

**Study
on
International Cooperation in Rice Farming
in
West Africa**

March 2003

Japan International Cooperation Agency (JICA)

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FOREWARD

The consumption of rice as the main staple food has been rapidly increasing in West Africa, particularly in urban areas. Meanwhile, despite their supply potential to meet the increasing demand, many countries in this region are missing the opportunity to increase the supply of domestically produced rice under the pressure of cheap imported rice on which the region spends US\$ 1 billion a year. The increased supply of domestically produced rice to meet the increasing demand poses an urgent task for West African countries in order to increase the income of farmers, to create employment in rural areas and to save foreign currencies. Although the R&D and extension of appropriate technologies/techniques enabling the effective use of local resources are essential for this purpose together with the improvement of the marketing system, these countries have found it very difficult to implement suitable measures because of their retrenched financial situation.

This study was conducted as a part of the project-type study entitled “Preparation of Rural Development Methods for Africa (Implementation)” which was conducted in FY 2002. The purposes were to assess the present situation of the research and extension of rice farming technologies in West Africa and then to propose the future direction for Japan’s international cooperation in rice farming in West Africa based on the findings. For these purposes, workshops were held with the participation of experts (from the JICA, JBIC, JIRCAS, international organizations, universities, journalists, NGOs, etc.) on rice farming in West Africa and a field study was conducted in three countries, i.e., Italy (FAO), Côte d’Ivoire and Guinea.

The International Development Center of Japan (IDCJ) has been responsible for the research work of the study and for the compilation of the present report. The main contributors of the report are Kunio Takase for the Summary, Chapter 2 and Chapter 7, Satoko Emoto for Chapter 1 and Chapter 3, Toshiyuki Wakatsuki for Chapter 4 and Toshiyuki Wakatsuki and Satoko Emoto for Chapter 5 and Chapter 6.

It is sincerely hoped that this report will prove useful for not only staff members of the JICA but also for those involved in agriculture and rural development cooperation in Africa.

March 2003

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Photographs (1-10 in Côte d'Ivoire and 11-12 in Guinea)



Photograph 1 Raifed upland rice field in a suburb of Gagnoa



Photograph 2 Rainfed upland rice field in the north of Bouake (a farmer participating in the NERICA-CBSS Project)



Photograph 3 Irrigated rice field in the Lokapli basin (suburb of Bouake)



Photograph 4 Lokapli Dam constructed with Japanese grant aid



Photograph 5 Irrigated rice field under the WFP/PBF Project (Foro-Foro)



Photograph 6 Irrigated rice field under the WFP/PBF Project (Soungourou)

Photographs (1-10 in Côte d'Ivoire and 11-12 in Guinea)



Photograph 7 Irrigated rice field in Anongblin (a model site of the JICA-PASEA Project)



Photograph 8 Cultivator purchased by a farmer in Anongblin (procured under the 2KR)



Photograph 9 A NERICA seed farm of PNR (suburb of Yamoussoukro)



Photograph 10 A NERICA demonstration farm in WARDA (suburb of Bouake)



Photograph 11 Rainfed upland rice field in Fouta Djallon (on the way from Dalaba to Tolo)



Photograph 12 Rainfed lowland rice field near Tolo

Table of Contents

Location of the Study Areas	i
Photographs	iii
Table of Contents	vii
Summary	ix
List of Abbreviation and Acronyms	xxi
CHAPTER1 PURPOSES, SCOPE AND SCHEDULE OF THE STUDY	1
1.1 Background and Purposes of the Study	1
1.2 Scope and Schedule of the Study	2
1.3 Study Group Members	3
1.4 Study Team Members	3
1.5 Work Schedule	4
CHAPTER2 SITUATION SURROUNDING RICE FARMING IN WEST AFRICA	6
2.1 Development Strategies and Problems in 40 Years of African Development	6
2.2 Major Donors' Strategies for African Agriculture and Rural Development	7
2.3 Historical Changes of Chronically Undernourished Population in Developing Countries	8
2.4 Lessons from the World Summit on Sustainable Development (WSSD) in Johannesburg	9
2.5 Distribution of Major Food Producing Countries in Africa	10
2.6 NERICA (New Rice for Africa): Its Merits and Limitations	11
2.7 African Rice Initiative (ARI) and Future Prospects	13
2.8 Global Comparison of Food Production and Fertilizer Utilization	13
2.9 Historical Background of Rice Production	15
CHAPTER3 CURRENT SITUATION AND PROSPECTS OF RICE SUPPLY AND DEMAND IN WEST AFRICA	16
3.1 Characteristics of the World Rice Market	16
3.2 Subsidies for Rice Production and Export	20
3.3 Rice Supply and Demand Trends in West Africa	25
3.4 Rice Supply and Demand Prospects in West Africa	28
CHAPTER4 TRENDS OF RICE CULTIVATION AND DIRECTION FOR COOPERATION IN WEST AFRICA	30
4.1 Rice Ecology in West Africa	30
4.2 Development of Rice Farming and Environmental Conservation Strategy in West Africa	43
4.3 International Cooperation in Research and Extension of Rice Farming in West Africa	47
CHAPTER5 CASE 1: RICE FARMING IN CÔTE D'IVOIRE	61
5.1 Political and Economic Conditions and Agriculture	61
5.2 Rice Supply and Demand Trends	62
5.3 Rice Farming-Related Administration and Agricultural Support Services	64
5.4 Technological and Environmental Problems on Rice Cultivation	67
5.5 International Cooperation in Rice Farming	73
5.6 Japan's Possible Cooperation in Rice Farming	77
CHAPTER6 CASE 2: RICE FARMING IN GUINEA	79
6.1 Political and Economic Conditions and Agriculture	79
6.2 Rice Supply and Demand Trends	79
6.3 Rice Farming-Related Administration and Agricultural Support Services	80
6.4 Technological and Environmental Problems on Rice Cultivation	81
6.5 International Cooperation in Rice Farming	83
6.6 Japan's Possible Cooperation in Rice Farming	84

