

Document:	<u>EB 2007/91/R.33</u>
Agenda:	<u>11(a)</u>
Date:	<u>17 August 2007</u>
Distribution:	<u>Public</u>
Original:	<u>English</u>

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Enabling the rural poor
to overcome poverty

President's report on proposed grants under the global/regional grants window to CGIAR-supported international centres

Executive Board — Ninety-first Session
Rome, 11-12 September 2007

For: **Approval**

Note to Executive Board Directors

This document is submitted for approval by the Executive Board.

To make the best use of time available at Executive Board sessions, Directors are invited to contact the following focal point with any technical questions about this document before the session:

Shantanu Mathur

Grants Coordinator

telephone: +39 06 5459 2515

e-mail: s.mathur@ifad.org

Queries regarding the dispatch of documentation for this session should be addressed to:

Deirdre McGrenra

Governing Bodies Officer

telephone: +39 06 5459 2374

e-mail: d.mcgrenra@ifad.org

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Abbreviations and acronyms

CIAT	International Center for Tropical Agriculture
GIL	grant and investment linkages
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute of Tropical Agriculture
M&E	monitoring and evaluation
NARES	national agricultural research and extension systems
NERICA	New Rice for Africa
PRONAF	Africa Cowpea Project
WARDA	Africa Rice Center

Recommendation for approval

The Executive Board is invited to approve the recommendations for grants under the global/regional grants window to CGIAR-supported international centres as contained in paragraph 11.

President's report on proposed grants under the global/regional grants window to CGIAR-supported international centres

I submit the following report and recommendation on four proposed grants for agricultural research and training to Consultative Group on International Agricultural Research (CGIAR)-supported international centres in the amount of US\$5.6 million.

Part I – Introduction

1. This report recommends the provision of IFAD support to the research and training programmes of the following CGIAR-supported international centres: the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the International Institute of Tropical Agriculture (IITA) and the Africa Rice Center (WARDA).
2. The documents on the grants for approval by the Executive Board are contained in the annexes to this report:
 - (i) International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): Programme for Integrated Innovations for Improving Legume Productivity, Market Linkages and Risk Management in Eastern and Southern Africa
 - (ii) International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): Programme for Linking the Poor to Global Markets: Pro-poor Development of Biofuel Supply Chains
 - (iii) International Institute of Tropical Agriculture (IITA): Programme for the Participatory Development, Diffusion and Adoption of Cowpea Technologies for Poverty Reduction and Sustainable Livelihoods in West Africa
 - (iv) Africa Rice Center (WARDA): Programme for Enhancing Smallholder Access to New Rice for Africa (NERICA) Seeds for Alleviating Rural Poverty in Western and Central Africa
3. The objectives and content of these applied research programmes are in line with the evolving strategic objectives of IFAD and the policy and criteria of IFAD's grant programme.
4. The overarching strategic objectives that drive the IFAD Policy for Grant Financing, which was approved by the Executive Board in December 2003, are:
 - (a) Promoting pro-poor research on innovative approaches and technological options to enhance field-level impact; and/or
 - (b) Building pro-poor capacities of partner institutions, including community-based organizations and NGOs.
5. Deriving from these objectives and those of the IFAD Strategic Framework 2007-2010, the specific aims of IFAD's grant support relate to the following: (a) the Fund's target groups and their household food-security strategies, particularly groups in remote and marginalized agroecological areas; (b) technologies that build on traditional, local, or indigenous knowledge systems, are gender-responsive and enhance and diversify the productive potential of resource-poor farming systems by improving on- and off-farm productivity and by addressing production bottlenecks; (c) access to productive assets (land and water, a broad range of rural financial services, labour and technology); (d) the sustainable and productive management

of natural resources, including the sustainable utilization and conservation of such resources; (e) a policy framework at the local and national levels that provides the rural poor with a conducive incentive structure to improve their productivity and reduce their dependence on transfers; (f) access to transparent and competitive input and product markets that work for the poor primary producers involved in remunerative small and medium-sized enterprises and value chains; and (g) an institutional framework within which institutions – formal and informal, public and private sector, local and national – can provide services to the economically vulnerable according to their comparative advantage. Within this framework, IFAD's grant financing supports commodity-based approaches for self-targeting among the rural poor. Finally, IFAD's grant programme fosters the establishment and strengthening of networks for pro-poor knowledge generation and exchange, which, in turn, enhances the Fund's own capacity to establish long-term strategic links with its development partners and multiply the effect of its grant-financed research and capacity-building programmes.

6. The grants proposed in this document respond to the foregoing strategic objectives.
7. The Programme for Integrated Innovations for Improving Legume Productivity, Market Linkages and Risk Management in Eastern and Southern Africa responds to the foregoing strategic objectives by building upon the implementation of local varieties and local cropping systems to improve productivity in a gender-responsive manner.
8. The Programme for Linking the Poor to Global Markets: Pro-poor Development of Biofuel Supply Chains will meet both the strategic objectives by (a) conducting innovative research on improvements in crop productivity and integrating the crops developed into smallholder farming systems so as to ensure food security and meet other needs of farmers for animal feed and (b) building the capacity of governments, NGOs and community-based organizations to develop rural energy schemes that would assess the impact of rural energy provision on poverty reduction and link communities to global markets, while maintaining food security. The proposed grant will also help initiate policy measures to protect the land rights of the poor, introduce rural energy provision as a poverty reduction strategy and mainstream the development of biofuels in IFAD operations, thereby establishing a direct link between loans and grants.
9. The Programme for the Participatory Development, Diffusion and Adoption of Cowpea Technologies for Poverty Reduction and Sustainable Livelihoods in West Africa (Africa Cowpea Project [PRONAF]-grant and investment linkages [GIL]) responds to the foregoing strategic objectives as it will;
 - (a) Consolidate and scale out PRONAF achievements in participatory cowpea technology development aimed at attaining higher productivity and incomes among smallholders, in partnership with IFAD investment projects;
 - (b) Empower, through demand-driven capacity-building and information exchanges at all levels of stakeholders (farmers, farmer organizations, IFAD project managers, scientists, the private sector, policymakers);
 - (c) Sustain multistakeholder dialogue through a regional platform of partnerships on cowpea production and productivity involving PRONAF, IFAD projects, FIDAFRIQUE, IFAD's Results and Impact Management System (RIMS), IFAD's technical assistance grant on monitoring and evaluation (M&E), national agricultural research and extension systems (NARES), the West and Central African Council for Agricultural Research and Development, the Food and Agriculture Organization of the United Nations, the New Partnership for Africa's Development, the African Union and the European Union.
10. The Programme for Enhancing Smallholder Access to New Rice for Africa (NERICA) Seeds for Alleviating Rural Poverty in Western and Central Africa responds to the

foregoing strategic objectives through the following: (i) the development of comprehensive packages of practices in NERICA seed and grain production that are made available to project beneficiaries; (ii) building the capacity of rice scientists and technicians in order to strengthen national rice research and production; (iii) conducting participatory assessments of labour-saving and post-harvest technologies to reduce losses and enhance grain quality; and (iv) undertaking studies to improve policies and market arrangements in domestic rice production and trade.

