequently, in the mid-2000s, the government began to intervene in the farm mechanization process again by importing tractors and selling them under hire-purchase arrangements and at discounted prices to farmers and other private sector entities. In 2007, the government began to support the establishment of private-sector operated Agricultural Mechanization Services Centers (AMSECs) to offer tractor-hiring services to small-scale farmers, using the tractors purchased from the government under the discounted and hire-purchase arrangements.

In Vietnam, however, the government has continuously played an active role in the farm mechanization process. Although the Vietnamese government allowed private-sector participation in the agricultural mechanization process through both importation and local manufacturing of tractors starting from the late 1980s, unlike what happened in Ghana, the private sector was made to complement the government of Vietnam's efforts and not to replace them. Therefore, at present, "SOEs [state-owned enterprises] such as Vietnam Engine and Agricultural Machinery (VEAM) and its subsidiaries are the major providers of agricultural machines among local enterprises, with a total production capacity of 5,500 tractors per year" (Sakata, 2020). It is no wonder, therefore, that in 2005 when there were only 1,807 tractors in Ghana according to data from World Development Indicators (WDI), there were as many as 310,000 tractors in Vietnam (Hien, 2025). In 2016, the number of tractors in Vietnam increased to more than 700,000 (Sakata, 2020).

On the small demand for agricultural machinery services, as has been noticed by other researchers, because of the low level of irrigation development as explained under the previous point, rice cultivation in Ghana is mostly limited to the rainy seasons – two in the southern part of the country (April-July and September to October) and one in the northern part (May-October). Therefore, after the rainy

seasons are over, demand for mechanization services in Ghana almost dies out, making farm machines lie idle. This discourages investment in farm mechanization, since it affects the profitability of mechanization services provision in the country. However, in Vietnam, due to the availability and extensive use of irrigation facilities for rice cultivation throughout the year, demand for mechanization services is continuous and quite large, which serves an incentive for extensive investment in rice mechanization services. This, therefore, is an important factor contributing to the low mechanization of rice farm operations in Ghana compared to Vietnam.

(B) Causes of the Inability of Ghana to Allocate Considerable Portion of Its Agricultural Land for Rice Cultivation

We saw from Table 4 that while the ratio of agricultural land used for rice cultivation ranges from 43.1% to 51.5% in Thailand, and from as much as 58.8% to 92.0% in Vietnam, it only ranges from 0.3% to 2.6% in Ghana. We pointed out that this significantly explains why Ghana is unable to produce enough rice to meet its domestic consumption despite the desire of the government of Ghana to do so. Before we proceed to answer the question as to why Ghana is unable to allocate enough agricultural land for rice production, it is important to point out that this outcome is not because there is unavailability of suitable vast agricultural land for rice farming in Ghana. As reported by the government in its Rice Development Strategy II, in a study conducted by Japan International Cooperation Agency (JICA) in 2008, which was commissioned by the government of Ghana, it was estimated that Ghana has over 4 million hectares of unexploited lowlands, which can be exploited for massive rain-fed lowland rice farming. It was also pointed out above that irrigation development potential of Ghana is about 1.9 million hectares. Adding these two estimates together, we get 5.9 million hectares of land that can be used for rice farming in Ghana. Given this, what explains the inability of Ghana to allocate considerable portion of its agricultural land for rice cultivation to increase rice production and address the issue of increasing importation of rice? Ghana's land tenure and administration issues are what mainly explain this.

Although there have been compulsory acquisitions of stretches of land by the government of Ghana, which have turned these stretches of land into state lands, the traditional or customary land tenure system dominates – it constitutes about 80% of all lands in Ghana (Sewornu et al., 2015). In the traditional land tenure systems, land is owned communally along tribal, clan, or family lines. While farmers who are members of the land owning group have access to their tracks of land, it is difficult for farmers who are outside the group to have such an access. Also, the traditional land tenure system is often characterized by conflicting claims to ownership, which affects accessibility to land for agricultural (and other) purposes (National Land Policy, 1999). Consequently, the traditional land tenure system does not only make land acquisition for increased farming activities very difficult, it is unfair and frustrating to many farmers, since rents extracted from them by landlords, who are

normally chiefs or clan/family heads, are usually very high. Ghana's traditional land tenure system is, therefore, the main factor limiting the ability of Ghana to allocate considerable portion of agricultural land in the country for rice cultivation despite the need and desire to do so.

