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Investing in rural people

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

## International Crops Research Institute for the Semi-Arid Tropics

## WorldFish Centre

## World Agroforestry Centre

Note to Executive Board representatives

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For: Approval

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# Abbreviations and acronyms

| | |
|---|---|
| A4NH | CRP 4 Agriculture for Nutrition and Health |
| AHBFI | Africa Harvest Biotech Foundation International |
| AR4D | Agricultural Research for Development |
| ASAL | arid and semi-arid land |
| BI | Bioversity International |
| CGIAR | Consultative Group on International Agricultural Research |
| COSOP | country strategy opportunities programme |
| CPE | country programme evaluation |
| CRP | CGIAR Research Program |
| CSP | cost-sharing percentage |
| ISAs | International Standards on Auditing |
| ICRAF | World Agroforestry Centre |
| ICRISAT | International Crops Research Institute for the Semi-Arid Tropics |
| IDO | intermediate development outcome |
| IFRS | International Financial Reporting Standards |
| M&E | monitoring and evaluation |
| NARS | national agricultural research systems |
| SLO | system level outcome |
| SO | strategic objective |
| SRF | strategy and results framework |

## Recommendation for approval

The Executive Board is invited to approve the recommendation for the proposed grants under the global/regional grants window to CGIAR-supported centres as contained in paragraph 5.

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

# International Crops Research Institute for the Semi-Arid Tropics, WorldFish Centre and World Agroforestry Centre

## Part I – Introduction

1. This report recommends the provision of three IFAD grants in the amount of US$4,500,000 under the global/regional grants window to CGIAR-supported centres. The grant proposal documents are contained in the annexes to this report.

2. The goal of IFAD grants is to significantly broaden and add value to the support provided to smallholder farming and rural transformation, thereby contributing to rural poverty eradication, sustainable agricultural development, and global food security and nutrition. In order to achieve these goals, IFAD grants should adhere to three basic principles: (i) make a significant contribution to a global, regional or national public good related to IFAD's mandate; (ii) focus on interventions where grant financing has clear added value and a comparative advantage over regular loans; and (iii) not be used as a substitute for resources from IFAD's administrative budget.

3. The objectives of IFAD grant financing are to: (i) promote innovative, pro-poor approaches and technologies with the potential to be scaled up for greater impact; (ii) strengthen partners' institutional and policy capacities; (iii) enhance advocacy and policy engagement; and (iv) generate and share knowledge for development impact. Rural poor people and their organizations should be squarely positioned at the centre of each grant submission to fulfil IFAD's mandate to enable poor rural people to improve their food security and nutrition, raise their incomes and strengthen their resilience.

4. The proposed projects are in line with the goal and objectives of IFAD grant financing, as stated in the IFAD grant policy:

   (i) International Crops Research Institute for the Semi-Arid Tropics (ICRISAT): Strengthening Sorghum and Millet Value Chains for Food, Nutritional and Income Security in Arid and Semi-Arid Lands of Kenya and the United Republic of Tanzania.

   The project goal is to improve food, nutritional and income security for enhanced livelihoods and gender equity among smallholder farming households in arid and semi-arid lands. The objective is to identify, develop, test and disseminate improved technologies for sorghum and millet cultivation to increase dryland cereal production and productivity while protecting local environments.

(ii) WorldFish Centre: Improving the Technological Foundations for Sustainable Aquaculture

The goal of the project is to ensure that improved fish strains in target aquatic systems are widely available and used sustainably and equitably in order to provide nutritious, affordable food and income for poor people. The objectives are: to maintain and make available more productive and adaptable strains of fish based on the needs of target production systems, using conventional breeding and genomic technologies; and to improve systems of delivery, assessment, use and performance of improved fish strains in Bangladesh, Egypt, Kenya and Mozambique.

(iii) World Agroforestry Centre (ICRAF): Agrobiodiversity and Landscape Restoration for Food Security and Nutrition in East Africa

The project goal is to contribute to landscape restoration through utilization of food tree and crop portfolios to enhance livelihood and landscape resilience and at the same time contribute to food security and nutrition. The objective is to identify ecologically suitable portfolios of food trees and crops to integrate into existing farming systems for increased food security, improved nutrition and restoration of landscapes.

Thus these three projects will contribute directly to achieving the goals and objectives of the grant policy.

## Part II – Recommendation

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

RESOLVED: that the Fund, in order to finance, in part, the project Strengthening Sorghum and Millet Value Chains for Food, Nutritional and Income Security in Arid and Semi-Arid Lands of Kenya and the United Republic of Tanzania shall provide a grant not exceeding one million five hundred thousand United States dollars (US$1,500,000) to International Crops Research Institute for the Semi-Arid Tropics for a four-year period 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 project Improving the Technological Foundations for Sustainable Aquaculture shall provide a grant not exceeding one million five hundred thousand United States dollars (US$1,500,000) to the WorldFish Centre for a three-year period 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 project Agrobiodiversity and Landscape Restoration for Food Security and Nutrition in East Africa shall provide a grant not exceeding one million five hundred thousand United States dollars (US$1,500,000) to the World Agroforestry Centre for a three-year period upon such terms and conditions as shall be substantially in accordance with the terms and conditions presented to the Executive Board herein.