**CHAPTER7 RECOMMENDATIONS FOR COOPERATION IN RICE FARMING
IN WEST AFRICA** **86**

7.1 Policy Changes from Emphasis on Export Crops to Emphasis on Food Production 86

7.2 Comparative Advantages and Problems of Rice 86

7.3 Medium to Long-Term Viewpoint for Rice Farming in West Africa 87

7.4 Implementation of Recommendations in Final Report of Second ODA Reform Forum 88

7.5 Japan’s Step-wise Cooperation Strategy for Rice Farming in West Africa 90

APPENDIXES

1. People Interviewed A-1

2. IFDC’s Proposal for Technical Cooperation with JICA A-5

3. Socioeconomic Conditions of Republic of Côte d’Ivoire A10

4. Socioeconomic Conditions of Republic of Guinea A-12

SUMMARY

1. Background and Purposes of the Study

- (1) The Japan International Cooperation Agency (JICA) entrusted the International Development Center of Japan (IDCJ) to conduct a project-type study entitled “Preparation of Rural Development Methods for Africa (Planning)” from FY 1999 to FY 2001. While the main staple foods in Africa have long been maize, potatoes, sorghum, millet, rice and wheat in the order of consumption volume, the consumption of rice as a main staple food has been rapidly increasing in recent years, particularly in urban areas. According to FAO data for 2002, rice has become a leading staple food in nine countries (six of which are in West Africa) out of 45 sub-Saharan African countries and has gained the second position after maize (13 countries). Meanwhile, 17 West African countries launched the African Rice Initiative (ARI) on March 27, 2002 for the purpose of extending the study results on NERICA (New Rice for Africa) varieties developed by the West African Rice Development Association (WARDA). The future rural development of Africa will be greatly affected by the extent of “rice cultivation centered on NERICA varieties” to reduce the pressure imposed by imported rice costing US\$1 billion a year. From this point of view, JICA has decided in 2002 to conduct the “Study on International Cooperation in Rice Farming in West Africa” as part of the study entitled “Preparation of Rural Development Methods for Africa (Implementation)”, which has been entrusted to IDCJ.
- (2) Based on the experience of rice farming for more than 1,000 years, Japan has been achieving positive results in its post-war cooperation for agricultural development in Asia and has also extended its cooperation to agricultural development in West Africa since around 1990. The Second Tokyo International Conference on African Development (TICAD II) held in 1998 provided Japan with the opportunity to become the largest donor supporting the research of WARDA. However, NERICA varieties are still facing a number of technological and organizational problems. In the age of global trade led by WTO, there are still many problems which cannot be ignored, ranging from the international price of rice to economic problems relating to subsidies in developed countries, social problems relating to incentives for poor farmers and global environmental problems. The cooperation from wide-ranging experts with profound knowledge on rice farming in West Africa (JICA, JBIC, JIRCAS, FAO, WFP, UNDP, Sasakawa Africa Association, AICAF, universities, research institutes, media and NGOs) is essential to solve such diverse problems. The purposes of the Study are to find the present situation of the research and extension of rice farming technologies in West Africa and then to propose the future direction for Japan’s international cooperation in rice farming in West Africa. For these purposes, workshops were held with the participation of the Ministry of Foreign Affairs, the Ministry of Agriculture, Forestry and Fisheries, and experts on rice farming in West Africa and a field study was conducted in three countries, i.e., Italy (FAO), Côte d’Ivoire and Guinea. It is also hoped to present the recommendations for TICAD III as one of possible roles to be played by Japan for agricultural development in Africa.