The limitations imposed by the traditional land tenure system on access to land for farming have long been recognized in Ghana. For instance, in its efforts to sharply increase agricultural production to achieve food self-sufficiency in Ghana through the Operation Feed Yourself program, the SMC government was confronted with the difficulties associated with the traditional land tenure system and lamented as follows:

"In most parts of the southern half of Ghana, the acquisition of land especially for large-scale commercial farming poses serious problems. While it is traditionally easy for the members of any small community in the southern part of Ghana to have title to the use of land in the areas they belong, outsiders with ambitions for large-scale farming operations have had difficulty in acquiring title to large tracks of land. This difficulty arises where tribal land is sold or leased to outsiders without the approval of the Chief of the area. A more crucial issue with regard to the problem of land tenure is the prevalence of several different forms of land tenure systems that make it impossible for the application of any set of prescriptions for improving the present small-scale farming systems in the country" (Page 11, Five-Year Development Plan, Part II, 1975/76 – 1979/80).

Moreover, as we quoted in Section 2 of this paper when discussing National Rice Development Strategies I and II, the Kufuor government also raised the issue of access to land for rice farming, resulting from the country's land tenure system. In spite of these serious concerns raised by the government of Ghana regarding the traditional land tenure system and its effects on access to land for farming, not much has been done to reform it over the years.

However, because land titling and registration help to secure property rights and thus serve as the basis for the development of an efficient land market, thereby helping to improve access to land through outright purchase, leasing or renting of land, the government of Ghana introduced land titling and registration in 1986 by PNDCL 152, even though land deed registration had existed in Ghana even before the country's independence. In 2008, the Lands Commission in its current form was established, which was given the mandate to, among other things, carry out land title and deed registration. However, land title and deed registration by the Lands Commission has been found to be characterized by inefficiency and corruption.

On corruption, in a survey conducted by Ghana Statistical Service (GSS) and the Commission for Human Rights and Administrative Justice (CHRAJ), termed "2021 Ghana Integrity of Public Services Survey", the Lands Commission was found to be

the 4th most corrupt institution in Ghana. It was also found that, of all categories of public officials in Ghana, officers of the Lands Commission took the largest average cash bribe of GH¢ 1,669 in 2021.

On inefficiency, the operations of the Lands Commission have been found to be associated with long delays, which frustrate clients. For instance, data provided by Ehwi and Asante (2016) show that of yearly applications received by the Lands Commission's office in Accra from 2008 to 2013, only an average of 33.2% were processed in each year. Also, in its performance audit report on land registration, covering the period from 2019 to 2023 in the Northern, Ashanti, Western, Greater Accra and Eastern Regions, the Ghana Audit Service found that, although the Lands Commission has set a 90-day timeline for processing of land title and deed applications, 79.6% of the applications were processed beyond the 90-day period. In the Northern Region, for instance, the Ghana Audit Service found that it took an average of 372 days for the Lands Commission to complete the processing of a deed application.

Therefore, the land title/deed registration in Ghana has not been able to significantly help develop a healthy land market for significant improvement in access to land for farming. This has contributed to the inability of Ghana to allocate considerable portion of its agricultural land for rice cultivation.

