

ANNEX I



WEST AFRICA RICE DEVELOPMENT ASSOCIATION

Association Pour le Developpement de la Riziculture en Afrique de L'Ouest

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PD-AA-354

(Intergovernmental Organization)

Cables: WARDA MONROVIA

ADRAO MONROVIA

Telephones : 21466-21963

E. J. Royo Memorial Building

P. O. Box 1019

Monrovia, Liberia

49P

January 23, 1976

MEMORANDUM OF UNDERSTANDING

Interested parties: West Africa Rice Development Association represented by Mr. Jacques Diouf, Executive Secretary, and Mr. Djibril Aw, Head of the Development Department, and the Food Research Institute, Stanford University, represented by Mr. Scott R. Pearson.

Subject: Agreement on a Collaborative Research Project to be undertaken jointly by the West Africa Rice Development Association and the Food Research Institute, Stanford University.

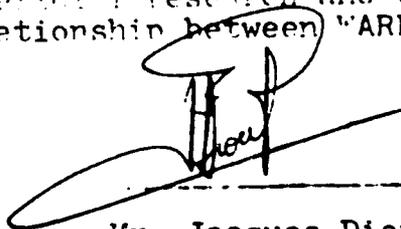
We, the undersigned, agree that, subject to the availability of adequate funding by the U.S. Agency for International Development, the West Africa Rice Development Association (WARDA) and the Food Research Institute, Stanford University will jointly undertake a program of collaborative research on selected economic aspects of rice in the thirteen member countries of WARDA (Benin, The Gambia, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta). The purpose of the joint project will be to complement the ongoing program of research at WARDA by taking advantage of WARDA's technical expertise on rice in West Africa and of the Institute's experience in carrying out economic analysis of issues relating to food.

At its meeting during December 1975, the Governing Council of WARDA passed a resolution calling for the Secretariat of WARDA to pursue research on the prospects for future intra-regional trade of rice in West Africa. The principal focus of the WARDA/Stanford program of research will therefore be on trade prospects between member countries. Essential elements of the research will include economic analyses of production, stressing especially the constraints on production under alternative techniques in different regions, of processing

and marketing, and of consumption. Efforts will be made to assess the comparative cost positions of the various countries and to describe analytically their policies affecting supply of and demand for rice. Detailed studies will be made of constraints that could limit the export potential of member countries, including lack of infrastructure, shortage of personnel, institutional limitations, government price, subsidy, and trade policies, and other factors influencing the costs of producing and exporting rice.

The results of the research will be reported in a series of papers to be jointly sponsored by WARDA and the Food Research Institute and to be made available in both English and French. It is anticipated that the program will involve the visit of Stanford personnel to West Africa and of WARDA personnel to Stanford as necessary to carry out the gathering of information and its interpretation. WARDA will not assume any financial responsibility for Stanford personnel, and Stanford will not assume any financial responsibility for the salaries of WARDA personnel. Stanford will pay for transportation and accommodation expenses incurred by WARDA personnel in carrying out parts of the research program in West Africa or at Stanford. The research contract, necessary for this research program to be implemented, will be between the U.S. Agency for International Development (AID) and the Food Research Institute, Stanford University. It is expected that this contract will be based on the unsolicited proposal submitted by the Food Research Institute to AID on October 24, 1975. The program of research is planned to begin no later than July 1976 and to produce an in-depth study of intra-regional trade of rice within West Africa by December 1977.

Both organizations are enthusiastic in their support of this research project. It is expected that this program will result in mutually beneficial research and will lead to a continuing working relationship between WARDA and Stanford.



Mr. Jacques Diouf
Executive Secretary
West Africa Rice Development Association



Mr. Scott R. Pearson
Associate Professor
Food Research Institute
Stanford University

PROPOSAL

to the

AGENCY FOR INTERNATIONAL DEVELOPMENT

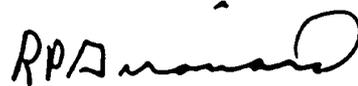
from the

FOOD RESEARCH INSTITUTE, STANFORD UNIVERSITY

"The Political Economy of Rice in West Africa"



**Scott R. Pearson,
Principal Investigator
Associate Professor
Food Research Institute**



**RAYMOND D. GIROUARD
Sponsored Projects Officer**

Proposed Period of Study: April 1, 1976 to September 30, 1978

Amount of Contract: \$602,927

Principal Investigators: Scott R. Pearson and Walter P. Falcon

Associate Investigator: J. Dirck Stryker

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Attached Papers by:	
C. Peter Timmer and Walter P. Falcon	
C. Peter Timmer	
Teresa Lacsina	
Scott R. Pearson and Gerald Nelson	
Robert Herdt and Teresa Lacsina	

Abstract

This proposal is an extension of work on the world rice economy currently underway at the Food Research Institute, Stanford University. The new research focuses on West Africa and is to be undertaken jointly with the West Africa Rice Development Association (WARDA). A major aim of the research is to analyze prospects for future intra-regional trade of rice in West Africa. For this purpose the comparative cost positions of WARDA member countries are to be ascertained, and their policies affecting supply of and demand for rice are to be described analytically. The research program includes micro-economic analyses of production, processing, marketing, and consumption of rice. Key personnel for the project are Scott R. Pearson, Walter P. Falcon, and J. Dirck Stryker; other likely senior personnel are Charles Humphreys, Bruce F. Johnston, William O. Jones, Leon Mears, John M. Page, Jr., Dunstan Spencer, and C. Peter Timmer. The proposed dates for the project are April 1, 1976 through September 30, 1978, and the proposed cost is \$602,927.

Review of the Current Project

"The Political Economy of Rice" project began in July 1973 and terminated at the end of calendar 1975. The original work called for a total expenditure of \$262,160 and was funded by two regional and two central bureaus of AID.

The main activity of the project has been the development of a network of scholars to carry out economic research on rice in Asia. As a consequence of a collaborative effort between Asian and Stanford-based researchers, substantial progress has been made in analyzing the rice economies of eight countries--Indonesia, Japan, Malaysia, Philippines, South Korea, Taiwan, Thailand, and the United States. Initially the research was focused on the generation and compilation of data needed for national decision making and on the analysis of rice policy in the respective countries. These country studies in turn have produced the information necessary for comparative studies. (A full listing of the working papers produced under project auspices is presented in Appendix A, Table 2.) Three separate volumes and numerous essays to be published separately make up the research output of the project.

We believe that there is strong logic for an extension of the rice project to West Africa. The West Africa Rice Development Association (WARDA), an inter-governmental organization of thirteen West African countries, desires to collaborate with the Food Research Institute in a program of economic research on rice and is therefore an enthusiastic supporter of this proposal. (A Memorandum of Understanding between WARDA and the Institute is attached as Appendix B.) In addition, AID and other donors have a growing interest in rice investments and hence in rice policy in West Africa. Moreover, for more than two decades, the Institute has been actively involved in research

on African agriculture and on related development issues in both Anglophone and Francophone countries. Hence, an in-depth economic analysis of rice in West Africa seems timely, and in light of the Institute's experience with both rice and Africa, an extension of AID's research support to the Institute seems warranted.

Research Design

Our proposed design of the African extension is similar to that of its Asian predecessor, but regional differences necessitate some important changes of emphasis. Most significantly, the Food Research Institute proposes to undertake a program of collaborative research with WARDA. At its meeting during December 1975, the Governing Council of WARDA passed a resolution calling for the Secretariat of WARDA to pursue research on the prospects for future intra-regional trade of rice in West Africa. The principal focus of the WARDA/Stanford program of research will therefore be on trade prospects between member countries. Moreover, in West Africa the existing data on the microeconomics of the production, processing, distribution, and consumption of rice is meager, and the number of West African economists who specialize in analysis of issues concerning rice is limited. Consequently, relative to the Asian project, the African study will involve considerably more collection of original microeconomic data and field collaboration between American and local researchers. Finally, because of the high degree of government and donor interest in prospective rice projects in West Africa, the research results from the new project will be oriented and timed to assist evaluation of alternative investment opportunities affecting rice. For this purpose, we plan to coordinate our research with other research projects in West Africa

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sponsored by AID, including studies of livestock, millet and sorghum, and irrigated farming.

The similarities in research design between the Asian and West African studies are, however, much greater than the differences. As in the Asian project, four kinds of papers are planned for the study of rice in West Africa. The first set of papers will be descriptive analyses of government policies influencing rice. These policy studies will be carried out within the objectives/policies/constraints format used in the Asian project and formulated in the attached paper by Timmer and Falcon. Particular attention will be paid to the kinds and extent of subsidies or taxes affecting rice production in comparison with those influencing the production of alternative food and cash crops. The attached policy paper on Indonesia by Timmer is a prototype for the studies in this category.

The second group of studies will involve a consistent compilation by country of existing data on the production, local distribution, consumption, and international trade of rice. The major purposes of these papers will be to identify important gaps in the available data base and to make specific suggestions for filling these lacunae. The attached paper on the Philippines by Lacsina provides an indication of what this set of papers entails.

A major share of the results of the research program will be reported in a series of analytical papers, also prepared on a country-by-country basis. This third set of papers will deal with microeconomic analysis of rice production, milling, marketing, and consumption. With respect to the supply of rice, analyses of the private and social profitability of existing producing areas, of alternative techniques of production, and of prospective projects will be carried out using various methodologies. One especially

useful approach, the domestic resource costs of foreign exchange (DRC), is described in the attached methodological paper by Pearson and Gerald Nelson and is applied in the attached paper on the Philippines by Robert Herdt and Teresa Lacsina. Several other studies of comparative advantage of producing rice are underway in the Asian project under the direction of Pearson, and Stryker is currently using this technique in a World Bank-sponsored study of agriculture in four West African countries. In these studies and in the proposed new research, it is necessary to estimate the social profitability of alternative crops in order to measure the social opportunity cost of land used in rice production. As a result, both the policy papers and the analytical papers on production and consumption will contain comparative discussions of rice and alternative commodities.

The fourth set of papers will consist of two comparative studies.

The first study will have a West African focus and will contrast rice policy, rice consumption, and recent and possible future trade patterns among the member countries of WARDA. As noted above, this study is the focal point of WARDA's interest in the project. The second study will examine West African rice in an international perspective, incorporating results from the Asian project. Attention will be centered on comparative government policies, relative economic efficiency in production, milling, and marketing, comparisons of consumption behavior, and international comparative advantage and trade prospects. The results of this second comparative study should further improve understanding of the international political economy of rice.

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Country Coverage

In our Memorandum of Understanding with WARDA (see Appendix B), we agreed to include all of WARDA's thirteen member countries in the proposed research project. Accordingly, we plan to analyze the prospects for future intra-regional trade of rice for all WARDA countries. In view of limited resources and time available for research, we naturally cannot undertake detailed micro-economic analyses of all aspects of the rice economy--production, milling, marketing, and consumption--in all member countries. One prototype study of the entire rice sub-sector, integrating survey research in all four of these economic areas, is planned for Ghana; on the basis of discussions involving the AID Mission to Ghana, Ghanaian Government officials, WARDA, and the Food Research Institute, it is anticipated that the Ghanaian study will be funded separately.

In the other countries, original survey research will be carried out on selected topic areas which will be chosen according to the degree of policy importance and the availability of existing information. We plan to have research personnel doing survey work in the following countries (in addition to Ghana): Senegal/Mauritania; Mali; Liberia; Ivory Coast; Sierra Leone/The Gambia; and Upper Volta/Niger. While we will not attempt to generate new data in Nigeria, Togo, and Benin, we will assemble existing information on these countries and incorporate it in our comparative study of intra-regional trade prospects. Given the importance and complexity of the rice economy in Nigeria, we hope that this country alone might be the subject of a companion study in the near future.

Responsibilities of Personnel

The three authors of this proposal will take primary responsibility for authorship or direct supervision of all research papers. Pearson and Stryker propose to devote seventeen man-months each to the project, and Falcon at least six months. Pearson will have direct responsibility for all of the research in the Anglophone countries and for the West African comparative studies, and he will contribute to the international comparative work. Stryker will be responsible for the country studies in the Francophone countries, and he will participate in both the West African and comparative studies, spending the 1977/78 academic year at Stanford. Pearson and Stryker will therefore organize and supervise all field research, analysis, and writing of papers. Falcon will have overall administrative responsibility, and he will be the principal author of the international comparative analysis.

In addition to the principal investigators, we plan to have six others U.S.-based researchers working in West Africa for at least one year each. Two of these people will be experienced field researchers holding Ph.D.s in economics or agricultural economics. One will work in Monrovia, carrying out research on Liberia and providing liaison with WARDA and assistance to researchers in the Anglophone countries, and the other will work in Abidjan, undertaking field work in the Ivory Coast and providing liaison with the AID and the IBRD regional offices there and assistance to field workers in the Francophone countries. We hope that Dunstan Spencer and Charles Humphreys will fill these two positions; Spencer will, in any event, be available to provide analysis of the Sierra Leonean rice economy. Four doctoral candidates and/or experienced field researchers will work in the countries (or pairs of

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countries) listed in the previous section. All six U.S.-based researchers plus the three principal investigators will spend several months at Stanford together to analyze information and write up results. Moreover, we plan to invite African students who wish to carry out field work for their masters or doctoral theses to affiliate with the project; it is anticipated that the Ford Foundation will provide financial support for the African students' post-graduate field work.

