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REPORT AND RECOMMENDATION OF THE PRESIDENT

TO THE EXECUTIVE BOARD ON PROPOSED

TECHNICAL ASSISTANCE GRANTS

FOR

AGRICULTURAL RESEARCH AND TRAINING

BY

NON-CGIAR-SUPPORTED INTERNATIONAL CENTRES



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ABBREVIATIONS AND ACRONYMS

ACSAD	Arab Center for the Studies of Arid Zones and Dry Lands
CARDN	Camel Applied Research and Development Network
CGIAR	Consultative Group on International Agricultural Research
FAO	Food and Agriculture Organization of the United Nations
HKH	Hindu-Kush Himalayas
ICIMOD	International Centre on Integrated Mountain Development
ICIPE	International Centre of Insect Physiology and Ecology
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
INPHO	International Network on Post-Harvest Operations
IsDB	Islamic Development Bank
M&E	Monitoring and evaluation
NARS	National Agricultural Research Systems
NGO	Non-Governmental Organization
PROCELOS	Project for the Promotion of Local Food Products
SG2000	Sasakawa Global 2000
TA	Technical Assistance
TPC	Technical Planning Committee



**REPORT AND RECOMMENDATION OF THE PRESIDENT OF IFAD
TO THE EXECUTIVE BOARD ON PROPOSED TECHNICAL ASSISTANCE GRANTS
FOR AGRICULTURAL RESEARCH AND TRAINING TO
NON-CGIAR-SUPPORTED INTERNATIONAL CENTRES**

I submit the following Report and Recommendation on four proposed technical assistance (TA) grants for agricultural research and training to four non-CGIAR-supported international centres in the amount of USD 4 800 000.

PART I - INTRODUCTION

1. This report recommends the provision of IFAD support to the research and training programmes of non-CGIAR-supported international centres: the Arab Center for the Studies of Arid Zones and Dry Lands; the International Centre on Integrated Mountain Development; the International Centre of Insect Physiology and Ecology; and Sasakawa Global 2000.
2. The documents of the TA grants for approval by the Executive Board are contained in the annexes to this report:
 - I. Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD): Camel Research and Development Network (CARDN) – Phase II
 - II. International Centre on Integrated Mountain Development (ICIMOD): Securing Livelihood in Uplands and Mountains of the Hindu-Kush Himalayas: Technical Innovations and Implementation Support to IFAD Projects
 - III. International Centre of Insect Physiology and Ecology (ICIPE): Programme for Improving Income-Generation Options Based on Sericulture and Apiculture Technologies in Africa - Phase II
 - IV. Sasakawa Global 2000 (SG2000): A Market-Driven Initiative for Millet and Sorghum Development in West and Central Africa.
3. The objectives and content of these applied research programmes are in line with the policy and criteria of IFAD's TA grant programme for agricultural research and training, and with the Fund's evolving strategic objectives.
4. More specifically, IFAD's strategic objectives in support of technology development relate to:
 - (a) IFAD's target groups and their household food-security strategies, specifically in remote and marginalized agro-ecological areas;
 - (b) technologies that build on traditional knowledge systems, are gender-responsive, and enhance and diversify the productive potential of resource-poor farming systems by improving productivity and addressing production bottlenecks;
 - (c) access to productive assets (land and water, financial services, labour and technology, including indigenous technology), and sustainable and productive management of such resources;



- (d) a policy framework that provides the rural poor with incentives to reach higher levels of productivity, thereby reducing their dependence on transfers; and
- (e) an institutional framework within which formal and informal, public and private-sector, local and national institutions provide services to the economically vulnerable, according to their comparative advantage. Within this framework, IFAD also intends to develop commodity-based approaches to rural poverty alleviation, specifically targeting those items that are produced and consumed by the rural poor.

Finally, the establishment of a consolidated network for knowledge gathering and dissemination will enhance the Fund's capacity to establish long-term strategic linkages with its development partners and to multiply the effect of its agricultural research and training programme.

5. The TA grants proposed in this document respond to the foregoing strategic objectives. The action-research programme to support poor pastoralists and camel herders in sustainable rangeland use for improving the income-generation potential of camel-based pastoral production systems will respond mainly to strategic objectives (a), (b) and (c). The programme will focus on improving the adoption of technological innovations and sound management practices by pastoral associations, and on consolidating shared knowledge and information systems among pastoral communities, including, in particular, those sedentarizing in areas addressed by IFAD-financed rural development projects. The programme to provide implementation support to IFAD loan-funded projects in upland/mountainous areas of the Hindu-Kush Himalayas will focus on (a), (b), (c) and (e). It will seek to draw on indigenous knowledge, promote the role of women as change agents, foster participatory development processes, identify local champions and mentors, and provide policy feedback on IFAD's innovative experience. The second phase of the programme for improving income-generation options based on sericulture and apiculture technologies in Africa will focus on objectives (a) and (b). It will be based on the development and validation of technologies, adapted to local conditions, for the production, value-addition and marketing of silk and honey products, which will assist in the design and implementation of loan projects promoting rural microenterprises for income-generation. The Fund's support to a market-driven development process for the local cereals, millet and sorghum, which are the mainstay of agriculture in the semi-arid zones of West and Central Africa, will focus on (a), (b), (c) and (d). The programme will contribute to research and development for improved food security, permitting rural poor communities in the populous semi-arid zones of West and Central Africa to make the transition from marginal environments to sustainable and remunerative farming systems. The programme will be based on the development, testing and regional exchange of information and training on market-oriented themes and on the identification of development opportunities.



PART II - RECOMMENDATION

6. I recommend that the Executive Board approve the proposed TA grants in terms of the following resolution:

RESOLVED: that the Fund, in order to finance, in part, the Camel Applied Research and Development Network (CARDN) - Phase II shall make a grant not exceeding one million two-hundred thousand United States dollars (USD 1 200 000) to the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the programme for Securing Livelihood in Uplands and Mountains of the Hindu-Kush Himalayas: Technical Innovations and Implementation Support to IFAD Projects, shall make a grant not exceeding one million United States dollars (USD 1 000 000) to the International Centre on Integrated Mountain Development (ICIMOD) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for Improving Income-Generation Options Based on Sericulture and Apiculture Technologies in Africa - Phase II shall make a grant not exceeding one million six hundred thousand United States dollars (USD 1 600 000) to the International Centre of Insect Physiology and Ecology (ICIPE) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President

FURTHER RESOLVED: that the Fund, in order to finance, in part, the Programme for the Market-Driven Initiative for Millet and Sorghum Development in West and Central Africa, shall make a grant not exceeding one million United States dollars (USD 1 000 000) to Sasakawa Global 2000 (SG2000) upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board in this Report and Recommendation of the President.