Kanayo F. Nwanze
President

# ICRISAT: Strengthening Sorghum and Millet Value Chains for Food, Nutritional and Income Security in Arid and Semi-Arid Lands of Kenya and the United Republic of Tanzania

## I. Background

1. Sorghum and millet are staples in rural areas of Kenya and the United Republic of Tanzania and are primary sources of food and nutrition for humans and livestock. Despite their resilience and adaptability to the challenges of arid and semi-arid lands (ASALs), demand and utilization are still low. Yet, coupled with dryland legumes, they can enhance household food and nutritional security. The project seeks to reduce food and nutritional insecurity and alleviate poverty by strengthening sorghum, millet and dryland legume value chains. It is aligned with CGIAR Research Programs (CRPs) on Dryland Systems and Dryland Cereals. It will contribute to IFAD's goal of enabling poor rural people to access and take advantage of improved agricultural technologies and effective production services.

## II. Rationale and relevance to IFAD

2. The project Strengthening Sorghum and Millet Value Chains for Food, Nutritional and Income Security in Arid and Semi-Arid Lands of Kenya and the United Republic of Tanzania is aligned with:

   (i) The objectives of the new IFAD Policy for Grant Financing: promote pro-poor innovative approaches and technologies with a potential for scaling up; strengthen institutional and policy capacities of partners; and generate and share knowledge for development.

   (ii) The IFAD Strategic Framework 2011-2015 (SF) by developing more effective methods of scaling up using a co-learning approach, and promoting sustainability through more-resilient livelihoods. Specifically, the project will contribute to two SF objectives, i.e. enable poor rural women and men (a) to access services to reduce poverty, improve nutrition, raise incomes and build resilience and (b) through their organizations, to manage profitable, sustainable and resilient farm and non-farm enterprises.

   (iii) The country programme evaluation (CPE) and country strategic opportunities programme (COSOP) 2013-2018 for Kenya, which recognize the role of ASALs in increasing food production.

## III. Proposed project

3. The project goal is "improved food, nutritional and income security for enhanced livelihoods and gender equity among smallholder farming households in ASALs of Kenya and the United Republic of Tanzania." Its development objective is to identify, develop, test and disseminate improved technologies of sorghum and millet to increase dryland cereal production and productivity, while protecting local environments.

4. Target groups. Direct beneficiaries include 30,000 poor smallholder farmers and agropastoralist households in Kenya and the United Republic of Tanzania. Indirect beneficiaries consist of policymakers and extension staff.

5. Strategy, approach and methodology

   (i) Support agricultural development for increased productivity and resilience in ASALs through adoption of climate-smart technologies and practices;

   (ii) Build on successes of previous proven investments in sorghum by scaling up technologies and end products for household and commercial uses;

(iii) Draw lessons from the collective experiences of ICRISAT, Africa Harvest Biotech Foundation International (AHBFI) and their partners to facilitate adoption of innovations; and

(iv) Build strategic and management partnerships with stakeholders in Kenya and the United Republic of Tanzania.

## IV. Expected outputs

6. The project is expected to have the following outputs:

(i) Output 1: Conduct rapid assessment studies to establish the status of nutrition, production and marketing value chains

- Document household socio-economic status and the nutritional contribution of sorghum, millet and dryland legumes to household diets and incomes;
- Assess policy frameworks affecting the use and development of sorghum and millet value chains;
- Conduct an ex post survey of impact on incomes, food security, nutrition and technology uptake.

(ii) Output 2: Evaluate released elite sorghum and millet cultivars for grain nutritional qualities and promote their adoption

- Conduct multilocation trials of selected cultivars for adaptability and grain nutrient stability;
- Identify, evaluate and validate crop management technologies for productivity and grain nutrient stability;
- Conduct participatory variety and crop management trials to generate databases for variety release;
- Produce scientific information on sorghum and millet nutritive value.

(iii) Output 3: Adapt and scale up/out commercially sustainable dryland cereal-based value chains

- Assemble sorghum and finger millet cultivars and crop management and post-harvest technologies validated under previous investments;
- Build capacity of value chain actors to increase adoption and productivity;
- Organize farmer exchange visits for information exchange and training as part of knowledge management and sharing.

(iv) Output 4: Diversify sorghum and millet utilization – at the household level and commercially – for nutritional and income enhancement

- Facilitate a grain-quality analysis of cultivars by commercial/industrial users;
- Develop new and promote existing products using suitable cultivars and processes at the household level and commercially;
- Conduct a marketing campaign targeting consumers and health-conscious markets to increase uptake of these cereals.

(v) Output 5: Strengthen the capacity of sorghum and millet value chain stakeholders for improved production

- Support the formation and operationalization of stakeholder forums at the country level;

- Develop gender-responsive communication products targeting diverse stakeholders.

(vi) Output 6: Develop and strengthen public/private partnerships for improved input and output markets

- Adapt proven interventions to improve efficiency and enhance availability and affordability in seed and other input systems;
- Engage alternative end-users to develop a market for surplus grain;
- Adapt the aggregator model to facilitate linkages between end-users, producers and input suppliers.

7. Project benefits

- Increased productivity of sorghum and millet;
- Improved market access for sorghum and millet value chain actors;
- Improved access of women and youth to assets and decision-making;
- Improved nutritional status of women and children.

## V. Implementation arrangements

8. ICRISAT is the lead grant recipient and will provide leadership and effective coordination among partners. AHBFI will be a sub-recipient. A project steering committee will be established to oversee implementation, with support from the ICRISAT regional office in Nairobi. The project will have a dedicated monitoring and evaluation (M&E) expert from ICRISAT to assist in development of the M&E strategy and framework. The initial project stakeholders meeting will be used to help define indicators, means of verification and time frames.

