AGRICULTURE AND FORESTRY IN GHANA

PRESENT STATE AND ISSUES FOR DEVELOPMENT

JAICAF

Japan Association for International Collaboration of Agriculture and Forestry

March 2007

Foreword

This study report is an abridged English edition extracted from the principal parts of the special volume on Ghana among the "Country Study" series (Japanese version only available) published by our Association.

In order to achieve the development of overseas agriculture and forestry effectively, it is imperative in the phase of formulating a cooperation project, to assess correctly the situation of the objective country in terms of politics, economics, society, natural conditions and culture, and identify accurately the issues relevant for the economic and social development in the country.

The current series of studies intend to give a comprehensive picture of the existing situation in economics, society, agriculture, forestry, food and rural communities in developing countries, as well as to sort out the issues involved in the development of agriculture/forestry and rural communities, so that the role and the orientation of international cooperation of Japan toward respective countries are to be clearly defined.

For the moment we have tried to compile the data representing the situation in Ghana, the country that Japan considers to be one of the most important countries in the efforts for assistance in West Africa, and has a great potential for the agricultural and forestry development. The approach in implementing this study has included, in order to assure the acquisition of information as accurate as possible, the observations and studies on site by dispatching mission of experts to the objective country, as well as the studies in Japan by organizing a research committee within the framework of our Association to examine the issues from the viewpoint of more advanced disciplinary knowledge.

The completion of the present volume owes entirely to the efforts exerted by all the contributors to the report compiled by the members of the research committee (Chairperson: Dr. Tsutomu Takane, Institute of Developing Economies). Deep appreciation also has to be expressed toward all those concerned officials of various institutions and organizations that have extended assistance to the implementation of this study, including related agencies of the government of Ghana, Ministry of Agriculture, Forestry and Fisheries, Ministry of Foreign Affairs, and Japan International Cooperation Agency.

March 2007
Hideo Maki
President
Japan Association for International Collaboration of Agriculture and Forestry

Table of Contents

CHAPTER I PRESENT STATE AND TREND OF AGRICULTURE AND FORESTRY

1. Structural Characteristics of the Economy

The structural characteristics of the economy of Ghana can be summarized into 3 points as described below. The first point is the importance of the agricultural sector. As observed in Table I – 1 showing the shares of GDP of different sectors, the proportion attributable to the agricultural sector amounts to 37 % (2005) and is the highest among others. Moreover, it is estimated that more than 60 % of the whole population of Ghana are engaged in agricultural activities (Government of Ghana 2005), which indicates the importance of this sector as the source of creation of employment as well. Furthermore, since most of the crop products consumed in domestic market are produced within the country, the agricultural sector also plays an important role from the viewpoint of food security. On the other hand, cocoa as a major export crop is not only an important crop to sustain the economy of the country, but it is also the means of livelihood for the rural population, because it is grown mostly by small-scale producers. With the background that the agricultural sector is playing an important role in the nation's economy, as discussed above, the government of Ghana has established an economic policy in which it gives the highest priority to the development of agricultural sector as well as to that of the sector of processing of agricultural products. The government of Ghana thus has set a goal of development according to which the country will acquire, through the growth of these sectors, the status of a country of medium income by the year 2015.

Table 1– 1 Shares of GDP by different sectors

Year	2000	2001	2002	2003	2004	2005
GDP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Agriculture	**36.0%**	**35.9%**	**35.8%**	**36.1%**	**36.7%**	**37.0%**
Agriculture & Livestock	24.3%	24.5%	24.7%	24.7%	24.6%	24.6%
Cocoa production and marketing	3.5%	3.3%	3.1%	3.5%	4.2%	4.5%
Forestry & logging	3.5%	3.6%	3.6%	3.6%	3.6%	3.6%
Fishing	4.6%	4.5%	4.4%	4.3%	4.3%	4.2%
Industry	**25.2%**	**24.9%**	**24.9%**	**24.9%**	**24.7%**	**24.7%**
Mining & quarrying	5.6%	5.3%	5.2%	5.2%	5.2%	5.0%
Manufacturing	9.2%	9.1%	9.2%	9.1%	9.0%	9.0%
Utilities	2.6%	2.6%	2.6%	2.5%	2.5%	2.5%
Construction	7.9%	7.9%	8.0%	8.0%	8.1%	8.2%
Services	**29.7%**	**29.9%**	**30.0%**	**29.8%**	**29.5%**	**29.4%**
Transport, Storage and communication	4.8%	4.8%	4.9%	4.9%	4.9%	4.9%
Wholesale & Retail Trade, Restaurant & Hotels	6.8%	6.9%	7.0%	6.9%	6.9%	6.9%
Finance, Insurance, Real Estate & Business Services	4.3%	4.3%	4.3%	4.3%	4.3%	4.3%
Government Services	11.0%	11.1%	11.0%	10.8%	10.7%	10.6%
Others	2.8%	2.8%	2.8%	2.8%	2.7%	2.7%
Net indirect taxes	**9.2%**	**9.3%**	**9.3%**	**9.2%**	**9.1%**	**9.0%**

Source: Calculated from the data, Statistical Bulletin, June 2006, Bank of Ghana
http://www.bog.gov.gh/privatecontent/File/Research/StatBullJun06/stBulBOPjul06.xls (Nov. 9, 2006)

The second characteristic of the economic structure of Ghana is its vulnerability owing to the fact that the national economy is heavily dependent on the export of a limited number of primary products. As observed in Table I-2 showing the trade balance for 2005, the principal export commodities of Ghana are all primary products consisting mainly of gold and cocoa. Since these commodities are subjected to the large fluctuation of international prices, the trade earnings and the domestic economy are liable to be affected greatly by such variations. Furthermore, all those commodities are the export products whose history goes back to the colonial era of Gold Coast, and even now a half century after achieving the national independence, the diversification and the sophistication of export goods have not been realized. On the other hand, the industrialization of the country is hardly progressing, which is manifested in the fact that the share by manufacturing industries among the gross national product remains permanently below 10 % year after year (Table I-1). In order to achieve the long-term economic growth of Ghana, it is essential to reform such economic structure.

Table I-2 Trade balance (2005)

	Sum (Million US Dollars)	Shares
Export(fob)	2,802	
Cocoa beans & products	908	32%
Gold	946	34%
Timber & timber products	227	8%
Other exports	721	26%
Import(fob)	5,345	
Oil	1,127	21%
Non-oil	4,218	79%
Merchandise Trade Balance	-2,543	

Source: Statistical Bulletin June 2006, Bank of Ghana
http://www.bog.gov.gh/privatecontent/File/Research/StatBullJun06/stBulBOPjul06.xls (Nov. 9, 2006)

The third characteristic is the interregional differentials existing within the country. For a long time since the colonial era and also during the years subsequent to the independence, the development policy of the government had been advanced by focusing the efforts principally on the southern part of Ghana endowed with rich mineral resources and a high potential for agricultural activities. Moreover, for a long time since the colonial era and even down to present days, gold and cocoa, the two principal commodities of exports, have been produced in the middle and southern parts of Ghana. These areas have an abundant rainfall and fertile soils, which not only favors productive agriculture but also gives rich forestry resources. What is more, major cities are concentrated in the southern part where the infrastructure and the social services have been relatively more developed. In contrast to these facts, in the northern regions of Ghana (Northern, Upper East, Upper West), because the climate is that of savanna, the agricultural production suffers from many constraints, and there are few mineral and forestry resources. With low population density, the development

of infrastructures and social services is relatively lagging behind other regions. As seen in Table I-3 showing the comparison of per capita annual income among different regions, the income of the three northern regions is evidently lower than that in other regions. With the existence of such a wide gap between the north and the south within the country in the background, there is a demographic phenomenon of a huge internal migration of people from the rural zones in the north to the southern regions. In recent years, the government, in its development policy, has been focusing on the poverty reduction. In this context, the development of the northern regions and the rectification of the interregional differentials have become one of the most intensely invested areas in the efforts of the government, aide organizations, and donor countries.

Table I-3　Per capita annual income by regions

Regions	Annual income (US dollars)
Western	233
Central	182
Greater Accra	382
Eastern	170
Volta	216
Ashanti	255
Brong-Ahafo	225
Northern	86
Upper West	84
Upper East	132
Whole country	216

Source: Calculation based on the data from Republic of Ghana (2000), p.102
Exchange rate was assumed as: 1 US$ = 2,439 Cedis (March 1999)

2. Present Situation of Agriculture

1) Natural conditions and regional classification

The total territorial area of Ghana is 238,533 km^2, corresponding approximately to two thirds of that of Japan. The territory borders on Togo on the eastern side, Burkina Faso on the northern and the northwestern sides, and Ivory Coast on the western side, being situated in cartographic terms, between latitude 4 degrees 44 minutes north and latitude 11 degrees 11 minutes north, and between longitude 3 degrees 11 minutes east and longitude 1 degrees 11 minutes west. Moreover on the southern side, it faces with Guinea Gulf in the Atlantic Ocean (with coastline extending 550 km).

The climate is roughly divided into that of humid tropics and that of savanna. While the annual rainfall exceeds 1,800 mm in certain parts of the south and approaches 1,000 mm even in the northern regions, the temperature variation and the pattern of rainfall differ greatly depending on the particular climate zones. In the zones under the tropical humid climate the range of variation of temperature throughout the year is relatively narrow, and both the rainy season and the dry

season are divided into a major season and a minor season. Overall rainfall pattern throughout the year can be described by identifying 4 distinctive periods: from March through July, the major rainy season; August, the minor dry season; from September through November, the minor rainy season; from December through February, the major dry season. On the other hand, in the zones under the savanna climate, the range of temperature variation throughout the year is relatively great and the rainfall pattern is represented by distinguishing only two seasons: the rainy season and the dry season. Normally the rainy season occurs from April through October and the dry season from November through March. Only, normally the pattern of rainfall shows two peaks, namely one in May through June and the other in September.

The vegetation is greatly influenced by climate and rainfall and can be classified into 6 categories (Fig. I-1).

Among the southern zones, the coastal area facing the Gulf of Guinea constitutes the mangrove swamp zone distributed around the estuary of the Volta River and a savanna zone. The savanna zone (Coastal Scrub and Grassland) lying around the capital Accra that is little affected by the tropical monsoon is also called Accra dry zone, comprising an extensive area of bushes and grassland.

To the southwest of the coastal savanna, there lies the forested zone with a very heavy rainfall. The forested zone can be divided into two zones, one situated to the southwestern part of Ghana where particularly tall trees grow to form dense forest, and the other which lies to the northeast of the tall forest zone and is covered with trees of medium heights. The former dense forest zone is classified as the tropical rain forest, and the latter abundant in trees of medium heights as the moist semi-deciduous forest: transitional zone.

The zone stretching out to the north of the forested zone is a vast zone of the savanna. The savanna is also classified, depending on the amount of annual rainfall, as the Guinea savanna woodland and the Sudan savanna woodland. The savanna zone that occupies more than a half of the national territory and covers the entire area of the northern part is the Guinea savanna woodland. In this area, tall tree species such as Baobab and Kapok can often be observed, and land spaces covered with a few number of tall trees and several species of bushes as well as with grass species stretch out. From among the northern regions, the Sudan savanna zone occurring on a very limited area on the eastern side of the extreme north has the climate with more intense aridity compared to the Guinea savanna, and the vegetation there includes only sparsely distributed tall tree species and bushes, if they exist at all, and is essentially predominated by natural grasslands (Nakasone 2002, 2005).

On the other hand, while the soils in Ghana are classified into three major groups, most of them are soils in the process of weathering where the common characteristics are those of fluvial soil (fluvisols) coupled with the properties of shallow soils exposed to erosion (leptosols) (Fig. I-2). As a consequence of this fact, generally most of the earth is presently recognized as barren land effected by the variations of natural environment and human activities.

The soils distributed in the eastern part of the coastal areas facing the Gulf of Guinea are

composed of those with diverse nature ranging from the barren soils under permanent inundation to those with fertile properties containing rich clay minerals (Longman 2000).

The soils distributed in forested zones are classified roughly into two groups consisting of oxysols and acid gleysols. These soils are characterized as those well drained with good percolation, generally loamy, and containing in the surface layers a larger quantity of organic substances deriving from the accumulation of biomass materials, as compared with the soils found in the savanna zone.

The soils distributed in the savanna zone contain a larger quantity of ferrous substances, and because they contain a lesser amount of organic substances (less than 2 % of the surface soil) as the location shifts further north, they are vulnerable to erosion. Consequently, the soils of the land situated on higher elevation that tends to lose moisture more rapidly are liable to be affected by droughts. Moreover, since the soils in this zone tend to form clayey blocks of soil in a red brick color with hardness like that of concrete, it is necessary to apply fertilizers periodically (K. Oppong-Anane 2001).

Source：Map annotated by author based on Longman, 2000

Fig. Ⅰ－1　Vegetation map of Ghana

Source: Same as Fig. I－1

Fig. I－2　Distribution of soils in Ghana

As seen in the above discussions, the geographical classification of Ghana is possible in various ways according to the criteria of climate, vegetation, and soil. Therefore, the government of Ghana has established the classification of ecological areas from the viewpoint based on agriculture because it is the key industry in the economy and its activities are greatly influenced by these ecological factors. The number of agro-ecological areas thus identified is three: Coastal Area; Forest Area; and Savanna Area. The regions included in these agro-ecological areas are as follows:

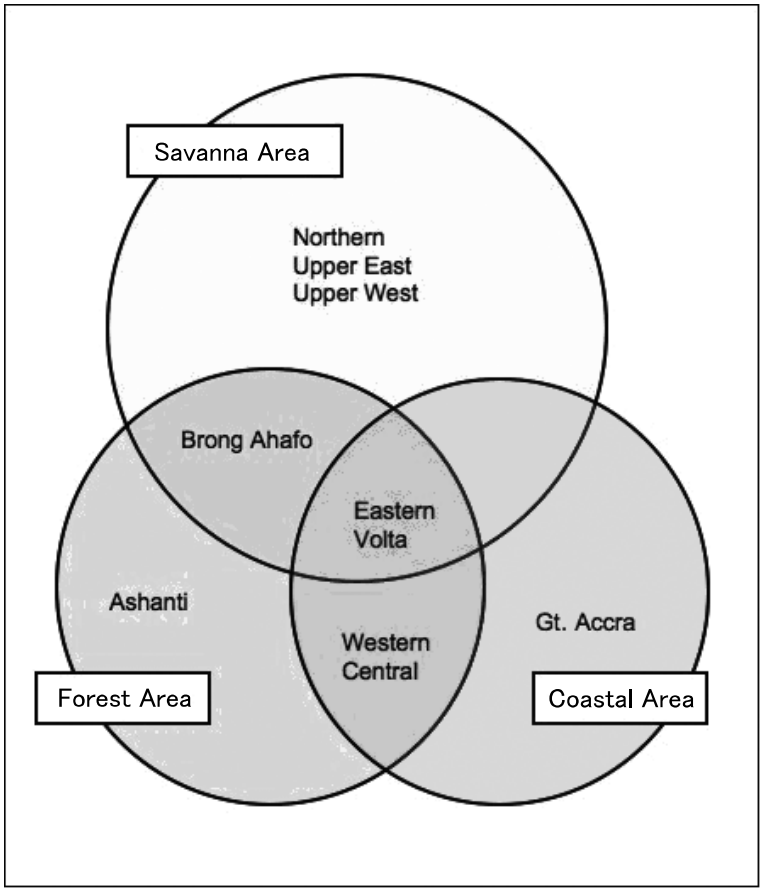
Coastal Area: Greater Accra Region and Western Region; Central Region; Eastern Region; a part of Volta Region

Forest Area: Ashanti Region and Western Region; Central Region; Eastern Region; Volta Region; a part of Brong-Ahafo Region

Savanna Area: Northern Region; Upper East Region; Upper West Region and Eastern Region; Volta Region; a part of Brong-Ahafo Region

(Ghana Statistical Service 1995) (Fig. I - 3)

In the following discussions as well, the classification of three agro-ecological areas by the Government of Ghana is adopted to identify the fundamental geographical units of the country.



Source：Annotated by author based on documents from Ghana Statistical Service 1995

Fig. Ⅰ－3　Diagram of agro-ecological areas classified by the government of Ghana

2) State of land use and agricultural production

(1) Land Use

The Ghanaian agriculture, although it has been evolving to take its shape since the colonial era, presently shows aspects of considerable changes made during the past 50 years following the independence.

According to the statistics of FAO, in the land use of Ghana, the proportion of area of agricultural land to the total land area of the country was 51.4 % at the moment of 1965, which changed to 64.8 % by 2003, representing an increase of agricultural land nearly by 26 % during the period of 38 years. If one looks closely at the breakdown of agricultural land, it is shown that the land dedicated to grow permanent crops occupies only 14.9 % in 2003. However, regarding the land area of forest and grassland, both forms representing a substantial part of the land use in Ghana, a large portion of them is considered to overlap with the agricultural land area, because Ghanaian agriculture is practiced mainly by cropping systems based on cycles of shifting cultivation comprising rotational bush fallow and bush burning or slash-and-burn technique (Table Ⅰ－4).