Part II – Recommendation

11. I recommend that the Executive Board approve the proposed grants in terms of the following resolutions:

RESOLVED: that the Fund, in order to finance, in part, the Programme for Integrated Innovations for Improving Legume Productivity, Market Linkages and Risk Management in Eastern and Southern Africa, shall make a grant not exceeding one million four hundred thousand United States dollars (US\$1,400,000) to the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) for a three-year programme upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for Linking the Poor to Global Markets: Pro-poor Development of Biofuel Supply Chains, shall make a grant not exceeding one million five hundred thousand United States dollars (US\$1,500,000) to the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) for a three-year programme upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for the Participatory Development, Diffusion and Adoption of Cowpea Technologies for Poverty Reduction and Sustainable Livelihoods in West Africa, shall make a grant not exceeding one million two hundred thousand United States dollars (US\$1,200,000) to the International Institute of Tropical Agriculture (IITA) for a three-year programme upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for Enhancing Smallholder Access to New Rice for Africa (NERICA) Seeds for Alleviating Rural Poverty in Western and Central Africa, shall make a grant not exceeding one million five hundred thousand United States dollars (US\$1,500,000) to the Africa Rice Center (WARDA) for a four-year programme upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

Lennart Båge
President

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): Programme for Integrated Innovations for Improving Legume Productivity, Market Linkages and Risk Management in Eastern and Southern Africa

I. Background

1. In Eastern and Southern Africa, more than half of the population of over 350 million people is living in extreme poverty, the majority in rural areas. The incidence and severity of deprivation are greatest in semi-arid areas characterized by infertile soils, variable climates, poor infrastructure and limited access to markets. Grain legumes and oilseed are dependable food and cash crops among smallholder farmers. They are well adapted to marginal biophysical conditions and do not require substantial external inputs. Grain legumes (particularly chickpeas and pigeon peas) and groundnuts are important food and cash crops in drier areas and represent a key source of liquidity among poor families when surplus production is possible. They provide an opportunity for resource-poor farmers and agribusinesses in the semi-arid areas of the region to increase their cash incomes and diversify their livelihoods.
2. This programme will focus on these legumes because the crops are highly valued by poor farmers as a source of food and cash income (which is in short supply), are nutritionally advantageous to children and vulnerable groups and have a great potential for generating wealth. Improving the productivity and value chains related to these legumes would help poor and vulnerable farm families overcome nutritional deficiencies that result from diets lacking in protein and oil. Growing legumes also contributes to maintaining soil fertility because the legumes fix atmospheric nitrogen that will benefit other crops (especially cereals) in the cropping system. Legume by-products (e.g. groundnut hay) are also valuable fodder for livestock. Along with the agronomic benefits, there is growing demand for legumes in local, regional and international markets and therefore real potential for smallholder farmers to exploit market opportunities to generate or diversify incomes and reduce poverty. However, with few exceptions, these opportunities have remained underexploited.
3. Despite the importance of these crops for the poor in the region, the crops have been largely neglected in agricultural development efforts. Average yields thus remain among the lowest in the world, and the relevant markets are largely underdeveloped. Recently, ICRISAT (a member of the Consultative Group on International Agricultural Research), in collaboration with national partners, has developed several high-yielding and stress-tolerant varieties of dryland legumes (including chickpeas, pigeon peas and groundnuts) that have desirable agronomic traits and attract market demand. Not only are the new varieties higher yielding, they are drought tolerant and resistant to devastating diseases such as Fusarium wilt and rosette virus. ICRISAT has also developed improved integrated crop management practices and innovations in pest and disease management that are leading to greater yields. Unfortunately, while market liberalization in the region is opening windows of opportunity for farmers, few of these farmers are benefiting.
4. Research in the region has identified several reasons for this, as follows: (a) low productivity of traditional varieties and the resulting lack of surplus for markets, (b) low market demand for the poor-quality grain that local varieties produce, (c) inadequate input delivery systems, (d) high transaction costs and lack of reliable market outlets, and (e) declining soil fertility and lack of irrigation. The cumulative effect of these factors is low production, poor competitiveness and the inability to penetrate markets that offer premiums for quality. To address these overlapping constraints and harness the untapped potential of legumes for the poor, new kinds

of institutional arrangements and partnerships are required. This programme aims to develop these opportunities for smallholder dryland grain-legume farmers through targeted pro-poor interventions in four Eastern and Southern African countries, namely, Ethiopia, Kenya, Malawi and the United Republic of Tanzania.

II. Rationale and relevance to IFAD

5. Eastern and Southern Africa has one of the highest concentrations of poor people in the world. The incidence and severity of deprivation are greatest in low-potential semi-arid areas. To achieve the Millennium Development Goals, growth and poverty reduction, it is essential that agricultural production and marketing issues be addressed. Addressing productivity-reducing constraints requires integrated innovations, including input-output market links, enhanced technology delivery systems and capacity-building to provide scientifically tested options for the improved productivity and competitiveness of smallholder production. However, it is increasingly difficult for governments to finance such activities.
6. The national and regional priorities in Eastern and Southern Africa provide the rationale for the five pillars of this programme: institutional innovations for improving markets; the promotion of market-preferred, low-risk varieties and management practices; institutional arrangements for improving the access to and utilization of quality seeds; new tools and methods for risk management; and capacity-strengthening for local service providers. This strategy is consistent with IFAD's strategies for Eastern and Southern Africa in the promotion of efficient and equitable market links; developing rural financial systems; improving the access to and management of land and water; and creating better knowledge, information and technology systems. The proposed programme will operate within this strategic framework and focus especially on women and woman-headed households affected by HIV/AIDS. The programme is also consistent with the Comprehensive Africa Agriculture Development Programme of the New Partnership for Africa's Development.

III. The proposed programme

7. The overall goal of the programme is to harness opportunities for income growth and diversification in the semi-arid areas of Eastern and Southern Africa through integrated innovations that improve productivity and market links for grain legumes and the resilience of livelihoods. Based on lessons from successful pilot projects, the programme will assess the opportunities for the diversification and commercialization of production through the introduction of widely adapted grain-legume varieties that embody market- and farmer-preferred traits, along with the best crop and resource management technologies. The programme will also develop effective institutional arrangements for technology delivery and market links, complemented by tools and methods for risk assessment and mapping to facilitate the targeting and the scaling up of successful innovations.
8. The programme will last three years and will comprise five main components that address identified challenges, as follows:
 - Institutional innovations for improving markets and reducing the transaction costs of smallholder farmers;
 - Locally adapted market-preferred and low-risk legume varieties and complementary management practices;
 - Institutional innovations to increase the access to and utilization of quality seeds of improved varieties and the complementary inputs;
 - Decision support tools for managing risks and enhancing the targeting of improved varieties and management practices;
 - Enhanced capacity among service providers so as to encourage farmers and agroenterprises to utilize legume innovations.

IV. Expected outputs and benefits

9. The following outputs are confidently anticipated:
 - Greater market participation and increased incomes among poor producers;
 - Improved food and nutrition security;
 - Greater income stability and resilience in the face of environmental shocks;
 - Gender and environmental benefits;
 - Greater seed security at the local level;
 - Improved capacity among farmers, farmer organizations and other service providers;
 - Greater returns to IFAD-supported agricultural investments.

V. Implementation arrangements

10. ICRISAT will implement the programme and provide scientific leadership. ICRISAT's mission is to enhance the livelihoods of the poor in semi-arid farming systems through integrated genetic and natural resource management strategies. ICRISAT currently maintains three major regional hubs that represent the dry tropics of Asia, West and Central Africa, and Eastern and Southern Africa. In Eastern and Southern Africa, ICRISAT also has offices in Malawi, Mozambique and Zimbabwe. In Ethiopia, ICRISAT runs significant collaborative programmes with the International Livestock Research Institute and the Ethiopian Institute of Agricultural Research. ICRISAT has collaborative research-for-development activities in almost all Eastern and Southern African countries. The project will be managed and coordinated by ICRISAT regional office in Nairobi. Many of the activities will be carried out in collaboration with national research institutions in Ethiopia, Malawi, Mozambique and Zimbabwe. Memorandums of understanding will be signed between ICRISAT and the collaborating institutions before programme implementation begins.
11. ICRISAT will designate a programme coordinator (a senior economist) who will provide technical and managerial oversight to ensure the efficient execution of the programme under the guidance of the programme steering committee. In addition, a number of ICRISAT scientists will participate in the programme, including legume breeders, an agronomist-seed systems specialist, an expert in crop growth modelling and a markets and institutions specialist. The programme coordinator will be responsible for preparing annual workplans and budgets with the national research institutions, coordinating the scientific monitoring of programme activities and ensuring the coordination of scientific exchanges and training programmes planned by the various groups and teams across disciplines and programme countries. The programme coordinator will maintain and enhance international and national partnerships, especially with IFAD loan-financed projects. The programme steering committee will meet annually to review, amend (if necessary) and approve the annual technical progress reports and the annual workplans and budgets. To ensure more flexible and adaptive management, the programme coordination strategy will be influenced and guided by recommendations resulting from monitoring and evaluation (M&E) activities.