2. Lessons from 40 Years of African Development

- (1) The birth of independent African countries beginning around 1960 provided a major turning point for the regeneration of the African continent after a period of colonization lasting for several hundred years. Their independence, however, was greeted by a combination of adverse impacts caused by dictatorships in terms of politics, a planned economy in terms of economy, ethnic conflicts in terms of society, desertification and environmental destruction in terms of nature, and falling prices of primary products in terms of international economy. Coupled with chronic starvation caused by a series of droughts and population explosion, the socioeconomy in Africa in the 21st century is facing extremely serious conditions. In the meantime, Africa has received the highest level of ODA per capita in the world. Although it has received ODA more than six times larger than that received by South Asia, poorer than Africa, Africa's real GDP growth per capita and food production index have remained almost in negative territory. As repeated changes of the aid strategy of donors have proven futile, there is a real need to learn from the lessons from 40 years of African development in order to come up with more viable measures for the 21st century.
- (2) There is no denying that "lack of ownership on the part of Africa itself" accounts for a large segment of these lessons. It is also a fact that "the insufficient experience and self-centered strategies on the part of donors" have been fairly responsible for the considerable delay in African development.
 - 1) In the 1960s immediately after independence, developed countries were divided into the East and the West camps and continued to provide "spoiling aid" in a race to bring African countries within their sphere of influence. As a result, the political and economic self-reliance of African countries was severely damaged.
 - 2) In the 1970s, although the Nairobi Speech by Mr. Robert S. McNamara, President of the World Bank, was on the right track, upholding "the elimination of poverty" as a goal, the World Bank concentrated as much as 30-40% of its loans to Africa in "top-down infrastructure development" with little consideration on the viewpoint of farmers' participation.
 - 3) In the 1980s, the "structural adjustment program" based on emphasis on the macroeconomy neglected the microeconomy in rural communities, resulting in "the discard of the poor".
 - 4) In the 1990s, the rapid progress of "globalization" favoring the market economy led to the entrustment of basic components of agriculture to the private sector, resulting in successive "environmental destruction and conflicts".
 - 5) In the 2000s, in a reaction to the negative development during the previous decade, the "emphasis on human development" went too far, in that 74% of the ODA in 1999 was invested in social development, e.g., education and health sectors. The imbalanced investment could be seen in the fact only 7% of the ODA went to agriculture, i.e., the livelihood of 70% of the poor population.

3. Symbolic Significance of “Summit on Sustainable Development in Johannesburg”

- (1) The fact, that a summit with more emphasis on “development” was held in Africa 10 years after the UN Conference on the Environment and Development (Earth Summit) in Rio de Janeiro in 1992 appears to have some symbolic significance implying the direction for mankind in the 21st century. In short, signs to present the repetition of “lessons from 40 years of African development” referred to in the previous section appears to be emerging in a slow but assured manner.
- (2) At the venue of the Summit on Sustainable Development where some 20,000 people (of which some 10,000 represented NGOs) gathered in South Africa from August 26 to September 4, 2002, there were repeated demonstrations by poor people. Their pressing sentiments were evident with their placards carrying such messages as “water and jobs”, “fair trade”, “simple development rather than sustainable development”, etc. While the African side insisted on a decision on “the time limit to achieve the target of 0.7% of the GNP”, G8 countries tried to enforce “good governance by developing countries” as a precondition. The representative of Ethiopia revolted against the Chairman’s draft wording to give precedence to the World Trade Organization (WTO) over environmental regulations. With the support of Norway, Kiribati, etc., the clause containing “while ensuring WTO consistency” was dropped. Meanwhile, the United States opted out of the Kyoto Protocol and President Bush failed to attend the Summit. Prior to the Johannesburg Summit, four presidents from Africa attended the Kananaskis G8 Summit in Canada (on June 26 and 27, 2002) and demanded “a promise to introduce a time limit for an increase of ODA to 0.7% of the GNP”. However, the response from the G8 countries was merely “more than half of the increased aid (US\$12 billion) expressed at the International Conference on Financing for Development held in Monterrey, Mexico in March 2002”. The African side repeated this demand at Johannesburg but no agreement was reached.
- (3) Such a procession of events may suggest that both sides failed to secure a satisfactory result at Johannesburg. However, as both sides fully expressed what they had wanted to say, this latest summit clarified the principal problems in the eyes of developed countries and developing countries regarding the theme of “African Development in the 21st Century”. Even though the Implementation Plan has neither legally binding force nor satisfactory contents, it at least indicates the direction to be followed. Positive outcomes include the urged cooperation between developed countries and developing countries regarding the “10-Year Reform Plan for Production and Consumption” and the “promise on comprehensive negotiations to aim at the phased withdrawal of export subsidies for agricultural products of developed countries”. In addition, it is highly significant that a consensus was achieved regarding the realization of the Millennium Development Goals (2015) adopted by the UN general meeting in 2000 and “efforts to reduce the gap between the rich and the poor” as the basic foundations for development.