9. ICRISAT will ensure that:

(i) The entire project implementation period is covered by audit;

(ii) Its institutional accounts are audited annually in accordance with International Standards on Auditing (ISAs) and IFAD financial guidelines, and a copy of its audited financial statements is submitted to IFAD within six months of the end of each fiscal year;

(iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation; and

(iv) The annual audit report submitted to IFAD will include IFAD funds and any cofinancing funds, and will consolidate expenditures incurred by sub-grantees, if any, which will be accountable for the use of sub-grant funds and be subject to normal audit oversight.

## VI. Indicative project costs and financing

10. The total project budget is US$2.25 million and includes: a US$1.5 million IFAD and US$0.75 million as an in-kind contribution of staff time, equipment and facilities from ICRISAT and AHBFI. All funds will be disbursed through the World Bank as trustee of the CGIAR Fund, with the World Bank retaining a 2 per cent cost-sharing percentage (CSP). Detailed project costs by component and expenditure category are presented in
tables 1 and 2.

Table 1
**Costs by output and financier**
(Thousands of United States dollars)

| | | IFAD | | | | | Cofinancier | | |
|---|---|---|---|---|---|---|---|---|---|
| | *Outputs* | *Year 1* | *Year 2* | *Year 3* | *Year 4* | *Total* | *ICRISAT* | *AHBFI* | *Total* |
| (i) | Conduct rapid assessment studies to establish the status of nutrition, production and marketing value chains | 75 | | | 75 | 150 | 0 | 0 | 150 |
| (ii) | Evaluate released and elite sorghum and millet cultivars for grain nutritional qualities and promote their adoption | 50 | 75 | 75 | 75 | 275 | 150 | 0 | 425 |
| (iii) | Adapt and scale up/out commercially sustainable dryland cereal-based value chains | 50 | 75 | 75 | 50 | 250 | 50 | 150 | 450 |
| (iv) | Diversify sorghum and millet utilization – at the household level and commercially – for nutritional and income enhancement | 75 | 75 | 75 | 75 | 300 | 0 | 150 | 450 |
| (v) | Strengthen the capacity of sorghum and millet value chain stakeholders for improved production | 50 | 65 | 85 | 50 | 250 | 100 | 0 | 350 |
| (vi) | Develop and strengthen public/private partnerships for improved input and output markets | 50 | 75 | 75 | 75 | 275 | 0 | 150 | 425 |
| | **Total** | **350** | **365** | **385** | **400** | **1500** | **300** | **450** | **2250** |

Table 2
**Project costs by expenditure category and financier**
(Thousands of United States dollars)

| | IFAD | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Expenditure category | *Year 1* | *Year 2* | *Year 3* | *Year 4* | Total | ICRISAT | AHBFI | Total |
| Salaries and allowances | 104 | 110 | 115 | 120 | 449 | 150 | 50 | 649 |
| Equipment and materials | 44 | 47 | 48 | 51 | 190 | | | 190 |
| Operating costs | 31 | 28 | 29 | 31 | 119 | | 150 | 269 |
| Goods, services and inputs | 26 | 27 | 28 | 28 | 109 | 150 | 50 | 309 |
| Travel and allowances | 39 | 38 | 40 | 43 | 160 | | | 160 |
| Consultancies | 9 | 9 | 9 | 8 | 35 | | | 35 |
| Training | 41 | 49 | 48 | 49 | 187 | | | 187 |
| Workshops | 27 | 27 | 31 | 28 | 113 | | | 113 |
| **Direct costs subtotal** | **322** | **334** | **347** | **358** | **1 362** | | **250** | **1912** |
| Management fee (max. 8% on direct costs) | 26 | 27 | 28 | 29 | 109 | | 200 | 309 |
| World Bank 2% CSP | 7 | 7 | 8 | 8 | 30 | | | 30 |
| **Total** | **354** | **368** | **383** | **395** | **1 500** | **300** | **450** | **2250** |

# Results-based logical framework

Strengthening Sorghum and Millet Value Chains for Food, Nutritional and Income Security in Arid and Semi-Arid Lands of Kenya and the United Republic of Tanzania