In another aspect, according to the statistics of the Ministry of Food and Agriculture

(MOFA-SRID 2006), the area of arable land that was actually cultivated in 2005 was 7.19 million hectares, slightly exceeding 30 % of the total land area of the country. Of the total cultivated land area, the irrigated area was very insignificant with only 11 thousand hectares, constituting, in comparison with the total land area, only 0.05 % of it. This signifies that almost all agriculture in Ghana is practiced under rainfed conditions.

Table I – 4 Area of land use in Ghana

(Unit : 1000ha)

Territorial area					23,854				
Land area					22,754				
	1965	**1970**	**1975**	**1980**	**1985**	**1990**	**1995**	**2000**	**2003**
Agricultural land	11,700	11,700	11,800	12,000	12,400	12,605	13,100	14,450	14,735
Permanent crops	1,600	1,600	1,600	1,700	1,600	1,500	1,700	2,150	2,200
Grassland	8,400	8,400	8,400	8,400	8,400	8,405	8,400	8,350	8,350
Utilizable land	1,700	1,700	1,800	1,900	2,400	2,700	3,000	3,950	4,185

Source: Compiled by author from the data of FAOSTAT

In overall terms, the areas of different types of land use and their proportions in Ghana are as shown in Table I – 5. The largest part of the use of national land is made in the humid and the arid savannas that occupy 71 thousand km^2 (30 % of the total land area). Coming next to the savannas, the land area that is covered with rotational bush fallow occupies 25 % (60 thousand km^2) of the total land area, which is followed by, in descending order, unimproved land of 36 thousand km^2 (15 % of the total land area), and protected forest of 26 thousand km^2 (11 % of the total land area). The types of land that occupy less than 10 % of the total land area are: the land planted with tree crops (7 %, 12 thousand km^2); wildlife reserves (5 %, 12 thousand km^2); arable land planted with annual crops (5 %, 12 thousand km^2); and unprotected forest (2 %, 5 thousand km^2). These figures indicate that the land use in Ghana is characterized by the fact that the vast area of savanna and the exploitation of land by cropping systems based on rotational bush fallow, predominant form over the savanna area, occupy more than half of the total land area. They also indicate that the types of land use which are considered to be more important for the national economy as well as for the people, namely, the forest including protected areas, the exploitation by annual crops, and the plantation of tree crops, etc., even if they are combined together, cover at most only 45 % of the total land area for beneficial purposes.

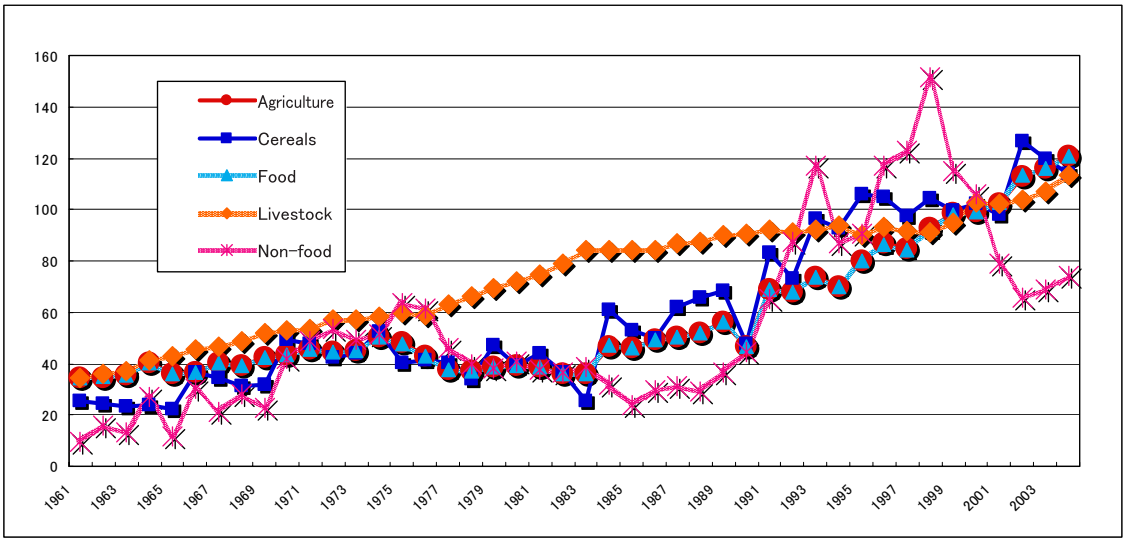
Table Ⅰ-5 Land use in Ghana

Land use type	Land area ($1000km^2$)	Proportion to total land area (%)
Humid/arid savanna	71	29.7
Rotational bush fallow, etc	60	25.1
Unimproved land	36	15.1
Protected forest	26	10.9
Plantation of tree crops	17	7.1
Exploitation of annual crops	12	5.0
Wildlife reserves	12	5.0
Unprotected forest	5	2.1
Total	239	100.0

Source: Compilation by author based on the data of MOFA-SRD

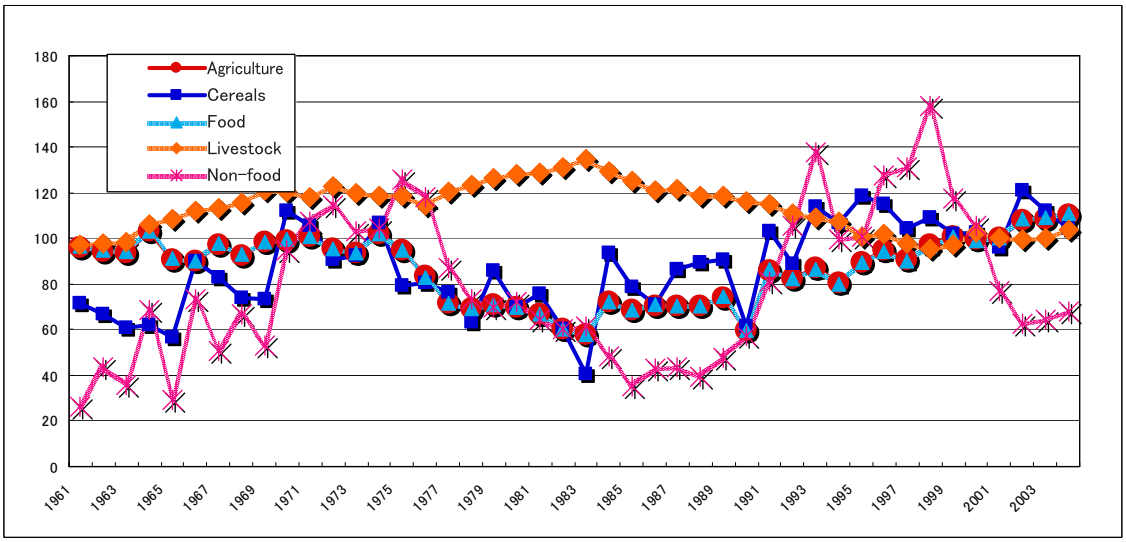
(2) Evolution of agricultural production and recent agricultural population

An examination of the change of indices (with average values over the years 1999 to 2001 taken as 100) estimated by FAO concerning agricultural production in Ghana indicates that the country has been increasing steadily its agricultural production until now since the independence. Both categories of cereals and food have been showing a tendency to increase since the latter half of the 1980s albeit repetitive variations. The livestock whose production status stagnated since mid 80s has been showing again the tendency to increase since the 1990s. The category of non-food which increased notably since the beginning of the 1990s took a downturn after attaining a peak in 1999, and because it remains only slowly increasing even in recent few years, the prospect of its development is a matter of concern (Fig. Ⅰ－4). On the other hand, if one looks at the changes of indices of per capita agricultural production during the same period, it is indicated that, because of the high growth rate of population during the period, the overall tendency of per capita agricultural production during the period from the 1960s to the latter part of the 1980s was on the decrease. Since the beginning of the 1990s, although they turned to increase for a while, the indices for many categories are showing again a sign of stagnation right now. Moreover also here, the index for per capita livestock production has been showing either a sign of stagnation or a tendency to decrease (Fig. Ⅰ－5).



Source: Same as Table I – 4

Fig. I – 4 Changes of indices of agricultural production in Ghana (with averages for 1999–2000 taken as 100)



Source: Same as Table I – 5

Fig. I – 5 Changes of indices of per capita agricultural production in Ghana (with averages for 1999–2000 taken as 100)

While the overall trend of Ghanaian agricultural production since the independence has been such as described above, if an examination is made of the production in recent years, it is indicated that the agriculture's share in gross domestic product was about 36.7 % in 2004 (ISSER 2006), and that the proportion of rural population among the total population of Ghana in 2000 was about 56 % (active agricultural population among the economically active population was about 50 %)(MOFA-SRID 2006). In other words, agriculture still remains the most important economic activity for Ghana. In Ghana also, however, under the circumstances

that the diffusion of monetary economy and the economic liberalization have been influencing greatly the whole society, because a larger number of farming population are migrating to urban areas in search of better opportunities for earning cash income, expanding rapidly the number of urban inhabitants, the proportion of rural population is on the decrease.

In such context, in order to assess the distribution of actors in Ghanaian agriculture, the statistics on rural population and active population in agriculture (adults in the age bracket between 15 and 49 years old), broken down by region, are shown in Table I－6. The regions where the proportion of rural population is smaller than that of urban population are only Greater Accra Region (with the proportion of rural population at 12.3 %) having the capital of Accra and Ashanti Region (with the proportion of rural population at 46.6 %) having the metropolitan district of Kumasi, inhabited by the nation's second largest urban population. In all of the other 8 regions, the proportion of rural population exceeds 50 %, and particularly in the regions refereed to as northern three regions, namely, Northern, Upper East, and Upper West, as well as in Volta Region that stretches longitudinally from the coastal area to the savanna area, more than 70 % of the people live in rural areas.

On the other hand, in terms of active agricultural population, in the two regions, Greater Accra and Ashanti, the active agricultural population constitutes, like the proportion of rural population, less than 50 % of the whole economically active population. Particularly in Greater Accra Region, the active agricultural population makes up only around 10 % of the whole economically active population. In other regions as well except Brong-Ahafo Region, the proportion of active agricultural population is smaller than that of rural population, while in Northern Region and Upper East Region the proportion of active agricultural population exceeds 70 %. What is noteworthy here is the fact that Brong-Ahafo Region with the proportion of rural population at 62.6 % has the population of active agricultural population the proportion of which reaches 69.1 %, signifying a higher value for the latter statistic. In other words, in Brong-Ahafo Region, it is possible to guess that there exists a situation where either the proportion of adult population working in rural areas is relatively large, or the number of adult people who live outside rural areas but engage in agricultural activities is large. At any rate, it is seen that the proportions of rural population and active agricultural population in Ghana are smaller in those regions where large metropolitan districts, such as Accra and Kumasi, are located, or in those which are located in forest areas in the southern part of the country, as compared with the regions situated in the savanna area in the northern part of the country, and that, as the location moves further inland, the proportion of people who live in rural areas and engage in agriculture increases.

Table Ⅰ－6 Rural and agricultural population in Ghana (2000)

Rural population			
Regions	Population (1,000 persons)	Rural population (1,000 persons)	Proportion of rural population
Greater Accra	2,906	359	12.3
Eastern	2,107	1,379	65.4
Western	1,925	1,226	63.7
Central	1,594	995	62.5
Volta	1,635	1,194	73.0
Ashanti	3,613	1,685	46.6
Brong-Ahafo	1,815	1,137	62.6
Northern	1,821	1,337	73.4
Upper East	920	776	84.3
Upper West	577	476	82.5
Total	18,912	10,564	55.9

Agricultural population*			
Regions	Economically active population (1,000 persons)	Number of persons engaged in agriculture (1,000 persons)	Proportion of rural population (%)
Greater Accra	1,378	145	10.5
Eastern	928	532	57.3
Western	857	512	59.7
Central	671	372	55.4
Volta	698	424	60.8
Ashanti	1,612	707	43.8
Brong-Ahafo	819	566	69.1
Northern	728	523	71.9
Upper East	241	177	73.2
Upper West	361	242	67.1
Total	8,292	4,200	50.6

＊：The value of agricultural population is that of economically active population as defined by the government of Ghana, i.e., those in the age bracket between 15 and 49 years old.

Source：Compiled by author from Ghana Statistical Services：2000 Population Census

(3) Production of food crops and principal regions growing them

① Trend of production of food crops in recent years

Principal merchandise of export sector in Ghana comprises primary commodities, such as the agricultural products like cocoa, the traditional export crop that has been the mainstay of the national economy until now since the days of the colonial era, and non-traditional export crops, as well as the products from mining sector including gold. However, regarding the cocoa that represents the core commodity of the national economy, although the product value is great, the actual quantity is quite small and hardly comparable with that of food crops production. Therefore, it should be stated that the agriculture of the country consists of a number of crops grown for various purposes, including those for export such as cocoa, those for selling in domestic market, or those for farmers' own consumption. Particularly those crops grown for the domestic market and for farmers' own consumption are produced in a very huge quantity, even

though their unit prices fetched in transactions are low. The evolution of the production volume of major food crops in Ghana is as shown in Table I – 7. The table reveals that the crops produced in a large quantity in recent years in Ghana are root crops consisting mainly of cassava and yam. Regarding cassava in particular, since it is designated as an object of the presidential initiative, the government is promoting intensively its production and processing, and it is produced in a great quantity, exceeding by far other root crops in production volume. However, according to the statistics for the past 5 years, the production turned to a decreasing trend after reaching the peak of 10.24 million tons in 2003, with annual reduction rate of 20 % from 2004 to 2005, and with annual production of less than 8 million tons in 2005. Regarding cocoyam, while its production also decreased by 1.7 % from 2004 to 2005, the production of 1.68 million tons remains little changed from the similar level in 2000. On the other hand, among root crops, the species that increased the production during the period from 2000 to 2005 is yam, the crop with the second largest production figure among Ghanaian root crops. The production figure in 2005 was 3.92 million tons, achieving an increase of nearly 600 thousand tons in the past 5 years.

Table I-7 Production trend of food crops in Ghana in recent years

Unit:1000t

	2000	2001	2002	2003	2004	2005
Cassava	8,107	8,966	9,731	10,239	9,738	7,791
Yam	3,363	3,547	3,900	3,813	3,892	3,922
Cocoyam	1,625	1,688	1,860	1,805	1,715	1,685
Plantain	1,932	2,074	2,279	2,329	2,380	2,791
Maize	1,013	938	1,400	1,289	1,157	1,171
Sorghum	280	280	257	338	287	299
Pearl millet	169	134	218	176	143	154
Rice	249	296	280	241	241	236

Source: Compiled by author from data of ISSER

Plantain (cooking banana) is a kind of banana, larger in size than ordinary banana, with hard peel and far less sweetness, and used as a staple food in Ghana. Examination of the change of plantain's production in the past 5 years indicates that it increased steadily since 2000, and the rate of increase from 2004 to 2005 was 17.3 %. Production in 2005 was 2.79 million tons.

Turning to cereals, among the production of cereals in Ghana, that of maize is significant. Regarding the production of maize during the past 5 years, it has been in the order surpassing one million tons except 2001 when the annual production was around 940 thousand tons, and it was around 1.17 million tons in 2005. As for other cereals, while sorghum, pearl millet and rice are grown, none of them exceeds 400 thousand tons in production, less than half as much as

the production of maize, indicating that their cultivated areas are smaller.

② Major growing areas of food crops

Major portions of principal food crops consumed in Ghana are produced domestically. However, not all crop species can be grown uniformly over all parts of the country, because of the differences in crop characteristics and growing environment. Consequently, in each of the agro-ecological areas in the country, namely, coastal area, forest area and savanna area, the selection of species of cultivated crops is made by taking into account the specific conditions of nature, soils, and climate, etc. In order to assess the situation of food crops grown in a particular agro-ecological area, the production statistics in 2005 for major food crops broken by region are shown in Table I - 8.