Fawzi H. Al-Sultan
President



**ARAB CENTER FOR THE STUDIES OF ARID ZONES AND DRY LANDS
(ACSAD): CAMEL APPLIED RESEARCH AND DEVELOPMENT NETWORK
(CARDN) – PHASE II**

I. BACKGROUND

1. Since 1996 IFAD has supported the Camel Applied Research and Development Network with USD 1.5 million. The network has a programme coordinator based in Damascus, Syria, at the Arab Center for the Studies of Arid Zones and Dry Lands, and national coordinators in ten member countries. It has been cofinanced by the Islamic Development Bank (IsDB) (USD 1 million) and by France (USD 50 000).

2. The first phase of the programme concentrated on creating awareness about camels and on institution-building. Several countries strengthened awareness by starting separate units for camel husbandry and development and by creating socio-economic profiles of camel herders. The latter revealed the importance of camels to pastoralists in fragile agro-ecologies and identified the constraints facing herder communities. In this period of institution-building, countries produced socio-economic survey data, research on the development of camel meat and production, and other studies. CARDN also compiled and documented the published scientific literature on camels; prioritized its own needs, including upgrading 17 laboratories; and supported 42 research projects, which are widely cited. The network has also published a “Camel Newsletter” and three technical reports, and will launch a journal of camel studies in 2000.

II. RATIONALE AND RELEVANCE TO IFAD

3. Camels are the preferred livestock species in extremely dry zones, enabling individuals to live in otherwise uninhabitable areas. Camels’ virtues include: going without water for days without decreasing feed intake and milk yield; utilizing feed that is unpalatable to other species; an ability to carry heavy loads over long distances; and low susceptibility to disease. They also ensure a sustainable livelihood for their owners by generating milk for subsistence and income from the sale of excess animals, while constituting a source of capital accumulation.

4. Camels benefit an important IFAD target group: poor pastoralists. However, pastoral systems and their communities are faced with a set of interconnected constraints deriving both from the constant need to increase income and from ecological pressures. Pastoralists are now being forced into more marginal areas due to population pressures and restrictions on their grazing rights. Here, there are greater risks of disease to camels and a lack of access to basic human amenities, including water and health facilities. Such areas typically are far from markets, leading to the waste of excess milk (beyond that needed by offspring and herders’ families), camel hair and hides, which could each be a source of additional income. As pastoralists’ need for cash increases, they tend to keep a higher proportion of small ruminants and cattle because they command higher market prices than camels. This reduces the stability of the ecosystem and results in a vicious circle of environmental degradation. As poor pastoralists become poorer, they are often forced to sell their few remaining animals to large herders. To break this syndrome and to avoid working as hired labourers or migrating to urban unemployment, herder pastoralists are looking for new ways to utilize their animals.

5. An analysis is needed to identify the viability of improving meat and dairy production as well as other investment opportunities that will assist poor pastoralists while simultaneously preserving their ecosystem. More-intensive feeding of camels by traders or butchers within city boundaries would enhance the value of camels before slaughter. However, little information exists on changes in carcass composition during the feeding process, and there is still a negative image of camel meat that



must be overcome to increase its market value. Developing opportunities to increase camel milk production by using concentrates, practising early weaning and reducing calving intervals, as is done in Tunisia, could have positive economic benefits for herder pastoralists. However, further research is needed on the feasibility of transferring these practices elsewhere, on whether camels can compete with other dairy animals, and on a range of other questions concerning camel-based production systems. Furthermore, because herders have lost access to traditional grazing grounds and tend to stay closer to urban centres, it might be possible to organize groups of camel owners for milk collection and link them up with dairy plants for activities such as milk collection, milk processing and cheese making.

6. While CARDN's first three-year phase of awareness-creation and institution-building was successful and strengthened research in many member countries, the network had neither the time nor the capacity to explore many research, investment and management questions, the answers to which could dramatically improve the well-being of IFAD's target group of poor herder pastoralists and their communities.

III. THE PROPOSED PROGRAMME

7. Phase II of CARDN will support a number of mutually supporting action-research activities with the full participation of poor camel-pastoralist communities in the region. The research will cover socio-economic aspects that influence the adoption of technical innovations. It will also cover technology development and adaptation in the areas of animal health and reproduction; animal nutrition, including feeding for more intensive production and quality control; and the processing, conservation and marketing of both milk and meat. It will last for four years, three of which will be spent on research data analysis and documentation, and one of which on herder-supported adoption of research results. Technical research will be combined with equally critical research on the social and economic aspects of camel-based production systems.

8. Research will be demand-driven, with projects being formulated at the community level using a strong participatory approach. Researchers will be in close contact with producers and will be encouraged to work on the outreach research sites established near the camel herding and marketing areas. This arrangement will ensure the validity of their approach and the timely feedback of their results to beneficiaries. A participatory methodology will contribute to camel-keeping pastoralists' utilizing sustainable husbandry practices, an area where they themselves admit their lack of knowledge and a need for assistance. Improved practices, in turn, will decrease land degradation, ensure the continuity of pastoral systems by improving living conditions and minimizing risks, and begin to alleviate poverty. When possible, research and development activities will link up with ongoing IFAD projects in member countries to identify investment opportunities derived from new technologies produced by CARDN's research results. Phase II will also explore the possibility of establishing the basic amenities necessary for camel herders to persist in a changing world. These may include medical dispensaries, elementary schools, general stores, marketing, banking and other facilities.

9. The programme will support several key project activities, with particular attention to countries where camel production is an important means of livelihood to the poorest herders. It will assist national agricultural research systems (NARS) in member countries with networking, collecting documentation, identifying camel research priorities, upgrading laboratories and research stations, and supporting projects to improve pastoralist systems. It will expand and improve the network's bibliographic services, concentrating on "gray" literature from cooperating laboratories and other sources, computerization, the development of an Internet website to reach outside parties, and the production of compact discs with read-only memory (CD-ROMs) for countries without Internet access. It will promote training in laboratory techniques, particularly those with direct impact on herding communities (e.g., disease diagnosis, on-site vaccination, treatment and hygiene), socio-



economic surveys, and data and systems analysis and modelling; and it will arrange workshops, especially travelling ones, so that camel herders can share their experiences. The programme will also assist scientists to conduct and publish field research and will develop a journal of camel studies as an outlet for articles of international repute that fall between specialized scientific studies and development reports. In due course, ACSAD will absorb the cost of producing this journal in its core budget. It will support the identification and development of applied and adaptive camel research, twinning arrangements between institutions; and it will examine existing experiences concerning the formation of camel-keepers' organizations.

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

10. The grant's major outputs will be a policy recommendation to support sustainable rangeland use and camel-based pastoral production systems; TA support to pastoral organizations and associations; problem-solving initiatives in camel keeping and rangeland use; range research and technology diffusion projects initiated or managed by pastoralists; improved research facilities, particularly those directly serving the needs of pastoral communities; the support, financing and monitoring of priority research projects; arrangements for twinning and research grants; a computerized data bank of research results and development projects on camels and small ruminants; the support of camel research and the adoption of technological innovations and sound management practices by pastoral associations; and shared knowledge and information systems among pastoral communities.