| | Objectives-hierarchy | Objectively verifiable indicators | Means of verification | Risks and Assumptions |
|---|---|---|---|---|
| Goal | Improved Food, Nutritional and Income Security for enhanced livelihoods and Gender equity among smallholder farming households in Semi-Arid lands of Kenya and Tanzania. | Livelihoods Indicators: 40% of the target households with 20% more assets by project end, 40% of the households have a more diversified diet.<br><br>Gender Equity Indicators 50% of target beneficiaries are Women and Youth, Number of Women and Youth deriving livelihood from Sorghum and Millet based enterprises increased by 20%,<br>20% increase in number of women and youth involved in farm and business decision making; | • Evaluation surveys for/assessment of income, employment, food markets, nutrition status, Impact survey] | •Continued support from County and national government.<br>•Willingness by target communities and markets to embrace Sorghum and Millet for food and incomes.<br>•Funding will be sustained<br>•Grain processors and traders willing to share their records.<br>•Farmers are willing adopt and participate in the evaluation<br>•Reliable/authentic laboratory<br>•Skilled partner NARS staff available<br>•Consumers willing to diversify diets<br>•Credit institutions willing to engage in agricultural funding. |
| Objective | Identify, develop, test and disseminate improved technologies of sorghum and millet to increase dry-land cereal production and productivity while protecting local environments. | • Food & Nutritional security indicators<br>• 40% of the target households have sufficient food for more than 8 months annually by project end;<br>• 20% increase in area under improved Sorghum and Millet per country;<br>• 4 new sorghum and millet based food products developed<br>• 15% reduction in the prevalence of child malnutrition (weight for age) | | |
| Outputs | Output 1: Conduct Rapid Assessment Studies to establish status of Nutrition, Production and Marketing Value chains | • One baseline report on socio-economic status and nutritional contribution of sorghum and millet at HH level<br>• One report on strategies to enhance consumption of sorghum and millet based products | • Project reports<br>• Policy briefs<br>• Working papers<br>• Project end impact assessment<br>• Policy briefs<br>• knowledge sharing products<br>• Publications<br>• Forum minutes | |
| | Output 2: Evaluate released and elite cultivars for grain nutritional qualities and promote adoption of Sorghum and Millet among the food insecure communities of the semi-arid lands | • 25 cultivars sorghum, finger and pearl millet evaluated for yield and resistance to stresses and nutrient stability,<br>• 6 elite varieties evaluated for yield and stress resistance 6 nutrient dense varieties entered into PVS and evaluated with and without legume intercrop with farmers. | | |
| | Output 3: Adapt and Scale Up/Out Robust Commercially Sustainable | • 500kg of seed per variety (4 varieties per crop) produced per year for promotion and up scaling,<br>• 100 demos and PVS per year in each country,<br>• one variety/crop adopted by 35% of the target HH | | |

| | Objectives-hierarchy | Objectively verifiable indicators | Means of verification | Risks and Assumptions |
|---|---|---|---|---|
| | dry-land cereal based Value chains | | | |
| | Output 4:<br><br>Diversify Sorghum and Millet utilization at households and market levels for nutritional and income enhancement. | • 100 cultivars (each) of sorghum, finger and Pearl Millet analysed for grain nutritional quality,<br>• 3 new food products each of sorghum, finger and pearl millet developed and promoted per country in partnership with private sector,<br>• 4 commercial grain processors in Kenya and Tanzania increase their use of sorghum and millet by 20%. | | |
| | Output 5:Strengthen capacity of Sorghum and Millet value chain stakeholders for improved Production | • 2 stakeholder forums formed/strengthened in each country,<br>• 5 farmers groups in each district trained in, value addition, agri-business and linked to credit and finance institutions,<br>• 2 farmer groups in each country trained and assisted to start cottage industries for sorghum and millet –based value added products, 5,000 participants trained for enhanced efficiencies in VC. | | |
| | Output 6:Develop and strengthen public and private partnerships for improved inputs and products markets | • 25% increase in use of improved seed of sorghum and millet including QDS and Certified seeds,<br>• 2 outlets for improved seed and other input supply per district (located at maximum of 5 km from farmers) identified, strengthened and linked to seed producers and farmers<br>• 4 commercial off-takers engaged as partners in each country. | | |

# WorldFish Centre: Improving the Technological Foundations for Sustainable Aquaculture

## I. Background

1. Fisheries and aquaculture have the potential to reduce hunger and poverty and to improve nutrition for many people throughout the world. Currently, overfishing, industrial development and agricultural pollution have reduced wild fish stocks, while aquaculture is growing to meet expanding global fish demand. Fish supply/demand research suggests that aquaculture production must double by 2030 to meet the world's growing demand. Africa and Asia face particularly significant shortfalls in fish supply unless investments are made in the growth of sustainable aquaculture. Sustainable intensification, yield improvements and growth in aquaculture rely on a combination of factors, including improved fish seed, fish feed, fish health management and farming technologies.

2. WorldFish has been involved in development of aquaculture for the last 20 years. It has recently expanded its programme to include molecular characterization of improved fish stocks, and genomic methods vital to identifying and incorporating key characteristics related to robustness and resilience in fish-breeding programmes, and to increasing the efficiency of these programmes. The ultimate goal is delivery of quality, genetically improved seed for the sustainable production of aquaculture. The initial focus of molecular characterization was on Indian carp in Bangladesh, but the activity will be extended in 2015-2017 to other key species and countries. Indeed, accelerated development of improved fish strains is essential to meet future needs of diverse African and Asian production systems.

3. WorldFish has recently accelerated its research and partnerships to assure farmers wider access to improved fish strains. The Genetically Improved Farmed Tilapia strain is widely disseminated throughout Asia, and, more recently, the improved Abbassa strain has become available to farmers in Egypt. These initiatives are already showing improved yields and productivity in small-scale fish farms, but more work is needed to develop the delivery systems to enable farmers to benefit from these improved strains, which are available and in wide demand. This project builds on WorldFish's knowledge and experiences in genetic improvement and dissemination activities across Africa and Asia, and will focus on four countries: Bangladesh, Egypt, Kenya and Mozambique.

## II. Rationale and relevance to IFAD

4. The Improving the Technological Foundations for Sustainable Aquaculture is aligned with the IFAD Strategic Framework 2011-2015 goals and objectives and its outputs are expected to feed into the IFAD loan portfolio. It will contribute to IFAD's Agricultural Research for Development (AR4D) areas of focus, in particular sustainable systems at farm and landscape levels to intensify production while conserving the natural resource base. The project focuses on two themes:

   (i) Natural resources, water and energy; and

   (ii) Improved agricultural technologies and effective production services, their synergies and trade-offs.