Table I - 8 Production of major food crops by region in Ghana (2005)

(Unit:ton)

Regions	Crops										
	Maize	Rice	Pearl millet	Sorghum	Cassava	Yam	Cocoyam	Plantain	Groundnut	Cow pea	Soybean
Western	88,145	23,517	-	-	828,362	103,870	219,041	573,310	-	-	-
Central	232,649	18,308	-	-	1,578,844	13,945	87,089	468,490	-	-	-
Eastern	292,185	11,416	-	-	4,310,111	668,925	121,475	788,948	-	-	-
Greater Accra	2,975	3,206	-	-	61,275	-	-	-	-	-	-
Volta	53,386	42,362	-	5,100	1,111,900	266,200	36,000	48,000	-	-	-
Ashanti	228,996	24,066	-	-	1,613,607	391,324	744,029	1,063,207	40,040	-	-
Brong-Ahofa	534,883	28,306	-	-	3,481,273	1,797,306	331,994	630,010	-	-	-
Northern	136,869	79,479	46,795	68,586	822,771	1,033,350	-	-	84,471	37,681	40,624
Upper West	67,109	6,365	42,727	79,850	-	329,745	-	-	107,939	26,052	-
Upper East	20,513	69,975	58,580	124,761	-	-	-	-	104,575	27,939	7,103
Total	**1,657,710**	**306,999**	**148,102**	**278,298**	**13,808,144**	**4,604,666**	**1,539,626**	**3,571,964**	**337,025**	**91,671**	**47,727**

Source: same as Table I - 5

Firstly, regarding root crops, cassava, having the top production figure in Ghana, while it is grown nationwide except for two northern regions, is grown in a large quantity in the regions situated in the part of the country extending from the northern portion of the forest area to the southern part of the savanna area, namely, Eastern, Ashanti, Brong-Ahafo, and Western. On the other hand, yam is grown in a larger quantity in regions in the savanna area, such as Brong-Ahafo and Northern. Moreover, a larger quantity of cocoyam is produced in the regions of Ashanti, Brong-Ahafo, and Western. In short, the production of root crops is distributed in a geographical pattern where Ashanti Region belonging to the savanna area is situated in the center, and the regions lying to the south of it tend to select cassava and cocoyam, and those to the north tend to select yam.

As for plantain, a larger quantity is produced in the regions of Ashanti, Eastern, Brong-Ahafo, and Western, indicating that it is a kind of crop chosen in the areas similar to those where cassava and cocoyam are preferred.

Next regarding cereals, maize, with the greatest production figure among others, is grown in a larger number of regions compared with cassava, extending all over the country in Ghana. However, this crop is also produced in a larger quantity, similarly as in the case of cassava, in the regions of Eastern, Ashanti, and Brong-Ahafo. The reason for the larger quantity of

production can be explained by several factors. One is the availability of a larger land area of cultivation. And another, not in the least important, is the fact that in these regions double cropping of maize is possible due to the environmental conditions of tropical humid climate where the rainy season occurs twice a year. Similarly as in the case of maize, rice is also grown nationwide. However, the regions where rice is grown in a significant quantity are Upper East, Northern, and Brong-Ahafo, indicating that the crop is planted principally in the savanna area. Furthermore, the production of pearl millet and sorghum outside the three northern regions of Northern, Upper East, and Upper West, is almost nonexistent, indicating that these crops are mainly grown in the areas of low rainfall in the agro-ecological area of savanna.

Leguminous crops are also important food crops in Ghana. Among them, groundnut is the one with the largest production. As other leguminous crops, cowpeas and soybean are also produced. While these crops are produced mainly in the three northern regions, groundnut is grown also in Ashanti Region, and soybean is not grown in Upper West Region. These leguminous crops are consumed in the form of cake prepared by pounding the steamed or boiled flour of their grains mixed with other food crops, or consumed as side dishes in the form of deep-fried dough prepared by kneading the similar flour. Moreover, the groundnut oil is also used as important cooking oil.

Although the Table I - 8 does not list them, vegetable crops such as okra, red pepper, or tomato, are also grown. However, since these food crops are not used as staples, but essentially used only as condiments or as ingredients in soups and stews, the quantity of production is not so significant.

(4) Production and growing regions of crops for processing

The crops for processing that are discussed here refer to those utilized for processing in manufacturing industries. In Ghana, in addition to those tree crops specific to the tropics, such as cocoa, coffee, oil palm, and cotton and tobacco, we can cite as well the grain of shea nut (karité) (*Vitellaria paradoxa*, or *Butyrospermum parkii*) which grows only in the savanna zone in Africa of the northern hemisphere. If one looks at the evolution of production of these crops in the past 15 years (Table I - 9), one can notice that the crop whose production has increased substantially in recent years is oil palm. Oil palm is used as important cooking oil particularly in the agro-ecological area of forest, and is also a crop whose exports are on the increase. Moreover, the production of cocoa which occupies an important position among export crops since the colonial era is also increasing. Furthermore, while the production of shea nut and cotton is also relatively increasing, both crops lack stability in production, with variations observed through the years. With respect to other crops, coffee and tobacco are the crops whose production figures are far smaller and lack stability besides.

Table I – 9 Evolution of production of crops for processing in Ghana

(Unit: 1,000t)

	1990	1991	1992	1993	1994	1995	1996	1997
Cocoa	295.1	293.4	242.8	312.1	254.7	309.4	403.0	322.5
Coffee	1.0	4.9	2.7	0.4	4.1	6.3	6.3	2.9
Shea nut	–	5.0	1.9	11.0	9.5	19.8	22.7	21.5
Cotton	–	11.2	14.3	17.5	23.4	26.3	17.8	25.0
Tobacco	1.5	1.2	1.7	1.7	2.2	1.7	2.0	2.0
Oil palm	–	–	–	–	879.3	901.2	984.4	955.5
	1998	1999	2000	2001	2002	2003	2004	2005
Cocoa	409.4	397.7	436.6	389.6	340.6	496.8	740.0	583.0
Coffee	8.4	4.0	2.0	1.4	1.5	2.1	–	–
Shea nut	34.9	17.5	30.7	19.9	27.2	–	–	–
Cotton	33.8	38.1	35.5	17.5	22.9	16.8	20.2	–
Tobacco	2.4	2.5	2.5	1.2	2.2	2.2	2.4	–
Oil palm	1,022.0	1,031.9	1,715.3	1,768.8	1,826.9	1,889.4	1,955.3	–

Source: Same as Table I – 5

Among these crops, tree crops, such as cocoa, coffee, and oil palm, are grown mainly in the agro-ecological area of forest in the southern part of the country. It is needless to say that these crops constitute the important cash crops for marketing for farmers living in the southern part of the country. On the other hand, the production of shea nut specific to the savanna area and that of cotton relatively tolerant to droughts are concentrated mainly in the northern part of the country. Particularly in the case of cotton, although the total amount of production is small, a large part of the crop is grown under the scheme of contract between farmers and operators of cotton industry, which, for the farmers living in the north in disadvantaged circumstances of having few species of crop with high value adding properties, makes cotton a valuable crop capable of earning income by trading. As for tobacco, although it has traditionally been grown for farmers' own consumption in the northern regions in the savanna zone such as Northern Region, the commercial production of the crop is being practiced, in recent years, by the method of business management under the leadership of foreign capital, in large-scale plantations in Brong-Ahafo Region, situated in the southern end of the savanna, or in a part of the coastal area.

3) Agricultural productivity and the income level of farmers

(1) Productivity and the state of utilization of input goods

In reality, the productivity of crops grown in Ghana is relatively low right now. Table I – 10 shows the production per unit area (hereafter referred to as yield) and the potential yield of principal crops grown in Ghana. The statistics in the table reveal the situation that, while plantain and cocoyam among food crops consumed domestically maintain the levels of productivity approaching those of the potential yield, most of other food crops, including root crops, cereals, and leguminous crops indicate the levels of productivity lower than halves of those of the potential yield.

Furthermore, the yield of cocoa that sustains the national economy as a traditional export

crop also indicates a level lower than half of that of the potential yield. Most of other crops, including fruit species, such as pineapple and papaya both of which are classified as a non-traditional export crop, indicate yield levels lower than or close to halves of those of the potential yield.

Table I －10 Current and potential levels of yield of principal crops in Ghana

Crops	Yield (t/ha)	Potential yield* (t/ha)	Crops	Yield (t/ha)	Potential yield* (t/ha)
Cassava	12.4	28.0	Tomato	7.5	15.0
Yam	12.5	20.0	Eggplant	8.0	15.0
Cocoyam	6.4	8.0	Red pepper	6.5	18.0
Taro	9.5	12.0	Pineapple	50.0	72.0
Sweet potato	8.0	18.0	Mango	11.0	?
Plantain	8.5	10.0	Papaya	45.0	75.0
Maize	6.4	8.0	Orange	35.0	?
Rice	2.0	6.5	Cocoa	0.4	1.0
Pearl millet	0.8	2.0	Coffee	1.5	?
Sorghum	1.0	2.0	Cashew nut	0.8	1.8
Cowpea	0.8	1.5	Cotton	0.8	?
Soybean	0.8	?	Rubber	0.8	?
Groundnut	0.9	2.0	Tobacco	1.6	?

＊: Potential yield indicates an estimated value which is able to be reached when the promoted technologies are disseminated more effectively among growers. The crops with no given data are those on which no tests on fild level have been carried out.
Source: Same as Table I-5

As a reason for the lower yield levels of agricultural products, while it is evident, in view of prevailing natural, climatic and soil conditions, that agronomic conditions are not necessarily favorable for high productivity, the fact that the utilization of input goods necessary to increase yield is an extremely rare practice can be cited as a major factor.

For example, a study of the number of units of agricultural machinery from the statistics provided by FAO indicates that the number of tractors operational in whole Ghana was only 3,600 in 2003. Considering the fact that there were already more than 2,000 units in 1965, the number of the machine should be said to be infinitesimally small, even if one takes into account the number of units non-operational owing to breakdowns. In an extreme instance, as to the number of harvesters-threshers, even in the years of 1980s to 1990s when they were in the largest number, they were only in the order of 150 units, which indicates how little Ghanaian farmers utilize agricultural machinery in their agricultural activities, depending almost entirely on manual labor (Table I - 11).

Table I – 11 Evolution of the number of units of agricultural machinery used in Ghana

(in units)

	1965	1970	1975	1980	1985	1990	1995	2000	2003
Tractors	2,124	2,700	3,200	3,700	4120	4,120	3,700	3,570	3,600
Harvesters-Threshers	15	30	150	150	156	156	40	19	19

Source: Same as I -4

On the other hand, regarding the amount of use of chemical fertilizers and agro-chemicals, because the quantity of unit purchase by local farmers varies greatly, ranging from a tin can full of fertilizer to a 50 kg sack of fertilizer, it is difficult to acquire detailed information on the actual quantity of these materials used by farmers. Therefore, as a reference for estimating the utilization of chemical fertilizers and agro-chemicals, the imports of fertilizers and agro-chemicals by Ghana in recent years are shown in Table I – 12. However, it should be noted that, because, in the cases of both of them, the period of storage sometimes extends for a long time, the values of imports may differ from the quantity which was actually used in the same year. Besides, since these data do not necessarily reflect directly the tendency of chemical fertilizers having been used recently, our analysis of respective types of products shall be generally carried out from chemical ingredients rather than from variations of individual fertilizers.

With respect to the imports of fertilizers, the total volume shows a general tendency to increase, even though there have been cyclic changes of increase and decrease. While, among those fertilizers with a substantial volume of imports, those of NPK complexes are imported in the largest quantity, the imports of fertilizers of ammonium compounds and potassium compounds are also on the increase in recent years. It is needless to say that the introduction of an appropriate kind of fertilizer is an important issue in the effort to increase agricultural productivity. Furthermore, particularly for the Ghanaian agriculture which has been practiced by the continuous exploitation to an excessive degree of the soil of shallow profile and essentially deficient in nutrients, it is vitally important to put in chemical fertilizers even for the purpose of only maintaining the productivity at the current level.

As for agro-chemicals, although their imports are relatively small in comparison with those of fertilizers, the volume of imports has been showing a tendency to increase similarly as with the case of fertilizers. The agro-chemicals that have been imported in a large volume since 2000 are classified into three groups, namely, insecticides, fungicides, and herbicides. As for the rodent poisons with a low volume of imports, although the recent tendency cannot be defined because of the deficiency in available data since 1999, their imports have been increasing gradually since 1999. To be sure, the use of these chemicals is effective for reducing the number of working hours and necessary labor cost. However, because of their prices that are prohibitively high for local farmers, only a limited number of them can afford to purchase and use them.

Table I－12 Imports of chemical fertilizers and agricultural chemicals in Ghana

(Unit:ton)

		1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Fertilizers	NPK15—15—15	9,300	5,870	19,230	13,058	3,202	14,127	31,787	－	16,930	17,118	26,100
	Other NPK complexes	0	2,830	17,850	8,800	400	775	17,500	800	1,960	1,105	12,878
	Urea1)	4,250	950	1,850	500	－	141	2,500	－	500	250	4,540
	M. of Potash2)	3,400	4,500	5,450	3,095	8,066	4,510	4,147	18,484	23,440	822	1,000
	SOA3)	9,000	5,320	10,700	13,265	4,800	23,165	22,628	20,047	25,715	7,688	15,000
	SSP & TSP4)	200	500	0	500	3,500	600	700	1,656	－	1,850	1,000
	Nitrate5)	－	－	－	－	－	－	－	－	735	9,531	157
	Pot. Sulfate6)	－	－	－	－	－	－	－	－	－	72,000	135
	Cocoa Fertilizer	－	－	－	－	－	－	－	－	19,500	25,000	12,000
	Others	1,990	400	1,083	3,097	2,025	180	1,586	901	4,027	2,588	18,496
	Total	28,140	20,370	56,163	42,315	21,993	43,498	80,848	41,888	92,807	137,952	91,306
Agro-chemicals	Insecticides	194	670	1,519	349	1,203	1,195	907	1,090	－	610	－
	Fungicides	134	192	130	183	718	673	618	1,345	－	770	－
	Herbicides	89	55	132	225	195	224	598	582	－	1,096	－
	Nematicides	21	22	51	5	－	－	－	－	－	－	－
	Rodenticides	－	－	－	－	22	257	384		－	563	－
	Total	438	939	1,832	762	2,138	2,349	2,507	3,017	－	3,039	－

Note: 1) fertilizer of ammonia type, 2) fertilizer of potassium sulfate type, 3) fertilizer of ammonia type), 4) fertilizer of phosphate type, 5) fertilizer containing potassium nitrate and potassium, 6) fertilizer of sulfate type

Source: Same as Table I－5

(2) Proportion of selling (commercialization rate) of crops and income level of farmers

① Monetary value of production and commercialization rate of crop species

The monetary value of agricultural production and commercialization rate of each crop species in Ghana for 1999 are presented in Table I－13. This reporter has not adopted the statistics to indicate the evolution of monetary values of production of individual crops. The reason for it is the particular situation in Ghana that, because the data representing monetary value of agricultural production are denominated in Ghanaian currency of Cedi, their figures in the 1990s when exchange rates fluctuated drastically deviate too much from those of different years of only a few years apart, making it rather difficult to compare them in logical context. Moreover, if one studies closely individual data, one would notice certain elements casting slight doubt on the authenticity of the data, because a certain crop is found to show an extremely small proportion of selling (commercialization rate) in spite of the fact it is one of the principal export crops, or inversely, other crops are found to have a high proportion of selling, while they are essentially grown for farmers' own consumption. Nevertheless, these data should be considered to be effective as source information, based on which a study shall be made on the tendencies of the monetary value of production and the commercialization rate that the government of Ghana knows of as they are.

Table I－13 Monetary value and commercialization rate of crops grown in Ghana

(Unit:100 million cedis)

		Production	Proportion of production (%)	Sales	Commercialization rate (%)
Cereals and dry beans	Maize	5,447	14.6	2,301	42.2
	Rice	1,260	3.4	533	42.3
	Pearl millet & sorghum	984	2.6	119	12.1
	Other cereals and dry beans	570	1.5	289	50.7
Root crops	Cassava	5,628	15.1	1,206	21.4
	Cocoyam	1,594	4.3	39	2.4
	Potatoes, sweet potatoes	333	0.9	182	54.7
	Yam	2,230	6.0	511	22.9
Other staples	Plantain	4,016	10.7	1,730	43.1
Vegetables	egg-plant	604	1.6	118	19.5
	Leafy vegetables	151	0.4	37	24.5
	Okra	343	0.9	116	33.8
	Onion	1,040	2.8	842	81.0
	Red pepper	752	2.0	168	22.3
	Tomatoes	615	1.6	313	50.9
	Other vegetables	24	0.1	1	4.2
Fruit trees	Avocado	112	0.3	41	36.6
	Banana	204	0.5	100	49.0
	Cola nut	43	0.1	36	83.7
	Mango	87	0.2	9	10.3
	Oil palm	875	2.3	369	42.2
	Orange	165	0.4	101	61.2
	Papaya	66	0.2	5	7.6
	Pineapple	99	0.3	35	35.4
	Other fruit trees	39	0.1	2	5.1
Cash crops	Cocoa	8,094	21.7	3,792	46.8
	Coffee	12	0.0	7	58.3
	Rubber	3	0.0	－	－
	Coconut	177	0.5	104	58.8
	Timber	148	0.4	11	7.4
	Kenaf	10	0.0	7	70.0
	Cotton	77	0.2	77	100.0
	Groundnut	1,461	3.9	602	41.2
	Tobacco	60	0.2	55	91.7
	Sugar cane	51	0.1	39	76.5
Total		37,374	100.0	13,897	37.2

Source: Compiled by author from Ghana Statistical Service 2000

The table indicates that the crop with the largest share in the value of production in Ghana is cocoa which accounts for more than 20 % of the total. Since the figures in the table are based on nominal values, it would be quite natural that cocoa which, in tandem with gold, exclusively supports the export sector in Ghana should come at the top of the list. Other crops each with a relatively large share of the production value are cassava, maize and plantain. These crops constitute staple foods in Ghana, and each one of their shares accounts for more than 10 % of the total agricultural production value. Other crops follow these items, each with a relatively large share in production value, including yam, cocoyam, pearl millet/sorghum. They are also important crops providing staples in Ghana. On the other hand, with respect to commercialization rate, it is shown that almost all crops are sold as commodities. However, the commercialization rates for crops consumed as staples, including root crops, plantain, cereals and dry beans, are at a relatively low level. Among such crops for staples, ones with the highest level are potatoes and sweet potatoes with the rate at 54.7 %, and the

commercialization rates of all six crops that have large shares in the total production value, namely, maize, cassava, plantain, yam, cocoyam, pearl-millet/sorghum, remain at a level below 50 %. As to the commercialization rates of vegetables and fruit tree products, all consumed as side-dishes, snacks and condiments, while there are crops whose rates exceed greatly above 50 %, such as onion, cola nut and orange, as a whole, a great majority of them are commercialized at a rate below 50 %. However, the commercialization rates of a large number of cash crops (including naturally produced commodities as well) exceed 50 %, and the figures for cotton and tobacco indicate that 90 % of them are sold. Only, the commercialization rates for cocoa, the leading crop among the agricultural commodities for export in Ghana, and groundnut that are consumed in a great quantity in the domestic market come down below 50 %, and the rate for timber which is extensively utilized as building materials and for furniture fabrication within the country is calculated to be only 7.4 %.