4. Development of Rice Farming in West Africa and its Problems

- (1) The geographical scope of West Africa in this study includes 17 member countries of WARDA (Benin, Burkina Faso, Cameroon, Chad, Côte d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra

Leone and Togo). The total land area of 731 million hectares of 16 countries excepting Cameroon as of 1998 consisted of 212 million hectares of grassland (29%), 82 million hectares of forest (11%), 60 million hectares of cultivated land (8%), 10 million hectares of land for permanent crops (2%) and 367 million hectares of others (50%). As of 1999, the rice cultivation area was only 4.7 million hectares (0.6%), though this figure showed an increase of 1.8 times compared to 2.6 million hectares (0.4%) for the period from 1980 to 1984.

- (2) Further details of the rice farming area show a percentage decline of upland rice from 57% (1.5 million hectares) in 1984 to 41% (1.9 million hectares) in 1999. In contrast, the rapid increase of lowland rice fields (including rainfed and irrigated) from 29% (0.8 million hectares) in 1984 to 47% (2.2 million hectares) in 1999 is very impressive. Even though the research of WARDA is directed towards the development of NERICA (upland rice), the main form of rice farming in West Africa moved from upland to lowland. As a result, the paddy (rough rice) production increased by 2.1 times from 3.4 million tons in 1984 to 7.5 million tons in 1999. In other words, contrary to the forecast that 43% and 54% of the increased paddy production (3.1 million tons) in the period from 1984 to 1999 would come from upland and lowland, respectively, the actual results was that only 10% of the increased paddy production (4.1 million tons) came from upland compared to 88% from lowland.
- (3) Meanwhile, during the period from 1970 to 1998, rice production in West Africa increased threefold, far exceeding the production increase of other crops in the same period, such as cassava (2.4 times), beans (2.3 times), maize (1.8 times), sorghum (1.4 times) and millet (1.5 times).
- (4) Based on the data mentioned above, the development of rice in West Africa and the problems can be summarized into the following three points.
 - 1) The rapid increase of rice production in West Africa is remarkable, though it is derived from pressing demand due to urbanization.
 - 2) The direction of research by WARDA and the governments of West African countries from the 1980s to the 1990s centering on upland rice is justifiable to focus on immediate attention to respect farmers' traditional farming practice. However, it is inadequate from a viewpoint of food self-sufficiency in West Africa as a whole.
 - 3) Farmers realized the advantages of "small-scale lowland rice" over "upland rice" and continued their efforts to develop with the inland valley bottom farming system and the techniques extended by Taiwanese technical cooperation teams since the 1960s. However, the application of fertilizer and effective irrigation management was found to be insufficient. The government-led large-scale irrigation that began in the 1970s with the assistance of donors was unsuccessful, because the required water and fertilizer management efforts were beyond the capability of local farmers.

5. Supply and Demand of Rice and Extension of Rice Farming in Côte d'Ivoire

- (1) In Côte d'Ivoire, where the natural conditions, including a relatively high level of rainfall, are suitable for rice cultivation among West African countries, the government has promoted rice cultivation for a long time. In fact, under the guidance and supervision of the Rice Cultivation Development Corporation (SODERIZ), the country achieved self-sufficiency in rice in the mid-1970s. In subsequent years, however, the country has been forced to import rice due to a decline of systematic support for production, associated by the reorganization of SODERIZ, and an increase of the urban population. The liberalization of agricultural imports in 1995 led to a massive inflow of cheaper imported rice in the market and the withdrawal of government assistance for the fuel cost, fertilizer, agrochemicals, output collection, milling and marketing adversely affected the will of farmers to produce rice locally. The average self-sufficiency rate in the period from 1991 to 2000 was 60% and some 300,000-500,000 tons of rice were imported annually at a cost of US\$100-160 million.
- (2) When Dr. Toshiyuki Wakatsuki, also a member of the IDCJ Study Team, visited Côte d'Ivoire in 1987, upland rice cultivation was dominant around Bouaké and Yamoussoukro in the central region, with rainfed lowland rice cultivation hardly being observed. During the recent visit, however, upland rice was seldom seen around Bouaké and Yamoussoukro. Instead, it was evident that the small-scale lowland paddy fields voluntarily developed by farmers and those of various development projects (assisted by WFP, AICAF, JICA, EU, etc.) have rapidly spread. There appears to be multiple reasons for the disappearance of upland rice cultivation in these areas, including a decline of the land fertility due to deterioration of the soil, expansion of *alang-alang* grassland, disappearance of forests and decline of rainfall. The NERICA varieties observed at a seed farm of WARDA in Gagnoa in the central west region and at another farm under the National Rice Program (PNR) at Yamoussoukro did not seem to be growing well. Upland rice fields cultivated by individual farm households were only seen in a scattered manner, implying a substantial decline of the share of rainfed upland rice fields.
- (3) With the appointment of Director General Dr. Kanayo F. Nwanze, the research and development strategy of WARDA has been changed from the traditional emphasis on the upland NERICA varieties to new NERICA varieties for rainfed and irrigated lowland rice with added focus on “environment” and “poverty reduction”. The commencement of ARI with extension activities regarding fertilizer, water management, multiple crop cultivation, agricultural cooperatives, processing and marketing in mind is one aspect of this new direction. Nevertheless, most parts of the extension activities must be earnestly implemented by various government organizations rather than WARDA. Although the World Bank has launched Phase II of the National Agricultural Services Support Project (PNASA) lasting for 10 years with a budget of US\$600 million, the coordination of its four components, i.e., support to the National Rural Development Agency (ANADER), support to the National Agricultural Research Center (CNRA), support to the Ministry of Agriculture and Animal Resources (MINAGRA) and support for information dissemination through a rural radio network, is still at the trial and error stage.