The number and level of participation of other Stanford-based researchers will depend upon specific requirements of the project. Jones is expected to participate in the planning and analysis of the marketing studies, and Page is likely to join the project during 1977/78 to assist with the design of the analytical work and with computer programming. In addition, we hope to be able to involve Mears in the project to provide guidance on the analysis of both production and milling, and we further hope to use other members of the Asian project, especially Timmer, and other members of the Institute faculty, notably Johnston, as occasional collaborators.

As in the Asian project, an integral feature of the proposed study will be the establishment of a research network, including collaborators from the West African countries in the study. The Secretariat of WARDA will participate directly in the project; in addition, WARDA's joint sponsorship of the research is expected to facilitate the establishment of working relationships with organizations in member countries. Because circumstances differ greatly among these countries, we anticipate establishing a variety of collaborative arrangements, ranging from providing honoraria to local economists, who would contribute research papers, to attaching doctoral

candidates to local universities, research institutes, or government agencies. We plan to involve the local collaborators to the greatest feasible extent in the preparation of all country studies, including the policy, data, and analytical papers. In nearly every instance we envisage joint authorship of country studies, involving one or more Stanford-based economists and one or more local collaborators. A central feature of the research network will be close collaboration with social and natural scientists in the international research organizations, which in addition to WARDA include the International Institute of Tropical Agriculture (IITA) and the International Rice Research Institute (IRRI).

Timing of Results

We propose to begin the project on April 1, 1976 and complete it by September 30, 1978. Following initial planning activity in the spring of 1976, Pearson, Stryker, and the two senior researchers will visit WARDA and the individual countries to establish the research network, review existing information, and chart the survey research. Field researchers will arrive in West Africa during the summer or early fall. During the first eighteen months of the study, we plan to complete the policy and data papers for all countries and to finish the gathering of detailed information in the field. In the fall of 1977, Pearson and Stryker will draw on summary statistics of the field research and complete an analysis of prospects for intra-African trade of rice prior to the December 1977 annual meeting of WARDA. While it is expected that the broad conclusions of this analysis will remain unchanged, underlying micro-economic details will be analyzed in considerable depth

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during the final year of the project. As results from the computer analyses become available, the analytical country studies will be completed, the policy studies will be revised, and the final comparative papers will be written. We plan to finish all papers by September 1978 and to make the principal results available in English and French.

Proposed Budget

The proposed budget for the project, totalling \$602,927 is presented in Table 1. Total amounts requested are \$132,296 in Fiscal Year 1976, \$249,174 in Fiscal Year 1977, and \$221,457 in Fiscal Year 1978. Approximately 16 man-years of research are incorporated in the budget.

Table 1

Budget

(figures expressed in constant 1976 dollars)

	<u>FY 1976</u> <u>(4/1/76-</u> <u>9/30/76)</u>	<u>FY 1977</u> <u>(10/1/76-</u> <u>9/30/77)</u>	<u>FY 1978</u> <u>(10/1/77-</u> <u>9/30/78)</u>	<u>Totals</u> <u>(4/1/76-</u> <u>9/30/78)</u>
1. <u>Salaries</u>	<u>37,000</u>	<u>62,000</u>	<u>84,000</u>	<u>183,000</u>
a. Principal and Associate Investigators (40 mo.) (Pearson, 17 mo.; Falcon, 6 mo.; Stryker, 17 mo.)	22,000	32,000	54,000	108,000
b. Senior Research Personnel (24 mo.)	10,000	20,000	20,000	50,000
c. Research, Translating, and Secretarial Assistance (36 mo.)	5,000	10,000	10,000	25,000
2. <u>Staff Benefits</u> (16.0% in FY 1976; 18.8% in FY 1977; 20.0% in FY 1978)	<u>6,031</u>	<u>11,718</u>	<u>16,859</u>	<u>34,608</u>
3. <u>Travel and Subsistence</u>	<u>21,000</u>	<u>12,000</u>	<u>12,000</u>	<u>45,000</u>
a. U.S. (10 round trips, Stanford - Washington)	1,000	2,000	2,000	5,000
b. International (16 round trips Stanford - West Africa)	20,000	10,000	10,000	40,000
4. <u>Expendable Materials, including Computer, Copying, and Printing Expenses</u>	<u>2,000</u>	<u>5,000</u>	<u>18,000</u>	<u>25,000</u>
5. <u>Expenditures in Africa</u> including field research and surveys (72 man-months and 6 survey teams)	<u>20,000</u>	<u>72,000</u>	<u>10,000</u>	<u>102,000</u>
6. <u>Indirect Costs</u>				
a. On-campus (Items 1,2,3,4; 56% through 8-31-76; 58% thereafter)	<u>37,198</u>	<u>52,616</u>	<u>75,898</u>	<u>165,712</u>
b. Off-campus (Item 5; 45% through 8-31-76; 47% thereafter)	<u>9,067</u>	<u>33,840</u>	<u>4,700</u>	<u>47,607</u>
<u>Grand Totals</u>	<u>132,296</u>	<u>249,174</u>	<u>221,457</u>	<u>602,927</u>

Appendix A

**Table 2.--Working Papers Prepared Under the Auspices
of the Political Economy of Rice Project**

Stanford

1. C. Peter Timmer and Walter P. Falcon, "The Political Economy of Rice Production and Trade in Asia," July 1973 (to appear in L.G. Reynolds (ed.), Agriculture in Development Theory, Yale University Press, 1975).
- *2. C. Peter Timmer, "Objectives and Constraints in the Formation of Indonesian Rice Policy," September 1973.
3. C. Peter Timmer and Walter P. Falcon, "The Impact of Price on Rice in Asia," September 1973 (to appear in G.S. Tolley (ed.), Agriculture, Trade, and Development, Balinger Books, 1975).
4. Richard H. Goldman, "Seasonal Production Instability and Price Formation in Indonesian Rice Markets, 1951-1970," Food Research Institute Studies, Vol. XIII, No. 2, 1974.
5. C. Peter Timmer, "The Demand for Fertilizer in Developing Countries," Food Research Institute Studies, Vol. XIII, No. 3, 1974.
6. C. Peter Timmer, "A Model of Rice Marketing Margins in Indonesia," Food Research Institute Studies, Vol. XIII, No. 2, 1974.
7. Christina C. David, "A Model of Fertilizer Demand of Asian Rice Farms: Some Micro-Macro Comparisons," revised September 1975 (mimeo).
8. Scott R. Pearson and Gerald C. Nelson, "The Measurement of Comparative Advantage in Rice Production," June 1974 (mimeo).
9. C. Peter Timmer, "Choice of Technique in Rice Milling in Java," Bulletin of Indonesian Economic Studies, July 1973 and "Reply," March 1974.
10. Dennis L. Chinn, "The Black Market and the Welfare Aspects of Japanese Rice Policy, 1950-60," February 1975 (mimeo).
11. Dennis L. Chinn, "Effects of Agricultural Price Policy on Output, Marketed Surplus, and the Distribution of Farm Household Income in Taiwan: 1960-72," May 1975 (mimeo).
- *12. Leon A. Mears, "The Political Economy of Rice in the United States," Food Research Institute Studies, Vol. XV, No. 1, 1976.
13. Peter G. Warr, "Shadow Pricing and Choice of Technique in Indonesian Rice Milling," December 1974.
14. Christina C. David, "A Comparison of Rural and Urban Consumption Patterns in the Philippines," March 1974, preliminary draft.

15. Gordon O. Nelson, "The Demand for Wheat and Rice in Japan," March 1975, preliminary draft.
16. S. M. Fuard Marikar, "Rice and Wheat Flour Consumption in Sri Lanka," March 1975, preliminary draft.
17. Walter P. Falcon and C. Peter Timmer, "Food: War on Hunger or New Cold War," Stanford Magazine, Fall/Winter 1974.
18. C. Peter Timmer, "Food Policy in China," Division of Nutritional Sciences Cornell University, Ithaca, NY, November 1975 (mimeo).

South Korea

- *1. Pal Yong Moon, "The Evolution of Rice Policy in Korea," June 1974.
2. Pal Yong Moon and Byong Seo Yoo, "A Review of the Crop Production Estimates and Key Statistics Relating to Grain Policy (Korea)," June 1974.

Thailand

1. Jittima Pookkachatikul and Delane E. Welsch, "Thai Rice Premium Data, 1954-1973," January 1974.
2. Yuavares Gaesuvan, Ammar Siamwalla, and Delane E. Welsch, "Thai Rice Production and Consumption Data, 1947-1970," June 1974.
3. Jittima Pookkachatikul, Sopin Tongpan, and Delane E. Welsch, "Thai Rice Price Data," June 1974.
4. Narongchai Akrasanee and Atchana Wattananukit, "A Domestic Resource Cost Study of Rice Production in Thailand, 1973-74," mimeo, October 1975.
- *5. Ammar Siamwalla, "A History of Rice Price Policies in Thailand," January 1975.
6. Sri-On Somboonsup, "The Pattern of Thai Rice Exports, 1955-72," unpublished M.A. thesis, Kasetsart University, 1975.

Malaysia

- *1. Richard H. Goldman, "Staple Food Self-Sufficiency and the Distributive Impact of Malaysian Rice Policy," revised June 1975, mimeo.
2. Mokhtar B. Tamin, "The Estimation of Factor Demand Functions for Rice Production in Malaysia," March 1975, preliminary draft.

Japan

- *1. Yujiro Hayami, "Japan's Rice Policy in Historical Perspective," January 1975.
2. Masao Kikuchi, Keizo Mochida, and Yujiro Hayami, "Rice Statistics of Japan," January 1975.

Philippines

1. Teresa Anden Lacsina, Data Series on Rice Statistics: Philippines, The International Rice Research Institute, June 1974.
- *2. Mahar Mangahas, "The Political Economy of Rice in the New Society," July 1974.
3. Cristina C. David, "Fertilizer Demand Among Asian Rice Farmers: A Micro-Macro Analysis," draft, May 1975, forthcoming Ph.D. dissertation, Stanford University.
4. Robert Herdt and Thomas Wickam, "Exploring the Gap Between Potential and Actual Rice Yield in the Philippines," forthcoming, Food Research Institute Studies, Volume XIV.
5. Robert W. Herdt and Teresa A. Lacsina, "The Domestic Resource Cost of Increasing Philippine Rice Production," June 1975, mimeo.

Taiwan

- *1. Hsin-yiu Chen, Wen-fu Hsu, and Yu-kang Mao, "Rice Policies of Taiwan," June 1974.
2. Hsin-yiu Chen, Wen-fu Hsu, and Yu-kang Mao, "Annex Statistical Tables for Rice Policies of Taiwan," June 1974.
3. Carson Kung-hsien Wu and Yu-kang Mao, "Studies of Interregional Comparative Advantage of Rice Production in Taiwan, China," June 1975, mimeo.

Indonesia

1. C. Peter Timmer, "The Political Economy of Rice in Asia: Indonesia," September 1975, mimeo.

* To appear jointly in a special issue of Food Research Institute Studies in 1975.



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Association Pour le Developpement de la Riziculture en Afrique de L'Ouest

(Intergovernmental Organization)

Cables: WARDA MONROVIA

ADRAO MONROVIA

Telephone: 21466-21963

E. J. Roye Memorial Building

P. O. Box 1019

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January 23, 1976

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We, the undersigned, agree that, subject to the availability of adequate funding by the U.S. Agency for International Development, the West Africa Rice Development Association (WARDA) and the Food Research Institute, Stanford University will jointly undertake a program of collaborative research on selected economic aspects of rice in the thirteen member countries of WARDA (Benin, The Gambia, Ghana, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Upper Volta). The purpose of the joint project will be to complement the ongoing program of research at WARDA by taking advantage of WARDA's technical expertise on rice in West Africa and of the Institute's experience in carrying out economic analysis of issues relating to food.

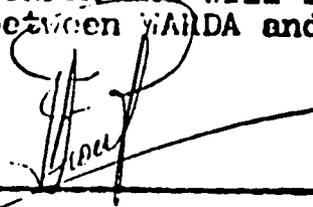
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The results of the research will be reported in a series of papers to be jointly sponsored by WARDA and the Food Research Institute and to be made available in both English and French. It is anticipated that the program will involve the visit of Stanford personnel to West Africa and of WARDA personnel to Stanford as necessary to carry out the gathering of information and its interpretation. WARDA will not assume any financial responsibility for Stanford personnel, and Stanford will not assume any financial responsibility for the salaries of WARDA personnel. Stanford will pay for transportation and accommodation expenses incurred by WARDA personnel in carrying out parts of the research program in West Africa or at Stanford. The research contract, necessary for this research program to be implemented, will be between the U.S. Agency for International Development (AID) and the Food Research Institute, Stanford University. It is expected that this contract will be based on the unsolicited proposal submitted by the Food Research Institute to AID on October 24, 1975. The program of research is planned to begin no later than July 1976 and to produce an in-depth study of intra-regional trade of rice within West Africa by December 1977.

Both organizations are enthusiastic in their support of this research project. It is expected that this program will result in mutually beneficial research and will lead to a continuing working relationship between WARDA and Stanford.

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Mr. Jacques Diouf
Executive Secretary
West Africa Rice Development Association



Mr. Scott R. Pearson
Associate Professor
Food Research Institute
Stanford University

An Integrated Analysis of Rice Production, Processing, Marketing,
and Consumption in Ghana

Scott R. Pearson and John M. Page, Jr.