5. The project is a component of CGIAR Research Program (CRP) 1.3 — Aquatic Agricultural Systems (AAS) —, with links to the CRP on Livestock and Fish (LF) and alignment with the recently proposed CRP on the Fish Agri-food system. It will contribute directly to:

   (i) Three System Level Outcomes (SLOs) of the CGIAR Strategy and Results Framework (SRF): reduced poverty; improved food and nutrition security for health; and improved natural resource systems and ecosystem services;

(ii) Three intermediate development outcomes (IDOs) of AAS (IDO4, productivity; IDO1, income; IDO6, capacity to innovate; and IDO7, capacity to adapt); and four LF IDOs (IDO1, increased livestock and fish productivity in small-scale production systems for the target commodities; IDO2, increased quantity and improved quality of the target commodity supplied from target small-scale production and marketing systems; IDO3, increased employment and income for low-income actors with an increased share of employment for and income controlled by low-income women; and IDO5, lower environmental impact and higher benefits per unit of commodity produced in the target value chains); and some alignment with CRP4 — Agriculture for Nutrition and Health (A4NH) — IDOs;

(iii) The goals of the IFAD Policy for Grant Financing: significantly broaden and add value to support for smallholder farming and rural transformation in order to reduce rural poverty, enable sustainable agricultural development, further global food security and improve nutrition. Moreover, the project will contribute to three objectives of the policy: promote innovative, pro-poor approaches and technologies with a potential for scaling up; strengthen partners' institutional and policy capacities; and generate and share knowledge for development impact.

## III. Proposed project

6. The goal of the project is to ensure that improved fish strains in target aquatic systems are widely available and used sustainably and equitably – providing nutritious, affordable food and incomes for poor people. Its objectives are to:

(i) Maintain and make available more-productive, adaptable strains of fish that fit the needs of target production systems using conventional breeding and genomic technologies; and

(ii) Improve systems of delivery, assessment, use and performance of improved fish strains in Bangladesh, Egypt, Kenya and Mozambique.

7. Target groups. Direct target groups: national aquaculture research systems and development partners in Bangladesh, Egypt, Kenya and Mozambique ('project countries'), including government agencies, NGOs, the private sector and community associations engaged in aquaculture. Indirect target groups include fish farmers, farmers' organizations, women's groups and other fish value-chain actors.

8. Strategy, approach and methodology:

(i) Continued development and availability of improved fish strains. WorldFish will use a combination of established approaches to selective breeding and new molecular methods, for greater resilience and sustainability of improved fish strains.

(ii) A proactive focus on scaling up systems for the dissemination of improved fish strains to improve access for producers, complemented by development of an enabling policy environment to increase overall access to affordable, fast-growing strains.

(iii) Deepening knowledge through assessment of the on-farm performance of key tilapia strains and adaption and delivery of breeding programmes.

## IV. Expected outputs

9. The project is expected to have the following outputs:

(i) Output 1. More-productive, adaptable strains of fish for aquaculture in the project countries are developed in line with target production systems using conventional breeding and genomic technologies:

- Improved strains of tilapia, carp and African catfish maintained and developed further; and
- Strengthening activities provided (through increased intensity of genetic services) by the Fish Breeding and Genetics group in WorldFish Penang to partner national agricultural research systems (NARS).

(ii) Output 2. Improved systems of delivery and greater use of the improved fish strains:

- Investigations conducted of delivery systems, on-farm performance, production efficiency and yield gap in improved tilapia in diverse farming systems; and
- Manuals developed and distributed for hatchery and farm use to obtain the best benefit from improved strains.

10. Project benefits

(i) Improved food security;

(ii) Increased fish production and productivity of aquatic systems; and

(iii) Improved nutritional status of women and children.

## V. Implementation arrangements

11. WorldFish is the grant recipient and executing agency for the project and accountable for use of grant funds to IFAD. Implementation will be led by the Genetic Group at WorldFish and the Genetic Theme group in CRP 3.7 (More Meat, Milk and Fish by and for the Poor). Key project partners will include the Bangladesh Fisheries Research Institute (BFRI), selected private-sector hatcheries and project country NARs.

12. WorldFish will ensure that:

(i) The entire project implementation period is covered by audit;

(ii) Its institutional accounts are audited annually in accordance with ISAs and IFAD financial guidelines, and a copy of its audited financial statements is submitted to IFAD within six months of the end of each fiscal year;

(iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation; and

(iv) The annual audit report submitted to IFAD will include IFAD funds and any cofinancing funds, and will consolidate expenditures incurred by sub-grantees, if any, which will be accountable for the use of sub-grant funds and be subject to normal audit oversight.

## VI. Indicative project costs and financing

13. The project budget is US$1,800,000, with IFAD providing US$1,500,000 and WorldFish US$300,000. All funds will be disbursed through the World Bank as trustee of the CGIAR Fund, with the World Bank retaining a 2 per cent CSP. Detailed project costs by activity, expenditure category and financier are presented in tables 1 and 2.

