

**THE CGIAR INITIATIVE FOR A
GLOBAL OPEN AGRICULTURE AND FOOD UNIVERSITY (GO-AFU)
([HTTP://WWW.OPENAGUNIVERSITY.CGIAR.ORG](http://www.openaguniversity.cgiar.org))**

A Program Proposal Presented by

THE CGIAR CENTERS AND AN INTERNATIONAL CONSORTIUM OF PARTNERS

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This paper remains a “living document”. It was drafted at IFPRI as a facilitating focal point. Contacts: Suresh Babu (s.babu@cgiar.org); Joachim von Braun (j.vonbraun@cgiar.org). The paper and planning benefited from the advise of many. Earlier drafts of this document were circulated among the Open University Taskforce members for their input and comments. It incorporates the comments and suggestions made at the Center Directors Committee of the CGIAR (CDC) meeting in Nairobi and at the 2003-AGM parallel sessions under the theme “The CGIAR Moving Forward.” The April 2004 version of the document was endorsed by CDC at its May 2004 meeting, as was the approach on the next steps. This version is an edited update incorporating suggestions of CDC as well as the Executive Council (ExCo) of the CGIAR (Montpellier, May 2004) where the proposal was subsequently presented.

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THE CGIAR INITIATIVE FOR A GLOBAL OPEN AGRICULTURE AND FOOD UNIVERSITY (GO-AFU)

EXECUTIVE SUMMARY

Agriculture, including livestock, forestry and fisheries, continue to be the foundation for development, hunger eradication, and poverty reduction for much of the developing world. These agricultural sectors are increasingly knowledge-based; therefore, strengthening the capacity for agricultural research and analysis for improved technologies, policies, programs, and institutions that will improve food and nutrition security, agricultural growth, and sustainable natural resource management is essential.

Currently, the developing countries are experiencing a significant capacity constraint of well trained agricultural experts. This gap between capacity and need must be addressed if the advances made thus far in poverty reduction with sustainable agricultural development are to continue, and if the regions with chronic and transitory food insecurity are to avoid despair in the future. The current level of postgraduate capacities in agriculture in developing countries is just a fraction of the level that was prevalent in the 1960s in developed countries. To even reach that level would require training additional tens of thousands of postgraduates per annum. Innovative approaches are needed to address this challenge.

Without reinvigorating food and agricultural systems with well-trained professionals, the quality and quantity of research will diminish, as will returns to developing-country investment in agriculture and implementation of innovative reform agendas. The result will be a further slowdown in the pace of progress towards the reduction of poverty and the achievement of other Millennium Development Goals. At the same time, new science and technology including information technology, biotechnology, as well as new management and institutional insights offer important innovative potentials for food and agriculture. These potentials can only be tapped with expanded and improved skills in agriculture, the food sector, and natural resources management.

Distance education is a cost- and time-effective way to strengthen capacity in the poorer countries, can link in-country students to high-quality teaching, and offers an incentive for students and professionals to obtain degrees while working in their own countries. Studies show that a strong demand exists in the South for distance learning and that this demand is growing.

The CGIAR system, with its human and physical assets, has a tremendous opportunity to establish a Global Open Agriculture and Food University (GO-AFU) that would effectively improve the skills of developing-country students and professionals. The CGIAR system has generated a large body of public goods over the past 35 years and has more than 1,000 researchers with solid knowledge on how to develop solutions that increase agricultural productivity, reduce hunger, and improve sustainable management of the natural resource base. CGIAR Centers have experience in using a variety of information and communication technologies through the capacity strengthening activities of its centers. The leading

international universities in OECD countries and developing countries can play a key role in forming and supporting the GO-AFU, and thereby, strengthen their own global reach.

Recognizing the opportunity for the CG system and its various partners, the Center Directors Committee of the CGIAR proposed the development of the initiative described in this document.

The idea: A Global Open Agriculture and Food University will provide course contents and professional and applied academic teaching in partnership with regional and national institutions to enhance research and analytical capacities necessary for sustainable use of natural resources and improved food and nutrition security in the developing countries.

The GO-AFU would ...

- **Complement – not substitute for or compete** with – the higher agricultural education programs those traditional and open universities in the developing countries offer. It would complement by filling in the technical and theoretical knowledge gaps;
- Capitalize on, **harmonize, and integrate** the wide array of existing distance learning programs that many of the CGIAR Centers have been administering or participating independently in the developing world;
- Help **regional-level organizations** to determine capacity strengthening needs and implement degree programs. **Traditional and open universities** at the national level will be partners in needs assessment, program development, and delivery of the courses;
- Offer its courses in **partnership** with developing and developed country institutions in **various languages** using distance learning technologies so that all developing countries could benefit;
- **Not envision granting degrees** alone, but it shall focus on strengthening existing open universities and other universities in the developing world;
- **Produce courses** by CGIAR-center staff and outside experts and enhance their availability. The primary beneficiaries of the program will be **M.Sc. and Ph.D. students** at developing-country universities and **mid-career professionals**, including teachers, researchers, and personnel in governmental, nongovernmental, private, and donor organizations that wish to upgrade their skills;
- Pay attention to the **inclusion of women**;
- Reach out to the **indigenous communities** who do not have access to higher education either due to their remoteness or due to declining quality of higher education in their countries; and
- Reach a large number of individuals and provide the highest quality programs. The GO-AFU will be structured as an **“open-source” institution** forming “creative knowledge commons”.
- Teaching resources and course contents will be shared with any interested educational institution and will be created by both the CGIAR Centers and outside experts through a **transparent quality review process**.