② Income level of farmers

It is very difficult to estimate the details of income of farmers in Ghana. Because, particularly in the case of the farmers growing food crops for selling to domestic market, it is not so unusual that they choose to sell their crop products by taking into account firstly the situation of foods to be set aside for own family's consumption, and secondly the needs for purchasing essentials for life, and thus try to obtain cash needed only to satisfy the minimum requirements for living. Moreover, because even in the case of the farmers growing mainly crops for selling as export commodities, they grow also the crops salable for internal consumption and often actually sell them in case of necessity, it is very difficult to measure precisely the income deriving from such irregular economic activities.

Nevertheless, the government of Ghana has been conducting, on the basis of population census conducted in 1984, a nationwide survey (Ghana Living Standard Survey) on the situation of living of the people by taking samples of a large number of households distributed over all the regions of the country, out of which so far the reports have been published four times by 2000. Although the reports include detailed information on people's income, because the data identify different population groups by classifying them only by the areas where they live, and give data under the title of rural areas rather than that of farmers, author shall examine the income level of rural inhabitants.

Table I - 14 shows the situation of income of urban inhabitants and that of rural inhabitants in Ghana for 1999. As a matter of course, the income of dwellers in cities typically represented by Accra is greater than that of rural dwellers, and the income per household is also smaller for rural households. A closer study of the data on income in rural areas reveals that household income and per capita income are the smallest in the coastal area and greater in the forest area. This situation would be a natural consequence of the fact that the agronomic conditions in the forest area are relatively more favorable than in other areas and the opportunities there for cultivation of export oriented cash crops specific to the tropics and

for that of food crops for selling in internal market are more abundant. However, the average per capita annual income for the forest area, the savanna area, and the coastal area, is 188.2, 125.6, and 141.8 each in USD, being considerably lower in comparison with the value of USD 349.8 for Accra.

Table I – 14 Situation of household income in rural areas in Ghana

		Household income (USD)*	Per capita income (USD)*	Total income per area (USD 1,000)*	Proportion of total domestic income (%)	Number of persons per household (persons)
Cities	Accra	1259.4	349.8	53794.5	16.2	3.6
	Other cities	856.0	214.1	90677.0	27.4	4.0
	Total cities	**971.5**	**249.0**	**135223.9**	**43.7**	**3.9**
Rural areas	Coastal area	581.1	141.8	36522.7	11.0	4.5
	Forest area	847.0	188.2	105214.1	31.7	5.1
	savanna area	640.9	125.6	45158.6	13.6	5.1
	Total rural areas	**725.8**	**168.8**	**182037.7**	**56.3**	**4.5**

*: Estimated by exchange rate at 1 USD = 2779.095 cedis (the average in 1999: Bank of Ghana)
Source: Same as I – 13

Next, Table I – 15 shows the proportion of means of earning income in rural areas in each of agro-ecological areas in the same year. In the forest area, where the income is the highest among rural areas, the proportion of agricultural income is more than 50 %, and the income from non-agricultural private practices or that from employment wages is around one half of the proportion of agricultural income. In the savanna area where the income in rural areas is ranked as the second largest, more than 70 % of the total income is earned by agriculture, non-agricultural private practices earn about one third of agricultural income, and employment wages realize only 6.4 % of the total income. In the coastal area where the income in rural areas is the lowest in the nation, the largest proportion of income is earned by non-agricultural private practices. However, the agricultural income as well constitutes more than 35 % of the total income, which is approximately at the same level with that of non-agricultural private practices, and the proportion of the income from employment wages is 18.7 %, indicating a larger value compared with levels of proportion of the wages income in other areas.

Table I－15 Means of earning household income in rural areas in Ghana (1999)

(Unit：%)

		Employment Wages	Agriculture	Non-agricultural private practices	Rentals	Remittance from relatives	Others
Urban areas	Accra	34.7	7.9	42.4	2.1	10.8	2.0
	Other cities	30.3	12.3	37.5	1.6	14.9	3.5
	Average	**32.3**	**10.3**	**39.7**	**1.8**	**13.0**	**2.8**
Rural areas	Coastal zone	18.7	35.1	35.2	2.9	7.1	1.0
	Forest zone	15.6	54.6	21.4	1.8	4.7	1.8
	Savanna zone	6.4	71.4	16.0	2.0	3.0	1.2
	Average	**13.7**	**54.0**	**23.8**	**2.2**	**4.9**	**1.4**

Source: Same as Table I－13

As observed in the above, even though the income level of farmers in Ghana is relatively lower than that of urban dwellers, that of farmers living in the forest area with abundant opportunities for growing marketable crops is the highest, and they earn more than half of their income from agriculture. However, in the savanna area where there exist fewer opportunities for growing marketable crops as well as for finding employment to earn wages, due to the low population density under remote inland conditions, people living there are obliged to depend on the agricultural income deriving from a fewer number of species of marketable crops. Furthermore, in the coastal area where the proportion of income from agriculture is the lowest, because the proximity to the coastal population centers attracting people makes it more and more difficult to obtain agricultural land, people pursue extensively non-agricultural private practices, which suggests the situation that the means of earning income are much diversified.

3. Outlook for Agricultural Development

1) Food crops

The area planted with principal food crops in recent years has remained stagnant (Table I－16). In the similar manner, the production of food crops has also shown little changes as a whole, even though there have been certain fluctuations from year to year caused by the influence of climatic conditions (Table I－7). On the other hand, the national population has been increasing at the annual growth rate of 2.7 %, wherein the population of 12. 3 million in 1984 increased to become that of 21.2 in 2003 (estimate).

Table Ⅰ－16　Evolution of planted area of food crops in recent years

(Unit：1000ha)

	2000	2001	2002	2003	2004	2005
Cassava	660	726	794	807	783	750
Yam	243	287	300	321	310	300
Cocoyam	246	262	282	277	269	255
Plantain	253	265	277	286	281	290
Maize	695	713	940	792	732	740
Sorghum	289	329	337	346	298	305
Pearl millet	208	193	198	207	182	185
Rice	115	138	123	118	119	120
Total	2,709	2,913	3,251	3,154	2,974	2,945

Source：Compiled by author from ISSER 2006.

The statistics indicate the following facts. Firstly, one sees the diminishing possibility of expanding production by enlarging the cultivated area. In the past, it was possible to expand the production extensively by newly clearing wasteland with the background of availability of abundant unexploited land. However, as the availability of unexploited land diminishes as a consequence of population growth, such a type of extensive agricultural activity is becoming more and more difficult.

Secondly, one can point out the fact that no improvement of land productivity is recognizable. The fact that both planted area and production remain stagnant signifies that there cannot also be found any improvement of yield per unit area. In agricultural activities of growing food crops in Ghana, hardly any fertilizers are used except for the cases of rice and maize, and the introduction and dissemination of production techniques to improve the yield is scarcely in progress. If one looks at this from another angle, the situation is also an evidence that the traditional agricultural techniques have been working effectively in supplying enough food without trying to improve the yield. As a matter fact, there have not occurred any serious food shortages in Ghana since more than 20 years ago[1].

However, if the population should continue to grow at the present rate without either the improvement of yield of food crops or the extensive expansion of cultivated area by newly clearing wasteland, it is most likely that in future the country will suffer from a situation where its food self-sufficiency will be jeopardized. In view of the fact that the national population has increased 1.7 times during the past 20 years, in a long-term perspective, there is a risk that the crop production system based on existing traditional techniques, characterized by low inputs, extensive management and dependency on rainwater, will fail to guarantee the food self-sufficiency. In this sense, it is imperative to make continuous effort from a long-term viewpoint to raise the productivity by introducing the improved varieties as well as by the improvement of techniques, based on the traditional farming methods which small-scale farmers will find easy to accept.

[1] With the exception that poor harvests due to the influence of climatic conditions have been experienced several times in the savanna area in the northern part.

2) Export crops

The export value of products of agriculture, forestry and fisheries accounts for 57.4 % (average for 2000–2005) of the total value of exports of Ghana (ISSER 2006 p. 114), confirming the fact that this sector constitutes an important source for earning foreign exchange. The breakdown of the export value of products of agriculture, forestry and fisheries is as shown in Table I – 17. In the following discussions, the export crops are broadly divided into two groups, namely cocoa, a traditional export crop, and other non-traditional export crops (horticultural crops, etc.) [2], and the recent trends and the prospects for respective crops shall be described.

Table I －17 Breakdown of exports of products of agriculture, forestry and fisheries

(Unit：Million USD)

Year	Cocoa	Timber	Non-traditional products of agriculture, forestry and fisheries
1998	554	170	78
1999	550	174	85
2000	437	175	75
2001	381	169	82
2002	463	183	86
2003	818	174	138
2004	1071	212	160
2005	719	172	151

Note: Non-traditional products of agriculture, forestry and fisheries denote those other than cocoa and timber

Source：ISSER(2006) p.114

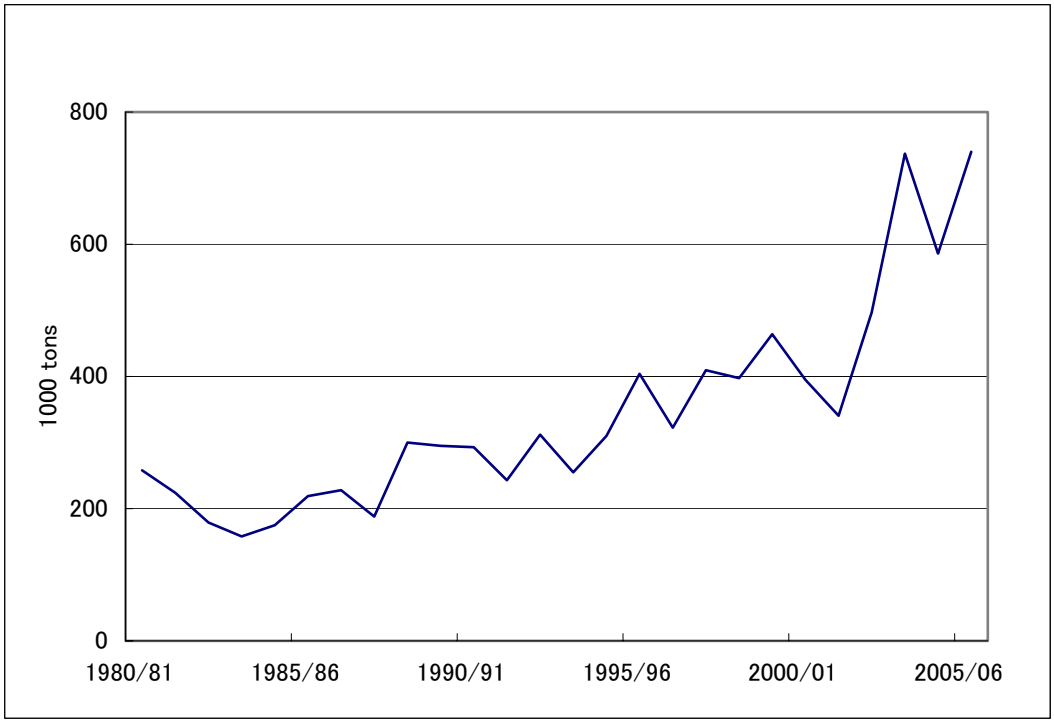
(1) Cocoa

Cocoa that has been sustaining the economy of Ghana since the colonial era is still now one of the important export commodities. Cocoa accounted for a share of 32 % in the total export value of Ghana in 2005, constituting, together with gold (that of 34 %), one of the two major export commodities. Furthermore, the export value of cocoa, among the total export value of products of agriculture, forestry and fisheries, exceeds by far that of other commodities, and this trend has remained almost unchanged also in recent years (Table I – 17). The situation like this is anticipated to continue in medium-term future as well.

The activities of producing cocoa are carried out mostly by small-scale growers. Therefore, booming cocoa exports have a positive impact on the improvement of livelihood of rural inhabitants, as well as lead to the expansion of income by exports for the entire nation. On the other hand, the situation of excessive dependence on cocoa may engender a risk of turning the economy of Ghana fragile in the following two aspects. The first is the fluctuation of production. As shown in Fig. I – 6, while the cocoa production in Ghana has a tendency to increase on the long-term basis, it is also characterized by large fluctuations when the changes are observed on the yearly basis. Three factors could be pointed out as causes of such fluctuations in cocoa

[2] In Ghana, cocoa and timber are called “traditional” export commodities, and other export commodities are designated as “non-traditional” ones.

production. The first is the climatic conditions, wherein the rainfall and its seasonal distribution in a particular year determine the cocoa harvest. The second factor is the impact of plant protection measures by application of agro-chemicals. Presence or absence of a government-sponsored campaign of plant protection and the prices of chemicals influence the domestic production in a certain year. The third factor is the situation in the neighboring country, Ivory Coast, which is the world largest producer of cocoa. Until the early part of the 1980s when the purchase price of cocoa in Ghana had been controlled at a low level, a large quantity of cocoa produced in Ghana was smuggled out overland to Ivory Coast that offered a higher purchase price, which made the cocoa exports from Ghana smaller than the actual production there. To the contrary, after 2002, as a result of the occurrence of internal conflicts in Ivory Coast, a large quantity of cocoa produced there has been smuggled out to Ghana, causing to increase substantially the production statistics. Since the cocoa exports are essentially subject to these three factors and fluctuate perpetually, the excessive dependence on cocoa tends to produce a negative impact on the Ghanaian economy as a consequence of a rapid decline of exports.



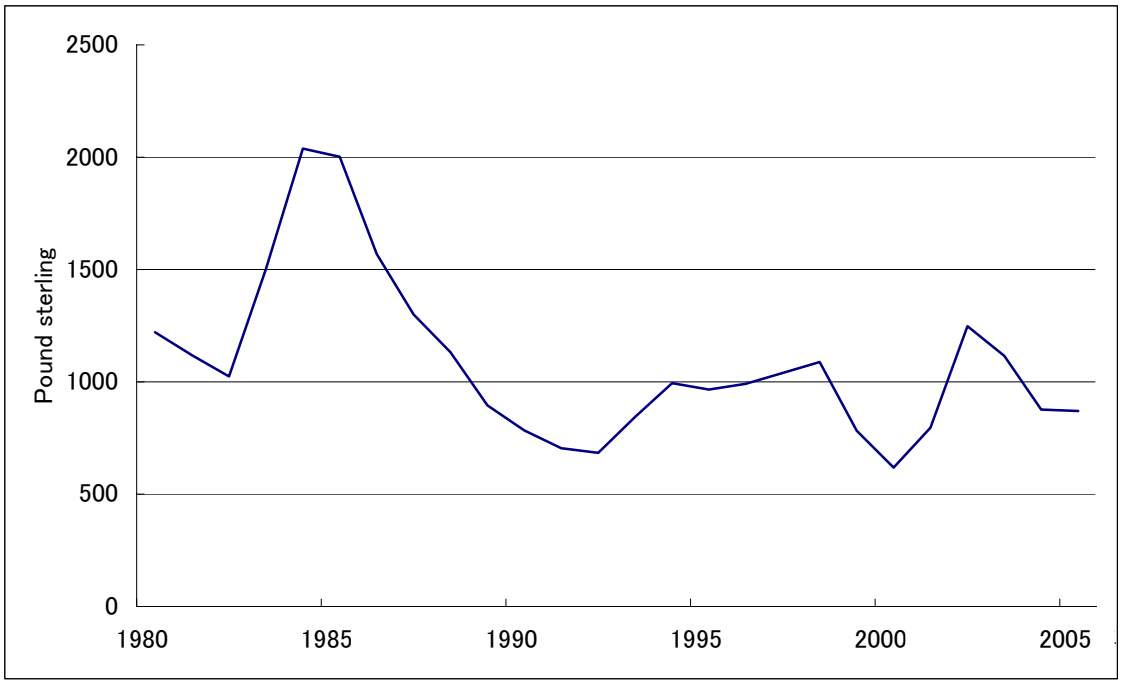
Note: Production year goes from October to September

Source：ICCO (International Cocoa Organization). Respective issues of *Quarterly Bulletin of Cocoa Statistics,*

Fig Ⅰ－6 Evolution of cocoa production

The second aspect of harmful effects of the economy excessively dependent on cocoa is the vulnerability to the fluctuation of international prices. The international price of cocoa is subject to large fluctuation from year to year as demonstrated in Fig Ⅰ－7 where, during the past

quarter-century, it has gone up and down drastically over a wide range between 619 and 2,380 pounds sterling per ton. Moreover, even the observation only during the recent short period from 2000 to 2005 shows that the highest price and the lowest one differ by the ratio 2 to 1. In other words, the more heavily the exports depend on cocoa, the more seriously is affected the Ghanaian economy as a whole by the fluctuation of international prices. As these statistics have indicated it, the economy dependent on cocoa is fragile one that is vulnerable to the impact of fluctuations of both production and international prices. Hence, in order to reform the structural weakness, it is one of the most important issues to be addressed in future to realize the development of exports of agricultural products other than cocoa.