Table 1
**Costs by component and financier**
(Thousands of United States dollars)

| | *IFAD* | | | | | |
|---|---|---|---|---|---|---|
| *Output/Component* | *2015 (Jul-Dec)* | *2016 (Jan-Dec)* | *2017 (Jan-Dec)* | *Total IFAD* | *Contribution of WorldFish* | *Total budget* |
| (i) Development of improved fish strains of tilapia, carp, and African catfish. | 312 | 432 | 412 | 1156 | 275 | 1431 |
| (ii) Delivery systems for genetically improved fish and assessments of the use and performance of these improved fish strains | 68 | 138 | 138 | 344 | 275 | 369 |
| **Total** | 380 | 570 | 550 | 1500 | 550 | 1800 |

Table 2
**Costs by expenditure category and financier**
(Thousands of United States dollars)

| | IFAD | | | | | |
|---|---|---|---|---|---|---|
| Expenditure category | Year 1 | Year 2 | Year 3 | Total IFAD | Contribution of WorldFish | Total budget |
| Salaries and allowances | 143 | 153 | 159 | 455 | 100 | 555 |
| Consultancies | 63 | 81 | 78 | 222 | | 302 |
| Equipment and materials | 20 | 30 | 30 | 80 | | 231 |
| Operating costs | 31 | 60 | 60 | 151 | | 291 |
| Goods, services and inputs | 18 | 61 | 61 | 140 | | 330 |
| Travel and allowances | 21 | 38 | 40 | 99 | 50 | 248 |
| Training | 29 | 40 | 46 | 115 | 25 | 255 |
| Workshops | 20 | 55 | 25 | 100 | 25 | 225 |
| **Subtotal** | **345** | **518** | **499** | **1 362** | **200** | **1 562** |
| Management fee | 27 | 41 | 40 | 109 | 100 | 209 |
| 2% CSP | 8 | 11 | 11 | 30 | | 30 |
| **Total** | **380** | **570** | **550** | **1 500** | **300** | **1 800** |

# Results-based logical framework

## Improving the Technological Foundations for Sustainable Aquaculture

| | Objectives hierarchy | Objectively verifiable indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| Goal | Ensure that improved fish strains in target systems are widely available, and used sustainably and equitably, providing nutritious, affordable food and income for the poor. | • Three improved strains being developed in Africa: Egypt, Kenya and Mozambique.<br>• Three improved strains being developed in Bangladesh<br>• Two genetically improved multiplication and dissemination systems in place | • Documentation, reports, local bulletins and press releases<br>• Station and on farm evaluation trial results, reports on the state of selection lines with respect to effective population size and inbreeding<br>• Research reports, peer reviewed publications, conference papers. | • Markets, policies, infrastructure, and national research and extension services support the spread and responsible use of technology<br>• Funds and conditions at the farm level adequate for aquaculture production<br>• Research facilities to maintain the nucleus at an appropriate effective population size and to contain inbreeding are in place<br>• Access to the countries involved.<br>• Research facilities and investments are sufficient to sustain long-term genetic improvement programmes<br>• Access to countries involved and appropriate partner participation.<br>• Investment sufficient to develop effective dissemination infrastructure. |
| Project Objectives | Maintain and have available more productive and adaptable strains of fish that fit the needs of target production systems using conventional breeding and genomic technologies;<br><br>Improve systems of delivery and assess use and performance of these improved fish strains. | • Growth rate of genetically improved fish strains 20-30% greater than other strains<br>• Effective population size in selection lines is kept above the minimum required and inbreeding avoided | | |
| Outputs | 1. More productive and adaptable strains of fish for aquaculture in Asia and Africa that fit the needs of target production systems using conventional breeding and genomic technologies | • Generation 15 of the improved strain of Nile tilapia (Abbassa strain) in Egypt developed and previous generations released to producers.<br>• Active program of African catfish improvement<br>• Generation 16 of GIFT Tilapia in Asia<br>• Genetic improvement program for three Bangladesh carp species designed and initiated.<br>• Support and advice provided to national partners implementing fish genetic improvement programs in he project countries. | | |
| | 2. Delivery systems for genetically improved fish and assessments of the use and performance of these improved fish strains. | • Analysis of>two country delivery systems completed.<br>• On-farm performance assessment of improved fish strains completed in Egypt and Bangladesh.<br>• Nucleus breeding site strengthened with enumerated output of fry to farmers and preliminary on-farm performance data. | • Tissue samples in gene bank.<br>• Publications and reports. | |

# ICRAF: Agrobiodiversity and Landscape Restoration for Food Security and Nutrition in East Africa

## I. Background

1. The East Africa region is facing land degradation, continued population pressure on the land, and a high prevalence of undernutrition. The need for landscape restoration in East Africa is a priority, demonstrated by various commitments of Ethiopia and Uganda to the international landscape restoration agenda, adopted as the Bonn Challenge in 2011 and the New York Declaration on Forests at the United Nations Climate Summit in 2014. Child undernutrition in the East Africa region is among the highest in the world, with 40 per cent of children under five years of age stunted. Diversifying farming systems with reference to food tree species and crop varieties, as a component of land restoration management, can help support sustainable production under changing climatic conditions, while also promoting diversified diets to reduce malnutrition. In these systems, food trees have the potential to provide year-round food, complementing cereal, legume and vegetable crops. At the same time, increasing intra-specific diversity (varieties) of crops provides a risk management strategy for smallholder farmers when combined with appropriate agronomic practices. Together, food tree species and crop variety portfolios – combinations of indigenous and exotic food tree and crop species and varieties – can provide year-round harvests and fill the 'hunger gap' and specific nutrient gaps.

## II. Rationale and relevance to IFAD

2. The Agrobiodiversity and Landscape Restoration for Food Security and Nutrition in East Africa is aligned with the IFAD Strategic Framework 2011-2015 goals and objectives. It will contribute to IFAD's AR4D, in particular to sustainable systems at farm and landscape levels to intensify production while conserving the natural resource base. The project focuses on:

   (i) Natural resources, water and energy;

   (ii) Improved agricultural technologies and effective production services, their synergies and trade-offs.