(4) Japan's cooperation for rice farming is classified as direct cooperation and indirect cooperation.

- 1) In regard to indirect cooperation, research cooperation through JIRCAS and WARDA/UNDP and the contribution to the trust fund for the Inland Valley Bottom Project (PBF) of WFP have made major achievements from 1999 to 2002 after TICAD II.
- 2) As direct cooperation after 1986, JICA has provided grant aid (the Agricultural Mechanization Training Center Project, or CFMAG, the Irrigated Farming Improvement Project in the North Central Region and a total of ¥5.25 billion for 2KR) and project-type technical cooperation (the Farming System Improvement Project for Small-Scale Irrigated Agriculture or PASEA) and has conducted several development studies (the Study for the Agricultural Development Plan in the Bu River Basin, the Study for the Integrated Rural Development Project in the N'zi River Basin and the Study for the Integrated Rural Development Project in San Pédro Plain). The experience gained from these projects appears to suggest: 1) the importance of dispatching experts capable of advising and coordinating efforts in general terms rather than in specialists; and 2) the need for introducing more flexibility in project implementation details and budget items.

6. Rice Farming in Guinea and Contribution by SG2000 (Sasakawa Global 2000)

- (1) Grassland resulting from slash and burn agriculture and sustainable upland farming system: During the flight by a chartered aircraft over a straight distance of some 300km from Conakry to Labé, a highland city in the northwest, a progressive shift to *alang-alang* grassland was observed along the entire route. Such a state of the land indicates the beginning of the artificial creation of savanna, eventually resulting in desertification. Under the *tabade* system (sustainable upland farming system) observed on the ground, however, the Furube people are conducting appropriate crop rotation involving fonia, vegetables, potatoes and rice (NERICA varieties and others) supported by sufficient fertilizer application using the manure of grazing animals and leguminous plants. The farming lands securing soil and water conservation with uniformly flat large ridges are excellent. It was impossible during the three-day field visit to determine how these two aspects are qualitatively as well as quantitatively related to rice farming in Guinea, where the rainfall level is fairly high.
- (2) Sasakawa Global 2000 (SG2000) was established in 1986 to solve agricultural problems in Africa, as a collaboration project between the Sasakawa Africa Association, whose president is Dr. Norman E. Borlaug, a Nobel Peace Prize winner in 1970, and the Global 2000, an international NGO active in the health sector led by Mr. Jimmy Carter, former president of the United States and a Nobel Peace Prize winner in 2002. With funding provided by these organizations and the Nippon Foundation, SG 2000 has so far been involved in the transfer of technology to small-scale farming households in 14 Sub-Saharan countries, where the yield of such crops as maize, sorghum and wheat has doubled or even trebled. Guinea is the only recipient country of SG2000 where rice has been the main focus for increased production. The visit to Guinea, which has become a

leading country in terms of increased rice production among the 17 West African countries, found three major reasons for its success.

- 1) The President himself has taken the initiative in the planting of NERICA varieties on 10 hectares of land, giving top priority to agriculture and declaring self-sufficiency in rice to be a national target to be achieved in several years. To achieve this target, scientists and engineers have been frequently sent to WARDA.
- 2) The SG2000 team has provided guidance on fertilizer application, weeding, diseases and pests control and water management. Its joint efforts with the National Rural Development and Agricultural Extension Service (SNPRV) have resulted in increased income for farming households.
- 3) A strategy appropriate for the level of rainfall and topography of Guinea has been adopted in combination of the assistance provided by the World Bank, the Special Program for African Agricultural Research (SPAAR), Japan, UNDP and other donors.