11. The programme's research and development efforts will primarily assist camel-keeping communities to develop, produce and market their produce, especially meat and milk. Its beneficiaries will be camel pastoralists practising nomadic or transhumant animal husbandry systems, often engaged in limited seasonal cropping activities, and increasingly living in one place. It will also try to target the more elusive poor small herders, who manage large numbers of animals in groups. In addition, CARDN II will benefit several ongoing IFAD investment projects where there are important camel-keeping communities. Both researchers and pastoralists will gain from a participatory approach; consumers will benefit from an increased supply of meat and dairy projects; and the ecosystem will improve because of better range management, better husbandry practices and reduced overgrazing. An attempt will be made to widely disseminate promising results to encourage technology diffusion across other developing regions, including Latin America and the Caribbean, and Asia and the Pacific, where appropriate.

V. IMPLEMENTATION ARRANGEMENTS

12. The network will serve ten countries in Asia and Africa with major camel populations and ongoing research on camel development. These are Algeria, Egypt, Iran, Libya, Mauritania, Morocco, Pakistan, The Sudan, Syria and Tunisia. Countries will be selectively involved in different activities. Documentation, information and coordination services will be available to all members. CARDN will help to incorporate and focus member countries' research programmes and laboratory work and will conduct the various types of training discussed above. The network will provide research support to member laboratories for projects falling under its programme, granted upon application and subject to strict reporting procedures. CARDN's core members will grow on a country-by-country basis according to certain criteria. Among others, these will include a willingness and capacity to organize pastoral communities and self-help groups; a commitment to support poor camel herders; the importance of the national camel herd; the availability of research facilities directly linked to the needs of pastoral communities; the existence of pastoral-based participatory research programmes; the number and quality of available research staff and the relevance of proposed national research programmes; previous commitment to CARDN; and donor interest in financing a country's camel research and development activities. CARDN will give priority to demand-driven community-level projects to improve husbandry, living conditions and the environment; to developing a market-



oriented approach to new forms of camel production and evaluating their biological, social and economic validity; to a systems-oriented approach; and to projects with appropriate co-funding and to those linked to IFAD projects in member countries.

13. ACSAD will coordinate Phase II of the programme with the possibility of some subcontracting of research to specialized centres of excellence such as the International Livestock Research Institute, ICIPE, or others depending upon additional funding. CARDN's coordinator will have minimal support staff and will rely on up-to-date technology including computer conferences for communication, limiting actual conferences to specialized research projects.

14. Each member country will have a technical/planning committee (TPC) and a national coordinator (together forming a regional TPC) to oversee its work. The network will choose member countries and institutions according to the criteria mentioned above. A steering committee will be the network's governing body and will include an ACSAD chairperson, a network coordinator, IFAD's TA grants task manager, and representatives from other donors. A monitoring and evaluation (M&E) system will be established in close collaboration with IFAD, and the logframe, which will be used as the basis for implementation monitoring at regular milestones, will be further defined during the implementation-launch workshop.

15. Researchers in national laboratories will formulate their own proposals. The TPC, consisting of national professionals and chaired by a national coordinator, will develop and implement an annual workplan and budget. The regional TPC, consisting of national coordinators and chaired by the network coordinator, will develop and implement general programme activities, including national progress reports and consolidated workplans and budgets. It will submit them annually to the network coordinator who will give them to the steering committee at least two weeks before their yearly meeting. The steering committee, which will meet yearly in different countries, will oversee all programme activities; approve progress reports; scientifically assess all activities, outputs and proposals; and approve the annual workplan and budget. The regional TPC will submit annual progress reports and draft work programmes.

VI. INDICATIVE PROGRAMME COSTS AND FINANCING

16. IFAD and ACSAD will provide core funds to finance basic network activities, with governments financing most of their own research and development programmes. The network will also solicit outside donors for support, specifically: the Arab Fund for Economic and Social Development, IsDB and the French Government. Other donors will include the Arab Authority for Agricultural Investment and Development, the Arab Bank for the Economic Development of Africa, the African Development Bank, the Asian Development Bank and the German and Italian Governments. Support from the private sector will be encouraged to fund specific projects.

**ESTIMATED COSTS AND FINANCING PLAN (FOUR YEARS)**
(Amounts in USD)

Cost Category	IFAD	ACSAD	AFESD	IsDB	French Govt.	Other donors	In-kind	Total
Scientific staff	360 000	225 000					200 000	785 000
Consultants	100 000		100 000		50 000	50 000	100 000	400 000
Technical support staff			150 000				100 000	250 000
Research expenses	300 000		250 000		100 000	100 000	400 000	1 150 000
Capital equipment				1 000 000			200 000	1 200 000
Travel and workshops	160 000					50 000	100 000	310 000
Training and capacity-building	90 000				50 000	50 000	200 000	390 000
Programme coordination	90 000							90 000
Incremental administration and technical backstopping	100 000							100 000
Total	1 200 000	225 000	500 000	1 000 000	200 000	250 000	1 300 000	4 675 000



**INTERNATIONAL CENTRE ON INTEGRATED MOUNTAIN DEVELOPMENT
(ICIMOD): SECURING LIVELIHOOD IN UPLANDS AND MOUNTAINS OF THE
HINDU-KUSH HIMALAYAS: TECHNICAL INNOVATIONS AND
IMPLEMENTATION SUPPORT TO IFAD PROJECTS**

I. BACKGROUND

1. The Hindu-Kush Himalayas (HKH) comprise the Chittagong Hill Tracts of Bangladesh; the Himalayas of north-eastern India; the mountains of Bhutan, Nepal and Pakistan; the Hengduan mountains of Sichuan and Yunnan in China; and the Chin, Kachin, Karen and Shan states of Myanmar. The subregion is host to some of the poorest people in Asia. It is known for diversity of ethnic tribal upland farming communities, each with different cultural traditions, religious beliefs and economic activities. It is an area where gender relations are more equitable than in other lowland and urban areas and where women have more autonomy, mobility, access to entrepreneurial activities, and opportunities to assert their opinions and influence over household and community decisions. The majority of the population depend on shifting cultivation for their sustenance.

2. Mountain and upland communities in the HKH are going through difficult times. After centuries of reasonably stable livelihood systems in mountain areas, these communities find themselves displaced by the forces of commercialization, depletion of natural resources and inappropriate development interventions. Sloping cultivated lands, including some terraced ones, are facing major problems of fertility management, soil erosion and water harvesting. Pastures, which are extensive in upper altitudes, supported sound livestock-based farming systems in the past, but have been overgrazed. Forests, the key to mountain watersheds, have been rapidly lost through deforestation, slash-and-burn agriculture and urban growth.

3. The increased levels of migration of able-bodied men have greatly added to women's farm and household responsibilities. Moreover, there is an increasing feminization of agriculture in many parts of the HKH region, due to the migration of men family members in search of employment in the plains. On the other hand, women are on the margins of access to public and private services and participate only in a limited way in extending or directing those services to meet their needs. As the main producers of food crops, with principal responsibility for assuring food security, the upland women hold an enormous store of indigenous knowledge about managing their agriculture and natural resources. Unless this enormous potential can be tapped and women's access to and control over productive resources enhanced, sustainable and equitable production increases are not possible.