3. The project is aligned with the objectives of the IFAD Policy for Grant Financing: promote pro-poor innovative approaches and technologies with a potential for scaling up; strengthen institutional and policy capacities of partners; and generate and share knowledge for development.

4. The project is a component of these CGIAR Research Programs (CRPs): CRP4 — Agriculture for Nutrition and Health; CPR5 — Water, Land and Ecosystems; CPR6 — Forests, Trees and Agroforestry; and CPR 7 — Climate Change, Agriculture and Food Security. For the new CRP phase (2017-2022), the project will mainly be linked to Integrated Land and Water Productivity and Agriculture for Nutrition and Health; Sustainable Food Systems; and Forest and Agroforestry Landscapes.

5. The project will contribute directly to:

   (i) All SLOs of the SRF (reduced poverty, improved food and nutritional security for health, and improved natural resource systems and ecosystem services).

   (ii) IDOs of five CRPs: improved diet quality (CRP4 and CRP6); food security (CRP7); enhanced income (CRP6); empowerment of women and poor communities (CRP4, CRP5 and CRP6); regenerated agricultural landscapes (CRP5); biodiversity and ecosystem services (CRP5, CRP6); policies (CRP6); crop genotypic and phenotypic attributes (Genebank CRP).

# III. Proposed project

6. The goal is to contribute to landscape restoration by harnessing food tree and crop portfolios to enhance livelihood and landscape resilience while addressing food insecurity and improving nutrition. The objective is to identify ecologically suitable and socio-economically relevant food tree and crop portfolios for integration into existing farming systems for increased food security, improved nutrition and restoration of landscapes.

7. Target groups consist of 8,000 smallholder farming households, including at least 50 per cent women, and their communities in two locations each in Ethiopia and Uganda. The project will benefit farmer groups in the target research locations by building capacity in extension services, research and education institutes in the agriculture, environment, nutrition and public health sectors.

8. Strategy, approach and methodology:

   (i) Builds on previous work of the World Agroforestry Centre (ICRAF) and Bioversity International (BI), which independently assessed and promoted local fruit/nut tree species and crop varietal diversity, respectively, in several projects for improved nutrition and landscape restoration;

   (ii) Fosters strong collaboration with national partners to support seed systems to provide diverse and high-quality planting material in line with national policies and initiatives;

   (iii) Will use BI's tested gender-disaggregated participatory diagnostic approaches that link farmer knowledge and management practices to empirical field and laboratory trials;

   (iv) Will adopt BI's proven approaches in project countries to improve access to quality seed to manage climate-related abiotic stresses; and

   (v) Will apply ICRAF's proven approaches to participatory species priority-setting, fruit-tree portfolio development and decentralized innovation and knowledge hubs for technology and materials.

# IV. Expected outputs

9. The project is expected to have the following outputs:

   (i) Output 1: Assessment of current agrobiodiversity and identification of suitable priority food tree and crop species

   - Participatory diagnostics of indigenous technical knowledge to assess the quantity and distribution of agrobiodiversity;
   - Map and assess the plant genetic baseline available for farming systems and land restoration; and
   - Document biotic and abiotic stresses, characterize the nutritional contents and assess the genetic variation for selected priority food tree and crop species/varieties.

   (ii) Output 2: Development and validation of food tree and crop portfolios for optimal species and systems productivity and resilience

   - Develop socially and ecological suitable, location-specific food tree and crop variety portfolios to respond to climate variability;
   - Test developed portfolios' productivity, adaptation and potential to provide for year-round food and nutrition;
   - Develop information and communication tools for integration of optimum portfolios into farming systems.

(iii) Output 3: Access to quality planting materials of validated food tree and crop portfolios for national partners for wide distribution to farmers

- Collect and characterize propagation material for the developed food trees;
- Develop effective information distribution systems/mechanisms for the tree/crop portfolios distribution and uptake by farmers;
- Conduct diversity fairs and cross-site visits of farmers, policymakers and other stakeholders to facilitate exchange of genetic diversity and knowledge;
- Develop quality standards and certification policies for decentralized seed and seedling supply systems.

(iv) Output 4: Communication and capacity development of farmers and national partners.

- Disseminate information on the characterized traits of selected priority species/varieties through appropriate knowledge products;
- Develop capacities of farmers to use the developed portfolios;
- Reinforce the role of smallholder farmers and farmer groups as seed/seedling producers and suppliers;
- Develop capacities of national researchers and extension services to use the information and delivery systems of developed portfolios;
- Develop locally relevant and innovative mass communication tools to increase access to information on suitable portfolios.

10. Project benefits

(i) Improved incomes and productivity;

(ii) Improved food security;

(iii) Improved nutrition and health; and

(iv) Enhanced resilience to climate variability.

# V. Implementation arrangements

11. ICRAF is the grant recipient and executing agency for the project, and accountable to IFAD for the use of grant funds. It will lead research in food trees and overall project implementation coordination. BI will lead research and development activities in crop genetic diversity, while ensuring quality of outputs, financial management and effective coordination among partners related to crop genetic diversity. Both centres will identify suitable national research and development partners prior to project inception – through initial coordination activities to strengthen current partnerships and identify new ones.