7. Weaknesses and Comparative Advantages of Rice Farming in West Africa

- (1) Early stages of rice production: Referring to the analysis of 1,400 years of recorded rice production in Japan, the history of rice production in the world can be classified into four development stages. The first stage is primitive farming with insufficient fertilizer and water (with a yield of less than 1 ton/hectare). The second stage is irrigated cultivation (1-2.5 tons/hectare). The third stage is irrigated cultivation with fertilizer application (technical innovation) (2.5-4.0 tons/hectare) while the fourth stage is post-agrarian reform (4.0-6.0 tons/hectare). Rice farming in Asia was at either the first or second stage throughout the 1960s and 1970s and most Asian countries reached the second or third stage in the 1980s. Korea, Taiwan and China in particular reached the fourth stage in 1990s. In contrast, rice farming in most West African countries at present is stagnant in the first or second stage. Fertilizer input in these countries is less than 10kg/hectare, substantially lower than the 200kg/hectare in Asian countries. The irrigation rate in West Africa is approximately 6%, much lower than the 35% in Asia.
- (2) Lower priority given to food crop production: Agriculture in Africa still follows customs dating back to the colonial era and emphasis is placed on cash crops for export (coffee, cocoa and cotton) with low priority given to food crops (maize, potatoes, sorghum, rice, millet, wheat and beans). Consequently, the technological standard is low and only limited government budget is allocated to the improvement of food crop production. In 1999, 74% of the ODA budget for Africa was distributed to education, health, peace, debt relief, good governance, etc. with agriculture receiving only 7%. From the historical point of view, countries that have achieved rapid economic development have, without exception, emphasized agriculture to ensure food self-sufficiency at the early stage of development. Typical examples are the development of the Wild West in the United States (annual agricultural growth rate of 2.7% between 1867 and 1900), post-war Japan (1.9% between 1950 and 1968), 15 Asian countries (excluding Japan and China) (3.1% between 1965 and 1974) and China (3.6% between

1963 and 1985). From the 1960s to the 1980s, the Asian Development Bank gave top priority to agriculture, allocating an average of 30-35% of its loans to agriculture.

- (3) Comparative advantages and problems of rice: The reason why Asia, which possesses only 30% of the world's permanent farming land, supports 60% of the world population lies with the exceptionally high productivity of rice, its staple food, compared to other types of grains and potatoes. According to FAO data, the average yield of rice throughout the world is 3.6 tons/hectare, which is 1.4 times higher than the 2.5 tons/hectare for wheat. As the double-cropping of rice is possible (the world average is 1.3 crops a year), the capacity of rice to feed people per unit area is 1.8 times (1.4 x 1.3) higher than that of wheat. Moreover, rice is superior to other grains in terms of nutrition, easy to cook and store. Rice, however, has its own problems. Lowland rice is more susceptible to a drought than upland rice in areas with annual rainfall of less than 1,000 mm and, therefore, fertilizer input in these areas is not economical. Work in lowland paddy fields is liable to health hazards posed by malaria and schistosomiasis. This is one reason why many farmers in West Africa have been reluctant to adopt rice production supported by irrigation and fertilizer application.

8. Rural Development Strategies of Major Donors for Africa

The end of the Cold War in 1990 was immediately followed by "aid fatigue" among European countries and the United States and the assistance of these countries shifted towards Eastern Europe and the former Soviet republics. The future of the Tokyo International Conference on African Development (TICAD I in 1993 and TICAD II in 1998) with which Japan has inherited the previous efforts to assist Africa is not necessarily bright. The latest development strategies of major donors for Africa in the 21st century, i.e., the G8, the World Bank and FAO, are outlined below.

(1) Kananaskis G8 (June 26 and 27, 2002)

With its Africa Action Plan, the G8 will increase aid for Africa in line with the New Partnership for African Development (NEPAD) prepared by African countries, taking the following points into consideration.

- 1) The emphasis of aid will be placed on those countries that have achieved positive results in terms of good governance, rule by law, investment in human resources, economic growth and poverty reduction. Only humanitarian aid will be provided for countries that ignore the interests and dignity of the people. The selection of countries will be based on the mutual assessment process of African countries.
- 2) The G8 believes that more than half of the increased aid portion (US\$12 billion) expressed at the International Conference on Financing for Development held in Monterrey, Mexico in March 2002 will be directed to Africa.
- 3) The priority areas for assistance are, in the order of importance: 1) promoting peace and security; 2) strengthening of institutions and governance; 3) fostering trade, investment, economic growth and sustainable development; 4) implementing debt relief; 5) expanding knowledge (education of women and

information communication technologies); 6) improving health and confronting HIV/AIDS; 7) increasing agricultural productivity; and 8) improving water resource management. Agriculture is given very low priority.

(2) Rural Development Strategy for Africa of the World Bank (From Action to Impact, July 2002)

- 1) Most of the least developed countries in the world are concentrated in Africa. Given the threat posed by HIV/AIDS, urgent cooperation for NEPAD is necessary to achieve the Millennium Development Goals by 2015. It is a fact that the World Bank loans for the rural development of Africa considerably fell from 23% (US\$1 billion; 23 new projects) of the entire loan amount in 1990 to 10% (US\$224 million; 8 new projects) in 2000 and future improvement in this aspect is desirable.
- 2) The priority themes for the World Bank are 1) PRSP/HIPC, 2) credit for poverty reduction, including non-rural areas, 3) decentralization, 4) self-reliant development of villages, 5) HIV/AIDS programs, 6) agricultural research and extension, 7) natural resource management, 8) global environment, 9) education and health, 10) water management, 11) infrastructure, 12) land reform and 13) post-war disposition. Even though the general aspects of rural development are covered in a broad sense, the focus on food production is not very sharp.