II. RATIONALE AND RELEVANCE TO IFAD

4. Years of continuing neglect and the recent crises in lowland development have created a sense of helplessness in the uplands. These people do not see a way out of the crisis, and have lost confidence in their own abilities to overcome their present problems successfully. The first major challenge is therefore to restore their self-confidence and to convince them that there is a future for them. However, for upland people to work for a better tomorrow, they need to be empowered so that they can make the necessary decisions to build a sustainable future based on their resources, improved technology and centuries of accumulated wisdom.

5. It is evident that there is a need for concerted efforts to find alternatives to shifting cultivation and subsistence agriculture, which is a key survival strategy of upland households living in marginal areas. In a wider context, these efforts will form part of the initiatives to contain unsustainability of rainfed agriculture, dominating the HKH region, with drastic consequences for both its people and the environment. While governments of the region have declared swidden agriculture as ecologically



undesirable, the majority of the marginal farmers have few other options for production, and hence exchange opportunities enabling them to acquire access to food and reasonable standards of living.

6. As in other fragile environments, sustainable development and natural resource-management interventions in the HKH need to be sensitive to the multiple dimensions of coping strategies. Therefore, a holistic perspective of shifting agriculture is needed. The transition from subsistence shifting cultivation to sustainable agriculture cannot take place in isolation, but must take into account the wider policies adopted for this region, which relate to natural resource management, infrastructure development, water and energy resources, economic development and trade-related opportunities.

7. Although their soils are marginal, the uplands of the HKH region offer huge opportunities for economic development on other fronts, e.g., as sources of water, power and biological diversity as well as of a wide variety of indigenous forest and agricultural products. Opportunities for investment include value-adding activities in forestry and agroforestry, harvesting of valuable non-timber forest products (medicinal and aromatic plants), and production of high-value horticultural products such as vegetable seeds, spices and fruits. Finally, the uplands and mountainous regions have some of the world's most pristine settings, eminently suited for ecotourism. There is a need to tap this huge potential for regenerative growth and poverty alleviation in this region.

8. The proposed four-year programme will promote the sustainable livelihoods of farmers in upland and mountain areas by evolving, adapting and incorporating into IFAD-funded projects the most promising innovative farming practices, non-farm enterprises, and institutional innovations. These innovations will be based on some of the promising developments with which ICIMOD and IFAD have been currently involved. These successful experiences provide important methods and indicators for expansion to a much larger scale within and among the countries of the region.

9. Ten ongoing projects have been identified to benefit from the programme. The programme will provide implementation support to IFAD-funded projects in the upland/mountainous areas of the HKH so that these projects can achieve their intended goals of rural poverty alleviation. Such implementation support will be provided in, among other areas, the promotion of women's role as change agents (e.g., their decision-making role at household and community levels); the application of participatory approaches; the use of a logical framework and other tools for clarity of objectives and impact assessment; the identification and documentation of indigenous knowledge; the identification and promotion of local champions and mentors; and policy feedback to governments.

10. To achieve these major objectives, the programme will provide support to IFAD-funded projects in the following programme areas: (a) identification, validation and dissemination of sustainable upland/mountain farming systems, including post-harvest/processing technologies; (b) enhancement of income opportunities from agricultural products, through the blending of appropriate components of indigenous knowledge and modern technology for improving food security and resources management; (c) improvement of local water-harvesting practices for ameliorating agricultural productivity and its diversification; and (d) identification of off-farm employment opportunities that are environmentally sound and economically valuable for poor women and upland/mountain households, and recommendation of appropriate policies for non-farm enterprise development as a source of local employment and income-generation.

III. THE PROPOSED PROGRAMME

11. In collaboration with national institutions and non-governmental organizations (NGOs) in the region, ICIMOD will provide implementation support to IFAD-funded projects in the assessment of the decision-making role of women; the application of participatory approaches in project implementation and monitoring; the identification and documentation of relevant indigenous knowledge in farming, resource conservation and income-generating activities; support to IFAD



projects in the promotion of local champions and mentors on regenerative agriculture and forestry; the organization of exchange visits among IFAD project staff and beneficiaries; training for IFAD staff on gender and participation; and the organization of workshops, and consultations to provide feedback to policy-makers on IFAD project experience. This programme will complement a similar programme proposed to be implemented by the International Centre for Research in Agroforestry, which will provide implementation support to IFAD projects in five countries of south-east Asia.

12. The programme will also support research in critical areas of upland development, focusing on sustainable upland farming and post-harvest measures, improved local water harvesting, and increased off-farm employment and income-generating options. The programme will:

- (a) field-test selected regenerative farming options through IFAD projects and local partner organizations in selected projects;
- (b) document and disseminate regenerative farming systems for upland/mountainous areas, focusing on innovative farming systems and their validation, and on the development of locally suited adaptations;
- (c) review local harvesting practices, their problems and potentials, including identification of concrete measures for improving existing systems that focus on reducing the drudgery of women and improving water quality and availability;
- (d) prepare a state-of-the-art survey of appropriate post-harvest and processing technologies and practices among selected upland and mountain communities; and
- (e) identify improved non-farm employment opportunities in small enterprises, crafts and traditional off-farm activities, rural public works, non-timber forest products, renewable energy resources, ecotourism and service sector activities.

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

13. The major outputs of the programme will include:

- (a) better awareness about upland development conditions and needs among IFAD projects, contributing to more effective project implementation and greater project impacts;
- (b) better awareness of improved practices and technologies, including those easily accessed by women in upland farming, post-harvest measures, local water harvesting and off-farm employment in upland areas;
- (c) documentation of indigenous knowledge and practices, including ways to blend with modern science;
- (d) identification of appropriate policies in support of sustainable livelihoods for upland households;
- (e) improvements in farm incomes and outputs through adoption of innovative farming methods that are environmentally sustainable and economically attractive;
- (f) reduction in post-harvest losses;
- (g) reduction in the drudgery of women through improvements in water-harvesting methods, and reduction in morbidity from water-borne parasites;



- (h) improvements in nutritional status through increased and diversified incomes and production;
- (i) testing and demonstration of improved technologies and practices, in cooperation with farmers, local organizations and IFAD projects for future implementation.

V. IMPLEMENTATION ARRANGEMENTS

14. The programme will be implemented by ICIMOD in collaboration with national institutions and NGOs from the region. The experience of these institutions in working with mountain and upland communities and their intimate knowledge of these people are essential to the programme's success and to the diffusion and sustainability of the technology promoted.