VI. Indicative programme costs and financing

12. The total cost of the programme is US\$3 million. Approximately 50 per cent will be contributed by ICRISAT and programme partners through in-kind contributions, such as professional staff time, field and laboratory facilities and infrastructure. The contribution of partners in co-funding will be as follows: 55 per cent by ICRISAT, 35 per cent by national agricultural research systems and 10 per cent by NGOs. The balance, amounting to US\$1.4 million, will be financed through the proposed IFAD grant. Additional support may become available from other funds presently being sought by ICRISAT and its partners from the Bill and Melinda Gates Foundation.
13. The programme will be supervised through field missions undertaken by the Eastern and Southern Africa Division of IFAD and financed through the IFAD internal administrative budget, in close collaboration with the Technical Advisory Division of IFAD.

Summary of budget

(thousands of United States dollars)

<i>Type of expenditure</i>	<i>IFAD</i>
Personnel (including subcontractors)	510
Research supplies and services	238
Travel	126
Equipment	70
Research subcontracts	64
Technical backstopping	112
Capacity-building	98
Overhead	182
Total	1 400

Logical framework

Objectives	Verifiable indicators	Means of verification	Assumptions
Goal: Improved incomes and well-being among legume farmers in the rainfed areas of Eastern and Southern Africa	For smallholder farmers and the rural poor: <ul style="list-style-type: none"> – Increased incomes, assets and savings – Improved food security and nutrition – Increased enterprise development – Improved sustainability of rainfed cropping systems 	<ul style="list-style-type: none"> – Baseline data on income, returns, assets, nutrition, crop productivity, rural markets and enterprises – M&E studies, impact assessment and reports 	<ul style="list-style-type: none"> – Conducive government policies and world trade scenarios – Amenable climatic conditions
Overall objective: Harness opportunities for income growth and diversification based on integrated innovations for improving productivity and market links for dryland legumes in Eastern and Southern Africa	<ul style="list-style-type: none"> – >10% of target farmers adopt improved varieties and agronomy practices within three years – >10% increase in marketed surplus of legumes in the targeted areas within three years 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring studies – Production statistics 	<ul style="list-style-type: none"> – Legume prices remain stable – Sustained policies – Farmer-friendly climate
Specific objectives: 1. Examine the functioning of rural legume markets and develop low-cost farmer-market links 2. Develop sustainable, market-responsive seed delivery systems 3. Facilitate the development of pro-poor legume varieties and technologies 4. Enhance the local capacity for innovation along the value chain	<ul style="list-style-type: none"> – At least 10% of farmers in the targeted areas adopt new varieties and practices in three years – At least a 10% increase in the marketed surplus of legumes in the targeted areas in three years – At least a 25% increase in legume seed availability in the targeted areas in three years – At least five agroenterprises are trained in legume innovations in each of the targeted countries 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report – Regional production statistics – Marketed surplus of farmers – ICRISAT archival reports 	<ul style="list-style-type: none"> – Legume prices remain stable – Sustained policy support for dryland areas – Climatic conditions remain farmer friendly
Outputs: 1. Develop Institutional innovations to improve markets for smallholder farmers	<ul style="list-style-type: none"> – At least one efficient legume value chain identified and defined for each crop 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report 	<ul style="list-style-type: none"> – Sustained policy support – Farmer-friendly climate
2. Promote new legume varieties evaluate and promote management practices	<ul style="list-style-type: none"> – At least two improved legume varieties and agronomic practices identified and promoted 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report 	=====DO=====
3. Develop institutional innovations to improve the access to and utilization of quality seeds of improved varieties	<ul style="list-style-type: none"> – At least one viable institutional innovation for seed systems established in each target country 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report 	=====DO=====
4. Developed and promote methods for better targeting of improved legume varieties	<ul style="list-style-type: none"> – Crop simulation model calibrated for variety targeting 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report 	=====DO=====
5. Strengthen the capacity of service providers and agroenterprises in the use of legume innovations	<ul style="list-style-type: none"> – At least two graduate students trained; at least two training modules developed for service providers and farmer organizations 	<ul style="list-style-type: none"> – Project progress reports – Impact monitoring report 	=====DO=====

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): Programme for Linking the Poor to Global Markets: Pro-poor Development of Biofuel Supply Chains

I. Background

1. Because of increases in oil prices and the global concern about environmental pollution, the interest in biofuels has grown. In view of these developments, many countries are formulating policies to blend fossil fuels with biofuels, which are organic fuels extracted from locally available and renewable biomass (agricultural crops, trees and grasses, agricultural and forestry residues). These crops may be used to produce environmentally friendly energy. Biofuel crops include purpose-grown energy crops and multipurpose crops that may provide, in addition to energy, by-products such as animal feed or fertilizers to meet the many needs of rural communities.
2. First-generation biofuels for which the technologies are generally well known are (a) bioethanol, which is produced through a fermentation process whereby sugar from crops (such as corn, sugar cane, sorghum and cassava) is converted into ethanol that is blended with petrol, and (b) biodiesel fuel, which is obtained from vegetable oils (such as coconut oil, palm oil and groundnuts), as well as from non-edible plants (such as *Jatropha curcas* and *Pongamia pinnata*). The oils are converted to biodiesel through a simple chemical process called transesterification. Second-generation biofuels, which are still under research, rely on advanced technologies to increase the sugar and biomass content in the stalk of the plant.

II. Rationale and relevance to IFAD

3. The success of poverty reduction is closely linked to the provision of energy in rural areas, many of which are remote and unconnected to electricity grids. More than two billion people in the world, mostly in rural areas in developing countries, have no access to energy services. In sub-Saharan Africa, over 90 per cent of people have no access to electricity. While rural people are dependent on bioenergy to meet their needs, this occurs at considerable cost to the environment because of deforestation and the adverse consequences in soil erosion.
4. Although energy issues are not explicitly incorporated into the Millennium Development Goals, it is widely recognized that access to energy may reduce poverty by increasing agricultural and labour productivity. Because it is labour intensive, renewable energy production also has considerable potential to generate on- and off-farm employment. Biofuels are explicitly mentioned in the IFAD Strategic Framework 2007-2010 and represent a major emerging market. The grant will meet many of IFAD's strategic objectives. Research on biofuel technologies is consistent with IFAD's strategy to promote improved agricultural technologies that will enable the poor to increase their productive assets. The grant will also strengthen "the capacity of rural women to perform their productive roles more effectively"¹ because energy provision reduces women's workloads in the collection of fuelwood and water and in food processing. There are also other significant benefits, especially in health because more cleanly burning fuels would reduce respiratory illnesses due to indoor air pollution. The grant will also address IFAD's strategic priority in tackling land degradation and promoting sustainable natural resource management and environmentally sustainable development. It will accomplish this by favouring the selection of biofuel crops and the promotion of

¹ IFAD Strategic Framework 2007-2010.

farming systems and practices that can utilize marginal lands and, in some cases, restore them. Biofuel production would also have a positive impact on the economies of developing countries through the generation of savings in foreign exchange and increases in exports to meet the surging demand for biofuel feed stocks for fuels in transport. This would allow IFAD's third objective, the promotion of access among the poor to national and international markets, to be met.