Issues and Objectives

The production, processing, marketing, and consumption of rice in Ghana have expanded rapidly during the past decade. In this proposed study we plan to carry out an integrated analysis of that expansion, stressing the technical and economic efficiency of increased production, milling, and marketing of rice, the equity of that growth, as reflected in the distribution of rice income and the expansion of employment opportunities related to rice, and the prospects for self-sufficiency in rice under alternative price levels and consumption patterns. The objectives of the study are to review existing studies and data sources on rice in Ghana, to generate original data on rice production, milling, marketing, and consumption, and to analyze existing and new data for the purpose of shedding light on several important policy issues. In view of the rapidly changing conditions affecting rice in Ghana, a major portion of the proposed research is concerned with a necessary precondition to policy analysis, the detailed collection of consistent data through field surveys: This study is complementary to the regional analysis of rice in West Africa which is being planned by the West Africa Rice Development Association (WARDA) and the Food Research Institute, Stanford University.

The rapid expansion of rice has been accompanied by a growing policy debate focusing on the social profitability of producing, milling, and marketing rice. Some contend that most Ghanaian rice is produced inefficiently and that Ghana and especially its consumers of rice would therefore be better off if Ghana continued to import much of its rice supplies. Others argue that import substitution for rice is a sound policy but that existing

techniques of production, which are believed to result in an undesirable distribution of income and in too little employment, should be altered to provide greater equity. Still others claim that considerations of efficiency and equity are less important than saving or earning foreign exchange and that rice production should be promoted, by government subsidies if need be, to reduce imports and to generate export earnings. In light of these divergent points of view, rice policy has become one of the most controversial topics now facing government decision makers in Ghana.

We plan to investigate these principal issues and several underlying topics affecting policies for Ghanaian rice production and consumption. With respect to supply, several well defined techniques, varying in yield, capital intensity, and foreign exchange content, exist for the production, processing, and marketing of rice in Ghana. A substantial body of literature has grown up in recent years concerning the evaluation of investment alternatives in developing countries. We plan to use these analytical tools in conjunction with existing and our newly generated data from farm management and engineering studies of rice production and milling to assess the efficiency of present and potential methods of rice farming, processing, and distribution. The results should provide both a comprehensive picture of Ghana's regional comparative advantage in rice production and a relative ranking of the efficiency of alternative production techniques. If certain processes are revealed to be inefficient or relatively less efficient than others, attention will be directed toward identifying the sources of inefficiency. Possible sources of inefficiency include ecological constraints, lack of availability of purchased inputs, access to credit, managerial competence, size of landholdings or of plant, access to markets, and inappropriate pricing policies for inputs and outputs.

The employment and income distributional characteristics of alternative methods of rice production will also be considered in detail. Techniques of rice farming which are land extensive and capital intensive would, if adopted, have a major impact on rural employment and income distribution in Ghana. By examining in detail the distribution of benefits from alternative investments, we will assess the welfare implications of an expansion in rice production or of a shift in techniques. The employment and distributional implications of alternative rice milling technologies and marketing structures will also be studied. Where tradeoffs exist between economic efficiency and equity, the consequences of promoting investments based on either criterion will be examined in detail.

Throughout the study, particular attention will be focused on the economic costs and benefits of government incentives to the rice industry. The effects of subsidies on inputs and final output in promoting efficient production will be considered. We will also attempt to identify areas in which government policies or incentives have biased the choice of techniques away from those consistent with comparative advantage, and we will suggest revisions to incentives to promote greater efficiency and/or improved rural employment and income distribution.

With respect to the demand for Ghanaian rice, we plan to carry out two related studies. The first will be an analysis of price and income elasticities for rice of urban and rural consumers in Ghana. In spite of the fact that government policies have often caused domestic consumer prices for rice to exceed comparable prices in the world market, the consumption of rice in Ghana has grown importantly. To the extent that self-sufficiency

in rice is a policy goal, it is of considerable interest to analyze the likely growth of rice consumption under differing assumptions concerning prices of rice relative to prices of other food crops and expansion of income and population. The second demand study will involve an investigation of the prospects for exporting Ghanaian rice, especially within West Africa. The analysis of regional demand will draw on results of the proposed WARDA/Stanford study of prospects for intra-West African trade of rice.

In brief, we intend to present a critique of existing policies, to suggest specific policy changes, and to identify critical areas for further government investment. The results of the study should therefore provide useful information to assist government policy making with respect to first, the pricing of inputs, especially fertilizer, and the pricing of milled rice, and second, public investment in the production and processing of rice. In addition, the results on rice marketing from this study will be complementary to a separate study of the marketing of staple food crops, which is being planned by the Department of Economic Research and Planning Services of the Ministry of Agriculture. Finally, the integrated analysis of the rice sub-sector will provide a prototype for other commodity studies in Ghana and elsewhere.

Research Design

The principal components of the research design are the techniques of analysis, or methodology, to be used in the study and the methods to be employed in the collection of data, especially the sample design. As indicated above, we plan to use a variety of analytical techniques, including econometric and programming analysis as appropriate, to measure

economic efficiency, distributive equity, and consumption behavior.

Methodologies which we have successfully used in previous research on production in Ghana include the domestic resource cost of earning or saving foreign exchange (DRC), described in an appended paper by Pearson and Gerald Nelson, and an amalgam of DRC and Little-Mirrlees methods used by Page in his dissertation on the forest products industry. Specific methodologies will be selected to accord with the policy issues being examined.

The system of data collection is designed to provide flexibility in selecting methodologies. Four surveys are planned, one each in production and rural consumption, milling, marketing, and urban consumption. For the production and rural consumption survey we distinguish three separate ecological zones in which rice is produced--the Northern Region, the Upper Region, and the coastal plain, and we stratify according to size and ownership. In the coastal plain, most rice farms are small-scale and owner-operated; hence, only one sampling category is established for that zone. In the two major rice-growing zones, the Northern and Upper Regions, we distinguish three size categories--small, medium, and large--and two ownership categories--owner-operated and tenant-operated. As a result, we have six sampling categories. We will undertake a post-stratification analysis of alternative techniques of production. An example of the kinds of production information which we will be seeking is provided in the appended format prepared by Robert Herdt of the International Rice Research Institute. In addition, we will obtain information on consumption behavior of the sampled farmers to allow study of the rural demand for rice.

The collection of data on rice processing will involve a census of both large and small mills. For analytical purposes the data on individual mills will be grouped according to ecological zone, size, ownership, and technology. We plan carry out this survey without the assistance of enumerators to ensure comparability of results. The survey research on rice marketing will be patterned after the design developed by William O. Jones for the Food Research Institute's study of the marketing of staple food crops in selected African countries. A condensed version of this research design is appended. Finally, we will carry out a limited household expenditure survey in urban areas to determine rice consumption behavior. The design for this survey will follow a straightforward pattern for analyses of food consumption.

Work Plan

The marketing study is scheduled to begin first because of immediate government interest in the results. Pearson, Page, and Roy Southworth plan to launch the project in mid-March 1976 by visiting Ghana to establish research liaison with the Department of Economic Research and Planning Services and to interview AID and Ghana Government officials and rice farmers, millers, and merchants. In addition, all three researchers will review existing data available only in Ghana, test and alter survey questionnaires, and map interviewing strategy. Southworth will then undertake the marketing survey during the six months between mid-March and mid-September. Eric Monke, like Southworth, a doctoral candidate at the Food Research Institute, will join the project in Ghana in mid-September. Pearson will return to Ghana for a month

in September and October to assist in wrapping up the marketing survey, to plan analysis of the marketing data, and to assist planning for the production, milling, and urban consumption surveys. Monke will carry out the milling survey and supervise the urban consumption survey between September 1976 and September 1977.

Planning for the production survey will begin in March 1976, and supervisory and enumerating personnel will be selected during the summer. All aspects of the production survey will be done in close coordination with the Department of Economic Research and Planning Services. Training of these personnel will occur in September and be administered jointly by the department and Southworth. The field research will begin in late September, again under collaborative supervision. The survey work will last one year, ending in September 1977. Pearson and Page will spend the month of September 1977 in Ghana to help complete the collection of production, milling, and consumption data and to assist Southworth and Monke in finishing the field work for the study. All four researchers will analyze the data at Stanford between October 1977 and May 1978 and prepare a final paper integrating the analysis for the entire rice sub-sector. If government officials request a follow-up visit to Ghana, any or all of the four researchers would be available for such a trip during late May or June 1978. The number of man-months planned for work in Ghana and at Stanford by each of the researchers can be summarized as follows:

<u>Researcher</u>	<u>Man-Months</u>		<u>Total</u>
	<u>in Ghana</u>	<u>at Stanford</u>	
Pearson	3	7	10
Page	2	10	12
Southworth	18.5	8	26.5
Monke	12.5	8	20.5

Budget for "An Integrated Analysis of Rice Production, Processing,
Marketing, and Consumption in Ghana"

(figures expressed in constant 1976 dollars)

	<u>FY 1976</u> <u>(3/1/76-</u> <u>9/30/76)</u>	<u>FY 1977</u> <u>(10/1/76-</u> <u>9/30/77)</u>	<u>FY 1978</u> <u>(10/1/77-</u> <u>5/31/78)</u>	<u>Totals</u> <u>(3/1/76-</u> <u>5/31/78)</u>
1. <u>Salaries, including OASI</u>				
a. Principal Investigators (Pearson, 10 mo.; Page, 12 mo.)	18,000	17,000	17,500	52,500
b. Research and Secretarial Assistance (5 mo.)	1,000	1,000	1,000	3,000
2. <u>International Travel and Subsistence</u> <u>In Ghana (8 round trips, Stanford-</u> <u>Ghana; 36 mo. in Ghana)</u>	22,100	42,400	--	64,500
3. <u>Expendable Materials including Computer</u> <u>and Copying Expenses</u>	500	500	4,000	5,000
4. <u>Survey Research Expenditures in Ghana</u>	12,000	18,000	--	30,000
<u>Grand Totals</u>	<u>53,600</u>	<u>78,900</u>	<u>22,500</u>	<u>155,000</u>

CURRICULUM VITAE

Walter Phillip Falcon

[REDACTED]
Graduated from Springville, Iowa High School in June 1954.
Married in June 1956, to Laura Hann Falcon.
[REDACTED]

University Information

Entered Iowa State University (Ames) in September 1954.
Graduated in June 1958, with B.S. in Agricultural Economics.

Entered Harvard University in September 1958.
Completed work in the fields of Economic Theory, Statistics, Economic
Development, Economics of Agriculture, Economic History, and
International Economics.

Ph.D. Thesis: "Farmer Response to Price in an Underdeveloped Area:
The Case of West Pakistan," Completed in July 1962.

Honors and Activities

Phi Eta Sigma, Phi Kappa Phi, Alpha Zeta, Cardinal Key,
Omicron Chi Epsilon.

Danforth Fellow, 1958-62
Fulbright Scholar, Pakistan, 1961-62

American Agricultural Economics Association, "Best Article
Award" for essay on the Green Revolution, 1971.

Trustee, Agricultural Development Council, 1971-Present.

Member, Advisory Board, Economics Institute, University of Colorado

Professional History

1955-1958 Part-time Research Assistant for Professor R. R. Beneke
Department of Economics, Iowa State University

Summers, 1955 & 1956 Research Assistant, Farmers' Grain Dealers Association,
1101 Walnut Street, Des Moines, Iowa

Summer 1959 Statistician, Harvard Economic Research Service

1959-1961 Programmer, Statistical Laboratory, Harvard University

1962-1963 Instructor, Department of Economics, Harvard University

1962-1963 Consultant, White House - Interior Panel on Pakistan

1963-1967 Consultant, Agency for International Development

1964-1965 General Economic and Agricultural Economic Advisor,
Pakistan Planning Commission (Harvard University Development
Advisory Service)

1963-1966 Assistant Professor, Department of Economics, Harvard University

1967 Consultant, Agricultural Economics, Economic Planning Unit,
Government of Malaysia

1968-1972 Consultant, Agricultural Economics, BAPPENAS, Government of
Indonesia

1963-1972 Associate Editor, Quarterly Journal of Economics

1968-1972 Editorial Council, American Journal of Agricultural Economics

1965-1972 Research Associate, Harvard Center for International Affairs

1966-1972 Lecturer and Development Advisor, Harvard University

1966-1970 Director of Research, Development Advisory Service,
Harvard University

1970-1972 Deputy Director, Development Advisory Service, Harvard University

1970-Present Consultant, International Bank for Reconstruction and
Development

1972-Present Professor, Department of Economics, Stanford University

1972-Present Director, Food Research Institute, Stanford University

1973-Present Consultant, The Ford Foundation

Publications

- "Reliability of Punjab Agricultural Data," Statistical Papers, Institute
of Development Economics, Karachi, 1962.
- "Some Comments on the Real Effects of Foreign Surplus Disposal in Underdeveloped
Economies," Quarterly Journal of Economics, May 1963.
- "Farmer Response to Price in a Subsistence Economy: The Case of West Pakistan,"
American Economic Review, 54:580-594, May 1964.
- "Agriculture in West Pakistan: Past Progress and Future Prospects," Pakistan
Planning Commission, December 1964 (with Carl H. Gotsch).