15. ICIMOD will appoint a senior programme coordinator who will conduct the day-to-day supervision and monitoring of the programme. He or she will be guided by an interdisciplinary team headed by the director of programmes. A person with in-depth knowledge of IFAD project activities in the region will also be hired to work in close collaboration with the ICIMOD programme coordinator in implementing the programme. Progress of the programme will be documented in annual reports to IFAD. In executing this programme, ICIMOD will coordinate its activities with, and provide feedback to, the United Nations Office for Project Services' project supervision in programme countries, so that important synergies are generated for effective implementation of IFAD projects. Such feedback will be incorporated into agreements in aide-memoires for follow-up activities.

16. A start-up workshop will be organized to define the mode of programme operation in each country and to establish linkage and feedback mechanisms with country institutions and NGOs. Annual meetings will be held with country collaborators to review the progress achieved, plan future activities, and implement mid-course corrections when needed.

VI. INDICATIVE PROGRAMME COSTS AND FINANCING

Cost Category	(Amounts in USD)			
	IFAD	ICIMOD	IFAD Projects	TOTAL
Staff cost (incremental)	300 000	200 000	-	500 000
Technical assistance	400 000	-	-	400 000
Training/workshops	100 000	20 000	100 000	220 000
Incremental operating costs	200 000	-	-	200 000
Country collaborators	-	50 000	-	50 000
Total	1 000 000	270 000	100 000	1 370 000

INTERNATIONAL CENTRE OF INSECT PHYSIOLOGY AND ECOLOGY (ICIPE): PROGRAMME FOR IMPROVING INCOME-GENERATION OPTIONS BASED ON SERICULTURE AND APICULTURE TECHNOLOGIES IN AFRICA - PHASE II

I. BACKGROUND

1. As population growth stresses many parts of Africa's forests and agricultural lands, the adaptation of research and extension services to meet the needs of farmers for nutrition security and incomes, while conserving the environment, is becoming increasingly relevant. In apiculture and sericulture, there is scope for developing innovative technologies that will meet these needs. Apiculture (bee-keeping) and sericulture (silkworm-rearing) can be undertaken as rural microenterprise initiatives by resource-poor farming communities on the continent. These initiatives can be integrated with the community's routine farming activities, but are particularly attractive options for rural off-farm employment and for income-generation in harsh agro-ecosystems where food production is marginal and the risk of crop failure is high. Such options, which have the potential to address income and household food security needs through on- and off-farm activities, while conferring a positive impact on the natural resource base, relate well to rural poverty-alleviation strategies for IFAD's loan portfolio, as pursued by the regional divisions.

2. Although bee-keeping is practised throughout Africa, the technology used by smallholders is generally very basic and results in extremely low yields, poor quality of products and often the destruction of hives. It is also a potentially hazardous activity. However, apiculture not only can generate income, but it can also aid nutrition and lead to an increase in the yields of many tropical crops through enhanced pollination. Sericulture has a long history in Africa, but development has been constrained because of the lack of facilities for the commercial production of eggs, and the limited attention paid to the processing requirements of cocoons: while cocoon production is a normal farming activity, it is only part of a chain of activities that needs to be completed to produce high-value outputs. The habitat and species loss of the wild silk moth in Africa is immense, while the potential for harvesting wild silk is not widely realized.

II. RATIONALE AND RELEVANCE TO IFAD

3. According to the completion evaluation, much has been achieved in Phase I of the programme led by ICIPE. Activities that promise widespread benefits to poor rural communities have continued to expand at an increasing pace. However, not all the research or demonstration aspects have as yet been completed. Moreover, although a number of farmers' groups, including those addressed by IFAD-loan projects in Eritrea, Kenya, the United Republic of Tanzania and Uganda, have begun production along commercial lines, there are still questions relating to the financial viability and sustainability of the technologies, where market links have yet to be established. Nevertheless, the TA grant has demonstrated that income-generation through small-scale apiculture and sericulture is not only possible, but has the potential to become an important source of income for the poorest farmers in the most difficult circumstances. ICIPE's strength lies in the development of technology through research and capacity-building, a strength effectively demonstrated in Phase I, as the evaluation mission notes. In addition, ICIPE has become the major backstopping organization in Africa for these technologies.

4. The rationale for further support by means of a Phase II TA grant is that the activities that have been started need further time to be fully realized and to become sustainable. Moreover, the commercial insects programme has become pivotal as a catalyst for the development of these activities, both in East and West Africa. Additional donor funding will allow the dissemination of the technology and the commercialization of the apiculture and sericulture industries, but at this stage this needs the "cementing" that IFAD funding of the core activities of the commercial insects programme has allowed.

III. THE PROPOSED PROGRAMME AND OUTPUTS

Objectives

5. It is proposed that Phase II continue research activities in apiculture and sericulture, building on the achievements of Phase I, in order to develop and validate further the technology packages developed so far. Specifically there is a need to:

- develop silk moth and honey bee smallholder-microenterprise production facilities adapted to local conditions;
- undertake further data collection and analysis (socio-economic, institutional and biophysical information) required to address the location-specific production and adoption issues for both apiculture and sericulture;
- define product-quality requirements of the markets;
- provide technical backstopping in sericulture and apiculture, both during design and implementation, to development initiatives involved in the promotion of rural microenterprises for income-generation. This would particularly apply to NARS and also to support for NGOs and others involved in the promotion of rural development;
- provide training for farmers and farmers' groups in appropriate technology for apiculture and sericulture, both at ICIPE headquarters and also on site. Training programmes will include training of trainers for local groups and for NGO and government personnel;
- increase scientific capacity by means of graduate and post-graduate training and scholarships, in order to provide a solid scientific base for practitioners throughout Africa;
- promote further the dissemination of the technologies developed;
- to continue the support for the demonstration groups from Phase I, including development of their marketing strategies and identification of marketing constraints. This will include the identification of relevant market linkages with private traders.

Output 1: Validation of production modules. Apiculture and sericulture technologies used in the field validated in various geographic locations.

Output 2: Establish grainages for the production of silk moth eggs. Two such facilities established by ICIPE, one at its *Mbita* Point field station in western Kenya and the other at the Sericulture Development Centre in Uganda.

In both sites, there is sufficient land for mulberry production and adequate laboratory facilities. The TA grant funding will allow for the partial equipping of the laboratories to maintain the quality required (the remaining funding comes under the regional Food and Agriculture Organization of the United Nations (FAO) Technical Cooperation Programme).

Output 3: Honey bee line-breeding. Honey bee line-breeding facilities established at ICIPE.

Honey bee races in the field will be tested, and the most productive races for commercial application will be selected. The honey bee line-breeding programme will be employed to produce breeds of bees for specific traits. Queen-rearing and colony multiplication techniques will be used to produce high-

quality bees for optimal product-generation. The major issues to be resolved are increased honey production, aggressiveness, absconding, resistance to brood diseases, effectiveness in pollination of crops, and high potential rate of egg-laying by the queen.

Output 4: Location-specific issues. Geographic constraints to the adaptation and adoption of apiculture and sericulture technologies identified and resolved.

The disease and pest problems in various geographic locations will be identified. Cultural and traditional influences in technology adoption will be determined. The constraints to successful product development in different locations will be resolved and quality-control practices to comply with international standards will be implemented.