5. So far, biofuel production has been mainly developed on a large scale. There is some danger that the rural poor may not be able to tap into this emerging opportunity unless measures are taken to introduce biofuel crops in smallholder farming systems, develop technologies and products that are appropriate to the needs and capabilities of the poor and increase plant productivity as a means of reducing the land requirements for the same unit of production. Traditionally, IFAD's target group has lived in remote areas where market access is limited, the soils are poor, the rainfall is low and the agroecological conditions are fragile. Food-crop production in such areas is at best challenging, and projects must often seek high-value niche products to provide viable income-earning opportunities. The production of biofuels from plants that can be grown under adverse conditions and enjoy wide and increasing international demand offers a unique opportunity to assist the poor living in these remote environments.
6. The grant aims at enabling rural communities to take advantage of this considerable market demand, while maintaining and possibly enhancing food security and meeting other needs. The grant will also attempt to address and mitigate the many risks involved (pests, diseases, the selection of suitable cultivars, the lack of information on the viability of feed stock production, the appropriation of land from powerful groups), evaluate the impact of biofuels on poverty reduction, food security and gender, and examine environmental issues.

III. The proposed programme

7. The proposed three-year grant is part of initiatives led by the Technical Advisory Division to promote pro-poor biofuel development in IFAD operations. These efforts include (a) a proposal jointly developed by the Technical Advisory Division and the Asia and the Pacific Division and financed through the Initiative for Mainstreaming Innovation to mainstream biofuels in IFAD operations, and (b) the establishment of an informal in-house policy reference group to define IFAD's strategy in biofuel development, including consideration at international forums of the views of small farmers and poor farmers. Because farmer holdings are small, mainstreaming biofuels in IFAD operations would be incomplete unless there is basic research that would enable the poor to undertake biofuel production without sacrificing food security or efforts to meet their other needs.
8. The overall **goal** is to ensure that poor rural people living in remote agroecologically fragile areas benefit from the emerging opportunity in biofuels. The **objective** is to integrate improved cultivars of biofuel crops in smallholder farming systems to provide an alternative source of income, while meeting the varied needs of rural communities for food security and animal feeds. The following crops have been selected for the production of biofuels: cassava, sweet sorghum, *Jatropha curcas* and *Pongamia pinnata*. Research will also be initiated in the use of cellulose-rich energy crops such as switchgrass and silver grass. All these crops are suitable for cultivation under adverse agroclimatic conditions.
9. The **target group** is poor rural communities, particularly small-scale farmers, the landless poor and women in remote and ecologically fragile areas.
10. The programme will be implemented in China, Colombia, India, Mali, the Philippines and Viet Nam. To facilitate links with IFAD's lending programme, some research sites will be located in ongoing IFAD loan projects.

11. The programme will consist of four interrelated components:

- **Intensification of biofuel production and productivity.** This component will be implemented by research institutions and will include the development of improved sweet sorghum hybrids and cassava varieties, as well as the invigoration or establishment and evaluation of *Jatropha curcas* and *Pongamia pinnata* (or local species in Mali) in degraded lands. The most suitable cultivars and clones will be identified, multiplied and introduced in target countries. The most appropriate planting material and production technologies will be introduced to optimize productivity and reduce the volume of feed stocks.
- **Action research.** Pilot initiatives will be conducted in villages in different agroecological areas in about 15 countries, of which six will be financed from the large grant and nine through interested country programme managers as a part of their country-specific grants. Where appropriate, rural electrification schemes and transesterification facilities for biodiesel production will be financed. Rural people, including women, will be encouraged to form integrated community-based initiatives for electricity generation whereby some of the energy would be used for irrigation and the balance would be used to meet domestic needs and supply local processing facilities. Smallholder farmers will be organized to cultivate around 130 hectares of biofuel crops, while other community members will engage in the collection of seeds, which will then be sold to community-operated processing centres. Where feasible, smallholder biofuel crop farmers and producers will be linked with large industries and enterprises and integrated into value chains. Contractual agreements between farmer and producer associations and ethanol and biodiesel producers will be established for the purchase of inputs and the buy-back of produce. The impact of biofuel-based energy in poverty reduction and the rehabilitation of degraded land, as well as the economics of biofuel cultivation, processing and marketing will be assessed. Action research will be conducted by NGOs, which will work closely with research institutions.
- **Technology dissemination, training and capacity-building.** The grant will support training, field visits and on-farm demonstrations for communities, national agricultural research systems, extension services, government staff and NGOs so as to ensure capacity-building, promote knowledge sharing and facilitate the scaling up of successful technologies and practices. Training activities and the transfer of technologies that enhance capacities along the value chain in the cultivation, processing and marketing of biofuels will be promoted. Women will be encouraged to participate. Local seminars and a final international workshop will be held to discuss the findings. This will lead to the production of the final report. Policy dialogue with governments will be initiated to ensure that the land rights of the rural poor are protected and to prevent appropriation by more powerful groups.
- **Grant management and M&E.** Grant costs include funds for ICRISAT and the International Center for Tropical Agriculture for the recruitment of staff to conduct research, supervise field trials, train and supervise NGO staff working with communities, develop systems, carry out studies, monitor results, evaluate impacts and conduct workshops to disseminate the results.

IV. Expected outputs and benefits

12. These include the following:
- Validation of technologies to improve plant productivity;
 - Improvement of crop productivity;
 - Identification of high-yield clones and cultivars suited to different agroecological zones and the integration of these into smallholder farming systems;
 - Standardization and documentation of agronomic production practices;
 - Standardization of seed and clone multiplication systems;
 - Assessment of the impact of rural energy on poverty;
 - Evaluation of the economics of rural electrification and the development of business models for rural energy services and chains;
 - Enhancement of the knowledge base of various stakeholders (farmers, NGOs, departmental staff, etc.);
 - Mainstreaming of pro-poor biofuel production in IFAD interventions and national poverty reduction strategies;
 - Initiation of policy dialogue on land issues.

V. Implementation arrangements

13. The programme will be implemented by ICRISAT-India, which will appoint a programme leader.² ICRISAT-India will choose crop specialists from ICRISAT and the Latin American Consortium for Cassava Research and Development as principal investigators and representatives of participating countries. ICRISAT-India will supervise programme activities and provide technical support to NGOs and community-based organizations. ICRISAT and the International Center for Tropical Agriculture (CIAT) will jointly train stakeholders and policymakers, conduct research on the development of high-yielding cultivars and test them under field conditions.³ ICRISAT-Mali will conduct feasibility studies of selected cultivars under field conditions.⁴ The Institut d'économie rurale du Mali will evaluate the results of the field trials undertaken by ICRISAT-Mali. CIAT-Cali will conduct research on the development, evaluation and identification of improved cassava cultivars. CIAT-Asia will coordinate the activities of partners in the region. ICRISAT-India will conduct pilot tests to identify the most appropriate market linkage models. The Food and Agriculture Organization of the United Nations (FAO) will provide technical advice.
14. A steering committee will be formed consisting of IFAD task managers and, where possible, three country programme managers from the Asia and the Pacific Division, the Latin America and the Caribbean Division and the Western and Central Africa Division, coordinators from ICRISAT and CIAT, representatives of national agricultural research system partners, ICRISAT-Mali, FAO and the Tata Energy Research Institute. It will meet annually to discuss implementation and approve annual workplans and budgets.
15. ICRISAT will have the overall responsibility for technical and financial management aspects and will provide periodic progress reports. There will be a mid-term review to fine tune the activities. Baseline surveys and participatory M&E system initiatives will be undertaken to assess impact. All data will be disaggregated by gender.

² ICRISAT headquarters are located in Patancheru, India.

³ ICRISAT will focus on sweet sorghum, *Jatropha curcas* and *Pongamia pinnata*, and the International Centre for Tropical Agriculture will focus on cassava.

⁴ This is the satellite office for sub-Saharan Africa.