In Thailand, there are two types of land ownership: public and private. Private ownership of land has been allowed in Thailand since 1872. In 2004, 20.48 million hectares of land, representing about 40% of the entire country, was classified as private land (Tawee, 2015). Land tenure reforms through land redistribution have been vigorously pursued by the government of Thailand. For instance, in Agricultural Reform Act of 1975, the Thai government began to allocate land to farmers who were landless or had insufficient land from publicly held land and land purchased from private owners. From 1975 to 2012, parcels of land with registered titles, representing 5.44 million hectares, were allocated by the Agricultural Land Reform Office of Thailand to 2.4 million farmers (ibid). In fact, Tawee (2015) reports that as part of the directive principles of state policy, the 2007 Constitution of Thailand states that the state shall "distribute land in a fair manner, enable farmers to have ownership or rights in land for farming purposes thoroughly through land reform or otherwise, and provide water resources for sufficient use of water by farmers in a manner suitable for farming (...)." In response to this directive, the government of Thailand has constantly been ensuring that all farmers are able to have access to land. It is, therefore, this vigorous policy of agricultural land distribution that has allowed Thailand to allocate considerable portion of its agricultural land for rice cultivation as we saw in Table 4.

On land title registration, Thailand has achieved a great deal of efficiency. Although land title registration started in Thailand in 1901, in 1984, the government of Thailand

embarked on a 20-year program to accelerate land title registration with a vision to issue land titles to all eligible landholders. Burns (2004) reports that as at 1984, the title register held 4.5 million titles. However, by the end of September 2001, the amount of land titles the title register held had increased to as many as 18.03 million, covering about 11.3 million hectares of land. This represented about 22% of the total area of Thailand. “The increased number of titles indicates the growth of the register through sporadic processes and the increasing efficiency and responsiveness of DOL [Department of Land] service delivery” (Burns, 2004). Also, citing Thailand’s Department of Lands, Tawee (2015) points out that as at November 2008, 46.1 million or 89.8% of the entire country of 51.3 million hectares had been surveyed and mapped. And between 1901 and 2010, certificates for 30 million parcels of land, representing 20 million hectares, were issued.

In Vietnam, land is conceived to be for the benefit of all the people, with the government of Vietnam serving as the overseer and administrator of the country’s land resources on behalf of the people. Therefore, there is no private ownership of land in Vietnam. Previously, each farming household was allowed to borrow 3 hectares of farmland. However, starting from 2010, each farmer has been allowed to borrow more than 3 hectares of farmland. To encourage large farm systems, in 2013, the government of Vietnam introduced additional changes to the 2010 land regulation, allowing farmers to borrow up to 30 hectares of farmland for a period of 50 years (Matsubara et al., 2020). “Agricultural policy has also encouraged farmers to support rice production. On 9th April, 2016, the government announced its intention to maintain at least 3,763,390 ha of rice paddy fields according to decision No. 134/2016/QH13” (ibid). Clearly, it is the responsibility of the government of Vietnam to ensure that all farmers have access to land for their farming activities. And the Vietnamese government has been ensuring exactly that. This is, therefore, the reason why Vietnam has been able to allocate considerable portion of its agricultural land for rice farming as we saw earlier.

4.2 Unmet Demand by Locally Produced Rice

As stated earlier, in addition to the domestic rice production limitations thoroughly discussed in Subsection 4.1 above, unmet demand by locally produced rice is another factor that is fueling importation of rice in Ghana. The reason is that a large segment of consumers of rice in Ghana, especially urban dwellers, have taste for what they consider to be imported high quality aromatic rice. In fact, it is estimated that only about 20% of domestically produced rice is consumed by urban consumers of rice in Ghana (Omari et al., 2018). Therefore, irrespective of the extent to which domestic production of rice may increase in Ghana, as far as this kind of demand for rice is not met by domestic producers of rice, there will continue to be significant importation of rice in Ghana.

As we saw from Figure 3b, a different form of this phenomenon has dawned on Vietnam since 2020. To recap, due to the shift of Vietnamese rice farmers to growing high quality rice for greater export revenues, the existing demand for low quality rice in Vietnam is not being met, which has stimulated a sharp increase in rice import in the country since 2020, despite Vietnam being the third biggest exporter of rice in the world.