12. ICRAF will ensure that:

(i) The entire project implementation period is covered by audit;

(ii) Its institutional accounts are audited annually in accordance with ISAs and IFAD financial guidelines, and a copy of its audited financial statements is submitted to IFAD within six months after the end of each fiscal year;

(iii) An audit opinion letter on the statement of expenditures submitted to IFAD is duly completed by its independent auditors, disclosing the amount of funds from various sources received and spent under this operation;

(iv) The annual audit report submitted to IFAD will include IFAD funds and any cofinancing funds and will consolidate expenditures incurred by sub-grantees, if any, which will be accountable for the use of sub-grant funds and be subject to normal audit oversight.

# VI. Indicative project costs and financing

13. The project will be funded from: an IFAD grant of US$1,500,000, and cofinancing of US$134,000 from ICRAF and US$446,000 from BI. The total project budget is US$2,080,000. All funds will be channelled through the World Bank as trustee of the CGIAR Fund, and the World Bank will retain a 2 per cent CSP. Detailed project costs by component, expenditure category and financier are presented in tables 1 and 2.

Table 1
**Costs by output and financier**
(Thousands of United States dollars)

| | *IFAD* | | | | *Co-financing* | | |
|---|---|---|---|---|---|---|---|
| *Output* | *Year 1* | *Year 2* | *Year 3* | *Total* | *ICRAF* | *Bioversity* | *Total* |
| (i) Assessment of current agrobiodiversity and identification of suitable food tree and crop species | 340 | 0 | 0 | 350 | 0 | 68 | 418 |
| (ii) Development and validation of tree food and crop portfolios for optimal species/systems productivity and resilience | 62 | 140 | 71 | 250 | 130 | 76 | 456 |
| (iii) Access to quality planting materials of validated food tree and crop portfolios | 35 | 118 | 180 | 337 | 0 | 302 | 639 |
| (iv) Communication and capacity development of farmers and national partners | 55 | 246 | 253 | 563 | 4 | 0 | 567 |
| **Total** | **492** | **504** | **504** | **1 500** | **134** | **446** | **2 080** |

Table 2
**Costs by expenditure category and financier**
(Thousands of United States dollars)

| | *IFAD* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Expenditure category* | *Year 1* | *Year 2* | *Year 3* | *Total* | *ICRAF* | *Bioversity* | *Total* |
| Salaries and allowances | 134 | 97 | 101 | 332 | 130 | 68 | 530 |
| Equipment and materials | 22 | 7 | 4 | 33 | 0 | 0 | 33 |
| Operating costs | 39 | 40 | 41 | 120 | 0 | 76 | 196 |
| Goods, services and inputs | 130 | 158 | 152 | 440 | 0 | 302 | 742 |
| Travel and allowances | 47 | 49 | 51 | 147 | 0 | 0 | 147 |
| Consultancies | 30 | 24 | 24 | 78 | 0 | 0 | 78 |
| Training (capacity-building) | 15 | 54 | 54 | 123 | 0 | 0 | 123 |
| Workshops | 25 | 25 | 26 | 77 | 4 | 0 | 80 |
| **Subtotal** | **442** | **454** | **453** | **1 350** | **0** | **0** | **1 350** |
| Management fee | 40 | 40 | 40 | 120 | 134 | 446 | 700 |
| 2% CSP | 10 | 10 | 10 | 30 | 0 | 0 | 30 |
| **Total** | **492** | **504** | **504** | **1 500** | **134** | **446** | **2 080** |

# Results-based Logical Framework

Agrobiodiversity and Landscape Restoration for Food Security and Nutrition in East Africa

| | Objectives-hierarchy | Objectively verifiable indicators | Means of verification | Assumptions |
|---|---|---|---|---|
| Goal | Contribute to landscape restoration by harnessing ecologically suitable food tree and crop portfolios in ways that enhance livelihood and landscape resilience while addressing food insecurity and improving nutrition | • 20% increase in the number of food tree and crop biodiversity used to improve productivity, nutrition and landscape resilience in target sites<br>• Increased number of government and non-government stakeholders who - include food tree and crop genetic diversity deployment as a strategy to sustainably increase production and nutrition | - Government and non-government agency annual reports<br>- CRP reports | - Programme areas do not experience exceptional drought and/or extreme flooding |
| Objective | Integrating ecologically suitable and socio-economically relevant food tree and crop portfolios into existing farming systems and restoring landscapes for increased food security and improved nutrition. | • 30% of male and female target farmers in the project sites integrated the food tree and crop portfolios into their farming systems<br>• 50% of materials in commercial and farmer's nurseries and community seed banks are locally diverse adaptive planting materials.<br>• two government agencies and two non-government or CBO per country promote good practices to deploy food tree and crop genetic diversity to sustainably increase production | - Report of HH surveys,<br>- Project reports<br>- Databases | - Farmers internalize capacity and development efforts |
| Outputs | (1) Current agrobiodiversity assessed and suitable priority food tree and crop species identified<br>(2) Food tree and crop portfolios for optimal species and systems productivity and resilience developed and validated in the project sites.<br>(3) National partners have access to quality planting materials of validated food tree and crop portfolios for wide distribution to farmers<br>(4) Innovative communication materials developed and capacities of farmers and national partners built. | • 3 target set of food tree and crop varieties identified and characterized<br>• one combined portfolio for food tree and crop varietal diversity identified/site<br>• 30% of targeted households report increased access to diversity-rich seeds/seedlings<br>• 4 000 female and male farmers (2000 in each of the 4 locations) trained on use and benefits of food tree and crop portfolios by different approaches<br>• Farmer adapted guidelines and process approved and validated for seed and planting materials quality control available | | - National partners and farmers are supportive and participate in the project |