16. The programme will be supervised by a task manager based in the Technical Advisory Division through its administrative budget in close collaboration with the regional divisions concerned.

VI. Indicative programme costs and financing

17. Excluding the costs of the nine country-specific grants, the cost of the programme has been estimated at US\$3.9 million. The cost estimates by expenditure category are given in the table.

Summary of budget^a
(thousands of United States dollars)

<i>Type of expenditure</i>	<i>IFAD</i>	<i>National agricultural research systems</i>	<i>ICRISAT-India, the Philippines and Viet Nam</i>	<i>ICRISAT-Mali and Institut d'économie rurale du Mali</i>	<i>CIAT-Cali and Asia</i>	<i>Total counterpart contribution</i>	<i>Total</i>
Personnel (including subcontractors)	555	164	569	88	166	987	1 542
Infrastructure, equipment, vehicles	104	725	19	5	9	758	862
Field operations and supplies	260	-	210	44	88	342	602
Travel	125	-	-	-	-	-	125
Workshop, training, capacity-building	240	-	48	9	14	71	311
Technical backstopping	80	-	40	-	-	40	120
Administrative costs (10 per cent)	136	89	89	15	28	221	357
Total	1 500	978	975	161	305	2 419	3 919

^a Discrepancies in totals are due to rounding.

Logical framework

Goal and objectives	Indicators	Means of verification	Assumptions and risks
Goal: To improve the livelihoods and socio-economic conditions in rural communities through pro-poor biofuel value chains and business models	<ul style="list-style-type: none"> Number of participants from target groups reporting increases in incomes at least by 10% and improvement in non-financial assets, by gender Number of households reporting improvement in food security, including the share of woman-headed households % increase in households accessing energy services, including share of woman-headed households Increased value of biofuel crops by 10% among farmers and by 5% among entrepreneurs 	<ul style="list-style-type: none"> Progress and final reports Participatory M&E systems Impact assessment surveys 	<ul style="list-style-type: none"> Drop in prices of fossil fuels Governments implement favourable policies on biofuel pricing and blending and support farmers and producers
Project purpose: To establish pilot communities for the production of biofuel crops, the integration of the crops in smallholder farming systems with low inputs and assessment of the adaptability of the crops to various agroecological zones	<ul style="list-style-type: none"> Number of households and participants from target groups in each village engaging in biofuel production Increase in the number of community cooperatives and microenterprises in biofuel sector Agricultural productivity improved 	<ul style="list-style-type: none"> Programme reports Participatory M&E systems Baseline and impact assessment surveys Information bulletins Testing sites 	<ul style="list-style-type: none"> Drop in prices of fossil fuels Governments implement favourable policies on biofuel pricing and blending: and support farmers and producers Farmers willing to use part of their land for biofuels
Output 1: Technologies to improve plant productivity and reduce the volume of feed stock developed and evaluated; crop productivity improved	<ul style="list-style-type: none"> Number of evaluated technologies and local sites and farmers using developed technologies Crop productivity quantified Between 15 and 50 brown mid-rib sweet sorghum varieties and hybrids developed and tested 30 high-yielding cassava clones identified and 3 high-quality mutants evaluated 50 each of jatropha and pongamia lines collected and identified 	<ul style="list-style-type: none"> Programme reports Participatory M&E systems Impact assessment surveys Testing sites and farmer experiments Scientific publications, information bulletins 	<ul style="list-style-type: none"> Adverse weather conditions Lack of interest of local communities Farmers willing to use part of their land for biofuel cultivation
Output 2: High-yielding varieties suited to various agroecological zones and integrated in smallholder farming systems	<ul style="list-style-type: none"> Two cultivars of sweet sorghum and two high-yielding cassava clones for each zone identified Two nurseries for each crop in each agroecological zone established and evaluated At least 50 accessions of jatropha and pongamia evaluated for oil content 100 kg of seed of sorghum cultivar materials produced, and planting material for 20 ha of nurseries produced 	<ul style="list-style-type: none"> Programme reports Information bulletins 	<ul style="list-style-type: none"> Unseasonable rainfall and unfavourable weather conditions
Output 3: Agronomic production practices and seed and clone multiplication systems standardized and documented	<ul style="list-style-type: none"> Planting dates, fertilizer dosage and types and plant protection measures formulated for sorghum and cassava in each agroecological zone Pruning schedule and techniques, fertilizer dosage and types and plant protection measures formulated for jatropha and pongamia Production of 6,000 kg of each of the two identified sorghum cultivars and the cassava clones sufficient to plant in 50 ha in each agroecological region Multiplying high-quality jatropha and pongamia clones sufficient to plant in at least 500 ha in each target country 	<ul style="list-style-type: none"> Programme reports 	<ul style="list-style-type: none"> Unseasonable rainfall and unfavourable weather conditions
Output 4: Economics of rural electrification and impact of rural energy on poverty assessed; rural energy service business models and chains developed	<ul style="list-style-type: none"> Increase in the number of households reporting higher income and non-financial assets and accessing electricity Increase in the number of community cooperatives and microenterprises in biofuel sector Number of out-grower schemes and contract farming agreements % of farmers producing biofuels that have increased inputs and outputs At least one entrepreneur identified who will buy the target crops produced in each zone, and one best model identified and applied that is acceptable to producers and entrepreneurs 	<ul style="list-style-type: none"> Programme reports Participatory M&E systems Impact assessment surveys Contract farming agreements Report on market links Pilot testing sites 	<ul style="list-style-type: none"> Competition from large companies Inhibition and scepticism of input agencies, entrepreneurs and governments in the benefits of participating in project activities
Output 5: Knowledge base of various stakeholders enhanced	<ul style="list-style-type: none"> Project launching meeting, training programmes, exposure field visits Local seminars and final overall workshop 	<ul style="list-style-type: none"> Programme reports Training materials Minutes and attendance of seminars 	
Output 6: Pro-poor biofuel production and energy services mainstreamed in IFAD operations and included in poverty reduction strategies; policy dialogue initiated on land issues	<ul style="list-style-type: none"> Number of country strategic opportunities programmes with a biofuel component Number of IFAD projects and programmes with a biofuel component Number of countries including biofuels in their energy policies and poverty reduction strategy papers % of national financial resources allocated to biofuel development 	<ul style="list-style-type: none"> Country strategic opportunities programme, project and policy documents National statistics and other data Poverty reduction strategy papers and national policy documents Budget allocations 	<ul style="list-style-type: none"> Governments willing to engage in policy dialogue and enforcement actions

International Institute of Tropical Agriculture (IITA): Programme for the Participatory Development, Diffusion and Adoption of Cowpea Technologies for Poverty Reduction and Sustainable Livelihoods in West Africa

I. Background

1. Cowpeas are a key crop for resource-poor farmers and rural women in subsistence farming systems. The crop performs well in areas endowed with only scarce resources. In remote areas, cowpeas are often the only cash crop with good marketing opportunities because they do not perish quickly. Cowpea residues are a major fodder resource for the small ruminants that are important in the coping strategies, particularly of poor households. Farmers in the savannahs of West Africa are eager to adopt improved cowpea technologies such as high-yielding, disease- and drought-tolerant and short-cycle varieties, integrated pest management options and improved storage techniques.
2. From 1999 to 2006, the Africa Cowpea Project (PRONAF), a pioneer grant in establishing strong links with IFAD investment projects in Western and Central Africa, has been involved in the setting of priorities, participatory cowpea technology testing and farmer choices among varieties through seven projects in Benin, Burkina Faso, Mali, Niger and Nigeria. PRONAF has trained 235 national agricultural research and extension systems (NARES) scientists, IFAD project staff, public extension experts and private-sector stakeholders in the monitoring and impact assessment of research and development activities in food security and poverty reduction.