5. Policy Recommendations

We have seen in this paper that consumption of rice has seen a sharp increasing trend in Ghana. Yet, the country is unable to produce enough rice, both in terms of quantity and quality, to meet the increasing consumption. These have led to increasing importation of rice in the country. Although the government of Ghana has pursued policies aimed at boosting domestic production of rice in order to do away with its importation, it has generally not been successful. However, we found that since 2008, domestic production of rice has seen some significant increase in response to increase in rice yield. This resulted from the implementation of the National Rice Development Strategies I and II. Yet, the gap between rice production and consumption rather worsened during this period, leading to accelerated rice importation.

Based on lessons learnt from the comparative analyses we have carried out in this paper (i.e. comparing Ghana's case with those of Vietnam and Thailand) and given the fact that Ghana has all the necessary conditions for a very successful rice sector, we believe that Ghana has the potential to completely transform its fortunes in the rice sector if right policies are pursued.

To ensure that Ghana realizes this potential, we make the following policy recommendations to the government of Ghana:

1. Set a More Ambitious Goal of Ghana Becoming a Major Net Exporter of Rice in the Medium Term

To begin with, as pointed out in Section 2, the Coalition for African Rice Development's (CARD's) Africa-wide rice production goal in Phase I (2008–2018) was to double rice production in Africa during the planning period. Also in Ghana's context, the specific goal of NRDS I (2008–2018) was "to contribute to national food security, increased income and reduced poverty towards the attainment of self-sufficiency from sustainable rice production." In addition to finding this specific goal of Ghana unambitious, given the potential Ghana has in rice production, we find the Africa-wide rice production goal of CARD to be awkward. The question is, what specific economic or even sociopolitical end did doubling rice production intend to achieve? Well, in Ghana, after implementing NRDS I (2008–2018), the country succeeded in almost tripling rice production (milled) from 181,152 metric tons

in 2008 to 530,887 metric tons in 2018, implying that Ghana actually did better than what was expected of it by CARD. Yet, rice importation, for instance, rather worsened from 394,998 metric tons in 2008 to 830,546 metric tons in 2018. Sadly, CARD Phase II (2019–2030) and Ghana’s NRDS II (2019–2030) have continued to set similar goals.

Indeed, Ghana has all that it takes to achieve great heights in the rice sector. Ghana has an abundant supply of labor that can be mobilized for massive rice farming. Also, as stated in Section 4, Ghana has the potential to devote estimated 5.9 million hectares of fertile land to rice production. Given that at present Ghana has a total of 12.6 million ha of agricultural land, the estimated potentially available land for rice cultivation in Ghana as a share of the country’s agricultural land is as high as 47%, which thus dwarfs the average of 2.6% of agricultural land actually used for rice farming in Ghana in 2019–2021. In fact, this estimated ratio of Ghana’s agricultural land that can potentially be made available for rice farming falls within the range of ratios of agricultural land actually used for rice cultivation by Thailand and Vietnam as we saw from Table 4. Now, if Ghana is able to achieve rice yield of 6.0 metric tons of paddy rice per hectare⁷ of land like the average achieved by Vietnam in 2019–2022 as we saw in Table 3, and if Ghana is able to use the estimated 5.9 million hectares of land for rice cultivation, Ghana would be able to produce 35.40 million metric tons of paddy rice annually. This is 34.12 million metric tons or 2,665.6% more than the 1.28 million metric tons of paddy rice the country actually produced in 2022. This estimated production volume of Ghana, if achieved, would be comparable to what Thailand and Vietnam currently produce. In 2022, for instance, Thailand produced 34.32 million metric tons of paddy rice, while Vietnam produced 43.68 million metric tons of paddy rice. And given the pattern of rice consumption in Ghana, this scale of rice production would make Ghana become a major net exporter of rice. In fact, given Ghana’s level of rice consumption, which is much smaller than what prevails in Vietnam and Thailand, it does not even have to produce this scale of rice output before it becomes a major exporter of rice. For instance, given the level of consumption, import and stocks of rice in Ghana in 2022, if Ghana had produced only 7.4 million metric tons of milled rice in 2022, it would have exported 6.6 million metric tons of milled rice in that year. Interestingly, 6.6 million metric tons of milled rice is how much Vietnam exported to earn US\$3.2 billion in 2022, having produced as much as 26.7 million metric tons of milled rice in that year.