Source : ICCO (International Cocoa Organization). Respective issues of *Quarterly Bulletin of Cocoa Statistics,*

Fig. Ⅰ－7 Fluctuation of international price of cocoa (London market, quoted in pound sterling per ton)

(2) Non-traditional export crops

Table I-18 shows the export values of different categories of non-traditional products of agriculture, forestry and fisheries. All categories of commodities, namely, horticultural crops, fisheries products and others, are on the increase in recent years, which may justify the view that the diversification of export commodities is progressing. Nevertheless, if one considers the absolute value of exports, even if all of the above categories of non-traditional commodities of agriculture, forestry and fisheries are combined together, the total is short of the export value of a single commodity of timber, and besides there exists a huge gap to compare with that of the greatest export commodity of cocoa. It is evident that the

diversification of export commodities by the expansion of exports of non-traditional products of agriculture, forestry and fisheries still remains quite limited in extent.

Table Ⅰ－18 Evolution of export values of different categories of non-traditional products of agriculture, forestry and fisheries

(Unit：Million USD)

Year	Horticultural crops	Fishery products	Others
1998	19.77	21.02	40.01
1999	27.21	20.94	38.95
2000	28.08	18.58	27.88
2001	29.99	23.85	28.14
2002	33.61	24.48	27.64
2003	29.22	26.85	82.07
2004	60.52	52.02	47.25
2005	50.26	45.76	55.84

Note: Non-traditional products of agriculture, forestry and fisheries denote those other than cocoa and timber
Source：ISSER(2006) p.115

Table Ⅰ－19 shows the quantity and value of exports of principal items of non-traditional export crops. Crops with large values include pineapple, yam, cotton, shea nut, cashew nut, etc., and not a few of them fluctuate violently in export values from year to year. Incidentally, the values of pineapple indicated in the table are only those for unprocessed product, in addition to which a large value of pineapple is exported in a processed form, as so-called "cut-fruit". For example, the value of export of unprocessed pineapple in 2003 was nearly equivalent to that of cut pineapple, signifying that the actual value of exported pineapple as a whole amounted to that twice as much as the figure in the table. If distinction is made among Regions, while many of the items produced in the southern part of Ghana are perishable produce like pineapple, quite a few of the products from the north are those capable of a long period of preservation, including cotton and shea nut. The expansion of exports of those items that can be produced in the poverty prevailing area in the northern Ghana is highly likely to lead directly to the improvement of livelihood of rural inhabitants. Hence in the context of advancement of the double-faceted challenges of poverty reduction and diversification of export, the promotion of exports of these items is the area where various efforts need to be concentrated.

Table Ⅰ－19 Value and quantity of exports of principal non-traditional export crops

	Value of export (1,000 USD)					Quantity of export (tons)				
	2001	2002	2003	2004	2005	2001	2002	2003	2004	2005
Pineapple (non-processed)	13,316	15,520	14,378	22,069	12,784	35,174	46,391	45,145	71,804	46,694
Banana	3,189	3,250	227	209	458	3,251	3,233	364	725	1,116
Orange	126	672	329	94	3,865	1,336	15,213	4,307	741	5,845
Papaya	993	864	737	1,266	1,081	1,792	1,474	1,916	3,751	3,211
Yam	7,786	8,248	4,442	8,399	10,951	14,410	13,025	7,974	16,169	18,376
Cotton	11,118	6,506	46,271	1,965	5,815	35,714	9,936	49,447	9,933	11,216
Cashew nut	89	1,450	2,599	18,758	5,235	419	3,892	6,338	51,763	13,831
Shea nut	6,654	6,125	16,746	2,463	28,968	45,281	27,627	66,997	5,548	165,508

Note: Among those crops listed in the above table, cotton, cashew nut, and shea nut are clasified as others in Table Ⅰ－18.
Source：for 2001-2003, Ghana Export Promotion Council; for 2004-2005, ISSER(2006), p.116.

3) Orientation of agricultural development

In the domain of non-traditional export crops that have been making remarkable progress in recent years, we can notice a new turn of situation suggesting the orientation of development of agricultural sector. In the following section, we shall examine this situation, taking up the case in the domain of pineapple that has been increasing exports in the past ten years or so.

(1) Participation of international agribusiness enterprises

Concerning the export business of unprocessed pineapple, the companies of indigenous capital have been playing the principal role. However, since the company G., fully controlled in terms of capital by a French enterprise, in turn a subsidiary with participation of the international conglomerate of agribusiness, Dole, has started its activities in full swing, the industry of exporting pineapple in Ghana has begun evolving around the axis of the business of that company. The company is producing and exporting banana and pineapple, employing about 2000 farm workers. It bought up farms of 300 ha previously owned by indigenous capital and started exporting pineapple as recently as since 2004, with an only short history of exporting in Ghana. Nevertheless, it exported about 10,000 tons in 2006, and expects to increase exports to 15,000 tons in 2007. The company, owning local affiliates based in Ivory Coast and Cameroon as well, has a business experience of 10 years in this sector, and disposes a well-established network for marketing merchandise in Europe. Furthermore, in the world market of pineapple, a changeover of varieties from traditional ones to a new variety called MD2 is taking place. While other local companies are struggling in the process of the changeover, the company G., with a previous experience with the variety in Ivory Coast, introduced MD2 from the very beginning and has already completed the changeover of 100 % of the past varieties to MD2. As described above, because the company G, as a multinational agribusiness enterprise disposes all sorts of characteristics in terms of scale of exports, production technologies, network within the consumption market, etc., that are absent from existing enterprises of pineapple exports, it is highly likely that the situation of the pineapple sector in Ghana will undergo a drastic change within the next few years, centering around the activities of the company.

(2) Progress of the sector of processing pineapple for export

In parallel with the increase of production and export of unprocessed pineapple, the sector of processing agricultural products that transform fresh fruits into juice or cut fruits and export them is also progressing. The key player in this sector is the company B that owns a plant in a suburb of the state capital, Accra. The company is a subsidiary of a British enterprise that operates a processing plant also in South Africa. It began the business of exporting pineapple by processing it by cutting and packaging the earliest in Ghana. Currently it is operating business of processing other fruits also in addition to pineapple, including mango and papaya (exporting them after peeling, cutting and then wrapping them in packages which can be placed on supermarket shelves as they are). The fact that it employs 1,100 workers and operates 24/7 proves the growth of business of

cut fruits of the company. Furthermore, the company process the pineapple that it purchases from farms lying around the plant, signifying that it has a great impact on the surrounding producers who serve as a supplying sector. The case of the company demonstrates the scenario that the growth of the sector of processing agricultural products contributes to development in two ways, one to the expansion of the scale of employment in rural areas, and the other to the development of agricultural production sector.

The two new trends identified in the pineapple sector in Ghana, namely, the participation of multinational agribusiness enterprise for one, and the development of the sector of processing agricultural products for the other, are expected to spread gradually also to other export commodities. Such trends signifies that similar phenomena of diverse natures which are observed in other developing nations in the context of intensification of international competition, including the magnification of scale, the introduction of new technologies and varieties, the labor-intensive production by making use of cheap manpower, the development of processing of agricultural products, etc., are also occurring to the agricultural sector in Ghana.

From now on, it is anticipated that circumstances shall demand the effort to raise the basic level of entire agriculture, in taking account of the small-scale producers liable to be left behind in the global competition and the residents of poverty prevailing areas, and by trying to diversify and expand the commodities produced with the aim of transforming the biased structure of excessive dependence on cocoa, and by further developing the sector of processing agricultural products in order to add greater values to them. Particularly in the sector of food crops, in view of the trend of future population growth, the endeavors in a long-term perspective should be made to introduce new varieties, to diffuse small-scale irrigation schemes, and to improve techniques to raise productivity, so that gradually farmers shall be able to innovate the existing production system essentially based on rainwater, low-input and extensive cultivation.

4. Present State and Issues of Forestry

1) Present state of forests and forestry in Ghana

The forest of Ghana is broadly divided into three zones, namely, that in the tropical rainforest zone in the southern coastal regions, that in the savanna zone in the north, and that in the humid deciduous tree forest zone (transitional zone) lying in the intermediate zone between the two. The forest in the transitional zone, in addition to constituting the center of timber production that is one of the major industries in Ghana, provides various functions to the purposes of environmental conservation, including the recharge of water resources, the protection against a heated wind, etc. Particularly, for the principal agricultural area extending in the central and southern parts of Ghana where crops of major importance including cocoa are grown, the forest in the transitional zone serves as a windbreak against the harmattan, a hot, dry seasonal wind that blows from the Sahara, and hence, its conservation is very

important also from the viewpoint of securing food production.

However, because of the agricultural land encroaching on forest due to the population growth as well as because of the excessive commercial logging, the degradation of forest continues to be aggravated. To make the matter worse, a high incidence of wildfire during the period of droughts in 1983 accelerated at a breath the devastation of forest. Furthermore, as to the question of logging, the logs are reportedly being felled throughout the country in volume three times as much as that which is permitted as an annual quota, in order to meet the rapidly increasing demand for internal consumption, in addition to the traditional requirements for timber exports. The frequent occurrence of bushfires and the excessive logging can be considered to be the two major factors causing the degradation of forest in Ghana.

2) Issues

(1) Accelerated progress of forest degradation

Forest reserves in Ghana have been established at 291 locations throughout the country, covering the total area of some 2.57 million hectares, out of which an area of 400 thousand hectares is said to have deteriorated owing to illegal logging and wildfire. Furthermore, the forests in off-reserve areas have already been mostly converted to agricultural land, and there remain only 400 thousand hectares of them in the transitional zone and 7 million hectares in the savanna zone, and the whole situation has started to cause ill effects indirectly. For example, in Sunyani (capital of Brong-Ahafo Region) situated in the transitional zone, also because of the reduction of forest areas in the drainage basin of the Tano River from which the city draws tap water, the water comes down to a very low level during the dry season, forcing the city to impose restriction on water supply for long duration. Furthermore, in the savanna zone in the north as well, the process of deterioration and desiccation of soils is progressing, mainly as a consequence of unsustainable agricultural practices such as the shifting cultivation by slash and burn techniques, creating the state that, depending on rainfall conditions, a serious case of desertification is very likely to arise.

The government of Ghana started a campaign in 2001, under a Presidential initiative, which promotes the planting of trees with teak as the principal targeted species. Nevertheless, in consequence of the reduction of volume of timber available for logging in existing natural forests, the commodity demanded by timber trade sector is in short supply.

(2) Stagnation in timber industry

In Ghana, there are 250 logging firms, 130 sawmills and plywood manufacturers, more than 200 furniture manufacturers and wood-processing firms, employing 7,500 workers in total. Although the sawmills and the wood-related industry have a capacity of processing 4.70 million of timber per year, recently only 21 % of the capacity (1 million m^3) is reportedly being utilized actually, because of the high prices of logs and the difficulties in procurement of logs of large diameters. Consequently, the sawmills in Takoradi on the coast and Kumasi in the inland have

started laying off workers or closing their operation, which confirms the fact that the deterioration of forests is inflicting ill effects even on the national economy.

Logging firms are obligated to reforest 10 % of the area of forests which they have been licensed to log. However, while, with the consciousness of crisis in view of the future, the sector of timber industry itself latently possesses the strong will to embark on reforestation on its own, the real action of planting trees is hardly in progress, because of the deficiency of funds owing to worsening business performance, insufficient experience, and the retarded efforts of the government to institute and implement preferential measures to promote the reforestation by private initiatives.

(3) Unending illegal logging

In addition to bushfires and excessive logging, the illegal logging is accelerating the devastation of forestland. Although an exact figure of actual illegal logging has not been established, it is generally believed that one third of the domestic consumption of timber is supplied through illegal logging.

To strengthen the crackdown on illegal logging, the surveillance is carried out by the patrol of FSD (Forest Service Division) in collaboration with police and army. Furthermore, in order to prevent the collusion between the officials and illegal logging operators, FSD implements the policy of frequent reshuffling of personnel and is strengthening penalties on violation of the code of conduct. In consequence of these measures, coupled with the sudden reduction of personnel in the process of administrative restructuring, it is an undeniable fact that, at the worksite, the morale is falling and the quality of administrative services is in disarray.

(4) Frequent occurrence of wildfire

Frequent cases of wildfire occur around the time of the end of the dry season, as a consequence of burning of agricultural land, and inappropriate handling of smokescreens or firearms in hunting game or bush meat, and the fire sometimes may spread to devastate an extensive area. In the transitional zone, the deteriorated forest reserves present a landscape looking like a prairie where one can see an odd scene with dispersed slender palm trees. The unique vegetation is a result of wildfire where the seedlings of a species of palm, called "borasus" and resistant to fire but previously suppressed by other species, have survived the fire and are growing tall after other trees died off. The state of land patches on the sites of wildfire within the forest reserves resembles that of patches immediately after the slash-and-burn process, and, during the period of cultivation under the reforestation scheme of Taungya, they are said to produce crops two or three times as much as the private patches that have been exploited under continuous cultivation since a long time ago, and hence very much deteriorated in fertility.

(5) Illegal cultivation

Deteriorated forest reserves have turned into virtually fertile prairies. Consequently, in many cases, the landless residents living in the neighborhood illegally invade there and cultivate crops. Along with the expansion of the Taungya reforestation scheme under the national reforestation project, the vacant patches inside the forest reserves are decreasing, and hence the illegal cultivation is reportedly on the decrease.

CHAPTER II PRESENT STATE AND TREND OF INTERNATIONAL COOPERATION FOR THE DEVELOPMENT OF AGRICULTURE AND FORESTRY

1. Present State of Cooperation for Development

1) Cooperation by foreign countries and international organizations

(1) General trend

① Strategies for poverty reduction

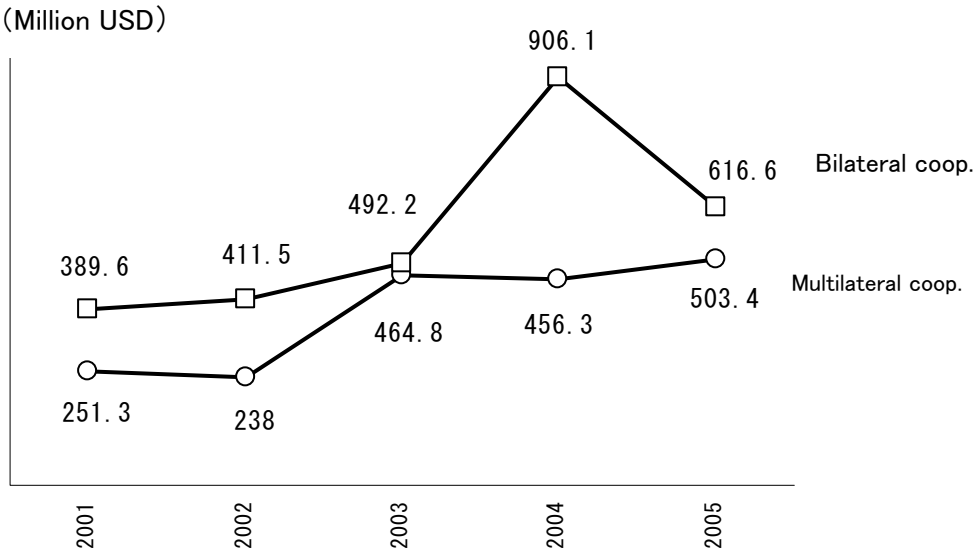
The Government of Ghana drew up the Poverty Reduction Strategy I (GPRS-1) in February 2002, and since then, donors are extending their assistance to the country in accordance with the strategic plan by coordinating their efforts. The GPRS-1 (2003～2005) has a subtitle phrased as "An Agenda for Growth and Prosperity" and laid out 5 themes as the principal issues: macro economic stability; production enhancement and employment generation; human resource development and basic service improvement; special programs for the vulnerable and excluded; and governance improvement. The revised GPRS-II (2006～2009)[3], while essentially giving priorities to the previous 5 themes, reordered priorities and summarized issues into three key thrusts: strengthening the competitiveness of private sector; human resource development and basic service improvement; and governance improvement. Ghana Government in 2001 presented a request for the application of the "Expanded HIPCs initiative" that is an international framework for granting debt relief for the heavily indebted poor countries (HIPCs), and it attained the Completion Point[4] in July 2004 and obtained the cancellation of the debt of USD 3.5 billion (USD 2.2 billion net). The government of Ghana has converted the funds thus obtained into the program funds of HIPC out of which it allocates budgets to local governments by restricting the usage of the funds to the financing of programs for internal debt relief and poverty reduction (basic education, public health, water and hygiene, local infrastructures).