Output 5: Pollination services. The extent of the production increase of field crops due to adequate pollination assessed, and information disseminated to farmers.

The contribution of bee species to crop pollination will be assessed and strategies to conserve key pollinators developed. The assumption that when bees are foraging on a crop, they are also pollinating it sufficiently is not necessarily valid. Therefore, information about the behaviour of bees on flowers and how this affects pollination efficiency and crop yields is essential; unfortunately few studies to date include such information. The solution to this problem will also demonstrate the value of bees in increasing food production. The programme will therefore explore the role of floral volatiles of specific species and investigate the use of a volatile blend to enhance pollination and therefore increase yield. This technology, once developed, will be applicable to other crops

Output 6: Project design and implementation. On the basis of technologies developed in sericulture and apiculture during Phase I of the programme, the transfer of information to NARS, farmers, government extension workers and local NGOs facilitated by ICIPE through intensive courses and demonstrations.

ICIPE will implement this activity using a demand-driven approach, which is directly related to the needs of the rural poor and their environment. In this manner, a two-way transfer of technology – from the laboratory to the farmer, and from the farmer to the scientist – will be created. An effective technology transfer system will assist in fulfilling research and extension goals; identify the organizational and institutional arrangements necessary to achieve these goals; and improve linkages between research, extension and farmers.

Output 7: Capacity-building. Capacity of local farmers and research staff improved.

Training courses for bee-keepers, NGOs and government officers will be undertaken. Arrangement will be made for the strengthening of the scientific staff to undertake local and regional research and to backstop the adoption of the technology packages. The technology will be disseminated through two international workshops and training of NARS, as appropriate.

Output 8: Marketing strategy. A marketing strategy for apiculture and sericulture-based products proposed and demonstrated.

Problems in the marketing of apiculture and sericulture products will be identified. In addition, a marketing strategy for bee-keepers and silkworm farmers will be developed and will include the identification of relevant market linkages with private traders. The development of a strategy for honey and beehive products and silk and silk-based products depends on the specific circumstances of the different regions, and needs interactive communications among partners at each stage of production, processing and distribution. This process will take place in three phases: (i) research and investigations; (ii) coordination and coaching of stakeholders; and (iii) M&E. The research will

examine the processing, packaging and marketing of apiculture and sericulture products, and develop a framework describing the performance of the partners. Quality, pricing and placement are the most important factors for the development of the marketing strategy: ICIPE will act as a catalyst in these linkages.

Returns to Smallholders and Other Benefits

6. Apiculture practices will generate revenue in a number of ways. Quality honey and wax have ready and established markets. Wax has commercial and industrial value, especially in the cosmetic and candle industries. The sale of colonies by queen-rearing will provide additional income. Other high-value products, such as royal jelly, bee venom, propolis and pollen, are in high demand by pharmaceutical companies and may be produced at a later date. During nectar and pollen-gathering, honey bees effect pollination and improve the quality and quantity of crops, a benefit enjoyed by the whole community as well as the bee-keeper. This benefit will be investigated and assessed for various crops. Sericulture produces cocoons or raw silk and will provide a regular income (the cycle may be as short as 30-40 days). As well as food for silkworms, mulberry leaves can serve as animal feed, and, of course, mulberry trees provide fruit. After reeling, silkworm pupae can be used as fish or chicken feed. Economic values will be enhanced by quality-control procedures for sericulture and apiculture products. A quality-control laboratory will test honey, hive products, cocoons, raw silk twisted yarn and silk cloth to ensure that products meet industry standards.

7. Apiculture and sericulture require the services of local traders and craftsmen, for example to make beehives and rearing frames or to repair reeling equipment. Both apiculture and sericulture help to promote cottage industries (for example in processing of outputs) and enhance industrial technologies in the rural sector; they can also create off-farm employment. Both technologies are particularly appropriate for women's groups.

8. Training modules will be further developed at ICIPE and will have two major components: one to explain apiculture and sericulture procedures, and the other to describe training strategies. Each working module will comprise a curriculum and a description of the working approach, methods and techniques. The working modules will focus on planning, monitoring progress, and evaluating the results achieved. The training portion of the modules will provide "researcher-trainers" with management plans and training materials, which will have been designed to improve the existing infrastructure and knowledge, attitudes and skills needed to manage apiculture and sericulture in a sustainable manner. These modules will be shared with the organizations charged with the promotion of the technologies in cooperating countries.

9. ICIPE will collaborate with national and international agricultural livestock research organizations in Africa to transfer apiculture and sericulture technologies to smallholders and to develop linkages for collaboration with NARS and NGOs in countries in Africa. ICIPE will serve as the focal point in a network that will facilitate collaboration among the scientists of ICIPE, NARS and NGOs.

IV. IMPLEMENTATION ARRANGEMENTS

10. ICIPE will serve as the implementing agency for the programme, but will work closely with IFAD technical advisors and the three relevant regional divisions working in Africa to ensure that strategic objectives are achieved.

11. The programme will have a coordinator (at the principal scientist level) who will be responsible for all aspects of programme implementation. It is expected that the current programme coordinator will continue with Phase II. The programme coordinator will answer to ICIPE's head of the department

of population ecology and ecosystem sciences. The programme will disseminate sustainable working and training modules compiled during Phases I and II.

12. The technical development team with the participation of country portfolio managers from the Africa II Division, the Near East and North Africa Division and the Africa I Division will: (i) participate in a stakeholders' phase launch workshop in order to define further the logframe in terms of specific activities in the programme of work and budget, M&E indicators and links with the ongoing loan portfolio in the participating countries; (ii) endorse the programme and finalize roles and responsibilities of all actors to be involved in implementation; and (iii) monitor and supervise the TA grant via annual field supervision missions and technical backstopping. Output materials, including technical advisory notes, when available, will be channelled to IFAD and other interested institutions and individuals, from ICIPE headquarters in Nairobi, Kenya, or IFAD headquarters in Rome, Italy.

V. INDICATIVE PROGRAMME COSTS AND FINANCING

13. Through IFAD's support, farmers will benefit economically from procedures designed at ICIPE to increase production of apiculture and sericulture products while conserving the environment. The total programme costs covering five countries (IFAD) and eight additional countries (FAO) in Africa are estimated to be USD 4 830 000. The table below shows both the costs by category and the financing plan.