The government of Ghana should, therefore, set a more ambitious goal of Ghana becoming a major net exporter of rice in the medium term. Ghana should immediately begin to work towards attaining this goal, using the strategies recommended below. The good news is that international demand for rice is very strong, and it is expected to significantly increase in years and decades ahead.

⁷*With right strategies put in place, as we shall discuss below, this yield is achievable. After all, as we saw in Table 3, Ghana is already making strides in respect of rice yield, currently.*

For instance, according to Mordor Intelligence⁸, the world's market size for rice, "the most widely consumed staple food for most of the global human population", is projected to increase by as much as US\$61.77 billion from US\$387.84 billion in 2025 to US\$449.61 billion in 2030. Also, according to Valera and Pede (2023) of the International Rice Research Institute (IRRI), "the global rice sector faces a challenge in meeting future rice demand due to the growing global population, which is expected to increase from 8.9 to 10.6 billion by 2050."

2. Set up Rice Development Board (RDB) as the Means to Ensure Active Government Intervention in the Rice Sector to Transform the Sector

We repeatedly saw from the analysis in Section 4 that a more fundamental cause of the poor performance of rice production in Ghana is lack of active government involvement in the country's rice sector to address the factors limiting the performance of the sector. This is because, unlike the governments of Vietnam and Thailand, the government of Ghana has relegated itself to the background to only create the enabling environment for the sector, while expecting the private sector to fully address the factors limiting rice production in Ghana. This policy position of the government of Ghana has resulted in market failures in the rice sector, as private sector actors have colossally failed to improve these limiting factors. This is what has caused the actual rice production in Ghana to represent only a small fraction of what the sector can potentially deliver.

To correct this market failure, achieve great results like Vietnam and Thailand, and thus transform the country's fortunes in the rice sector, the government of Ghana should actively get involved in the sector and directly address these limiting factors. Thus, the government of Ghana should aim at invigorating the rice sector in such a way that it can deliver up to its potential, which would make Ghana become a major net exporter of rice.

However, because of new Ghanaian governments' penchant for discontinuing policies started by previous governments when these policies are not legally and institutionally entrenched, we recommend that the government of Ghana should formally establish Rice Development Board (RDB), an agency through which active interventions of the government in the rice sector should be channeled. RDB should be provided with adequate funding, and its funding sources should be spelt out.

RDB should handle all government interventions in the rice sector covering production, harvesting, milling and storage of rice. Therefore, it should be equipped, financially and technically, in such a way that it can handle government interventions pertaining to the provision of certified and quality rice seeds to rice farmers; provision of adequate fertilizers to rice farmers; provision of adequate

⁸*Rice Market Size & Share Analysis - Growth Trends & Forecasts (2025 - 2030)*
Source: <https://www.mordorintelligence.com/industry-reports/rice-market>

irrigation facilities for rice farming; mechanization of rice farming operations; provision of adequate access to land for rice farming; etc. RDB should draw lessons from intervention experiences of governments of Vietnam, Thailand and other major rice producing countries in the developing world.