- "The Role of Agricultural Diversification in the Development of West Pakistan," and "Prospects in Sind," contributions to the White House - Interior Panel Report (the "Revelle Report") on Land and Water Development in the Indus Plain, January 1964.
- "Recent Growth of the Livestock Sector of West Pakistan," Pakistan Planning Commission, May 1965 (with Carl H. Gotsch).
- "Land and Water Development in West Pakistan: A Summary of the Current Controversy," Pakistan Planning Commission, October 1964 (with Carl H. Gotsch).
- "An Analysis of East Pakistan Agriculture During the Second and Third Plan Period," Pakistan Planning Commission, March 1965 (with Carl H. Gotsch).
- "A Strategy for Increased Agricultural Growth During the Third Plan Periods," Pakistan Planning Commission, October 1964 (with Carl H. Gotsch).
- "Growth of Livestock Products in East Pakistan During the Second Plan Period," Pakistan Planning Commission, May 1965 (with Carl H. Gotsch).
- "Consistency of U.S. Policy Towards P.L. 480, With Special Reference to Pakistan," Pakistan Planning Commission, March 1965.
- Review of E. O. Heady and L. G. Tweeten, Resource Demand and Structure of the Agricultural Industry, American Economic Review, December 1964.
- "Lessons in Agricultural Development - Pakistan," in Gustav F. Papanek (ed.), Development Policy - Theory and Practice, Cambridge, Mass.: Harvard University Press, 1968, pp. 269-315 (with Carl H. Gotsch).
- "Relative Price Response, Economic Efficiency and Technological Change: A Study of Punjab Agriculture," in Walter P. Falcon and Gustav F. Papanek (eds.), Development Policy II - The Pakistan Experience, Cambridge, Mass.: Harvard University Press, 1971 (with Carl H. Gotsch).
- "Comment: Programming Models for the Planning of the Agricultural Sector," in Irma Adelman and Erik Thorbecke (eds.), The Theory and Design of Economic Development, Baltimore: Johns Hopkins Press, 1966.
- "Discussion: Agricultural Development Policies," Journal of Farm Economics, 48: 1207-1209, December 1966.
- "Review: Edwin Dean's, The Supply Responses of African Farmers," American Economic Review, Volume LVII, Number 1, March 1967.

- "Economic Implications," in The World Food Problem, Report of the President's Science Advisory Committee Panel on the World Food Supply. The White House, May 1967, Chapter 13, pp. 641-672 (with Thorbecke, Ezekiel, and Gotsch).
- "Agricultural and Industrial Interrelationships in West Pakistan." Presented at the American Farm Economics Association meetings, Guelph, Ontario, August 1967. Journal of Farm Economics, 49:1139-1157, December 1967.
- Development Policy II - The Pakistan Experience. Cambridge, Mass.: Harvard University Press, 1971 (co-editor with Gustav F. Papanek).
- Growth and Development in Pakistan: 1955-1969, Cambridge, Mass.: Harvard University, Center for International Affairs. Occasional Paper No. 23, April 1970 (with Joseph J. Stern).
- "Agricultural Policy and Performance in the Punjab: A Comparative Study of India and Pakistan." Asian Review, 1:239-255, July 1968 (with Carl H. Gotsch).
- "Cigarette Smoking and the Tobacco Farmer," Public Policy, Vol. XVIII, No. 5, Fall 1970 (with Charles K. Mann).
- "Review: Doreen Warriner's Land Reform in Principle and Practice," The Annals of the American Academy of Political and Social Science, 1970.
- Agricultural Price Policy and the Development of West Pakistan, Organization for Social and Technological Innovation, 1970 (with Carl H. Gotsch).
- "The Green Revolution: Generations of Problems," presented at the American Agricultural Economics Association, Columbia, Missouri, August, 1970. American Journal of Agricultural Economics, Vol. 52, No. 5, December 1970.
- "Review: Clifton R. Wharton, Jr. (ed.), Subsistence Agriculture and Economic Development," Science, Volume 170, No. 3958, November 1970.
- "The IBRD and Rural Development: Some Observations," (with Carl H. Gotsch) 1972.
- "Agricultural Employment in Less Developed Countries: General Situation, Research Approaches, and Policy Palliatives," International Bank for Reconstruction and Development, Economics Department, Working Paper No. 113, 1971.
- "The Political Economy of Rice Production and Trade in Asia," in Lloyd G. Reynolds (ed.), Agriculture in Development Theory, Yale University Press, 1975 (with C. Peter Timmer).
- "The Impact of Price on Rice Trade in Asia," in George S. Tolley (ed.), Agriculture, Trade, and Development, Ballinger Books (forthcoming) (with C. Peter Timmer).

"An Experiment in Rural Employment Creation: Indonesia's Kabupaten Development Program," SEADAG Conference, Baguio, July 1973, mimeographed (with Belinda Dapice and Richard Patten).

"Cropping Systems and Seasonal Employment in East Java and South Sulawesi," Research Report No. 17, Agro-Economic Survey, Jakarta, July 1973, mimeographed (with Belinda Dapice and Sri Widayati).

"Lessons and Issues in Taiwan's Development," in Agriculture's Place in the Strategy of Development, T. H. Shen (ed.), Taipei, Joint Commission on Rural Reconstruction, July 1974; and in Sino-American Relations, Vol. 1, No. 1, Spring 1975.

A Technical Assessment of Public Health Aspects of Pest Control, Report of the Public Health Study Team, Washington, D. C., National Academy of Sciences (co-author) (forthcoming).

"Ways to Improve International Training," American Journal of Agricultural Economics, December 1974 (with Lyle P. Schertz).

"Food: War on Hunger or New Cold War?" The Stanford Magazine, Vol. 2, No. 2, Fall/Winter 1974 (with C. Peter Timmer).

"The Green Revolution and the Economics of Punjab," Food Research Institute Studies, Vol. XIV, No. 1, 1975 (with Carl H. Gotsch).

November 1975

CURRICULUM VITAE

SCOTT ROBERTS PEARSON

PERSONAL HISTORY

[REDACTED]

Married: Sandra C. Anderson: B.A. Minnesota, 1961; M.A.: Howard, 1965

[REDACTED]

Military Status: IV-A; member of U.S. Army Reserve, 1956-1964, six months of active duty, October 1956-March 1957; completion of commitment and honorable discharge, August 1964

[REDACTED]

EDUCATION

Diploma, 1956, Baraboo High School, Baraboo, Wisconsin

Bachelor of Science (American Institutions), January 1961, The University of Wisconsin, Madison, Wisconsin

Diploma, summer 1964, Institute of Phonetics, University of Grenoble, Grenoble, France

Master of Arts (International Relations), June 1965, School of Advanced International Studies, The Johns Hopkins University, Washington, D.C. and Bologna, Italy

Doctor of Philosophy (Economics), July 1968, Graduate School of Arts and Sciences, Harvard University, Cambridge, Massachusetts

ACADEMIC HONORS AND AWARDS

Valedictorian, Baraboo High School, 1956

Sophomore Honors, University of Wisconsin, 1959

Senior High Honors, University of Wisconsin, 1961

Phi Beta Kappa, 1961

Bologna Center Fellowship, SAIS, The Johns Hopkins University, 1963-64

Charles Merrill Fellowship, SAIS, The Johns Hopkins University, 1964-65

Harvard University Fellowship, Harvard University, 1965-66 and 1966-67

ACADEMIC HONORS AND AWARDS (continued)

Arthur Lehman Scholarship, Harvard University, 1966-67
Doctoral Dissertation Fellowship in Natural Resources, Resources for the Future, Harvard University, 1967-68
Ford Foundation, Summer Fellowship in International Studies, Harvard University, 1968

POST-DOCTORAL AWARDS

Research Grant from the Center for Research in International Studies, Stanford University, 1969-70 (with Benton F. Massell)
Research Grant from the Joint Committee on African Studies of the Social Science Research Council and the American Council of Learned Societies, 1971-72 (with John Cowie)
Research Grant from the NDEA African Language and Area Center, Stanford University, 1972-73
Research Grant from the Center for Research in International Studies, Stanford University, 1973

AFFILIATIONS

American Academy of Political and Social Science
American Agricultural Economics Association
American Economic Association
African Studies Association
Association for the Advancement of Agricultural Sciences in Africa
Society for International Development

WORK EXPERIENCE

Associate Professor, September 1974-present, Assistant Professor, September 1968-August 1974, Food Research Institute, Stanford University, Stanford, California (on leave, academic year, 1970-71); research and teaching (course titles: International Trade and Investment Policy; Empirical Analysis of International Trade and Investment; Trade and Development Problems of Tropical Africa).

Research Associate, Stanford University Project on the Political Economy of Rice in Asia, June 1974-present (interim periods); research project investigating comparative advantage of rice in several Asian countries (with Walter P. Falcon, Stanford University, and C. Peter Timmer, Cornell University).

Research Associate, University of California, Berkeley, Project on Alternative Federal Leasing Policies for Petroleum on the U.S. Outer Continental Shelf, July 1975-present (interim periods); research project investigating the desirability of alternative leasing structures (with Hayne E. Leland and Richard B. Norgaard).

Economic Consultant to the International Bank for Reconstruction and Development, April 1974-present (interim periods); research project investigating industrial/agricultural policy and economic integration in Western Africa (with Bela Balassa, Johns Hopkins University, and associates).

WORK EXPERIENCE (continued)

- Lecturer, Summer Alumni College, Stanford University, July-August 1975; lectures on trade and aid, food and population, petroleum and energy, and multinational commodity cartels.
- Economic Consultant to the U.S. Agency for International Development, Accra, Ghana, and Washington, D.C., November 1971-May 1974 (interim periods); research project investigating developmental effects of Ghana's forest products industries (with John M. Page, Jr., Oxford University).
- Economic Consultant to the Department of State, Bureau of Intelligence and Research, December 1968-present (interim periods); advisory capacity with special emphasis on the implications for U.S. foreign policy of developments and trends in international trade and in energy industries of African countries.
- Economic Consultant to the International Bank for Reconstruction and Development, June 1973-February 1974 (interim periods); development of a methodology to permit measurement of comparative advantage in cocoa production.
- Economic Consultant to the U.S. Agency for International Development, Addis Ababa, Ethiopia, and Washington, D.C., summer 1972 (interim periods); member of three-man team (with Paul G. Clark and Vincent M. Barnett, Jr., Williams College) reviewing medium-term strategy for U.S. development assistance to Ethiopia.
- Economic Consultant to Institute of Social, Economic and Government Research, University of Alaska, Fairbanks, Alaska, July-August 1972; member of three-man team (with Hayne E. Leland and Richard B. Norgaard, University of California, Berkeley) undertaking research on optimal leasing policies for the private exploitation of publicly-owned natural resources in Alaska.
- Economic Consultant to the International Bank for Reconstruction and Development, July-August 1971; analysis of the international petroleum industry in Nigeria and of the effects of oil production on Nigerian economic development.
- Staff Economist, Commission on International Trade and Investment Policy, Washington, D.C., August 1970-June 1971; general staff analysis, with principal emphasis on import competition and government relief in the United States and on U.S. trade and investment relations with Communist countries.
- Lecturer, Africa, Sub-Sahara Program of the Foreign Service Institute, 1970-71; foreign investment and economic development with special reference to petroleum in Nigeria.
- Research Associate, Institute of Social, Economic and Government Research, University of Alaska, Fairbanks, Alaska, July-August 1970; analysis of economic and environmental considerations in the use of Alaska's land and natural resources (team research project sponsored by the Ford Foundation).

WORK EXPERIENCE (continued)

Economic Consultant to the U.S. Agency for International Development, Lagos, Nigeria, and Washington, D.C.; spring 1969, spring 1968, summer 1966, and summer 1965; projections of the impact of petroleum production on the Nigerian economy and projections of the Nigerian balance of payments.

Faculty Resident, Serra House, Stanford University, Stanford, California, September 1968-August 1969; supervision of an undergraduate dormitory.

Head Resident, Radcliffe College, Cambridge, Massachusetts, September 1967-June 1968; supervision of an undergraduate dormitory.

Economic Consultant to the U.S. Agency for International Development, Accra, Ghana, and Washington, D.C., summer 1967; analysis of recent Ghanaian economic policy and projections of the Ghanaian balance of payments.

Assistant Professorial Lecturer, The George Washington University, Washington, D.C., Second Summer Session 1966; teaching of Principles of Economics.

Research Assistant to Professor Otto Eckstein, Harvard University, spring 1966; econometric analysis of various aspects of the U.S. economy.

U.S. Peace Corps Volunteer, July 1961-June 1963, Sokoto, Nigeria; teaching of African history and geography, Sokoto Training College.

RESEARCH

Books:

Petroleum and the Nigerian Economy (Stanford, California: Stanford University Press, 1970).

Commodity Exports and African Economic Development (with John Cownie, et al.), (Lexington, Massachusetts: Lexington Books, D.C. Heath and Company, 1974).

Articles:

"Aims for AAMS: A Larger Flow?" (with Wilson E. Schmidt), The Journal of Common Market Studies, Vol. III (October 1964), pp. 74-82.

"The West Divides at Tokyo," SAIS Review, Vol. IX (Winter 1965), pp. 27-31.

"The Political Economics of Nigerian Short-Term Borrowing," in Public Policy, edited by John D. Montgomery and Arthur Smithies (Brattleboro, Vermont: Harvard University Press, 1966), vol. XV, pp. 337-60.

"Nigerian Petroleum: Implications for Medium-Term Planning," in Growth and Development of the Nigerian Economy, edited by Carl K. Eicher and Carl Leidholm (East Lansing, Michigan: Michigan State University Press, 1970), pp. 352-75.