(3) FAO's Comprehensive Africa Agriculture Development Programme (CAADP, May 2002) for NEPAD

CAADP requires investment of US\$240 billion (US\$17.2 billion/year) to achieve the following four targets in 14 years from 2002 to 2015. Under the current state of fund availability, however, the achievement of the Millennium Development Goals by 2015 is almost impossible.

- 1) Land and water development (US\$37 billion) and their management (US\$31 billion)
- 2) Increase of food production and reduction of hunger (US\$8 billion)
- 3) Development of infrastructure and marketing (roads, inputs, markets and storage) (US\$89 billion) and their management (US\$37 billion)
- 4) School meals for 100 million pupils (US\$38 billion)

9. Medium to Long-Term Viewpoint for Development of Rice Farming in West Africa

- (1) The analysis so far has made it clear that the significance of the recent development of the upland NERICA varieties lies with its opening the gate for the increase of food production in Africa. Thoughtless emphasis on the expansion of upland rice production will spread environmental destruction due to slash and burn farming practice, while a minor increase of rice production will not necessarily increase the income of farmers.

What is important is the formulation and pursuit of medium to long-term strategy to simultaneously achieve three objectives, i.e., “sustainable development”, “rectifying the gap between the rich and the poor”, as envisaged by the Johannesburg Summit, and “economic growth”. As already mentioned in 7-(2) above, food self-sufficiency cannot possibly be achieved without continual efforts over a long period of time. The examples of the United States, Japan, China and other Asian countries all suggest that 20-30 years are required to achieve such a goal. Even though Africa has the advantage of being a late starter in that it can rely on the experience of its forerunners for reference, it is essential for Africa to move towards actively adopting a long-term strategy for its successful achievement of the Millennium Development Goals by 2015.

- (2) Based on the past research achievements (development of NERICA varieties as upland rice), WARDA has already commenced the development of new NERICA varieties for rainfed and irrigated lowland rice farming. At the same time, the launch of the ARI Pilot Program (2002-2006) to prepare technical guidelines for the extension of these new varieties to farmers was also very appropriate. It is said that there is a plan to expand the initial budget of US\$15 million involving seven countries to US\$75.3 million with a view to increasing the number of countries involved in this pilot program. This reflects the natural development of the program. The present Study proposes that the five-year period is regarded as the medium-term plan period so that the technological as well as organizational foundations for the plan for increasing rice production can be established in this period. The nine-year period from 2007 to 2015 will then become the long-term plan period during which full-scale production supported by the development of infrastructure can be implemented.
- (3) While there are some successful small-scale irrigation projects using Asian rice varieties (see Section 4.2 in Chapter 4), NERICA has its strong points in terms of weed resistance and taste. These two types of rice can co-exist in West Africa.
- (4) The most important point is how to raise the necessary funds. As mentioned in 8-(3), FAO calculates that US\$240 billion will be required by 2015 for the first step to achieve NEPAD’s objectives. This translates to a huge annual spending of US\$17.2 billion, which is more than 15 times greater than the total agricultural budget of ODA in 1999 (US\$1.1 billion). Even if the 0.7% (of the GDP) target for ODA of the G8 is fulfilled, it will not be sufficient. What is now required is for African countries to adopt a medium to long-term viewpoint for fund raising in which they will independently secure their own budgets and stimulate private investment and trade to raise the necessary funds.

10. Japan’s Step-wise Cooperation Strategy for Rice Farming in West Africa

(1) From NEPAD to TICAD III

As NEPAD was the answer to the theme of homework on “African ownership” given by TICAD II, it is appropriate for the preparatory work under TICAD III to proceed with comments on and improvement of NEPAD. The biggest shortcoming of NEPAD (first version) issued in October 2001 was its inheritance of “thinking in the 20th Century” pointed out in Section 2.1. To be more precise, it still allowed an imbalance of distribution of 74% of ODA funding in 1999 to education, health, etc. and only 7% to agriculture, because of the “bias towards human development”. Even though NEPAD is

based on the TICAD II Tokyo Action Plan, there is too much imbalance within the framework of “rural development in a broader sense”. The NEPAD Action Program announced by the NEPAD Secretariat in July 2002 upgrades the ranking of agriculture from the fourth in the first version of NEPAD (① infrastructure, ② education, ③ health and ④ agriculture) to the top (① agriculture and markets, ② education and health, ③ infrastructure and ④ environment). The present Study proposes that at least about 20% of ODA should be allocated to these four priority sectors, respectively, in TICAD III.