II. Rationale and relevance to IFAD

3. Poverty, food insecurity and malnutrition are major constraints to the improvement of livelihoods in Western and Central Africa. Access to markets, food quality and the related premium value of food play a key role in providing nutrients and higher profit margins to small farmers.
4. IFAD's research strategy assigns high priority to applied and adaptive research on crops that are important in the farming systems of the rural poor. Dealing with one of these crops, PRONAF is a longstanding regional network of cowpea researchers and stakeholders. Its comparative advantage lies in its economies of scale in the research and development of technologies and training modules and in its links with IFAD projects and other projects in scaling out the results.

III. The proposed programme

5. The overall goal of the programme is to enhance the livelihoods of target groups through the participatory development of cowpea technologies, commodity chains and institutions, capacity-building and partnerships.
6. The programme will last three years and will comprise three main thrusts:
 - The development and dissemination of innovations;
 - The institutional development and empowerment of stakeholders;
 - Public/private partnerships, stakeholder mobilization and communication.

The specific objectives are as follows:

- The participatory screening and dissemination of newly developed, affordable technologies for integrated cowpea production and processing;

- The strengthening of capacities and the empowerment of grass-roots and institutional stakeholders through a commodity chain development approach;
- The scaling out and sustainability of Africa Cowpea Project-grant investment linkages (PRONAF-GIL) achievements through stronger links with IFAD investment projects and other rural development projects.

IV. Expected outputs and benefits

Outputs

7. The expected outputs are:
 - Output 1: Updated, consolidated and disseminated cowpea technologies
 - Output 2: Sustainable business models for cowpea input supply, processing and marketing enterprises and improved marketing systems
 - Output 3: A methodology to increase awareness and information exchanges among target groups on important technological, social, economic and environmental issues

Benefits

8. The expected benefits of PRONAF-GIL are as follows:
 - Greater **agricultural productivity** and increased value added will be derived through processing and other downstream activities because of the mainstreaming of new technologies.
 - Improved varieties and biopesticides are scale neutral and may therefore be adopted even by poor households for **increased outreach and greater impact**.
 - Data collection tools and capacity-building modules are especially adapted to **women's needs** in terms of the increased access of women to affordable technologies.
 - The use of non-chemical storage technologies, including solar drying, triple bagging and botanical extracts, will have a **positive impact on the environment and health**.
 - The increased **regional awareness** of cowpea commodity chain development opportunities will lead to more cowpea-based income-generating activities.
 - The improved **regional competitiveness** of cowpea-based farming systems will lead to new opportunities and greater incomes for smallholder farmers.
 - A **sustainable network** of cowpea researchers and other stakeholders will facilitate and enhance exchanges.
 - An appropriate operational model will mainstream the results of research grants through **loan-grant links** to IFAD investment projects.

V. Implementation arrangements

Regional level

9. A programme coordinator from IITA will ensure day-to-day programme management. Each year, a regional stakeholder workshop will be organized to prepare annual workplans and budgets. These will be reviewed and approved by a regional steering committee made up of IITA, NARES, IFAD investment projects and IFAD staff (not funded under this grant). The committee will also be responsible for monitoring implementation. National partner NARES will be Institut national des

recherches agricoles du Bénin, Institut national de l'environnement et des recherches agricoles of Burkina Faso, Institut d'économie rurale du Mali, the Savanna Agricultural Research Institute in Ghana, and the Institute of Agricultural Research in Nigeria. The committee will delegate responsibility for selected programme activities to institutions at the national level. Scientific and technical backstopping will be provided by experts from participating research and development institutions. The committee will include five representatives (one from each of the countries covered), one IFAD staff member, one IITA representative and the PRONAF-GIL regional coordinator, who does not have the right to vote.

10. **M&E.** A special rotating M&E subgroup, the members of which are nominated by the steering committee, will assess the activities in each of the five countries. The subgroup will be composed of one IITA staff member and two NARES staff members from two different countries, plus one or two staff members from the local PRONAF team that is being visited and monitored. The PRONAF-GIL regional coordination team will prepare the group's terms of reference following consultations with other relevant researchers.
11. **Financial management.** Grant expenditures will be audited as an integral part of IITA's annual audit by an independent auditor. IITA has a long record of managing small, medium-sized and mega projects with funding amounts up to US\$17 million. All scientists are regularly trained in project management and are capable of managing small and medium-sized projects. The use of project management software is currently promoted within IITA.

National level

12. Each country will have a national coordinator, who will serve as the financial and logistical link in regional coordination. Oversight is to be provided by a national M&E committee that will be established in each country. IITA will be fully responsible for technical and financial reporting.
13. **Partnerships with IFAD investments projects.** The following partnerships in cowpea technology dissemination and farmer field forums will be established in Benin (the Roots and Tubers Development Programme and the Microfinance and Marketing Project), Burkina Faso (the Agricultural Commodity Chain Support Project), Ghana (the Rural Enterprises Project – Phase II, the Root and Tuber Improvement and Marketing Programme, the Northern Region Poverty-Reduction Programme), Mali (the Northern Regions Investment and Rural Development Programme and the Kidal Integrated Rural Development Programme) and Nigeria (the Community-Based Natural Resource Management Programme-Niger Delta and the Community-Based Agricultural and Rural Development Programme).
14. **M&E.** Monitoring will be carried out by internal teams, the steering committee and the PRONAF regional coordination unit. Monitoring reports will be presented at annual regional workshops according to previous workplans and allocated budgets. External teams approved by IFAD will also carry out M&E among PRONAF activities.
15. The annual evaluation will be a participatory internal exercise of the stakeholder workshop. The final evaluation of PRONAF-GIL will also be carried out by external teams approved by IFAD.

VI. Indicative programme costs and financing

16. The proposed IFAD contribution is US\$1.2 million. It will be used to finance regional exchanges and workshops, M&E, coordination, technical backstopping and NARES research operations, as well as some minor capital investments. In addition, the NARES will make in-kind contributions of professional and administrative staff time, land, germ plasm and laboratory and office space equivalent to a total of approximately US\$600,000. IITA will contribute administrative staff time, germ plasm and laboratory and office space equivalent to approximately US\$700,000.

Summary of budget

(thousands of United States dollars)

<i>Type of expenditure</i>	<i>IFAD</i>
Personnel (including subcontractors)	34
Professional services	251
Travel costs	60
Equipment	147
Technology development and impact studies	375
Operating costs and technical backstopping	333
Total	1 200

Logical framework

Goal	Verifiable indicators	Means of verification	Assumptions and risks
To enhance the livelihoods of the rural poor through empowerment and gender equitable access to cowpea value chain opportunities	Growing role of cowpeas as a tool against rural poverty The number of partnerships with rural development projects that adopt PRONAF-GIL expertise	Agricultural and trade statistics Rural poverty statistics	
Specific objective 1: The participatory screening and dissemination of newly developed, affordable technologies for integrated cowpea production and processing			
Results			
1.1 Cowpea technology packages are updated	Technology packages made available through research	Project assessment document, National and regional midterm reports	Research identified new technologies
1.2 Cowpea technologies and institutional innovations are consolidated, disseminated and made accessible to poor farm households and women	Three demonstration field trials/season/country	Project assessment document, National and regional midterm reports	
1.3 The lack of sustainable access to quality seeds and inputs for women and men is the main constraint to be addressed	One seed fair/year/country Two regional seed fairs for the Sahel at the beginning and at the end of the project	Project assessment document, National and regional midterm reports	Private sector interested in seed multiplication
Specific objective 2: Strengthening of capacities and empowerment of grass-roots and institutional stakeholders through a commodity chain development approach			
Results			
2.1 Empower smallholders through participatory diagnostic farmer field forums, field diversity	150 farmer facilitators and 1 200 farmers trained/empowered /year/country Number of diversity fields	Training reports and national and regional midterm and final reports	Farmer groups interested in the diversity field approach
2.2 The farmer field forum approach has been improved and mainstreamed	Number of partnerships with IFAD projects Number of modules for farmer field forums prepared Number of farmer field forums installed Research on the use of farmer facilitators	Project assessment document, National and regional midterm reports	IFAD projects are interested in a cost-effective extension approach
2.3 Improved access of poor farmers and women to cowpea-based market opportunities and value adding (microfinances, input and output markets)	Number of enterprises created by private stakeholders One market access workshop for women and men, stakeholders in local language/project/year Three types of extension flyers in local language/country/year	Workshop reports Sample of flyers	Good market opportunities for cowpea-based products
2.4 Farmer welfare forums promoted as a relevant and cost-effective strategy for increasing awareness and information exchanges among rural households and communities	Number of project staff trained in developing and scaling out farmer welfare forums Number of projects	100 farmer facilitators and 800 farmers trained/empowered/year/country	Development projects are interested
2.5 Gender-friendly tools and modules have been made available to IFAD investment projects and are used	Three joint participatory activities/year/country One capacity-building session/IFAD investment project/year	Project assessment document, National and regional midterm reports	