"Oil Boom Reshapes Nigeria's Future" (with Sandra C. Pearson), Africa Report, Vol. XVI (February 1971), pp. 14-17.

Articles (continued):

- "A Framework for Evaluating Use of Alaska's Land and Natural Resources," in Alaska Public Policy, edited by Gordon S. Harrison (College, Alaska: University of Alaska, Institute of Social, Economic and Government Research, 1971), pp. 48-71.
- "Redistribution of Industry in the East African Common Market" (with John M. Page, Jr.), Bulletin of the Oxford University Institute of Economics and Statistics, Vol. XXXIII (November 1971), pp. 275-88.
- "The Economic Imperialism of the Royal Niger Company," Food Research Institute Studies in Agricultural Economics, Trade, and Development, Vol. X, No. 1, 1971, pp. 69-88.
- "Foreign Exchange and Economic Development: An Empirical Study of Selected Latin American Countries" (with Benton F. Massell and James B. Fitch), The Review of Economics and Statistics, Vol. LIV (May 1972), pp. 208-12.
- "Comparative Advantage among African Coffee Producers" (with Ronald K. Meyer), American Journal of Agricultural Economics, Vol. LVI (May 1974), pp. 310-13.
- "Contributions of Petroleum to Nigerian Economic Development" (with Ronald K. Meyer), in Commodity Exports and African Economic Development, Scott R. Pearson and John Cowie et al. (Lexington, Massachusetts: Lexington Books, D.C. Heath and Company, 1974), pp. 155-78.
- "Petroleum and Natural Gas in Sub-Saharan Africa," in The Energy Question, edited by Edward W. Erickson and Leonard Waverman (Toronto: University of Toronto Press, 1974), pp. 121-45.
- "Principal Issues Facing the World Fertilizer Economy," Report on a Seminar Held by the Agricultural Development Council and the International Bank for Reconstruction and Development at Princeton, N.Y., May 23-25, 1974, (New York: Agricultural Development Council, March 1975).
- "Net Social Profitability, Domestic Resource Costs, and Effective Rate of Protection," The Journal of Development Studies, forthcoming.
- Monographs for Private Distribution:
- "The Tiger in Nigeria's Tank: Some Numerical Estimates" (with Wilson E. Schmidt), USAID Mission to Nigeria, July 1966, 177 pp.
- "A Critique of the Ghanaian Government's Economic Strategy and a Projection of the Ghanaian Balance of Payments," USAID Mission to Ghana, September 1967, 153 pp.
- "Nigeria's Tiger Revisited: Some Further Numerical Estimates," USAID Mission to Nigeria, April 1968, 93 pp.
- "The Rapid Recovery of Nigeria's Tiger: A Further Look," USAID Mission to Nigeria, April 1969, 97 pp.

Monographs for Private Distribution (continued):

"Strategy Review of U.S. Developmental Assistance to Ethiopia" (with Vincent M. Barnett, Jr. and Paul G. Clark), USAID Mission to Ethiopia, August 1972, 58 pp.

"Development Effects of Ghana's Forest Products Industry" (with John M. Page, Jr.), USAID Mission to Ghana, December 1972, 155 pp.

"An Economic Analysis of Alternative Outer Continental Shelf Petroleum Leasing Policies" (with Hayne E. Leland and Richard B. Norgaard), Office of Energy R&D Policy, National Science Foundation, September 1974, 77 pp.

"Incentives and Comparative Advantage in Ghanaian Industry" (with Gerald C. Nelson), Development Research Center, IBRD, May 1975, 101 pp.

Papers for Private Distribution:

"The Petroleum Industry's Impact on Nigeria" (with Wilson E. Schmidt), USAID Mission to Nigeria, July 1965, 38 pp.

"A Projection of Nigeria's Balance of Payments to 1970" (with Wilson E. Schmidt), USAID Mission to Nigeria, July 1965, 26 pp.

"Working Paper on the Historical and Possible Future Economic Impacts of the Petroleum Industry on the Nigerian Economy," USAID Mission to Nigeria, May 1968, 35 pp.

"Measurement of the Impacts of Petroleum Production on the Nigerian Economy: A Second Working Paper," USAID Mission to Nigeria, April 1969, 10 pp.

"Notes on the Petroleum Industry in Nigeria," Western Africa Department, IBRD, September 1971, 21 pp.

"Economic Analysis of Selected Problems Facing Ghana's Timber Industry, An Interim Report" (with John M. Page, Jr.), USAID Mission to Ghana, September 1972, 33 pp.

"Comparative Advantage in Cocoa Production: A Methodological Annex," Economic Analysis and Projections Department, IBRD, February 1974, 40 pp.

"Concession, Royalty, and Tax Policies for Ghanaian Timber," USAID Mission to Ghana, April 1974, 34 pp.

Papers for Private Distribution (continued):

"The Measurement of Comparative Advantage in Rice Production" (with Gerald C. Nelson. paper presented to Stanford Rice Project -- Los Banos Workshop, Los Banos, Philippines, July 1-4, 1974, 20 pp.

Research in Progress:

"Gains and Losses from Economic Integration of Developing Countries" (with Benton F. Massell), Discussion Paper No. 73-10, Food Research Institute, Stanford University, September 1973.

"Industrial/Agricultural Policy and Economic Integration in Western Africa" (with Bela Balassa and associates).

"Comparative Advantage and Primary Processing: An Analysis of Ghana's Export Industries" (with John M. Page, Jr.).

"Alternative Federal Leasing Policies for Oil and Gas Rights on the U.S. Outer Continental Shelf" (with Hayne E. Leland and Richard B. Norgaard).

"Comparative Advantage in Asian Rice Production" (with Narongchai Akrasanee).

CURRICULUM VITAE

JOSIAH DIRCK STRYKER

November 3, 1975

Home address and Phone



Office Address and Phone:

**Fletcher School of Law and Diplomacy
Tufts University
Medford, Massachusetts 02155
617-628-5000 x561**

Date of Birth:



Family Status:

Married, three children

Education:

B.S., U.S. Naval Academy, 1958

Ph.D. (Economics), Columbia University, 1967

Fellowships:

**Harry G. Friedman Scholarship,
Columbia University, 1963-64**

Positions:

**Senior Research Assistant
International Economics Workshop
Columbia University
1964-1966**

**Preceptor, Principles of Economics Course
Columbia University
1965-1966**

**Lecturer and Research Economist
Yale University
1966-1968**

**Assistant Professor
Yale University
1969-1972**

**Associate Professor
Fletcher School of Law and Diplomacy
1972-Present**

Fields of Interest:

**The African Economies
Economic Development
International Economics**

Agricultural Economics

Dissertation Topic:

Theoretical and Empirical Study of the Effects of Growth on Exports, U.S. and Canada.

Publications or accepted for publication:

"The Sources of Change in Export Performance: The United States and Canada," in Peter Kenen and Roger C. Lawrence, The Open Economy: Essays on Foreign Trade and Finance, 1969.

Vent for Surplus Growth in a Colonial Economy: A Tentative Model, Center Discussion Paper No. 153, Economic Growth Center, Yale University, August 1972.

Population Density, Capital Investment, and Agricultural Exports: The Franc Zone, Center Discussion Paper No. 155, Economic Growth Center, Yale University, August 1972.

"Exports and Growth in the Ivory Coast: Timber, Cocoa, and Coffee," in Scott Pearson, John Cowie, et al, Commodity Exports and African Economic Development, 1974.

"The Malian Cattle Industry: Opportunity and Dilemma," Journal of Modern African Studies, September 1974.

"Socialist Development in Africa: The Case of Keita's Mali," in Helen Des Fosses and Jacques Levesque (eds.), Socialism in the Third World, forthcoming (co-author).

Population Density, Agricultural Technique and Land Utilization in Village Economy, American Economic Review, June 1976.

Unpublished papers, reports, etc.:

Analyse Econometrique: Facteurs Naturels, Densité de Population et Production Agricole dans les Pays de la Zone Franc - Etude Critique, November 5, 1971.

Mali Livestock Design Study: A Conceptual Program to Increase Meat Production, Report prepared for the U.S. Agency for International Development, Washington, D.C., March 1973 (co-author).

Livestock Production and Distribution in the Malian Economy, Supplementary Report prepared for the U.S. Agency for International Development, Washington, D.C., August 1973.

"Optimal Population and Agricultural Development: Empirical Evidence from the Franc Zone," paper presented to the First Annual Meeting of the World Population Society, Washington, D.C., February 7-9, 1974.

"The Development of Manufacturing in the Ivory Coast: A Recent Assessment," paper presented at a Colloquium on the Ivory Coast, U.S. Department of State, Washington, D. February 26, 1974.

Financing Livestock Development in Mali, position paper prepared for the U.S. Agency for International Development, March 7, 1973,

"Optimum Population in Rural Areas: Empirical Evidence from the Franc Zone," April 1974 -- being revised for publication.

"Shadow Price of Labor in Ghana, Ivory Coast, Mali and Senegal," September 17, 1974.

"Western Africa Regional Project: Ivory Coast Agriculture," April 10, 1975

"Western Africa Regional Project: Senegal Agriculture," May 23, 1975.

"Western Africa Regional Project: Ghana Agriculture," June 6, 1975

"The Marketing of Malian Cattle," October 15, 1975

"Colonial Investment and Agricultural Development: The French Empire," October 1975--being revised for publication.

Current Research:

Monograph on economic development in the Ivory Coast from before colonial rule to 1970

Comparative structure of production costs and incentives in the agricultural sectors of Ghana, Ivory Coast, Mali, and Senegal

Language Qualification:

Good French

Overseas and Consultant Experience:

Researcher attached to Ministère du Plan, Ivory Coast, 1967-68

Lecturer on African Economic problems, U.S. Foreign Service Institute, 1971

U.S.A.I.D. consultant on mission to study
livestock sect in Mali, 1973.

Participated in panels on African economic
problems, U.S. Department of State, 1973-74.

Consultant to World Bank for research project
concerning Comparative Analysis of Resource
Allocation in Cocoa Production, 1973.

Consultant to World Bank for research project
concerning Economic Integration in Western
Africa, 1973-74. Participated in a mission to
Western Africa, May-July, 1974, and June,
July, 1974.

4.

Professor Michael J. Montias
Department of Economics
Yale University

References:

Professor Gustav Ranis
Economic Growth Center
Yale University

Professor Robert West
The Fletcher School of Law and Diplomacy
Tufts University

Professor Eela Balassa
Department of Economics
Johns Hopkins University

UNITED STATES GOVERNMENT

Memorandum

TO : AFR/DS, Mr. A. Glyoso

DATE: Feb. 13, 1976

FROM : AFR/DS, David E. Weisenborn

DEW for committee

SUBJECT: Technical review of the SFRI Research Proposals

The Technical Committee met on February 11, 1976 to discuss the subject proposals. The Committee basically agreed that the proposals were technically sound with the three following exceptions:

1. Although WARDA is the collaborating agency, it is not clear that adequate provisions have been made to leave WARDA with the capacity to conduct similar research once the project is complete. (WARDA does have an economic section with 2 positions, both of which are now vacant.) The Committee feels that this is a major gap in the proposal and that consideration of WARDA's capacity and needs for training must be included.
2. The proposal indicates that 4 doctoral candidates will form an integral part of the research team. The Committee feels that SFRI should make every attempt possible to use African students in these positions.
3. The Committee recommends that Guinea and Guinea Bissau be included in the study on the same basis as Nigeria, Togo, and Benin in spite of the fact that they are not currently members of WARDA.

In addition to the three points above, the Committee had several other comments/issues which need to be considered. These were:

1. Is it relevant at this time for AID to fund a major study of rice? It was pointed out that rice only represents about 12% of food production in West Africa and is, therefore not a major crop. On the other hand, many countries are using scarce foreign exchange to fund rice imports and donors are considering major investments in rice production projects. In the latter case, the basic economic data to analyze such proposals are ~~extremely~~ extremely limited. The Committee believes that this is an issue for further discussion.

2. Are sufficient provisions going to be made to assure that the separate Ghana proposal will be integrated into the total analysis? The Committee feels that we should consider the two proposals as one study in spite of the fact that funding sources may differ.

3. If AID decides to fund the study the Committee recommends that the contract with SFRI include a requirement that a brief non-technical summary document of the entire study be prepared.

4. It is unclear in the proposals how much time the principal investigators will actually spend in the field. This point should be clarified.

5. The high cost of the proposals was questioned especially in view of the relatively lower cost of the SFRI Asian studies. Part of the reason is the need for more survey work in this study and the increased number of countries.

6. The Committee was concerned about possible duplication of effort with other research projects now under consideration or to be proposed. This point should be carefully examined as part of the overall review process.

As indicated above, the Committee agreed that the proposals were technically sound with three exceptions. In the case of exceptions 2 and 3, the Committee feels strongly that they be adopted as part of the proposal but, if circumstances prevented this, would still consider the study technically sound. In the case of exception 1, the Committee feels that some action must be taken prior to a final decision on the study. If it proves infeasible for SFRI and WAPDA to reach some agreement for inclusion in the proposal, we recommend that an AID-WARDA agreement be worked out to insure that a capacity to conduct further studies exists.