The sums of ODA to Ghana, according to DAC statistics (net amount basis), totaled USD 650 million in 2002, USD 957 million in 2003, USD 1,362 million in 2004, and USD 1,120 million in 2005, showing a tendency of gradual increase (see Fig. II-1). Among those sums, in 2005, the

[3] While the first GPRS was the acronym of Ghana Poverty Reduction Strategy, the second GPRS is that of Growth and Poverty Reduction Strategy, indicating both goals of growth and poverty reduction in the paper title.

[4] Expanded HIPC initiative is implemented in two phases. Firstly, the surveillance is carried out on the progress of the structural adjustment programs imposed on the indebted country by IMF and World Bank, and on the efforts of the country in poverty reduction and social development. If it is confirmed at a certain point of time that the country attained a certain objective, a decision is made as to the necessity of application of the said initiative, taking account of specific conditions (Decision Point: DP). Afterward, further surveillance is continued for a certain period of time and only after it is judged that the country has met the preset conditions, the comprehensive debt cancellation is carried out (Completion Point: CP).

Second World Bank (IDA)[5] provided USD 318 million (28.4 %) and U.K. provided USD 120 million (10.7 %), both combined accounting for nearly 40 % of the total.



Source：Compiled by author from the statistics of DAC(2007). Geographical Distribution of Financial Flows to Aid Recipients 2001-2005

Fig.Ⅱ－1 Results of ODA for Ghana

② Trends of collaboration between different assistance programs

Since the 1980s many donors invested a huge amount of their financial resources in Ghana, considering the country to be one of the focuses of development aid in Africa. With the net annual growth rate of 4 – 5 %, Ghana maintained a level relatively high in Africa, adopted the sector-wide approach[6] in the domains of public health and education, and in 1999 was assigned the status of pilot country in the Comprehensive Development Framework, CDF[7], of the World Bank, having established a reputation of the honor-roll student of structural adjustment. In recent years, the schemes of development partnership within the framework of GPRS have been pursued actively, and in 2003, under the initiatives of U. K. and World Bank,

[5] Acronym of International Development Association which accommodates funds to low-income countries on conditions so soft that the loan may rather be qualified virtually as a grant (donation). Generally the designation of World Bank refers to the two organizations, namely, the IDA and International Bank for Reconstruction and Development, IBRD, which lends money with relatively harsher conditions at an interest rate close to that prevailing in financial market.

[6] Refers to an approach where a recipient country and a donor make efforts in coherence vis-à-vis the partner's activities, based on a consistent development policy encompassing a whole sector.

[7] A new approach in development and assistance that emphasizes the importance of the ownership of recipient countries, proposed at the annual general assembly of IMF and World Bank in 1998. The PRSP is a 3-year action plan based on CDF.

the framework of Multi-Donor Budget Support, MDBS, was established as a supporting tool for implementing GPRS programs.

Although the proposed framework has enlisted, besides World Bank and Britain, Canada, Netherlands, Switzerland, Germany, France and Italy, Japan and the U.S.A. have not yet participated in it. The framework of MDBS stipulates a financing scheme in which the donors and the Ghana government agree to establish in advance an objective of attainment (trigger) for each sector every year, and the provision of pledged funds is made directly to the treasury of Ghana by the donors successively with the objective attainment as conditionality. The sum of MDBS amounts to as much as one third of the total investment in aid (every year World Bank puts in nearly USD 130 million as Poverty Reduction Support Credit, PRSC, and other 9 countries provide slightly more than USD 180 million in total as financial support, bringing the sum total to around USD 310 million). Moreover, in February 2005, the donors of MDBS, Japan, the U. S. A. and various organizations of the UN signed a joint agreement on the harmonization[8] of efforts of economic cooperation with Ghana, indicating that there exists slow but steady progress of the trend of coordination of aid efforts among different donors.

(2) Bilateral cooperation

As donor in bilateral aid programs, Britain maintains the top position since 2002. In 2005, Japan ranked 7th, coming behind Britain, Netherlands, U.S.A., Germany, Denmark, and Canada (see Fig. II – 2). Qualities of these donors are as follows:

① Britain: With MDBS as principal device, Britain is implementing aid programs in various areas, including financial management, capacity building in public sector, agricultural and rural development, and development of private sector. From now on, Britain intends to integrate the aid in public health sector into MDBS and has initiated the attempt in progressive harmonization in advance of other donors.

② U. S. A.: The country is extending aid with the formula of projects and programs in such areas as democratization and governance, development of private sector, basic health, and basic education. U. S. A. has designated Ghana as a target country of Millennium Challenge Account, MCA[9] and decided to extend aid amounting to USD 547 million over 5 years from 2006, aiming at the improvement of farmers' livelihood and the poverty reduction, through

[8] Harmonization of aid procedures denotes the concerted action among different donors to try as much as possible to follow the common procedures in extending aid, in conformity with the institution and system in the recipient country.

[9] Special budget created with a view of attaining Millennium Development Goals, MDGs, of the UN. It is allocated to the country (qualified country) that has demonstrated strong commitment to three essential areas, i.e., good governance, human resource development (health and education), and sound economic policy.

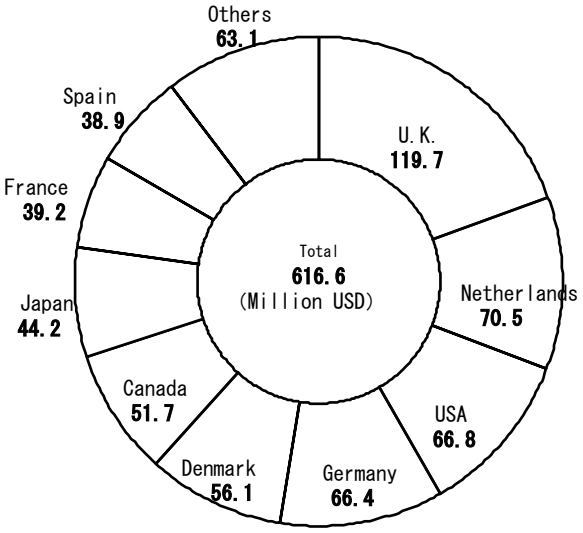
the development of agri-business.

③ Canada: Canada considers Ghana as one of the countries of high priority to assist has decided to increase the amount of aid. The increased amount is allocated to general financial assistance, in addition to which the assistance funds for sector financing are deployed to support the budget of the Ministry of Agriculture. Furthermore, Canada is supporting intensively the decentralization (budget support for districts) and the development of local water resource.

④ Denmark: Denmark has been a donor since the time of creation of the common fund[10] for the health sector, a part of which is allocated, with the initiative of Denmark, to aid specific sub-sectors or projects. Moreover, although the amount is small, the fund is invested in general financial assistance. On the other hand, in road sector and energy sector, the aid with the formula of project is being undertaken by means of employing local operators.

⑤ Germany: Germany is implementing a project of comprehensive development of rural areas focusing on the participatory forestry. It is a comprehensive project, launched in 1999, comprising components, including the construction of facilities, the provision of equipment and materials, and the deployment of a team of experts and volunteers numbering approximately 10 persons.

[10] A mode of financing aid programs in which donors create a common fund and programs are implemented through consultations between the recipient country and the donors.



Source：Same as Fig. Ⅱ－1

Fig.Ⅱ－2 Result of bilateral ODA for Ghana (2005)

(1) Multilateral cooperation

① World Bank Group: With the PRSC as the core instrument (approximately 50 % of the total investment), the Group is providing credits supporting such areas as education, health, agriculture, infrastructure (urban and rural) as sector-specific financing by IDA. Moreover, either financing or credit guarantee by IDA is also undertaken in the areas of financial management and capacity building in public sector, and of energy (the construction of power plants and the West Africa Gas Pipeline).

② Africa Development Bank Group[11]: The group is funding various programs in a number of priority sectors, including the development of agriculture and rural areas, transport, society, financing, water and health, etc., by focusing on the three agendas, namely, stability in macroeconomics, promotion of economic growth, and human resource development. The sum total of UA[12] 376.5 million of loans have been approved for the period between 1996 and 2006, among which the amount allocated for the development of agriculture and rural areas accounts for 25 percent.

③ European Union: EU supports, through the faculty of administrative unit of Commission of

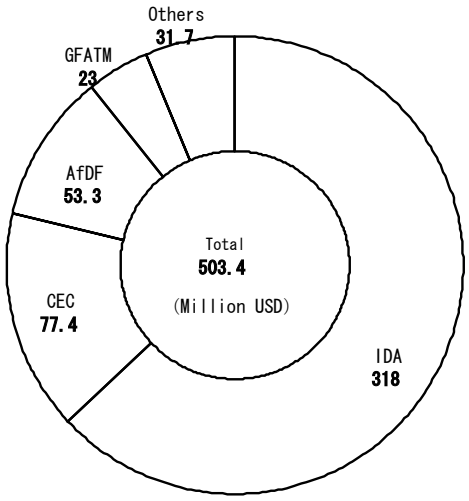
[11] The group consists of the African Development Bank, AfDB, which lends money on quasi-commercial basis and the African Development Fund, AfDF, which provides loans on less demanding terms.

[12] Unit of Account, the monetary unit employed by the Africa Development Bank Group, corresponds to Special Drawing Right (SDR) of the International Monetary Fund (IMF). 1UA＝1SDR＝1.55301 USD（End of 2004）

the European Communities (CEC) and together with Britain, the MDBS. The Union leads the assistance in the improvement of the capacity of financial management of the government, particularly in the strengthening of the government's function of auditing. Besides, it is conducting assistance projects for the repair of trunk roads and the water supply in local communities.

④ Food and Agriculture organization (FAO) of the UN: The organization is implementing various programs in all parts of the country, in addition to the assistance in drawing up the national irrigation policy. A typical example is the Special Program on Food Security (SPFS), which, based on the financial assistance from AfDB, implements various projects on a pilot scale, including the application of low-cost irrigation technology, the introduction of horticultural crops, the diversification of farming activities by incorporating animal husbandry and/or pisciculture, etc. Moreover, FAO maintains a regional office in Accra to oversee its operations in Africa.

⑤ International Tropical Timber Organization (ITTO): A number of small-scale projects are ongoing on a permanent basis, with financial assistance provided by ITTO. The organization itself has no fixed offices inside FSD (Forest Service Division) or in other local institutions, and those responsible for respective programs communicate directly with the headquarters of ITTO to conduct their operations. Around every March, an annual conference is held to review the results of all projects.



Source: Same as Fig. Ⅱ－1
GFATA: Global Fund to Fight AIDS, Tuberculosis and Malaria[13]

Fig. Ⅱ－3 Results of multilateral aid to Ghana (2005)

[13] An international organization that was proposed at the occasion of the G8 Kyushu-Okinawa Summit 2000, and established in January 2002 (the headquarters in Geneva) with a mission to help developing countries to finance programs to fight against the three major infectious diseases. It has so far approved financial assistance amounting up to the ceiling of USD 7.1 billion to support more than 450 projects in 136 countries.

(4) Positioning of the agricultural and forestry sector

① Positioning in the basic national policy

The GPRS-2 sets an objective to raise the per capita income of the nation to USD 1,000 per annum by 2015, of which the main agendas are: ① development of rural economy based on modernized agriculture; ② conservation of environment (its sustainability); ③ strengthening of infrastructure development; ④ private sector activities and the creation of environment for their development. Agriculture sector is important from the viewpoints of food security, provision of raw material for the indigenous industry, earning foreign exchange, employment generation, and source of income for the people, and therefore, is considered as an important factor to contribute to the poverty reduction.

② Agricultural development policy

The Ghanaian government formulated in 1997 the Accelerated Agricultural Growth and Development Strategy, AAGDS, as a sector-specific strategy in agricultural domain. The strategy aimed at attaining the annual growth rate of 6 % in the agricultural sector over the period 2001 – 2010, and designated 5 elements as the strategic focuses: facilitating access to improved technology; promoting the production and the marketing of selected agricultural commodities; improving rural infrastructure; improving access to agricultural financial services; improving access to domestic, regional and international markets. In 2000, with the intention of aiding the action plan of the AAGDS, i.e., Agricultural Services Sub-sector Investment Program(AgSSIP), World Bank approved a sector-specific financing scheme through IDA, amounting to the total sum of USD 67 million, by means of which a comprehensive project, comprising 4 elements, namely, strengthening of the improvement and extension of agricultural technology, structural reform of MOFA, development of farmers' organizations, and strengthening of agricultural education and training, has been implemented and is ongoing

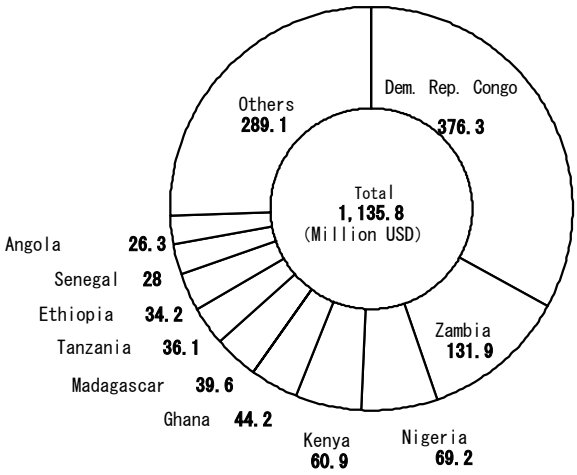
Furthermore, in 2002, Food and Agriculture Sector Development Policy, FASDEP, was formulated anew. The FASDEP provides a holistic policy framework based on a sector-wide approach which intends to attain the objectives in 5 strategic thrusts: enhanced human resource development and institutional capacity building; improved financial service delivery in agriculture; development, dissemination and adoption of appropriate technology; development of rural infrastructure; and promotion of selected commodities and improvement in access to markets. With a view to facilitating the realization of FASDEP, Canadian International Development Agency, CIDA, is providing aid to MOFA by implementing a program titled as Food and Agriculture Budgetary Support, FABS. Furthermore, Agricultural Sector Harmonization Program, launched in 2005 by UK Department for International Development, DFID, is trying to improve the coherency in agricultural policies and harmonize the aid efforts made by different donors, by reviewing FASDEP.

2) Cooperation of Japan

(1) Results of cooperation classified by types of program

① Overview

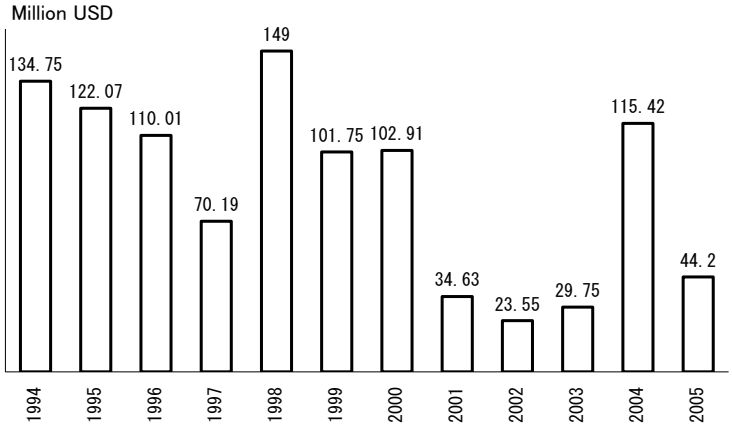
Ghana is one of the largest recipients of Japanese assistance programs in West Africa. Actual figure of grant aid to Ghana in 2004 was ¥ 2.527 billion (on the basis of exchange of notes) and that of technical cooperation with the country was ¥ 1.764 billion (on the basis of expenditure by JICA). As a result of implementation of debt relief amounting to ¥ 104.678 billion, Ghana ranked at the top (USD 11.542 billion) among the African countries in 2004, but it came down again to the fifth place (USD 4.42 billion) in 2005 (see Fig. II – 4).