On the issue of the provision of adequate fertilizers, for instance, the government of Ghana, through RDB, should directly set up factories that produce adequate fertilizers locally to serve rice farmers' needs at affordable prices. The government should also provide sufficient tax incentives and subsidies to private sector firms to locally produce fertilizers to serve farmers, including rice farmers, at affordable prices. RDB should get actively involved in the distribution and marketing of the produced fertilizers to farmers, using offices it ought to set up in every rice producing district of the country. On the issue of the use of certified and high yielding rice seeds, the government of Ghana, through RDB, should go beyond the provision of funding for rice seed research and development by getting directly involved in the production, distribution and marketing of certified and high-yielding rice seeds to rice farmers. On the issue of the provision of irrigation facilities for rice farmers, RDB, with adequate financing, should work with the Ghana Irrigation Development Authority (GIDA) to develop adequate irrigation facilities on the estimated 1.9 million hectares of land identified to be suitable for irrigated rice farming. And on mechanization of rice farming operations, RDB should concern itself with the mechanization of the entire operational processes of rice farming, and not just land preparation. This involves land preparation, fertilizer and insecticide application, clearing of weeds, harvesting, milling and storing of rice. In addition to providing tax incentives and subsidies for importation of new and used machines for rice farming, the government, through RDB, should set up entities to manufacture rice farming machines locally, making sure that they are designed to be more suitable for the local environment. Alternatively, RDB may partner with private-sector firms like Kantanka Automobile to manufacture the machines.

RDB should also be tasked to provide technical support and facilitation to private sector actors in the locally produced rice distribution and marketing chain, regarding both the domestic and export markets. If necessary, RDB may directly get involved in the purchasing, distribution and marketing of domestically produced rice, especially with respect to the export market.

3. Continue to Provide Incentives and the Enabling Environment to the Private Sector Actors in the Locally Produced Rice Value Chain

The government of Ghana should continue to provide incentives and the enabling environment to the private sector actors in the locally produced rice value chain. However, unlike the existing situation whereby the private sector has been made to

largely take over the government's role in the rice sector, and has thus been made to substitute for the government, which has led to the market failure as discussed earlier, the private sector should now be seen and treated as complementary to the government's efforts in the sector. As we saw in Section 4, this is the kind of arrangements that exist in the rice sectors of Vietnam and Thailand, which have worked so well for them.

4. *Provide Adequate Access to Land for Rice Farming through Land Purchases and Redistribution*

We saw in Section 4 that Ghana's traditional land tenure system makes many rice farmers unable to have easy access to land. We also understood that this is making Ghana unable to devote considerable hectares of land for rice farming, which is heavily limiting the quantity of rice that can be produced in the country, thereby immensely contributing to the increasing importation of rice. To solve this problem, the government of Ghana should acquire large tracts of land suitable for rice farming by paying fair compensation to the current holders and treating them as public Land⁹. These tracts of land should be redistributed to people interested in rice farming through renting and leasing at very affordable prices.

5. *Mobilize the Youth for Rice Farming*

To be able to massively expand rice production in Ghana and turn Ghana into a major net exporter of rice as recommended above, the government of Ghana should also massively mobilize the youth into rice farming. As IFS recommended in its Policy Brief No. 22, this should be done "on team basis by providing them with seed money (capital) on credit with no regard to political party affiliation."

6. *Directly Produce, Distribute and Market Aromatic Rice Seed for Cultivation to Substitute for Imported Aromatic Rice*

In addition to high-yielding rice seeds, RDB should also make sure that it directly produces, distributes and markets aromatic rice seeds to farmers for cultivation, as a means of substituting for imported aromatic rice. If locally developed aromatic rice does not serve as perfect substitute for imported aromatic rice, the relevant seeds can be imported by RDB and marketed to rice farmers for cultivation.

⁹"Land, a gift from God, should not be allowed to be permanently owned by certain class of people through inheritance and without efforts. As already explained, this is not only unfair, but it also entrenches poverty in rural communities through excessive rent extraction, retards agricultural development and leads to poor industrial performance. We should recognize that chiefs and kings in Ghana are not serving as custodians of the lands for their people as they are quick to point out but are practically treating the lands as their personal or family properties, since rents extracted from these lands are not accounted to their people nor used for development of their respective communities or regions but for their personal wealth accumulation, creating unjust and unproductive society. We should remind ourselves that generally, economies thrive when wealth is acquired through merit and hard work and not through permanent entitlements" (Boakye, 2018).

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Residential Address

No. 13, 2nd Close, Airport Residential Area, Accra, Ghana

Postal Address

P.O. Box CT 11260, Cantonments, Accra, Ghana

+233 302 786 991

info@ifsghana.org

www.ifsghana.org