CLEARANCE & DISTRIBUTION:

TA/AGR, LMartin (draft)
AFR/DP, FMoore (draft)
AFR/CWR, SPeck (draft)
AFR/RA, CSanders (draft)
PFC/FDA, DDalympie (draft)
AFR/DS, WLoake (draft)

SECRET 14-00000

"FRI WEST AFRICA STUDY"

Budget

(figures expressed in constant 1976 dollars)

	<u>FY 1976</u> <u>(4/1/76-</u> <u>9/30/76)</u>	<u>FY 1977</u> <u>(10/1/76-</u> <u>9/30/77)</u>	<u>FY 1978</u> <u>(10/1/77-</u> <u>9/30/78)</u>	<u>Totals</u> <u>(4/1/76-</u> <u>9/30/78)</u>
1. <u>Salaries</u>	<u>37,000</u>	<u>62,000</u>	<u>84,000</u>	<u>183,000</u>
a. Principal and Associate Investigators (40 mo.) (Pearson, 17 mo.; Falcon, 6 mo.; Stryker, 17 mo.)	22,000	32,000	54,000	108,000
b. Senior Research Personnel (24 mo.)	10,000	20,000	20,000	50,000
c. Research, Translating, and Secretarial Assistance (36 mo.)	5,000	10,000	10,000	25,000
2. <u>Staff Benefits</u> (16.0% in FY 1976; 18.8% in FY 1977; 20.0% in FY 1978)	<u>6,031</u>	<u>11,718</u>	<u>16,859</u>	<u>34,608</u>
3. <u>Travel and Subsistence</u>	<u>21,000</u>	<u>12,000</u>	<u>12,000</u>	<u>45,000</u>
a. U.S. (10 round trips, Stanford - Washington)	1,000	2,000	2,000	5,000
b. International (16 round trips Stanford - West Africa)	20,000	10,000	10,000	40,000
4. <u>Expendable Materials, including Computer, Copying, and Printing Expenses</u>	<u>2,000</u>	<u>5,000</u>	<u>18,000</u>	<u>25,000</u>
5. <u>Expenditures in Africa</u> including field research and surveys (72 man-months and 6 survey teams)	<u>20,000</u>	<u>72,000</u>	<u>10,000</u>	<u>102,000</u>
6. <u>Indirect Costs</u>				
a. On-campus (Items 1,2,3,4; 56% through 8-31-76; 58% thereafter)	<u>37,198</u>	<u>52,616</u>	<u>75,898</u>	<u>165,712</u>
b. Off-campus (Item 5; 45% through 8-31-76; 47% thereafter)	<u>9,067</u>	<u>33,840</u>	<u>4,700</u>	<u>47,607</u>
 <u>Grand Totals</u>	 <u>132,296</u>	 <u>249,174</u>	 <u>221,457</u>	 <u>602,927</u>

Budget for "An Integrated Analysis of Rice Production, Processing,
Marketing, and Consumption in Ghana"

(figures expressed in constant 1976 dollars)

	<u>FY 1976</u> <u>(3/1/76-</u> <u>9/30/76)</u>	<u>FY 1977</u> <u>(10/1/76-</u> <u>9/30/77)</u>	<u>FY 1978</u> <u>(10/1/77-</u> <u>5/31/78)</u>	<u>Totals</u> <u>(3/1/76-</u> <u>5/31/78)</u>
1. <u>Salaries, including OASI</u>				
a. Principal Investigators (Pearson, 10 mo.; Page, 12 mo.)	18,000	17,000	17,500	52,500
b. Research and Secretarial Assistance (5 mo.)	1,000	1,000	1,000	3,000
2. <u>International Travel and Subsistence</u> in Ghana (8 round trips, Stanford- Ghana; 36 mo. in Ghana)	22,100	42,400	--	64,500
3. <u>Expendable Materials</u> including Computer and Copying Expenses	500	500	4,000	5,000
4. <u>Survey Research Expenditures in Ghana</u>	12,000	18,000	--	30,000
 <u>Grand Totals</u>	 <u>53,600</u>	 <u>78,900</u>	 <u>22,500</u>	 <u>155,000</u>

6980382 ⑤
PD-AAL-354

AID. Reference
Counter 6P

AMENDMENT NUMBER SEVEN
TO THE
GRANT AGREEMENT
Between
THE AGENCY FOR INTERNATIONAL DEVELOPMENT
And
THE WEST AFRICA RICE DEVELOPMENT ASSOCIATION
For
RICE PRODUCTION AND MARKETING

Project: 698-0332

Fiscal Year - 1975	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$737,000
Fiscal Year - 1976	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$445,000
Fiscal Year - 1977	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$443,000
Fiscal Year - 1978	Appropriation No. :	72-1181021.3
	Allotment No. :	843-60-669-00-69-81
	Total Funds :	\$441,500

PREAMBLE: The purpose of this Amendment, entered into this 30th day of March, 1978, between A.I.D. and WARDA, is to revise provisions of this Grant Agreement as set forth below. All other terms and conditions of the original Grant Agreement, as Amended, shall remain in full force and effect.

ARTICLE II - EXTENT OF A.I.D. GRANT

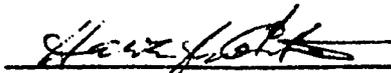
The first sentence is deleted and the following is substituted in lieu thereof: "There is granted the additional sum of \$441,500, bringing the total of this grant to \$2,066,500 for the purposes and activities described in Article I."

ANNEX A - BUDGET

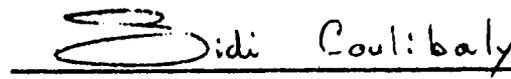
ANNEX A is deleted in its entirety and a revised budget (Annex A) is substituted in lieu thereof.

AGENCY FOR INTERNATIONAL DEVELOPMENT

WEST AFRICA RICE DEVELOPMENT ASSOCIATION

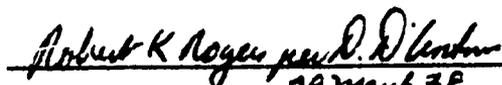


Signature: Stanley J. Siegel, A.I.D.
Director



Signature: Sidi Coulibaly, WARDA
Executive Secretary

Funds Available



Robert K. Rogers *29 March 78*
Controller, USAID/Liberia

Date: 29 March 78



Noel R. Marsh, Program Officer
USAID/Liberia

Date: 30 March 1978

ANNEX ABUDGET

	<u>Prior Years</u>		<u>CY 1978</u>	<u>Total</u>
	<u>1/3/75 -</u>	<u>Changes in</u>	<u>1/1/78-</u>	<u>1/3/75-</u>
	<u>12/31/77</u>	<u>line items</u>	<u>12/31/78</u>	<u>12/31/78</u>
I. <u>WARDA TRAINING CENTER, LIBERIA</u>				
A. Salaries and Benefits	\$ 233.0	-	169.0	402.0
B. Operating Costs	242.0	-	130.5	372.5
C. Commodities	164.0	-	-	164.0
D. Construction Costs	338.0	-	8.49	346.49
a. Dormitory	(240.0)			(240)
b. Storage Room	(25.0)			(25.0)
c. Water System	(30.0)			(30.0)
d. Land Preparation	(10.0)			(10.0)
e. Stand by Generators	(30.0)			(30.0)
f. Other Costs	(3.0)		(8.49)	(11.49)
E. Consultant/Inservice	52.0	-	2.0	54.0
Training				
Sub-Totals	\$1,029.0	-	309.99	1,338.99
II. <u>TRAINING OF RESEARCH PERSONNEL</u>				
A. Participatory Training	141.0	-	-	141.0
Sub-Totals	\$ 141.0	-	-	141.0
III. <u>ROKUPR RICE RESEARCH STATION, SIERRA LEONE</u>				
A. Salaries and Benefits	135.3	[61.8]	77.51	151.01
B. Commodities	85.5	+18.4	8.0	111.9
C. Construction	126.0	+63.0	5.0	194.0
a. Greenhouse/ Screenhouse	(34.0)	-	-	(34.0)
b. Controlled Tempera- ture Storage Room	(14.0)	-	-	(14.0)
c. Laboratory Block	(57.0)	(+8.0)		(65.0)
d. Senior Staff House	(17.0)	(+55.0)		(72.0)
e. Other (Minor Costs)	(4.0)	-	(5.0)	(9.0)
D. Operating Costs	68.0	[11.6]	30.0	86.4
E. Consultant/WARDA Support	18.2	[8.0]	11.0	21.2
Sub-Totals	433.0	-	131.51	564.51
IV. <u>CONSULTANT SERVICES TO WARDA</u>				
A. Study of Rice Develop- ment in Sahel Region	12.2	-	-	12.2
B. Experts/Guest Lecturers	9.8	-	-	9.8
Sub-Totals	22.0	-	-	22.0
GRAND TOTAL	\$1,625.0		\$ 441.5	\$ 2,066.5

AMENDMENT NUMBER SEVEN
TO THE
GRANT AGREEMENT
Between
THE AGENCY FOR INTERNATIONAL DEVELOPMENT
And
THE WEST AFRICA RICE DEVELOPMENT ASSOCIATION
For
RICE PRODUCTION AND MARKETING

Project: 698-0382

Fiscal Year - 1975	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$737,000
Fiscal Year - 1976	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$445,000
Fiscal Year - 1977	Appropriation No. :	72-11X1023
	Allotment No. :	402-60-669-00-69-83
	Total Funds :	\$443,000
Fiscal Year - 1978	Appropriation No. :	72-1181021.3
	Allotment No. :	843-60-669-00-69-81
	Total Funds :	\$441,500

PREAMBLE: The purpose of this Amendment, entered into this 30th day of March, 1978, between A.I.D. and WARDA, is to revise provisions of this Grant Agreement as set forth below. All other terms and conditions of the original Grant Agreement, as Amended, shall remain in full force and effect.

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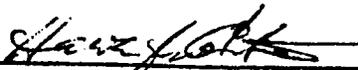
The first sentence is deleted and the following is substituted in lieu thereof: "There is granted the additional sum of \$441,500, bringing the total of this grant to \$2,066,500 for the purposes and activities described in Article I."

ANNEX A - BUDGET

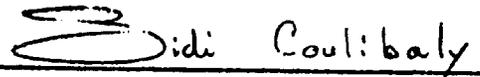
ANNEX A is deleted in its entirety and a revised budget (Annex A) is substituted in lieu thereof.

AGENCY FOR INTERNATIONAL DEVELOPMENT

WEST AFRICA RICE DEVELOPMENT ASSOCIATION



Signature: Stanley J. Siegel, A.I.D.
Director



Signature: Sidi Coulibaly, WARDA
Executive Secretary

Funds Available



Robert K. Rogers *29 March 78*
Controller, USAID/Liberia

Date: 29 March 78



Noel R. Marsh, Program Officer
USAID/Liberia

Date: 30 March 1978

ANNEX A

BUDGET

	<u>Prior Years</u> <u>1/3/75 -</u> <u>12/31/77</u>	<u>Changes in</u> <u>line items</u>	<u>CY 1978</u> <u>1/1/78-</u> <u>12/31/78</u>	<u>Total</u> <u>1/3/75-</u> <u>12/31/78</u>
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B. Operating Costs	242.0	-	130.5	372.5
C. Commodities	164.0	-	-	164.0
D. Construction Costs	338.0	-	8.49	346.49
a. Dormitory	(240.0)			(240)
b. Storage Room	(25.0)			(25.0)
c. Water System	(30.0)			(30.0)
d. Land Preparation	(10.0)			(10.0)
e. Stand by Generators	(30.0)			(30.0)
f. Other Costs	(3.0)		(8.49)	(11.49)
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Sub-Total	\$ 141.0	-	-	141.0
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b. Controlled Temperature Storage Room	(14.0)	-	-	(14.0)
c. Laboratory Block	(57.0)	(+8.0)		(65.0)
d. Senior Staff House	(17.0)	(+55.0)		(72.0)
e. Other (Minor Costs)	(4.0)	-	(5.0)	(9.0)
D. Operating Costs	68.0	[11.6]	30.0	86.4
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IV. <u>CONSULTANT SERVICES TO WARDA</u>				
A. Study of Rice Development in Sahel Region	12.2	-	-	12.2
B. Experts/Guest Lecturers	9.8	-	-	9.8
Sub-Totals	22.0	-	-	22.0
GRAND TOTAL	\$1,625.0		\$ 441.5	\$ 2,066.5

UNITED STATES GOVERNMENT

Memorandum

6980382-④

PD-ACC-354

ZIP.

Meeting - 3:30 ^U 3/22
on these issues

TO : AFR/DS, Mr. Steve Klein

DATE: MAR 18 1976

FROM : AFR/DP, Robert G. Huesmann *MA*

Klein's office

6980382

A U

PH

SUBJECT: Stanford Rice Research Proposal

I think there are several more fundamental issues on the Stanford proposal than the issues paper presents. The issues paper seems in fact to assume approval of the proposal essentially as is, with issues dealing mainly with fairly minor implementation questions.

The most basic question which the ECPR needs to ask is whether the present proposal will give AID the answers it needs to program rice (and other food crop to the extent they are related) research and production projects over the next 5-10 years, in accord with the current legislation. To do that, it seems to me that the proposal needs to focus on small farmer rice production. However, there is no information or analysis in the proposal to indicate to what extent, or in which countries, or under which type of culture, rice is a small farmer crop. Nor does it indicate the buyer profile for rice. If, as I suspect, rice is generally a middle/upper income food, then AID's rationale for assisting rice production must lie more in the income effect on producers. Hence the importance of the producer profile question. A related issue on which there is no information in the proposal is the extent to which rice is self-consumed, and thus enters into the self-sufficiency equation.