Specific objective 3: Scaling out and sustainability of PRONAF achievements through strengthened links with IFAD investment projects and other rural development projects			
Results			
3.1 Develop links with IFAD investment projects	Number of active partnerships Number of joint activities	Memorandum of understanding Project assessment document, National and regional midterm reports	IFAD projects are interested in partnerships
3.2 Strengthened capacity of staff of IFAD investment projects, NGOs and private managers	30 men and 10 women from IFAD investment projects, NGOs, public and private development managers/year/country	Training reports and regional midterm reports	IFAD projects are interested in partnerships
3.3 Institutional assessment of networks and organizations involved in the cowpea subsector	One regional survey on commodity-related networks and organizations carried out at year 1	Report available	
3.4 Sustainable business models for cowpea input supply and marketing enterprises are developed; producers and processors become more organized	Number of rural microenterprises created Number of private enterprises and other organizations that produce cowpea-based products	Project assessment document, National and regional midterm reports	The private sector is willing to invest in cowpeas

Africa Rice Center (WARDA): Programme for Enhancing Smallholder Access to New Rice for Africa (NERICA) Seeds for Alleviating Rural Poverty in Western and Central Africa

I. Background

1. Seeds are essential for food security because they constitute the most important input of farmers in Western and Central Africa. The inadequate supply of quality seed is a major constraint to crop production and food security in Western and Central Africa. Although most African Governments have invested significant resources into strengthening national agricultural production capacities, the lack of seeds in adequate quantities and of optimal quality still remains a bottleneck to agricultural development. Guaranteeing farmers access to quality seeds requires a viable system to multiply and distribute seeds that have been produced on a timely basis, at the right place and at an affordable price.
2. IFAD provided a US\$1 million grant to WARDA in 2000 to finance the Participatory Adaptive Research and Dissemination of Rice Technologies in West Africa. The aim of the grant was to contribute to an increase in rice productivity, crop diversification and rural income generation through the development, testing, evaluation and adaptation of appropriate innovations. Due to the need to use a different methodology to disseminate knowledge about complex issues in integrated crop and natural resource management in rice-based cropping systems, the programme introduced participatory learning and action research, a novel approach to farmer learning. The approach has been expanded to at least eight West African countries in the context of integrated crop management.
3. Building on the success of the first phase of the programme, a second phase was approved in 2003, with financing of US\$1 million, to focus on an inland valley rice-based system (high-impact ecology) in The Gambia, Ghana, Guinea and Mali. The second phase gives increased emphasis to local innovations and scales up the participatory learning and action research methodology through improved partnerships. The phase II programme deals with three main issues: (i) the development of technological baskets for rice-based systems, (ii) the development of a methodological basis for integrated crop management, and (iii) partnership-building among research and development stakeholders. It seeks to identify and evaluate local innovations, promote participatory learning and action research for integrated crop management and develop farmer-to-farmer training networks. A large number of partners, including farmers, have been trained in documenting local innovations. The main results and impacts achieved by the second phase include (i) an increase and improvement in human and social capital, (ii) local knowledge in rice-based systems is captured and shared more effectively among stakeholders, (iii) an increase in rice yields, and (iv) crop diversification in inland valleys.
4. Despite the positive results achieved so far, the availability and access to NERICA seeds by small farmers remain limited in Western and Central Africa. This is a matter of great concern, and the issue needs to be tackled appropriately.

II. Rationale and relevance to IFAD

5. More than 90 per cent of rice farmers in Western and Central Africa are smallholders. The majority are women who cultivate less than 1 hectare each. They mostly depend on rainfall. Production from the small plots is generally insufficient to provide households with a reasonable standard of living. These farmers manage complex farming systems, cultivating rice and other food crops, and accord varying importance to rice as a food crop and as a cash crop. This is unlike Asian farmers

among whom rice is a predominant crop grown mainly in lowland and irrigated systems. This means that African countries are at a different stage of development in rice production and in the importance of rice production to their economies.

6. NERICA seeds offer new opportunities to rice farmers not only in Western and Central Africa but throughout sub-Saharan Africa because of their major characteristics of short growing period, high yield, resistance to major local stresses and pleasant taste. They have shown stable yields under different management conditions. Their introduction into farmer fields is a first step towards the stabilization and sustainable intensification of Western and Central Africa's fragile uplands. NERICA seeds constitute a catalyzing element in reducing the risks and the year-to-year variability involved in rice production and in improving the sustainability and productivity of rainfed environments in Western and Central Africa. The idea, however, is not to replace local rice varieties with NERICA lines, but rather to integrate NERICA seeds into the existing varietal portfolio of rice farmers, together with complementary technologies such as sound natural resource management practices and improved rice marketing and distribution systems.
7. There is evidence that NERICA may revolutionize rice production in Africa. However, a lack of a critical mass of rice scientists and technicians in the NARES to conduct adaptive research to develop sustainable production and post-harvest packages is a major constraint to rice production. Farmers also have poor access to seeds and yield-enhancing technologies.
8. Through the participatory varietal selection approach, NERICA seeds have been successfully introduced in many countries in West Africa, such as Benin, Burkina Faso, Côte d'Ivoire, The Gambia, Ghana, Guinea, Mali, Nigeria, Sierra Leone and Togo. In Benin, Guinea and Togo, reports indicate that the livelihoods of local farmers have been improved through the adoption of NERICA seeds. Currently, over 150,000 hectares (ha) are being cultivated in NERICA in West and Central Africa (under the Africa Rice Initiative 2005). (Guinea alone accounts for more than 70,000 ha, and Uganda for more than 20,000 ha.) In addition, reports from Eastern Africa indicate that NERICA lines have been released in Ethiopia and are in the process of release in Kenya, Madagascar and the United Republic of Tanzania. NERICA testing is at an advanced stage in the Congo and the Democratic Republic of the Congo, where three NERICA seed varieties (NERICA 3, 4 and 6) are the most popular.
9. Making NERICA seeds available to smallholder farmers and scaling up new NERICA-based technologies may be hindered by organizational and institutional factors. Key among the institutional factors are the limited capacity of national extension institutions, the absence of national seed policies and the limited working resources. Adaptive research and capacity-building are required to address these bottlenecks. Furthermore, coordinated research is necessary in selected countries to develop complementary technologies such as integrated soil fertility and pest management practices and to ensure that NERICA-based technologies are ecologically sustainable. Research at WARDA has shown that NERICA yields are superior to the yields of other rainfed rice varieties, giving about 2 tons/ha under zero fertilizer application.
10. Men, women and youth play critical roles in rice seed production and marketing in Western and Central Africa. Thus, this programme will identify the particular constraints and potential relative to each of these key actors in enhancing the seed system. The differences in the technology needs of men and women farmers along the upland-lowland continuum need to be evaluated. Experiences in other projects, such as the Lowlands Agricultural Development Programme in The Gambia, that have addressed women-specific technology needs will be useful in this. The programme will generate knowledge on improving strategies and interventions in the development of the rice seed sector.