Cost Category	(Amounts in USD)			
	IFAD	ICIPE	FAO	TOTAL
Status of financing	Active pipeline	Proposed	Proposed	
Research staff	552 000	770 000	-	1 322 000
Consultation and travel	80 000	-	150 000	230 000
Equipment and supplies (NARS/ICIPE)	398 000	-	1 800 000	2 198 000
Training and workshops	216 000	60 000	210 000	486 000
Incremental administrative backstopping of network	354 000	-	240 000	594 000
Total	1 600 000	830 000	2 400 000	4 830 000

SASAKAWA GLOBAL 2000 (SG2000): A MARKET-DRIVEN INITIATIVE FOR MILLET AND SORGHUM DEVELOPMENT IN WEST AND CENTRAL AFRICA

I. BACKGROUND

1. At the beginning of the 20th century, agriculture in the semi-arid zones of West Africa was based on millet and sorghum, crops well adapted to the ecosystem. These cereals were primarily utilized for home consumption, market outlets being limited by the small size of towns. To satisfy their cash needs, farmers turned toward the cultivation of groundnuts, for which there was a buoyant world market demand. Up to the late 1950s, the supply of food to the growing urban centres was assured by imports of low-cost rice, and agricultural research and development projects focused on groundnuts. With independence, the new governments' desire to switch to local sources to feed the urban population, now accustomed to rice, led to investments in large-scale irrigation projects similar to the model of the Asian Green Revolution. Some 30 years later, the long-term deterioration of market conditions for groundnuts, due to the rise of cheaper edible oil substitutes, has led the countries of the region to retreat one by one from export markets, while results of the large irrigated rice schemes have generally not met expectations, in terms of either technical performance or costs of production.

2. Within the region, the idea has been gaining ground that the time may be ripe to rethink this strategy, by shifting attention to millet and sorghum, the two crops that continue to dominate production systems. Agricultural intensification in the zone has become a priority in the face of demographic pressure and the disappearance of fallow. But it is not enough to have viable technical packages on hand. The lessons of past development programmes show that widespread intensification is facilitated by a particular type of enabling environment, including favourable conditions both upstream and downstream from agricultural production itself. For millet and sorghum, the situation is wanting on both scores. Upstream, the general context has perhaps never been as unfavourable, with the deterioration of seed supply services, reduced access to agricultural credit, and the rise of fertilizer prices as subsidies have been removed. Downstream, millet and sorghum still are confronted by limited urban demand, given the attractiveness of rice and wheat-based commodities. Nevertheless, one sign of resilience is that many countries have experienced per capita growth in sorghum and millet consumption over the past decade and a half, after an earlier decline. Exchange-rate adjustments, including the devaluation of the CFA franc, and new macroeconomic policies present new opportunities for local cereal market development. The present growth of urban demand and the regionalization of the market also contribute to creating an enabling environment.

II. RATIONALE AND RELEVANCE TO IFAD

3. The proposed programme builds upon IFAD's research strategy in West and Central Africa, which recognizes the importance of millet and sorghum in the region, the weakness of research and promotion efforts for both "orphan" crops, the need to support efforts in this regard and create an enabling environment. The programme will mainly facilitate a development process based on millet and sorghum and driven by output markets. Avenues for enlarging the market exist, including: (i) ready-to-cook preparations of traditional dishes; (ii) new food products (such as pasta, biscuits, tortillas, snack foods, and weaning foods); (iii) animal feed; and (iv) industrial uses. The programme will mainly be developed with the private sector, which must be the leader in a market-driven development process. Market-driven development implies the orientation of production and input-supply services upstream in line with the identified demands for processed products. For farmers, it means choosing the appropriate varieties, and ensuring supply with regularity, according to the required quality standards and at attractive prices. For processors, it means investing in appropriate technologies and developing suitable marketing strategies for reaching consumers. For the subsector as

a whole, it implies channelling information flows so that stakeholders at different stages can efficiently coordinate the flows of agricultural inputs and outputs in line with market demands.

4. The programme will focus on five of the region's major millet and sorghum producing countries: Burkina Faso, Chad, Mali, Niger and Senegal.

5. **Linkages and partnership.** This programme is a joint initiative with a number of regional research institutes and networks, led by the NGO Sasakawa Global 2000 (SG2000) and the International Cooperation Centre on Agrarian Research for Development (CIRAD)¹. Since the current programme is intended to deal with stakeholder mobilization and market development, it is complementary to the TA grant made to the programme run by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) "Farmer participatory testing of technologies to increase sorghum and pearl millet production in the Sahel", approved by the April 1999 Executive Board. While the ICRISAT programme is production-oriented, the present operation aims at bridging the gap among different stakeholders, creating linkages within the commodity chain, and developing commercial outlets for sorghum and millet production. Complementarity will be sought in terms of activities and area coverage (three of the countries under the ICRISAT TA grant will be involved – Burkina Faso, Mali and Niger). This will be a built-in process since ICRISAT is one of the main partners in this programme. In addition, about 15 IFAD projects² will be associated with this operation. Synergy will also result from linkages with other IFAD-financed activities such as the IFAD/NGO Extended Cooperation Programme grant to the NGO *Afrique Verte*, which aims at supporting women's cereals-marketing groups in Niger. Linkages will be also established with other ongoing marketing and post-harvest activities, and millet and sorghum-development networks financed by other donors. These will include, among others, the International Network on Post-Harvest Operations (INPHO) being developed by FAO; the Permanent Interstate Committee for Drought Control in the Sahel's project for the promotion of local food products (PROCELOS); the technologies and food partnership networks at the regional level; and other networks such as the Intermediate Technology Group, based in the United Kingdom.

6. A planning workshop bringing together some 40 stakeholders from the participating countries and resource persons from research and development organizations was held in Ouagadougou, Burkina Faso, on 7-8 March 2000, to validate proposed activities and implementation methods and to ensure adequate mechanisms for maintaining strong linkages between this programme and other ongoing activities in support of millet and sorghum development, particularly at the production level.

¹ Other institutions are: the *Conférence des responsables de recherche agronomique en Afrique de l'Ouest et du Centre* (CORAF), Dakar, Senegal; the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Niamey, Niger; the sorghum/millet collaborative research support programme (INTSORMIL), USA; the West and Central African millet research network (ROCAFREMI/WCAMRN), Niamey; and the West and Central African sorghum research network (ROCARS/WCASRN), Bamako, Mali; as well as other national NGOs and regional organizations.

² In particular, the Special Programme for Soil and Water Conservation and Agroforestry in the Central Plateau (Burkina Faso); the Food Security Project in the Northern Guéra Region (Chad); the Ouadis of Kanem Agricultural Development Project (Chad); the recently completed Village Development Fund Programme - Phase II (Mali); the Aguié Rural Development Project in Niger; the Special Country Programme (Niger); and the Village Organization and Management Project (Senegal).

III. THE PROPOSED PROGRAMME

Goal and Objectives

7. The ultimate goal of the programme is to improve food security by raising rural incomes and to permit the transition to sustainable farming systems in the populous semi-arid zones of West and Central Africa. The development objective of the programme is to launch a market-driven development process for the local cereals, millet and sorghum, which are the mainstay of food production in the semi-arid zones of West and Central Africa.