I think the ECPR ought also to at least consider why we are entertaining a proposal for \$800,000 worth of research on any crop other than sorghum, millet or maize. Does (should) rice really have the priority this proposal implies? Raising this issue doesn't mean that I don't think we ought to consider the Stanford proposal, but I do think we ought to think about whether some or all of the rather substantial (and, apparently, capable) Stanford resources should be applied to other, higher priority crops.

Also, the question of crop priorities may influence our views on the nature of the Stanford research on rice, to the extent that rice and the other basic cereal crops are either production or market alternatives to rice.

Finally, I get the impression from the Stanford proposal that very little if anything has been done on rice economics in West Africa. For a proposal of this magnitude, I would have expected some sort of overall review and assessment of the existing literature.



In short, the proposal does not tell me why we should research rice, what it is about rice we should research, or that previous research has left \$800,000 worth of gaps which we find it essential to cover.

I think a thoroughgoing discussion of the above issues, whatever the outcome regarding this specific proposal, would help the Bureau to begin sharpening up our research priorities and get some idea of what kinds of data we think are essential to make sound decisions on research proposals whether solicited or unsolicited.

ROUTING SLIP

DATE **3/17/76**

TO:	Name or Title	Organ. Symbol	Room No.	Bldg.	Initials	Date
1.	JH111	AFR/RA	✓			
2.	SRea	AFR/CWR				
3.	EParfrey	AFR/DP				
4.						
5.						

Approval	For Your Information	Note and Return
As Requested	Initial for Clearance	Per Conversation
Comment	Investigate	Prepare Reply
File	Justify	See Me
For Correction	Necessary Action	Signature

REMARKS OR ADDITIONAL ROUTING

Attached are the final papers for the ECPR scheduled for next Tuesday at 3:00.

The draft memo incorporates the suggestions made at the project committee meeting. I call your attention to the following: (i) Dave Weisenborn has added substantial language on page 7; (ii) the financial analysis VI(a) Tables have been condensed and summarized and the detailed budgets added as new Annexes VI(A) and VI(B); (iii) the new Section VI.B. financial arrangements has been added as we discussed; and (iv) the Section VII Evaluation Plans has been rewritten to incorporate the project committee suggestions.

FROM: (Name and Org. Symbol) Stephen Klein AFR/DS	ROOM NO. & BLDG. 2480 NS	PHONE NO. 28168
CLASSIFICATION		

UNITED STATES GOVERNMENT

Memorandum

DATE: March 12, 1976

TO : ECPR

FROM : Project Committee

SUBJECT: Issues Paper for ECPR Meeting on Economics of Rice in West Africa

The following are issues or considerations which the Project Committee wishes addressed by the ECPR:

1. It is not clear that adequate provisions have been made to leave WARDA and the countries included in the study with the capacity to conduct similar research once the project is complete. Both the technical and project committees felt that this was a major gap which had to be addressed.

The Project Committee recommends that FRI be requested to make an assessment of the WARDA and the countries included in the study. Based upon this, FRI should provide AID with a report recommending what, if anything, is needed in terms of personnel, training, funding, etc. to provide such capacity. From this AID can work directly with WARDA and the countries themselves to implement the recommendations. The report would be due about six months after the start of the study.

2. The West Africa proposal indicates that 4 doctoral candidates will form an integral part of the research team. The Project Committee recommends that FRI be instructed to make every reasonable attempt to use West Africans.

3. Should Guinea and Guinea Bissau be included in the analysis? The Project Committee recommends that they be included on the same basis as Nigeria, Togo, and Benin (i.e., no original survey research) in order to provide a more complete picture of the economics of rice in West Africa.

4. The proposals do not clearly indicate how much time will actually be spent in the field by the principal investigators. Since the time of the principals is central to the quality of the studies, this must be clarified prior to project approval.

5. The AFR Bureau must decide how to fund the project. The draft proposes to find it under the Rice Research and Production project already submitted to Congress. Because the major FRI study will be carried out in collaboration with WARDA, it is logical to propose an enlargement of the existing project to accommodate the related but separate economic research activity. Two alternative options exist. AID could fund the studies under the Program Development and Support Project. Alternatively, AID could fund this activity under drought-related research if separate funds are available for that purpose.



6. The AFR Bureau must decide what organizational unit will be responsible for project management. The alternatives include AFR/RA which manages the WARDA activities, AFR/DR which has the professional economic expertise to review the substantive outputs, and AFR/DP which after the Bureau reorganization will be responsible for AFR Bureau research. The Project Committee assumes the Ghana Desk will backstop the Ghana component and that if AFR/RA does not undertake direct project management responsibility, then close coordination between the responsible unit and AFR/RA will be essential.

PROJECT COMMITTEE

AFR/DS:SKlein

AFR/DS:DWeisenborn

AFR/CWR:JMcLaughlin

AFR/CWR:SRea

AFR/RA:JHill

AFR/DP:FMoore

DRAFT MEMO

TO : AA/AFR, Mr. Stanley S. Scott

FROM : AFR/DS, Princeton Lyman

SUBJECT: Approval of Research Project on the Economics of Rice in West Africa

I. SUMMARY

I recommend that you approve a research project on the Economics of Rice in West Africa consisting of two components: (i) a study by the Stanford Food Research Institute (FRI) entitled "The Political Economy of Rice in West Africa", and (ii) a separate but complementary in-depth study in Ghana entitled "An Integrated Analysis of Rice Production, Processing, Marketing, and Consumption in Ghana". The FRI study will be carried out pursuant to a contract between FRI and AID, based on the unsolicited research proposal submitted by FRI on January 30, 1976. The West Africa Rice Development Association (WARDA) fully supports the FRI proposal and will collaborate with FRI in the study, pursuant to a Memorandum of Understanding (See Annex I) signed by WARDA and FRI on January 23, 1976. The Ghana study will be carried out by Stanford personnel under Personal Services Contracts with the Ghana Mission. The Ghana Government has requested and strongly supports the Ghana Research.

The total cost of the Research Project is \$775,000, composed of \$620,000 for the FRI study, and \$155,000 for the Ghana study. The project will be funded under the Rice Research and Production project, and a Congressional Notification will be required on the project which will be combined with the Notification for the Mopti Research project.

II. DESCRIPTION OF PROJECT

The Research Project consists of two separate but complementary components described as follows.

A. West African Study (See Annex II)

FRI will carry out a research study on "The Political Economy of Rice in West Africa" to be undertaken jointly with WARDA. The study will be divided into four sub-components as follows:

1. Descriptive analyses of government policies influencing rice. These studies will also compare rice policies with policies for alternative food and cash crops to give a more complete picture of the agriculture sector.

2. A compilation by country of existing data on the production, local distribution, consumption and international trade of rice. In addition to providing a data base for future use, this effort will identify primary data collection needs for other parts of the analysis.

3. Micro-analysis of rice production, milling, marketing, and consumption. The studies will examine among others the private and social profitability of existing producing areas, the economics of alternative techniques of production, and the equity implications attributable to the different applications of technology. The analyses of production and consumption will contain comparative discussions of rice and alternative commodities.

4. This component will have two separate studies:

(a) a study to contrast rice policy, rice consumption, and recent and possible future trade patterns among the member countries of WARDA; and

(b) a study of West African rice in an international perspective, incorporating results of an AID financed study by FRI on The Political Economy of Rice in Asia. (See Section III.A. below.)

All thirteen WARDA countries will be included in the analysis but the depth of analysis will vary between countries, especially in the case of 3 above. FRI plans to have research personnel doing survey work in Senegal/Mauritania, Mali, Liberia, Ivory Coast, Sierra Leone/the Gambia, and Upper Volta/Niger. No

new data would be collected in Togo, Benin, and Nigeria. Ghana would be covered by the separate in-depth study described in II.B. below.

The study will be carried out principally by Dr. Walter P. Falcon, Dr. Scott Pearson, and Dr. J. Dirck Stryker, with the assistance of other FRI staff personnel and more junior researchers and degree candidates.

FRI proposed to begin the study on April 1, 1976 and complete it by September 20, 1978, assuming AID funding arrangements had been completed. Initial discussions would be held with WARDA and individual countries to establish a research network, review basic data and establish the needs and framework for survey research. In the fall of 1976, survey researchers would begin work. In the Fall of 1977, Pearson and Stryker will prepare the analysis for intra-African trade of rice for submission by WARDA to the December 1977 annual meeting of WARDA. Additional micro-data developed in the detailed country studies will be incorporated into the final comparative papers. The principal results will be available in English and French.

B. Ghana Study (See Annex III)

The Ghana study entitled "An Integrated Analysis of Rice Production Processing, Marketing, and Consumption in Ghana" will be based on original field surveys of each component of the rice sub-sector. The study will provide an integrated analysis of comparative cost and government policies, especially as they affect the choice of technique and hence income distribution and employment opportunities. The study will provide significantly more depth than any country study under the FRI/WARDA collaboration, and thus will have important lessons for other WARDA countries.

The details of the Ghana study include inter alia: (i) assessment of the efficiency of present and potential methods of rice farming, processing, and distribution; (ii) evaluation of the employment and income distributional charac-

teristics of alternative methods of rice production; (iii) analyses of the economic costs and benefits of government incentives to the rice industry; (iv) analysis of the price and income elasticities for rice of urban and rural consumers in Ghana; and (v) investigation of the prospects for exporting Ghanaian rice, especially within West Africa.

The study will be carried out by Dr. Scott Pearson and John Page under Personal Services Contracts with USAID Ghana assisted by researchers Southworth, Menke and personnel from the Ghana Department of Economic Research and Planning Services.

The Ghana study will start in May 1976, with a visit by the principal team members and the inception of the marketing study. The field research will be carried on from September 1976 through September 1977. The integration of the separate studies will be carried out following completion of the field surveys with a final report available in June-September 1978.

III. HISTORY AND BACKGROUND

A. FRI Contract with Asia Bureau

FRI carried out a study "The Political Economy of Rice" with the Asia Bureau which began in July 1973, and was completed at the end of 1975. The contract expenditure totalled \$262,160 and was funded centrally as well as by the operating bureau (AID Contract No. CM-ASIA-C-73-39). The Asia study concentrated on the rice economics of eight countries - Indonesia, Japan, Malaysia, Philippines, South Korea, Taiwan, Thailand, and the U.S. The initial attention focused on the generation and compilation of data needed for national decision-making and for national rice policy in each country. The study facilitated development of a network of scholars who worked on and will continue to carry out the research on rice in Asia. FRI produced a series of eighteen different working papers. In addition,

twenty-one separate papers were prepared for the seven Asian countries by Asian scholars.

The appraisal of the Asia contract by responsible officials who administered the contract, and TAB, has been positive. FRI carried out the contract in a professional manner, the work was produced on time and within the contract amount, and most importantly, the contract provided a substantive addition to the information on rice policy in Asia, both through the papers produced and the catalytic effect in developing the network of Asian research scholars on rice.

B. FRI Proposal to AID

FRI submitted a preliminary unsolicited research proposal to AID on 24 October 1975 to carry out a West Africa rice study. This work was proposed as a separate but follow-on study of the work which FRI had done in Asia. The primary differences in approach and cost between the Asia and the Africa study are the lack of basic data in Africa, and the fewer number of African indigenous research scholars. FRI submitted a supplemental letter on the proposal on November 6. Following discussions with AID/W and WARDA described below, FRI formally submitted an unsolicited research proposal to AID on January 30, 1976. (See Annex II)

The Ghana study flowed from extensive discussions among Dr. Scott Pearson, the USAID Mission in Accra, and Ghanaian Government Officials, especially Dr. Atta-Konadu, Head of the Department of Economic Research and Planning Services, Ministry of Agriculture. These discussions began in June 1975, were continued in September 1975 during Dr. Pearson's visit to Ghana in September, and the final details of the proposal were formed during December 1975 when Dr. Atta-Konadu met with Dr. Pearson at Stanford, and in January 1976 when Dr. Pearson was in Ghana. (See Annex III)

C. Discussions with AID and WARDA

FRI representatives Falcon, Pearson, and Stryker met with AID/W personnel on November 4 and 5, 1975 to discuss the AID/W reaction to the FRI unsolicited proposal. Several questions were raised on the proposal to which FRI responded in their November 6 letter. A major issue for the FRI proposal was the role and involvement of WARDA, the major West African institution concerned with rice. The cabled WARDA reactions to the FRI proposal were not positive, primarily because there was not opportunity for face-to-face discussions on the purpose and intent of the FRI proposal. Since AID/W representatives believed the proposal addressed an important area for AID research, the AID Field rep to WARDA continued discussions with Mr. Jacques Diouf, Executive Director of WARDA, through December. This led to an offer by WARDA to meet with FRI reps in January. Dr. Pearson met with Mr. Diouf in Monrovia for the week of January 19-23 (the trip financed by FRI). These discussions resulted in the signing of a Memorandum of Understanding dated January 23, 1976 between FRI and WARDA which expressed enthusiastic support for the research project.

For WARDA, the FRI study will produce an in-depth study of intra-regional trade of rice within West Africa by December 1977. This study will respond to a resolution passed at the December 1975 meeting of the Governing Council of WARDA for such a study by the biannual meeting in December 1977. This study is item II.A.4.(a) above. Mr. Diouf in discussions with AID/W representatives in Washington in February reiterated his strong support for the FRI proposal emphasizing the mutual advantages of collaboration, and the need for the intra-regional trade study, which he said WARDA needed external assistance to prepare.