Source：Same as Fig. Ⅱ－1

Fig. Ⅱ－4 Disbursements of Japan's bilateral ODA in sub-Sahara African countries (2005)

The cumulative disbursement of aid until 2004 amounted to ¥ 104.678 billion by the scheme of yen loan, ¥ 104.678 billion by debt relief, ¥ 67.15 billion by grant aid (all these on the basis of exchange of notes), and ¥ 32.209 billion (on the basis of expenditure by JICA). The scale of annual disbursement of aid varies greatly depending on whether the aid by the scheme of yen loan is implemented or not (see Fig. II – 5). The combined total of grant aid and technical cooperation varies around the range of 3 to 4 billion yens.



Source：Compiled by author from the statistics in the "Ministry of Foreign Affairs (2006). Data Book by Country on Official Development Assistance in 2005 ". (For the figures of 2005, refer to II－2)

Fig. II －5 Disbursement of Japan's ODA to Ghana

② Grant aid

In addition to the cooperation programs focused on such areas as the development of economic infrastructure, including electrification in the provinces, repair of trunk roads, and construction of bridges, and the domain of health and medical care, such as prevention of infectious diseases, and the domains of agriculture, Japan is also actively extending assistance in the form of grant aid to address the issues on grass-roots level and on human security, focusing on the areas of Basic Human Needs, BHN, such as the construction of schools for primary education and the provision of equipment and materials to hospitals. Moreover, Japan provided non-project grant aid to support the efforts of structural adjustment, totaling ¥ 16.5 billion by 2004. The level of assistance in the 1990s used to be in the order of ¥ 200 million in the form of food aid, and in the range of ¥ 300 million and ¥ 400 million in the form of grant aid for increase of food production, with both forms of assistance implemented on a continuous basis. However, that type of assistance is no more implemented, with the last program of food aid (¥ 300 million) terminating in 2001.

③ Technical cooperation

In addition to the areas concerned with basic human needs, such as health and medical care or education, the assistance by the formula of technical cooperation is provided in diverse areas, including agriculture, promotion of international trade and investment, occupational training, etc. Particularly, the Noguchi Memorial Institute for Medical Research is a representative case of Japan's cooperation in the domain of medical care. The research institute built by a program of grant aid from Japan in 1979 is widely recognized as one of the key institutions in West Africa dedicated to the fight against and the research on infectious diseases. Since its inauguration, through many years of technical cooperation, efforts have been made to improve the professional

competency of medical workers engaged in the activities to control infectious diseases, by means of projects on the improvement of vaccination technology, and the enhancement of research on and activities of the control of HIV/AIDS. Furthermore, currently a type of pan-regional cooperation is ongoing in which a project is being implemented, with the Institute as the core facility and covering the neighboring countries as well, in the area of human resource development for the fight against parasitic diseases in a holistic approach. In other areas, in the domain of the development of irrigated agriculture, a succession of cooperation projects have been implemented since the latter half of the 1980s, the details of which shall be described later.

④ Yen loan

The amount of yen loans offered to Ghana until the early half of 2000 was second only behind that to Kenya in sub-Sahara African countries, with the cumulative approved sum of ¥ 125.1 billion for 17 programs. Their objectives were concerned with the two axes of national strategy, namely, the promotion of private investment by the development of economic and social infrastructure and the stabilization of macroeconomics by the assistance in the form of loans to facilitate structural adjustment. The yen loans by the formula of project to finance the development of economic and social infrastructure since early 1980s included those of ¥ 54.1 billion for 7 programs in the transport sector, and ¥ 88.2 billion for 11 programs comprising those of telecommunication and drinking water, and the yen loans of the type of structural adjustment were offered since the late 1980s with the sum of ¥ 36.9 billion for 11 programs (in most cases shared by World Bank). Subsequently, as Ghana requested in 2002 for the application of the expanded HIPC initiative, the provision of further yen loans has been suspended ever since.

(2) Positioning of agriculture and forestry sector

The sum of Japan's assistance for Ghanaian agriculture and forestry sector (1996 – 2005) totaled up to USD 39.4 million, which positioned Japan in the fifth place among donors also assisting Ghana[14]. Although this accounts for only 2.4 % of the total sum of ODA by Japan, the cooperation in this sector has a long history with the promotion of irrigated agriculture as a key area, and also in "Japan's Country Assistance Programme for Republic of Ghana" drawn up in 2000, agricultural development was designated as one of the five priority areas and issues for cooperation. In "the country assistance programme for Ghana" revised in 2006, the fundamental objective of development was defined as the "poverty reduction through economic growth" which is aimed at by GPRS-1／GPRS-2, and "accelerating rural development" and "promoting industrial development" were selected as the priority issues for development to achieve the ultimate goals of the national strategy. As strategic objectives (SO) for addressing the issue of "accelerating rural development", two thrusts, "program of agricultural development (SO1)" and "Improvement of basic social services (SO2)", were set out, and "Priority areas of cooperation"

[14] Based on Ministry of Foreign Affairs (2006)."Evaluation of ODA. Agricultural and rural development."

for each strategic objective were defined accordingly (see Fig. II-6). For the thrust of agricultural development (SO1), the following 4 areas were set forth.

Strategic Objective1 (SO1): Promotion of agricultural development

< Focal cooperation areas >

◎ **SO1-1: Increase of agricultural productivity**

Increasing agricultural productivity by identifying and coping with bottlenecks in a whole value chain, covering production, post-harvest techniques, marketing and distribution of selected commodities Strengthening the production base such as irrigation facilities and drainage equipment, encouraging R&D at research institutes, establishing farming systems, and developing capacity of extension officers, farmers and relevant institutions

◎ **SO1-2: Improvement of post-harvest techniques**

Improving post-harvest techniques, quality control and processing of agricultural products, with specific consideration for the linkages between agriculture and manufacturing, so as to increase the income of smallholders

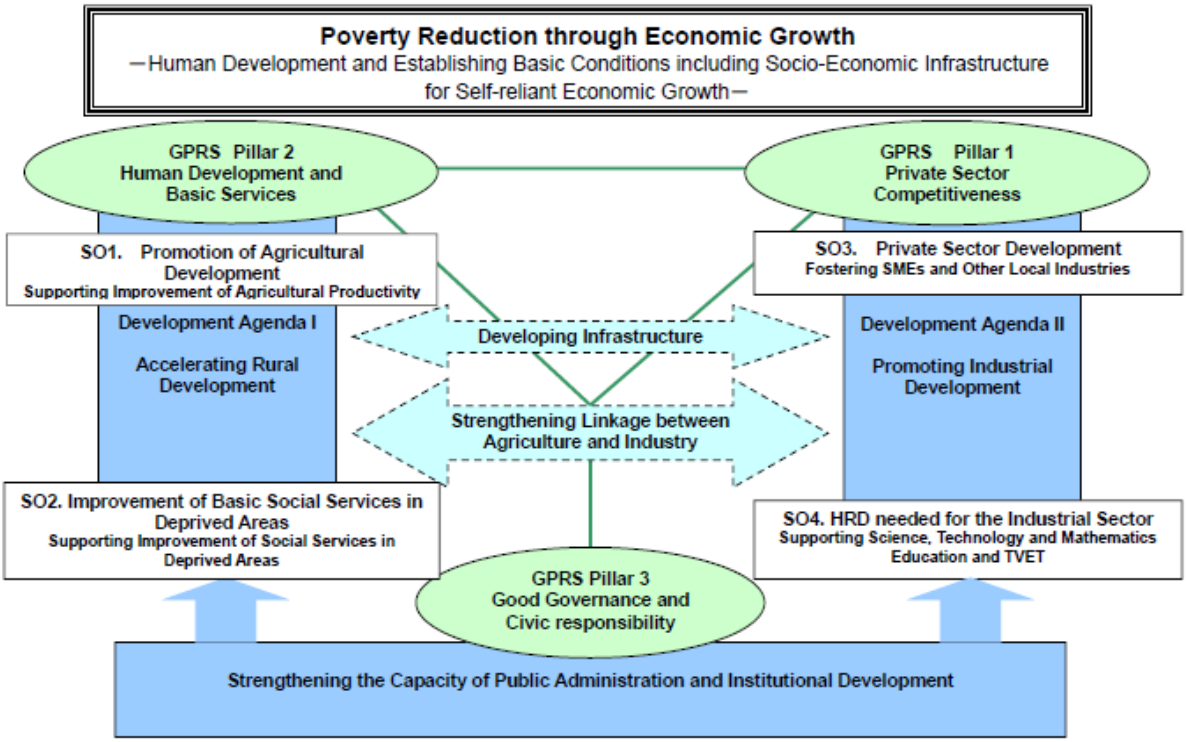
○ **SO1-3: Improvement of agricultural administration**

Improving the efficiency of agricultural administration in the areas of policy-making, planning and financial management, so as to strengthen the linkages between the above inputs and agricultural policies

◎ **SO1-4: Development of infrastructure**

Developing infrastructure such as roads and bridges to transport agricultural products to the markets, as well as rural electrification Enhancing the capacity of planning, management and maintenance of these infrastructures

◎ shows Japan's priority areas, while ○ indicates the areas of secondary importance or with a possibility of future priority. With Japan's aid principle of "selectivity and concentration," inputs and instruments will be preferentially distributed to the selected focal cooperation areas ◎. Japan will cooperate only in the areas ◎ and ○, as the others are not aligned to the two pillars and thus considered to be of lower priority.



Source：Ministry of Foreign Affairs (2006). Japan's Country Assistance Programme for Republic of Ghana

Fig. Ⅱ－6 Country Assistance Plan to Ghana: Cooperation Diagram

(3) Overview of cooperation programs in agriculture and forestry sector

① Promotion of irrigated agriculture

The thrust of Japan's assistance to Ghana in the development of agriculture and rural areas has been for many years the promotion of irrigated agriculture. The priority areas in which the Ghanaian government requested technical cooperation of Japan were: (i) rehabilitation of existing irrigated areas[15]; (ii) promotion of farmers' initiative in the management and maintenance of the facilities; (iii) establishment of sustainable farming systems for small-scale farmers; (iv) strengthening the institution of technical assistance to farmers. The bilateral cooperation was undertaken with the Ghana Irrigation Development Authority, GIDA, playing the role of counterpart institution, which implemented a series of programs starting with the dispatch of individual technical expert (1988-'91), followed by a mini-project (1992-'95)[16],

[15] The development of irrigation in Ghana began in the 1960s and so far 22 irrigation schemes (8 schemes by pumping, 5 schemes by combination of pumping and gravity, 9 schemes entirely by gravity) with the acreage of 8,800 ha have been developed. Nevertheless, the actually irrigated area decreased to 5,100 ha, due to the obsolescence of facilities and the lack of capacity of management. The acreage of one irrigated scheme varies greatly from several dozen to the thousands hectares, where the scale of farming operation is small with the area cultivated by a beneficiary farm household being less than 1 ha, and the main crops grown are rice and vegetables.

[16] Mini-project refers to a type of cooperation with the dispatch of individual experts, scheduled to last in principle for three years. The technical cooperation designated as "project" is another type of technical assistance that is implemented by a fixed formula comprising three key program elements, namely, dispatch of experts, acceptance of trainees and provision of machinery and equipment, and scheduled to

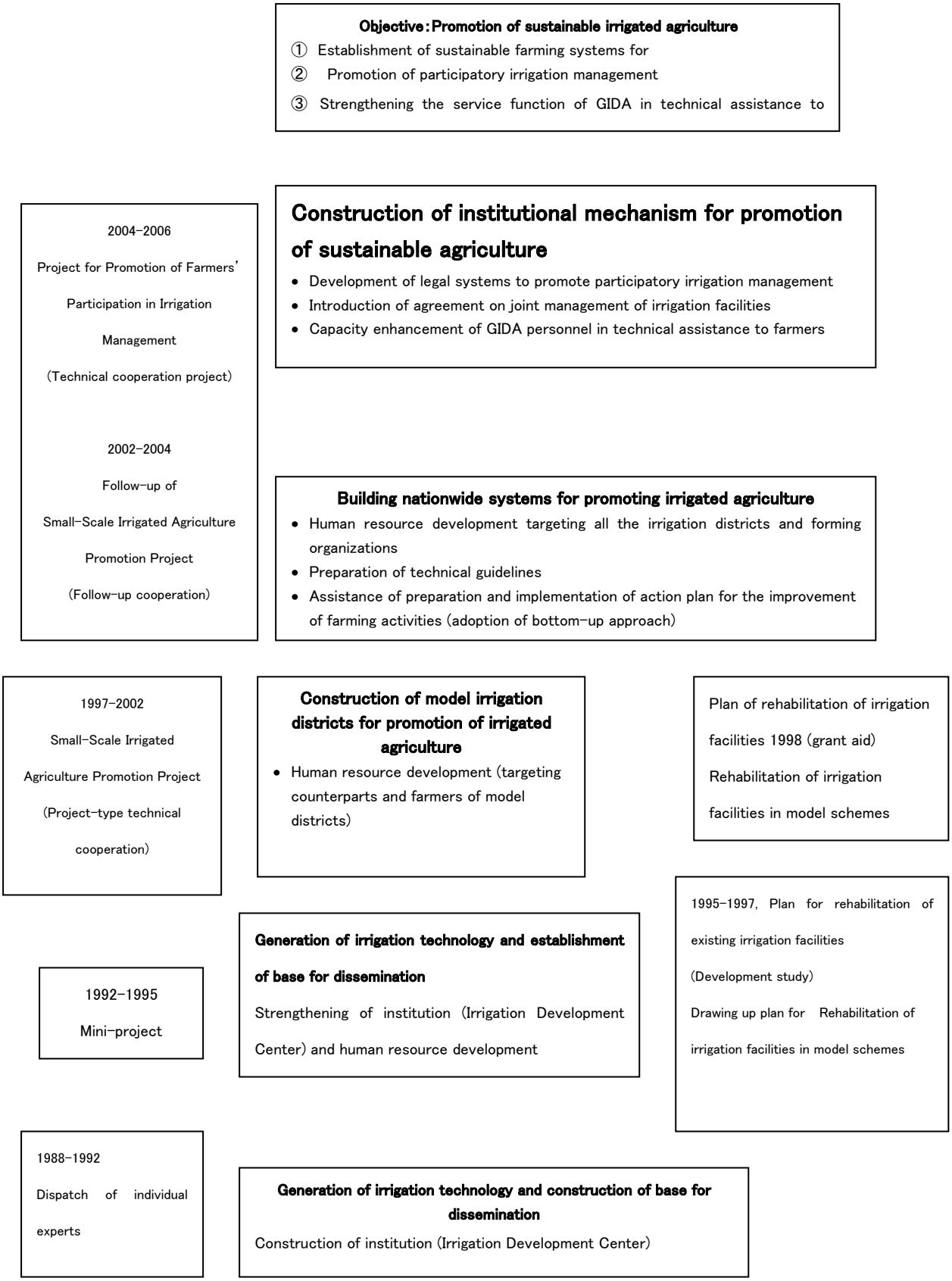
and then by Small-Scale Irrigated Agriculture Promotion Project (1997-2002). These activities were a typical example of "project in format of a center" of which the mission was specialized in the generation of technology and the construction of a couple of model irrigation schemes[17], based on the facilities of Irrigation Development Center, IDC, an entity established newly within the framework of GIDA. As a result of the cooperation efforts, the farming systems in both districts were improved substantially, which accordingly increased agricultural productivity as well as farmers' income.

In the subsequent phase of follow-up (2002-'04) of Small-Scale Irrigated Agriculture Promotion Project, the activities involved the preparation of technical guidelines for improving farming practices and that of strategic papers targeting respective irrigation schemes, in order to facilitate the dissemination of products of the preceding project. In the ensuing Project for Promotion of Farmers' Participation in Irrigation Management (2004-'06), the assistance was extended to cover the area of institutional elements of irrigation, aiming at the establishment of the management system of irrigation facilities by the participation of farmers and at the strengthening the functional capacity of GIDA in supporting farming practices of farmers. Through two years of cooperation efforts, a written agreement on joint management of irrigation facilities was signed between the GIDA and farmers' associations at 11 irrigation districts. At the same time, the capacity of the GIDA was strengthened for the service of training in techniques of irrigation farming such as cultural practices and water management. We may be able to conclude that the continuous efforts by combining diverse schemes of assistance had a great impact on the building of institutions (Irrigation Development Center, farmers organizations) and on the human resource development, both elements essential for the "development of sustainable irrigated agriculture" in Ghana (see Fig. II-7).

---

last normally for 5 years. JICA currently gives to the ensemble of these two types of cooperation a single generic term "Technical cooperation project". Incidentally, what is termed as "follow-up cooperation" refers to a mode of assistance characterized as prolongation of a cooperation project for a certain period of time when the preceding project is considered to have achieved the set goals insufficiently.