- (2) Medium-term plan period for rice cultivation in West Africa (2002-2006): Technical and institutional foundations should be established through the implementation of the following items.
- 1) Establishment of a clear understanding of the diverse realities of rice cultivation in West African countries and the development of statistics for the formulation of a long-term plan
 - 2) Continuation of the WARDA-JIRCAS research cooperation project as Phase III (2003-) with special emphasis on NERICA varieties for rainfed and irrigated lowlands
 - 3) For upland NERICA, the introduction of measures to develop infrastructure at low costs and to minimize environmental destruction
 - 4) Entrusting of technical cooperation for fertilizer procurement (2003-2005) to IFDC (see Appendix 2)
 - 5) Dispatch of advisors to NARES in pilot countries to assist ARI
 - 6) Development of technical cooperation with closer links with WFP, SG2000, FAO, AICAF, etc.
 - 7) Increase of the flexibility of JICA’s cooperation by expanding the decision-making power of representative offices
 - 8) Expansion of technical cooperation by sending former JOCVs who have knowledge about and work experience in African agriculture
 - 9) Technical cooperation to improve the processing and marketing of agricultural products, particularly rice
- (3) A long-term plan for rural development in Africa (2007-2015) should include the development of infrastructure necessary for rural development (food security, environmental conservation and a reduced gap between the rich and the poor) in Central, East and Southern Africa, in addition to the 17 West African countries, to achieve the Millennium Goals by 2015. While the required amount of funding is expected to be huge because of the infrastructure development, the details should be determined depending on the degree of completion of the medium-term plan. Not only ODA equivalent to 0.7% of G8 donors’ GNP, but also global cooperation through funding by

the World Bank, IMF, AfDB, JBIC, EU, USAID, WTO, etc. and the mobilization of developing countries' savings, trade surpluses and private investments is essential. It is hoped that we will witness these goals' realization in 2012, the 10th year after WSSD.

List of Abbreviations and Acronyms¹

2KR	Grant Aid for the Increase of Food Production
AfDB	African Development Bank (Banque Africaine de Développement)
AICAF	Association for International Cooperation of Agriculture and Forestry
ANADER	National Rural Development Agency (Agence Nationale d'Appui au Développement Rural)
ARI	African Rice Initiative
BADEA	Arab Bank for Economic Development in Africa
Bnetd	Bureau National d'Etudes Techniques et Développement Rural
CBSS	Community Based Seed Production System
CFMAG	Agricultural Mechanization Training Center (Centre de Formation à la Mécanisation Agricole de Grand-Lau)
CGIAR	Consultative Group for International Agricultural Research
CIRT	Ivorian Center for Technological Research (Centre Ivoirien de Recherche Technologique)
CNRA	National Agricultural Research Center (Centre National de Recherche Agronomique)
EDF/FED	European Development Fund (Fond Européen de Développement)
EU	European Union (Union Européenne)
FAO	Food and Agriculture Organization
FCFA	CFA Franc (Franc Communauté Financière Africaine)
GTZ	German Technical Cooperative Agency (Gesellschaft für Technische Zusammenarbeit)
HIPC	Highly Indebted Poor Countries
IDEFOR	Forest Institute (Institut des Forêts)
IDESSA	Savannah Institute (Institut des Savanes)
IFAD	International Fund for Agricultural Development
IFDC	International Fertilizer Development Center
IITA	International Institute of Tropical Agriculture
IMF	International Monetary Fund
IPM	Integrated Pest Management Program
IRAG	Agricultural Research Institute (Institut de recherche agronomique de Guinée)
IRRI	International Rice Research Institute
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
JIRCAS	Japan International Research Center for Agricultural Sciences
JOCV	Japan Overseas Cooperation Volunteer
LPDA	Lettre de Politique de Développement Agricole (Letter of Agricultural Development Policy)
MAE	Ministère de l'Agriculture de l'Élevage (Ministry of Agriculture and Livestock)
MINAGRA	Ministry of Agriculture and Animal Resources (Ministère de l'Agriculture et des Ressources Animales)

NARES	National Agricultural Research and Extension System
NASP	National Agricultural Services Project
NEPAD	New Partnership for African Development
NERICA	New Rice for Africa
NGO	Non Governmental Organization
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OISCA	Organization for Industrial, Spiritual and Cultural Advancement-International
PASEA	Farming System Improvement Project for Small-Scale Irrigated Agriculture (Projet d'Amélioration des Systèmes d'Exploitation Agricole dans l'agriculture irriguée de petite taille)
PBF	Inland Valley Bottom Project (Projet Bas-Fonds)
PFE	Small River Intake System (Prise au Fil d'Eau)
PNASA	National Agricultural Services Project (Projet National d'Appui aux Services Agricoles)
PNR	National Rice Program (Projet National Riz)
PRC	Rice Project in the Central Region (Projet Riz Central)
PRSP	Poverty Reduction Strategic Paper
PVS	Participatory Varietal Selection
RYMV	Rice Yellow Mottle Virus
SAA	Sasakawa Africa Association
SG2000	Sasakawa Global 2000
SNPRV	National Rural Development and Agricultural Extension Service (Service National de la Promotion Rurale et de Vulgarisation)
SODERIZ	Rice Cultivation Development Corporation (Société de Développement de la Riziculture)
SPAAR	Special Program for African Agricultural Research
SPFS	Special Programme for Food Security
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
WFP/PAM	World Food Programme (Programme Alimentaire Mondial)
WARDA	West Africa Rice Development Association
WTO	World Trade Organization