FRI will obtain the detailed collaboration with WARDA, which must provide the technical information on which the study will be based. Although WARDA's social science capability is limited, WARDA has established a strong capability

in the technical areas to which the FRI economics competence complements excellently.

The Ghana study will complement the broader based WARDA study. AID/W representatives discussed with Mr. Diouf the separate proposal for the Ghana study because Ghana is a member of WARDA, and cooperation between Ghana Government and WARDA is necessary to carry out both studies. Mr. Diouf concurred in principle with the Ghana study though he had not yet held discussions with Ghanaian officials.

The USAID/Ghana, and the AID representative to WARDA strongly support this project.

IV. OBJECTIVES AND IMPORTANCE OF THE STUDY

A. Goals and Outputs

AID/W has been considering for over a year a strategy for developing relevant research on important crops for the continent of Africa and therefore the unsolicited FRI economic rice study proposal was sent to AID at an opportune time. It will address an important component of the food crop spectrum. AID has been heavily involved, in funding technical research on food crops as evidenced by the Major Cereals Project and rice research through WARDA. There still exists, however, a major need for more economic research especially micro-economic research at the production level. AID has been discussing with consultants, international institutes, and host governments, a research program on food crops, primarily sorghum/and maize in the semi-arid areas of Africa. Currently, there are three proposals under consideration from Purdue as follows:

1. A Tentative Proposal for Research on the Costs and Benefits from Small Irrigated Perimeters and Supplementary Irrigation in the Sahelian Countries.
2. A Tentative Proposal for Research on Economic Evaluation of Mechanization Alternatives for Central and West Africa.
3. A Tentative Proposal for Research on the Economics of Sorghum and

Millet Production in the OMVS Region.

Also, Michigan State has submitted a proposal for "Agricultural Economics Services and Applied Research Studies in the Sahelian Region of West Africa" which includes components on "Food Policy in the Sahel" and "Economics of Animal Powered Mechanization for Small Farmers in the Sahel". Each of these will give some consideration to rice but the primary focus is millet and sorghum.

The FRI rice study complements the studies and research in these other important food crops and will fill an important gap in the Bureau's overall research package.

In attempting to analyze whether or not AID should fund the rice study, its importance to the countries involved and future AID programming must be considered. With respect to the countries involved, rice is becoming increasingly important in the diets of the people, especially in urban areas. Population growth plus increased urban migration have resulted in the rapid expansion of urban areas which, in turn, has increased the demand for rice. The continued inability of the local producers to meet this growing demand has resulted in large quantities of rice being imported. The loss of foreign exchange resulting from these imports is causing serious problems in some countries, especially those in the Sahel. For instance, Senegal imported 373,000 MT of rice in 1972 and 250,000 tons in 1973 and spent 20% of its foreign exchange in those years for rice and bread wheat to feed its cities. Research into the production possibilities for rice certainly seems justified.

The countries would also benefit as a result of the bilateral collaborative arrangements described in the proposal. The capacities of host country institutions to plan and execute agricultural economic research would be enhanced. In addition, collaborative arrangements on a regional basis would be attempted. WARDA is an appropriate vehicle in this case.

From an AID (and other donor) standpoint, there is a continuing problem of how to evaluate the need for and feasibility of proposed projects in the absence of basic data and analysis. Many of the large scale proposals for projects in the Senegal River Basin and the Niger River System involve rice because the projects are capital intensive and thus require a high value crop, and the increased demand for rice has resulted in a need to import. (WARDA estimated in March 1974 that the planned capital expenditure for /rice development projects totalled \$360 million through 1980 for 500,000 hectares, which figure has been revised upwards since that date) The ability to evaluate such proposals not only requires an adequate data base but also, analysis of the appropriate level of technology or technological package to use. This question arises in two different contexts. First, should rice production in West Africa be capital intensive or labor intensive? Secondly, regardless of whether it is capital intensive or labor intensive, what is level of technology or package required? The Stanford FRI study will provide /inputs to/these questions and, given the critical need for additional / information could not be more timely.

AID also has an interest in the economic relationships and trade-offs between rice, cash crops, and other cereals especially as they affect decisions to participate in agricultural production projects. While this area is not the specific focus of the study, it will be considered and valuable insights should result, especially at the policy level.

Finally, AID and the host countries have a continuing need for baseline data which can be built upon and utilized year-after-year. The study is not only designed to utilize existing secondary data but, will also involve primary data collection. At the conclusion of the study, a data base will exist which can be used many times in future analyses. The countries can also utilize this data base and the methodology used to establish it to design a system for collecting new

information on a regular basis.

B. Relationship/Support for WARDA

Mr. Diouf has pinpointed the importance of the intra-regional trade study for WARDA in responding to the Governing Council of WARDA's 1975 resolution for a study to be presented at the December 1977 meeting. AID policy has been to support WARDA as a regional organization to assure an integration of national rice planning into a rationally broader region-wide focus. WARDA's main effort and competence to date is on the technical side. Professor Robert F. Chandler, an internationally recognized consultant to the Canadian IDRC, prepared a report on WARDA dated 7 December 1975 which included a recommendation which the FRI study would address. Dr. Chandler said:

"I would recommend that the economists on the staff pay attention to the entire area of the economics of rice culture, including not only water management but the whole gamut of factors from land preparation to the finished product and to the further problems of storage and marketing".

The FRI study with which WARDA will collaborate will provide WARDA with a product, and a capability to assist in the important regional rice decisions, without which WARDA's role will be significantly diminished.

C. Ghana Study

Rice is an increasingly important commodity for Ghana's food supply. The Ghana study will be important in increasing the research capabilities of the Ministry of Agriculture and to fill a gap in research on agriculture issues which directly offset the small farmers and rural development. The study will help the GOC determine (i) if Ghana should rely on imports because its rice is produced inefficiently, (ii) to what extent existing techniques of production result in undesirable income distribution effects and should be changed to provide greater

equity, and (iii) the importance of foreign exchange saving through promotion of local production even if Government subsidies might be required.

The Ghana study will also provide an in-depth analysis of the range and interrelationships of economic activities related to rice which will have importance for the other countries of WARDA as they proceed both on a national and within a regional framework in the development of rice development policies and programs.

V. TECHNICAL ANALYSIS

As indicated earlier, FRI conducted a study similar to the proposals for West Africa and Ghana for AID in Asia. They propose to use basically the same methodology in these studies with the exception that significant in-depth survey research will be required to provide micro-level data for West Africa and Ghana whereas in Asia a stronger data base existed before the study began.

The studies of government policies affecting rice will be done using descriptive analyses. Existing policies and policy alternatives will be examined in terms of their interaction with the government's objectives and constraints to fulfilling these objectives.

The micro-economic analyses of rice production, milling, marketing, and consumption will be done using various methodologies. As an example, part of this analysis will involve comparing alternative methods of increasing production of rice against continuing or increasing imports. To do this, FRI will employ the domestic resource cost (DRC) approach. Essentially this approach evaluates the opportunity cost of domestic resources to be used in increasing production against foreign exchange savings resulting from import substitution, on the basis of shadow pricing where appropriate. Thus, one can choose the production alternative which is most efficient from a foreign exchange standpoint.

Finally, FRI will use comparative analysis among the WARDA countries in terms of policy, consumption, trade prospects and patterns, etc. They will make a similar analysis on an international level incorporating the results of their Asian analysis.

The approach and methodology used in the Asian studies and proposed for the West African and Ghana studies has been examined internally by AFR/DS and by a technical committee of Agency personnel. (Technical Committee's report is Annex V.) Basically, the approach and methodology were judged to be sound. In addition, the presentation of the Ghana segment as a separate proposal creates no technical problems as the approach and methodology proposed for both studies is similar. The Ghana study will utilize much more in-depth survey research than will be possible in any single country in the West African proposal and this is reflected in the relative costs of the studies.

An integral feature of the FRI proposal is the establishment of a research network including collaborators from the member countries. WARDA will participate directly in the study and will assist in establishing working relationships with organizations in member countries.

The Stanford Food Research Institute appears to be uniquely qualified to perform the proposed study because of their involvement in a similar study in Asia which is currently being completed. In addition, as indicated in the proposal, Stanford has more than two decades of experience in research on African agriculture in both Anglophone and Francophone countries.

The three principal and associate investigators, Drs. Pearson, Falcon, and Stryker are extremely well qualified to conduct such a study. In fact, Dr. Stryker has already done considerable research on rice in West Africa with the World Bank primarily in the Francophone countries, and Dr. Pearson has carried out extensive research in the Anglophone countries. Dr. Falcon was the principal

investigator in the Asia study, and also has significant field experience in Africa.

In addition to the principal investigators, FRI will have 6 additional researchers working in West Africa for at least one year. Two of these researchers will already hold Ph.D.s in economics or agricultural economics and the other four will be doctoral candidates. Finally, FRI will invite African students wishing to conduct thesis research to affiliate with the project.

The Africa Bureau technical review committee did raise three technical issues which must be considered. These are included in the committee's report (Annex V) and in the attached issues paper with proposed solutions. No problems are anticipated in resolving these issues with FRI.

VI. FINANCIAL ANALYSIS

A. Financial Requirements

The cost estimates for the study are summarized below. The details for each study are presented in Annex VI(A) and Annex VI(B).

WEST AFRICA RICE RESEARCH COST ESTIMATES

	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>	<u>TOTAL</u>
FRI West Africa Study	\$ 132,296	\$ 249,174	\$ 221,457	\$ 602,927
Ghana Study	53,600	78,900	22,500	155,000
Contingency	<u>4,104</u>	<u>6,926</u>	<u>6,043</u>	<u>17,073</u>
TOTAL	\$ 190,000	\$ 335,000	\$ 250,000	\$ 775,000

The project committee has reviewed the cost estimates and find them reasonable.

The total cost of the two components of the research project is \$775,000 of which the funding requirement for FY 76 and FY 77 is \$525,000. However, the

USAID/Ghana Mission has \$50,000 to allot to the Ghana study from its economic development project, which leaves a total of \$475,000 to be allotted for FY 76 and FY 77.

WARDA will collaborate with FRI in the execution of the study, but will not make any explicit financial contribution to the activity other than assignment of staff. If studies and survey work are required, these will be financed by FRI under the terms of its contract with AID.

The GOG will also assign people to work closely with the Stanford personnel, but the major financial burden of the Ghana study will be borne by AID.

B. Financial Arrangements

The research project will be financed as a new activity under the Rice Research and Production Project (698-11-190-382). The FRI study will be financed, as an AID contract, as one component of the activity to be administered by AFR/DS until the AFR Bureau reorganization takes affect or by AFR/RA. After the reorganization, responsibility for the project will rest with AFR/RA, AFR/DP or AFR/DR dependent upon the division of responsibility for projects of this nature.

The Ghana study will be carried out under Personal Services Contracts with the Ghana Mission which will administer that component of the activity.

The approval of this rice research activity will require a notification to Congress. This will go forward as part of an amended description of the Rice Research and Production Project, which will also be revised to include the expanded Mopti Rice Research activity now proposed for approval.

VII. EVALUATION PLANS

FRI will be providing a report and recommendations on the personnel, training, and funding requirements to address WARDA and Host Country capacity to continue the economic research initiated by the FRI West Africa study. This

report will be provided about six months after the start of the study. AID plans to hold consultations with FRI and appropriate other personnel to evaluate this report and incorporate recommendations as necessary in future planning.

AID will also hold an overall review of the project in September/October 1977 either in AID/W or in the Field to discuss progress of the study, difficult areas for implementation and problems with the research. This review will be a decision point for proceeding with the final FY 78 tranche of funding.

During the course of the study AID will receive semi-annual progress reports.

The project will produce several micro-analysis and technical studies in the various countries, a broad based study on intra-African trade which will be used by WARDA, a study of West African rice in an international perspective, and a final overall West Africa report, including a non-technical summary with recommendations for future project design and further work. The project will also produce the study in Ghana including its numerous sub-components.

The technical studies produced can be readily counted, read, and evaluated in terms of quality of work, impact on major rice decisions in West Africa and possible future interventions in some aspects of rice production, processing, marketing, and consumption patterns. More difficult to evaluate will be the impact of the study on WARDA, Ghana and other host country capacity to continue the social science research after the Stanford personnel complete their work.

VIII. RECOMMENDATIONS

That you approve the Rice Research study in West Africa for \$775,000 including (i) \$620,000 to fund the unsolicited research proposal from FRI to carry out the study of the Political Economy of Rice in West Africa in collaboration with WARDA and (ii) \$155,000 to finance "An Integrated Analysis of Rice Production, Processing, Marketing, and Consumption in Ghana".

APPROVED _____

DISAPPROVED _____

DATE _____

ANNEXES (WARDA/FRI)

- I. Memorandum of Understanding Between FRI and WARDA Signed January 23, 1976
- II. FRI January 30, 1976 Unsolicited Proposal for Study of Political Economy of Rice in West Africa
- III. Proposal to USAID/Ghana for "An Integrated Analysis of Rice Production, Processing, Marketing and Consumption in Ghana
- IV. Bio-Data on Principal Researchers
- V. Report of AID Technical Committee
- VI(A) Cost Estimates for FRI West Africa Study
- VI(B) Cost Estimates for Ghana Study

Drafted:AFR/DS:3/12/76:mj