11. The programme will complement ongoing development activities focused on rice seed systems in Western and Central Africa such as the Africa Rice Initiative funded by the African Development Bank and the International Rice Research Institute-WARDA collaborative programme funded by IFAD in Eastern and Southern Africa. The adaptive research and capacity-building components of this programme will provide synergy for the Africa Rice Initiative and other seed and rice production projects in the region.

III. The proposed programme

12. The overall goal of the programme is to improve the contribution of rice production and post-harvest technologies to poverty reduction and food security in Western and Central Africa and to increase the incomes of smallholder men and women rice farmers in selected Western and Central Africa countries. The objectives of the programme are as follows:
 - Develop a comprehensive package of NERICA seed and grain production practices and make them available to programme beneficiaries;
 - Build the capacity of rice scientists and technicians in order to strengthen national rice research and production;
 - Conduct participatory assessments of labour-saving post-harvest technologies for reduced losses and high grain quality;
 - Undertake studies to improve the policy and market arrangements for domestic rice production and trade.
13. The programme will last four years and will consist of five main components:
 - Start-up activities, including the assessment of gender issues and institutions at the outset of the programme, as well as a survey of consumer preferences (taste factors) and demand for NERICA in the selected countries;
 - An on-station and on-farm assessment of NERICA and complementary technologies along the upland and lowland production continuum;
 - The training of rice scientists and technicians through support for research at WARDA, short-term assignments, visits by scientists, workshops and seminars;
 - The assessment of smallholder labour-saving, post-harvest equipment for efficiency and cost-effectiveness and the identification of constraints on the adoption of the technologies, as well as an assessment of the economic and social benefits of the technologies;
 - An assessment of the input and output markets and market opportunities.

IV. Expected outputs and benefits

14. The programme will produce four outputs:
 - The development of comprehensive packages of NERICA seed and grain production practices;
 - Capacity strengthening among rice scientists and technicians to support national rice research and production;
 - The development of labour-saving, post-harvest technologies to reduce losses and improve grain quality;
 - Improvement in policy and market arrangements for domestic rice production and trade.

V. Implementation arrangements

15. The implementation and management of the programme will be carried out through existing local institutions and organizations and established structures in the beneficiary countries (the Democratic Republic of the Congo, Guinea and Sierra Leone) to ensure that the process is demand-driven. This collaborative mechanism will ensure sustainability and the continuity of activities after the end of the programme. Working through such existing structures will also ensure that the programme activities are adapted to fit local conditions.
16. WARDA will be responsible for administrative and financial matters. It will therefore ensure the efficient use of the financial resources of the grant and will prepare the annual workplan and budget. A programme advisory committee composed of a WARDA programme coordinator and country representatives will be responsible for planning, implementing and monitoring programme activities.
17. The programme will work with a large number of partners, including farmers, producer groups, farmer associations, NARES, national extension services, NGOs and IFAD projects. These partners will play a key role in the development of the technological packages and be closely associated in all programme components.

VI. Indicative programme costs and financing

18. The total cost of the programme is estimated at US\$2.4 million. Of this amount, US\$1.5 million will be financed through the proposed IFAD grant. The balance, US\$880,000, will be contributed by counterparts as follows: WARDA US\$698,500, NARES US\$139,500 and other sources (International Rice Research Institute staff, NGOs and private-sector participants in programme meetings and monitoring) US\$37,000.

Summary of budget^a
(thousands of United States dollars)

<i>Expenditure categories</i>	<i>IFAD</i>	<i>WARDA</i>	<i>NARES</i>	<i>Others^a</i>	<i>Total</i>
Personnel and technical	80	562	120	20	782.5
Capital, equipment	110	24	3.5	-	137.5
Travel costs	120	-	-	-	120
Operational costs (adaptive)	360	65	16	17	458
Technical backstopping	92	10	-	-	102
Capacity-building	543	37	-	-	580
Overhead (13 per cent)	195	-	-	-	195
Total	1 500	698.5	139.5	37	2 375

^a Includes the cost of International Rice Research Institute staff, NGOs and private-sector participation in programme meetings.

Logical framework

Narrative summary	Key performance indicators and targets	Monitoring mechanism and information sources	Assumptions and risks
Goal			
<i>To improve the contribution of rice production and post-harvest technologies to poverty reduction and food security in Western and Central Africa</i>	<ul style="list-style-type: none"> Proportion of people living on less than a dollar a day in Western and Central Africa down by 10% by 2015 Proportion of food-insecure rural households in Western and Central Africa down by 10% by 2015 	<ul style="list-style-type: none"> Government statistics Economic Community of West African States report IFAD reports Food and Agriculture Organization statistics 	<ul style="list-style-type: none"> Policies in place to promote competitive domestic rice production and trade in Western and Central Africa Increased incomes among farmers will translate into reduced poverty and improved livelihoods
Project purpose			
<i>To increase the incomes of smallholder men and women rice farmers in selected Western and Central African countries</i>	<ul style="list-style-type: none"> 75% of farmers adopt NERICA and productivity enhancing technologies in project communities by the end of the project 30% increase in rice productivity in project communities by the end of the project 20% increase in household incomes in project communities by the end of the project 	<ul style="list-style-type: none"> Statistics and reports of project countries WARDA reports and publications Reports and publications by NARESSs, universities and NGOs Impact assessment and final project reports Radio and television programmes 	<ul style="list-style-type: none"> Adequate social, economic and political stability exists for bilateral activities Government commitment to achieving rice self-sufficiency Climate variability does not significantly affect rice production
Outputs			
<i>1. Comprehensive packages of NERICA seed and grain production practices developed and made available to project beneficiaries</i>	<ul style="list-style-type: none"> A detailed project implementation plan in use by project stakeholders by mid-project year 1 The number of NERICA productivity-enhancing packages developed by project year 3 	<ul style="list-style-type: none"> Project reports and publications by WARDA, NARESSs, universities and NGOs IFAD assessment reports 	<ul style="list-style-type: none"> The active and sustained participation of project partners and farmers No hindrance to germ plasm transfers to project countries
<i>2. Capacity of rice scientists and technicians strengthened to support national rice research and production</i>	<ul style="list-style-type: none"> Coalition of partners developed in each participating country for project implementation The number of scientists and technicians from project countries trained by project year 3 The number of participatory learning modules and extension materials on rice seed and grain production techniques developed by project year 3 	<ul style="list-style-type: none"> Project reports and publications by WARDA, NARESSs, universities and NGOs Radio and television programmes 	<ul style="list-style-type: none"> Participating governments give priority to capacity-building
<i>3. Labour-saving, post-harvest technologies for reduced losses and improved grain quality assessed and documented</i>	<ul style="list-style-type: none"> The number of pieces of labour-saving equipment identified and assessed in project communities by the end of phase II The number of pieces of post-harvest equipment identified and assessed in project communities by the end of phase II The number of pieces of post-harvest equipment identified and assessed in each project community by the end of phase II 	<ul style="list-style-type: none"> Project reports and publications by WARDA, NARESSs, universities and NGOs IFAD assessment reports Market surveys 	
<i>4. Improved policy and market arrangements for domestic rice production and trade</i>	<ul style="list-style-type: none"> An assessment policy report and fact sheets on strategies to improve NERICA productivity and farmers incomes available to key project stakeholders to guide policy formulation by phase II 20% increase (over the start of project year 1) in the volume and value of rice sold in project communities by the end of phase II An assessment report on market information and dissemination systems available by the end of phase II 	<ul style="list-style-type: none"> Project reports and publications by WARDA, NARESSs, universities and NGOs IFAD assessment reports Radio and television programmes Market surveys 	<ul style="list-style-type: none"> Improved policies are sustained to promote the sale and local consumption of domestic rice