8. During the first phase, stakeholders will be mobilized at the national and regional levels and promising opportunities for market development will be identified. During the second phase, activities singled out earlier will be launched and implemented. The central focus of the initiative will be to encourage private operators in the agribusiness and food sectors to invest in millet and sorghum product-line development. Farmers, in turn, will need to be able to respond to more-structured market demands, and, where profitable, adopt productivity-enhancing techniques. Support to these endeavours will be envisaged at two levels: (i) market organization, including improved information flow and exchange establishment of contacts between producers and processors with specific requirements, vertical coordination; (ii) support to processing and new product development including market surveys and feasibility studies, technology and market-testing for products, and technical support by food scientists. The creation of stronger linkages among stakeholders should also facilitate the identification, together with private-sector operators, of areas most in need of further research, for instance varietal screening for new end-uses, and improvement of processing equipment. It is understood that complementary support to agricultural production activities such as improved access to seed and other inputs will be provided through other programmes oriented at the production level, including the TA grant made to ICRISAT and the activities of the two regional crop networks, ROCARS and ROCAFREMI. Project representatives agreed to this principle during the March 2000 planning workshop in Ouagadougou.

Target Groups

9. **Smallholders.** The creation of stronger linkages between producers and the market should benefit poor farmers in several ways. First, the incomes from cereals should rise as grain sales increase. The reliability of this income source should also improve as farmers enter agreements with processors and traders for supplying specific qualities and quantities. In the many areas where marketing margins are now high because of high transaction costs, one can also expect that better market linkages will lead to higher farm-gate prices. Second, as income opportunities from grain sales improve, conditions should become more favourable for farmers to invest in productivity enhancement of their land – and of their post-harvest facilities. These investments will have benefits for families by improving food security and contributing to the sustainable management of farmlands.

10. **Women.** By facilitating the expansion of the market for millet and sorghum-based products, the programme will also contribute directly to increasing incomes of grain processors, who are mainly women. Traditionally women do almost all processing, starting with threshing and going all the way to meal preparation. Women are also the main suppliers of the market for processed products. Most women work on their own or in groups and some are employed by small-scale enterprises. Techniques for processing remain mainly manual, although more and more women go to neighbourhood millers to lighten the workload of the laborious dehulling and milling operations. If one judges by the current trends, it is reasonable to expect that most of the market expansion for food products will come from the artisanal sector, as women artisans improve their organizational skills and improve their reputation for hygiene and quality of the processed products.

IV. EXPECTED OUTPUTS/EXPECTED BENEFITS

11. The programme's main outputs include:

- the creation of a coalition of stakeholders at national and regional levels;
- the identification, testing and validation of the most promising new products, processes and grain supply channels, which can contribute to market development at national and regional levels;
- reinforcement of regional information exchange on promising techniques and market opportunities;
- identification of a portfolio of investment projects (to be financed by private or public operators).

12. **Stakeholders mobilization.** In the **first phase**, programme activities will focus on the attainment of three of the specific results: (i) mobilizing a coalition of stakeholders; (ii) identifying promising opportunities for market development; and (iii) identifying a portfolio of investment projects. National workshops will be held in the region's major millet- and sorghum-producing countries (Burkina Faso, Chad, Mali, Niger and Senegal). The workshops are intended to facilitate the participation of stakeholders in the reviews; to provide a venue for exchanges among operators intervening at different stages of these subsectors, to take stock of initiatives already undertaken in technology transfer and market development; and to identify the constraints encountered and the needs articulated by stakeholders in terms of both technology use and subsector organization. By the end of the first phase, a regional forum will be convened, involving stakeholders within the subsectors, decision-makers and donor agencies. Following these workshops, identification of investment projects will be carried out for activities singled out for promotion, in accordance with interested donors and private-sector investors.

13. **Technology-testing and information exchange.** During the **second phase**, the programme will continue to promote the mobilization of a coalition of stakeholders, improve their access to information on market opportunities, and enable them to engage in pilot operations to test some of these opportunities. Although it is likely that these activities will take place primarily in the countries where national workshops will have been held, some flexibility should be foreseen, since precise needs and opportunities will be identified and refined during the course of the first phase. More particularly, the programme will:

- facilitate the creation of national stakeholder focus groups;
- support regional information services: regularly updated databases on market-related issues, designed for easy access by stakeholders throughout the region, will be supported by the programme; access to existing sources of information will be facilitated (e.g., INPHO, PROCELOS, and the technologies and food partnership networks at the regional level). The programme will also link with IFAD's information and knowledge networks both at headquarters and regional levels;
- promote regional exchange and training on market-oriented themes: a small fund will enable stakeholders to undertake study visits and bring in experts to provide on-the-job training ;
- carry out targeted market surveys: the surveys will gauge the total market size and identify development opportunities; and

- conduct research and development activities: the programme will provide support to test some of the promising opportunities identified in areas such as new product development, new processing techniques and new grain supply channels, especially those responding to IFAD's target group needs, including those of women.

14. Two other components, technical assistance and programme management, will support the above-mentioned activities.

V. IMPLEMENTATION ARRANGEMENTS

15. Sasakawa Global 2000, an NGO specialized in promoting innovation in African food-crop sectors, will be the implementing agency. Programme activities will to the extent possible be implemented on a decentralized basis, through local institutions. A programme coordinator from the implementing agency will ensure day-to-day programme management. A steering committee, composed of around eight members from key stakeholder groups, with representatives of the private sector, women and supporting donor agencies, will oversee the organization and implementation of programme activities. The steering committee will delegate responsibility for selected programme activities to appropriate institutions at the regional and national levels. Scientific and technical backstopping will be provided by experts of participating research and development institutions. The programme will be linked to some 15 selected ongoing or forthcoming IFAD projects in the participating countries.

VI. INDICATIVE PROGRAMME COSTS AND FINANCING

16. Total programme costs are estimated at USD 1 755 000 over three years. The working contribution of the participating research and development institutions is estimated at USD 240 000. IFAD will fund USD 1 million and SG2000 will provide USD 215 000. The French Cooperation has committed an initial financing of USD 100 000, which could be increased to USD 300 000 upon the completion of the first phase (regional forum) in mid 2001. SG2000 will also consider augmenting its funding of technology-testing and training activities. Costs by component and by programme category are shown in Tables 1 and 2.

**TABLE 1: PROGRAMME COST AND FINANCING BY COMPONENT
(Amounts in USD '000)**

Activity	IFAD	French Cooperation	SG2000	Participating institutions	Total
Stakeholders mobilization (Phase I)	185	100	-	95	380
Technology-testing and information exchange (Phase II)	460	200	175	115	950
Technical assistance	165	-	30	-	195
Programme management and evaluation	150	-	-	30	180
Contingencies	40		10		50
Total	1 000	300	215	240	1 755

**TABLE 2: PROGRAMME COST AND FINANCING BY COST CATEGORY**
(Amounts in USD '000)

Cost Categories	IFAD	French Cooperation	SG2000	Participating Institutions	Total
Personnel	125	-	-	30	155
Training	335	275	75	120	805
Information management	-	25	25	25	75
Technical assistance	250	-	30	40	320
Operating costs	250	-	75	25	350
Contingencies	40	-	10	-	50
Total	1000	300	215	240	1755