[17] The term refers to Ashaiman scheme where the Center was situated and Okyereko scheme. The irrigation facilities in these schemes were rehabilitated through the programs of developmental study and grant aid (¥ 764 million in 1998).

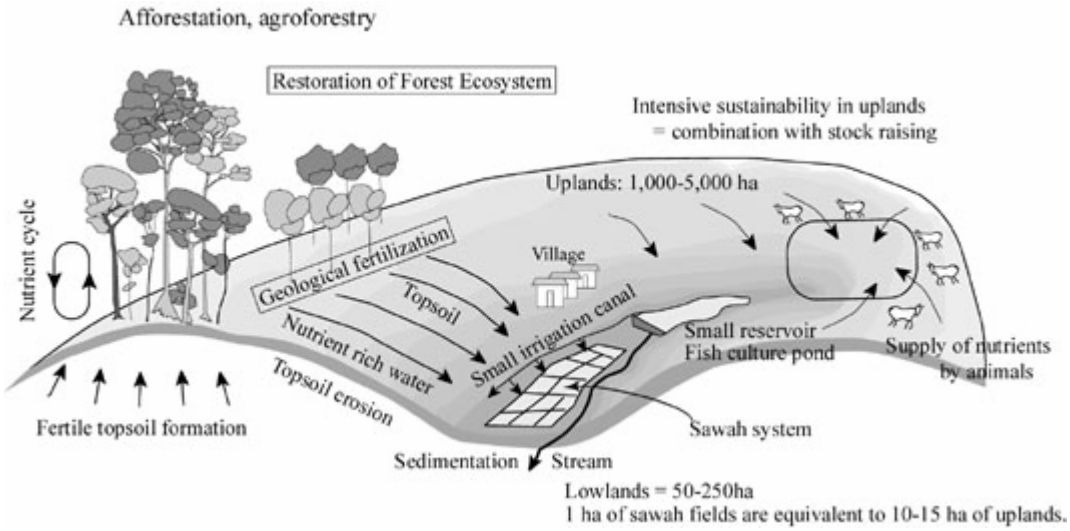


Source：Revised by author, based on "JICA (2005). A study of effectiveness and problems of JICA's technical cooperation from capacity development perspective"

Fig. Ⅱ－7 Approach of JICA's technical cooperation for the promotion of irrigated agriculture

② Development of lowlands in inland valleys

In order to establish the techniques to exploit the lowlands in inland valleys encountered frequently in Ghana, by converting them into rice fields, a project of research cooperation[18], "Integrated watershed management in inland valleys", was implemented from 1997 to 2000. Through project implementation, 4 long-term experts and 13 short-term experts were deployed and 10 trainees were accepted for training in Japan. The project studied the method for the development of inland valley watershed area, by applying the ecotechnology in 4 different scientific disciplines, namely, water, soil, crops and rural life (see Fig. II-8), from which a manual was compiled. In the paddies constructed in the verification study, the crop productivity turned out to be 4 to 5 times as high as that from traditional extensive practices of cultivation, having a great impact on farmers in the targeted area, and inducing the Ghanaian side to continue the activities on their own initiative after the termination of the project.



Source：Toshiyuki Wakatsuki (2002). Invitation to creating paddies and village forests together with farmers in West Africa

Fig. Ⅱ－8 Schematic presentation of the linkage between paddies and forests within a watershed

③ Forestry resources management

The forest resources in the transitional zone, situated in between the savanna zone and the tall tree forest zone, are very important for their multiple functions, not only as valuable sources of earning foreign exchange, but also as windbreaks, sources of recharge of water and for the biodiversity conservation. However, their degradation and transition to savanna is progressing owing to illegal logging and bushfires caused by human activities, making it an urgent issue to restore and conserve the forests in the zone. Under such circumstances,

[18] A type of technical cooperation in which, through carrying out programs of joint research with Japanese scientists, efforts are made mainly to enhance the professional capabilities of scientists in developing countries.

Japan has implemented two cooperation programs targeting five forest reserves in the transitional zone situated in the western part of Brong-Ahafo Region: the formulation of the forest management plan by a developmental study (1997-1999); the technology transfer by an individual expert in the participatory forest management (2001-2002). Furthermore, since 2004, a 5-year technical cooperation project entitled "Participatory Forest Resource Management Project in the Transitional Zone of the Republic of Ghana" has been implemented in the forest reserves and neighboring areas around Sunyani in Brong-Ahafo Region, to practice the integrated participatory forest resource management focusing on the participation of local residents (see Table II-1).

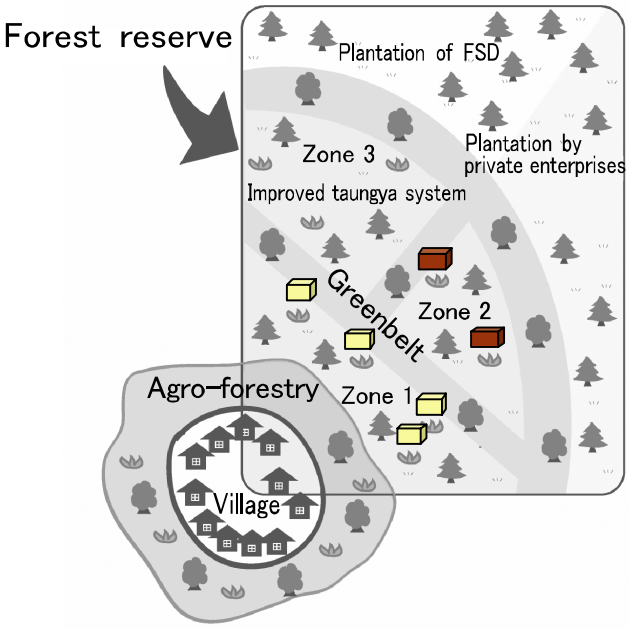
Table Ⅱ－1 Outline of "Participatory forest resource management project in the transitional zone of the republic of Ghana"

Upper level objective	The status of forest resource in Brong-Ahafo Region shall be improved through the participatory forest resource management.
Project purpose	The participatory forest resource management shall be carried out in the 5 pilot reserves in Brong-Ahafo Region and their neighboring areas
Outputs	a) The plan for the participatory forest reserve management shall be formulated and put into practice in sample areas. b) Through extension activities, the movement by the villages surrounding forest reserves for the restoration of forest resource outside the forest reserves shall be promoted. c) The activities for the alternative livelihood shall be promoted in the communities surrounding sample areas. d) The participation by surrounding communities for the prevention of bushfire shall be strengthened. e) Proposals based on the project activities shall be presented to the Government.

A reserve is zoned into protection zones and production zones. Moreover, all the production zones shall become planted zones, comprising three types of plantation: the area planted under the direct control of FSD; the area planted by private enterprises; and the area managed by improved *taungya* system[19]. The improved *taungya* is a system in which farmers obtain the concession to cultivate the land within reserves on the condition that they are obligated to plant trees (mainly teak) there and take care of the planted forest. Although, three years after planting trees, the cultivated plots are shaded from the sunlight by the tree growth and no more cultivable, a share of the profits to be realized from thinning conducted 10 and 18 years later and the final harvest 25 years later is to be collected by farmers (profit shares are 40 percent for farmers, 20 percent for landowners and 40 percent for FSD). While this share of

[19] *Taungya* is a type of agro-forestry in which the principal objective is the creation of forest by achieving the artificial reforestation through firstly cultivating food crops between rows of trees planted simultaneously, and then only nurturing trees once the canopy is closed and the forest floor becomes deficient in illumination.

the profits for farmers is considered as an incentive for farmers to participate in the management of planted forest, there still remains the issue how to maintain the motivation of farmers during the long waiting periods before the profits are realized (see Fig. II-9).



※ Zone 1 to zone 3 are exploited by rotation
・Zone 1：Teak＋Apiculture
・Zone 2：Teak＋Snail culture
・Zone 3：Teak＋Vegetables（yam・cassava）

Source：Interim report of "Participatory Forest Resource Management Project in the Transitional Zone of the Republic of Ghana"

Fig. Ⅱ－9 Cohabitation of forest reserve and neighboring inhabitants through improved taungya system

2. Orientation of Japan's Cooperation

1) Coherence with the Japan's county assistance programme for Ghana

In the Japan's county assistance programme for Ghana, the activation of the provinces/rural areas was set forth as a measure to realize economic growth accompanied with poverty reduction, in the context of which, in order to strengthen the life base of small-scale farm households and raise their income level, assistance efforts shall be made focusing on the programs for the development of agriculture by addressing various issues ranging from the improvement of productivity of these farm households, building infrastructure, to the processing and distribution of agricultural products. At the same time, assistance efforts shall be made also to promote the linkage between agriculture and industry in order to develop a strong agriculture-based industrial sector. Future cooperation efforts in respective areas have to be designed and engaged taking full account of the coherence with the above-mentioned basic strategy. Furthermore, a quick response to the shift in circumstances, including the increasing level of activities of development partnership having the policy

framework in common with GPRS-1／GPRS-2, or the advancement of general financial assistance, is also required.

2) Formulation of programs

The assistance to Ghana is likely, in the foreseeable future, to remain fluctuating in the approximate range between 3 billion yens and 4 billion yen (disbursement for 2002-2004), adding up both grant aid and technical cooperation. With recognition that available resources for inputs are limited, it is needed to organize groups of projects (cooperation programs), by fully taking into account the 4 focal cooperation areas of the agricultural development that are the strategic objectives in the above mentioned county assistance programme, i.e., "Increase of agricultural productivity", "Improvement of post-harvest techniques", "Improvement of agricultural administration", "Development of infrastructure", and also with due awareness of interaction between different inputs. Currently, JICA is deliberating on the implementation of "the program of promotion of domestic rice production" and "the program of rural development in Upper West Region", based on discussions among the members of the local ODA Task Force[20].

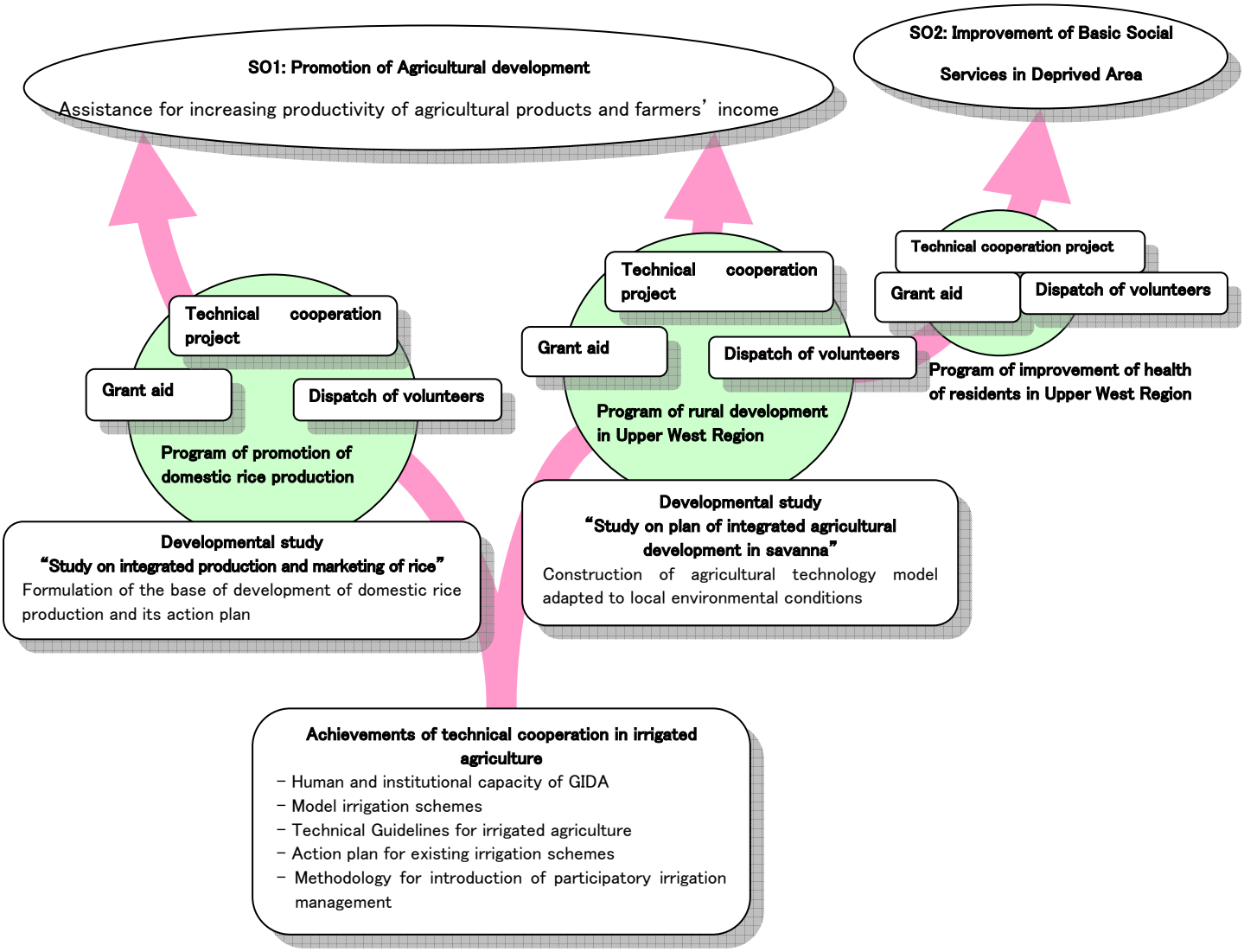
As for the former, it is a program that has been conceived by taking notice of the rapid expansion of rice consumption accompanying the recent trend of rapid urbanization. Over the 5 years from 1997 to 2002, while rice imports rapidly increased from 72,000 tons to 300,000 tons, its production increased only from 120,000 tons to 170,000 tons, depressing the self-sufficiency rate down to around 20-30%. Ghana spends a large sum of foreign exchange (USD 185 million in 2005) for rice imports, and the domestic rice production is expected to contribute greatly to the improvement of trade balance. Moreover, rice sells easily, and hence is important source of cash income for farmers. The activities constituting the program shall be determined based on the outcome of ongoing developmental studies. As for the latter, the program aims at establishing a technical model of agriculture adapted to local environmental conditions in Upper West Region in the north where the population in poverty is concentrated, and improving the livelihood of farmers through extensive dissemination of the established model. In the Region, the existence of a great need for water has been confirmed, and it is expected that the developmental study scheduled to start in 2008 will be able to construct an effective technical model.

3) Application of past achievements

The cooperation in agriculture and forestry sector in Ghana has a history of nearly 20 years since the first dispatch of individual experts in 1988, contributing greatly to the human

[20] Task forces consisting of Japanese Embassies and local offices of JICA and JBIC as main members, and established for the purpose of planning Japanese aid policies and organizations for their implementation, and strengthening linkages with other donors. As of December, 2006, they have been established in 72 countries including Ghana.

resource development for the country. Particularly, in the sphere of "promotion of sustainable irrigated agriculture" the cooperation efforts have produced a large group of people well equipped with technical expertise in irrigated agriculture and with competent leadership in Ghana Irrigation Development Authority (GIDA), particularly in Irrigation Development Center (IDC), as well as the intellectual assets in the form of technical guidelines and strategic papers for the improvement of farming systems. Furthermore, as to the methodology concerning the introduction of participatory irrigation management, an amount of technical know-how that would be sufficient for consolidating an institution has been accumulated. GIDA is, so to speak, a company to manage 22 government-owned irrigated estates (large-scale farms) scattered over the country, and the entire picture of the past cooperation efforts could be described as a rescue operation to restore its business. In the background of the whole situation, there is a fact that the development of new irrigation infrastructure had been scarcely undertaken since the 1990s. On the other hand, there has emerged a great change since the beginning of the 2000s in the circumstances surrounding the irrigated agriculture, where the government has launched a project to construct several thousands of hectares of irrigated land, highlighting again the role played by GIDA as the promoter of new development of irrigation. For its part, Japan also needs to aim at extending effective assistance in the planning and execution of the component of irrigated agriculture in the above-mentioned cooperation program, by utilizing to the utmost extent the achievements of the past cooperation with GIDA (see Fig. II-10). As to the two irrigation schemes of Ashaman and Okyereko, both having been developed as a model irrigation scheme, they are expected to serve as a training ground for farmers to learn irrigated agriculture, and also as the paddies for multiplication of NERICA seeds.



Source: Created by author

Fig. Ⅱ－10 Orientation of JICA cooperation programs in the area of agricultural development

AGRICULTURE AND FORESTRY IN GHANA:
PRESENT STATE AND ISSUES FOR DEVELOPMENT

JAPAN ASSOCIATION FOR INTERNATIONAL COLLABORATION OF AGRICULTURE AND FORESTRY

3F Akasaka KSA Bldg., 8-10-39 Akasaka,
Minato-ku, Tokyo, 107-0052 Japan
Tel: +81 - 3 - 577239 - 7880
Fax: +81 - 3 - 577239 - 7680