Through consolidating the various CGIAR-center programs on distance learning the CGIAR can have a large-scale, sustained, positive impact on capacity. The activities that will be undertaken to establish the GO-AFU and achieve its goals are:

- *Building Coalitions* within the CGIAR system and its regional networks to create awareness of the need for a GO-AFU, build ownership of the initiative, sensitize potential partners, and develop MOUs with partners;
- *Needs Assessment* to determine potential demand for specific areas of postgraduate distance education in agriculture; the material, programs, and capacity available in the CGIAR Centers; and the knowledge and technology gaps of delivery partners;
- *Course Content Creation* for organizing and enhancing existing CGIAR teaching material, procure new courses from CG staff and outside experts for distance learning, assemble faculty, translate material, and maintain course quality through review by experts;
- *Course Delivery* by partner institutions and with faculty guidance, using a variety of technologies (not only Internet, but also CD-ROM, television, etc.) and institutional arrangements to ensure course and program accessibility to all interested students regardless of the available distance learning infrastructure, and a rich learning experience; existing universities and CGIAR Centers would offer platforms for advanced coaching and thesis advise;
- *Monitoring and Evaluation* of the program activities and outcomes, the partners, students, and faculty to determine the extent to which the GO-AFU is reaching its goals, the specific areas in which it is having a positive impact, and the issues that remain to be addressed through adaptive management; and
- *Impact Assessment* to gauge the broader effect of the GO-AFU on research and policy in the developing countries.

The potentially large and ambitious program shall be phased in small steps, with careful assessment of each further step. The **phasing-in of the initiative** entails a two-year pilot-period in which the CGIAR Centers work only with their existing training and capacity strengthening staff and Center “faculty”. In this phase, existing center activities will be better coordinated with each other and with the cooperating open universities and other universities in the South and North. Quick wins from strengthening the related public goods provisioning by CGIAR-Centers are already expected from that pilot period, managed by a small team.

As the program evolves, a lean governance structure shall be formed:

- 1) A **CDC-Oversight Committee (CDCOC)**, which will supervise the GO-AFU Secretariat through the CGIAR host centers, and by reporting on the GO-AFU to the CGIAR Executive Council and Science Council.
- 2) A **GO-AFU Secretariat**, which will develop partnerships with organizations, oversee the budget, and execute needs assessment, content creation, course delivery, monitoring and

evaluation, and impact assessment. The Secretariat will report to the CGIAR host center Director Generals. Its Program Director will also maintain collaboration between the GO-AFU and the CGIAR Centers and outside experts, and between the CGIAR and partner institutions. A few Resource Experts, such as an Agricultural Scientist/Program Developer, an Agricultural Education Specialist, and an Agricultural Scientist on a rotating basis will serve in the Secretariat.

- 3) A **Program Advisory Committee (PAC)** consisting of representatives from partner organizations will be appointed by the CDCOC to advise the GO-AFU Secretariat on priority-setting and addressing gaps, based on monitoring, evaluation, and impact assessments. The PAC will submit the GO-AFU annual report to the CDCOC. Institutional memberships by the relevant international academic associations leaders may be considered (such as the international association of agronomists, breeders, agricultural economists, etc.)
- 4) An **Expert Group for Quality Control and Faculty Selection**, which will ensure the high quality of courses and programs through evaluation, and the selection of faculty members to serve based on criteria it develops with the PAC.
- 5) A **Task Force of CGIAR-center staff**, which will connect the teaching material and various resources available in each of the CGIAR Centers and assist in carrying out the coalition building, needs assessments, and other activities. The Task Force, which is already established, will be composed of key staff of the CGIAR Centers and outside experts and is managed by the GO-AFU Secretariat.

The time is ripe for a global open university of this kind. The CGIAR is best positioned to lead the initiative across all world regions. A cautious step-by-step approach toward scaling up — including learning from existing and emerging experiences — is envisioned; not a “big bang” approach. The initiative has the potential to evolve toward a key element of “good globalization” servicing the rural poor.

A timeline for achieving the activities discussed is given below.			
1 Year	2 Years	2–4 Years	5 Years
Inventory assessment		Strengthen material/programs	Help offer Ph.D. programs
Offer existing modules	Help offer M.Sc. programs	Expansion in offering M.Sc. programs	Develop Ph.D. program
Coalition building	Monitoring/evaluation	Impact assessment	
Needs assessment		Translation	
Initial oversight and quality control structure			

The CGIAR Initiative for a Global Open Agriculture and Food University

The idea: A Global Open Agriculture and Food University will provide course contents and professional and applied academic teaching in partnership with regional and national institutions to enhance research and analytical capacities necessary for sustainable use of natural resources and improved food and nutrition security in the developing countries.

PROBLEM AND RATIONALE

In the new millennium, agriculture, including livestock, forestry, and fisheries, will continue to be the foundation for economic growth, hunger eradication, and poverty reduction for much of the developing world. Strengthening the capacity for agricultural research and analysis is fundamental if improved strategies and programs that utilize new technologies and institutional frameworks are to emerge. Helping researchers and decisionmakers in these countries to enhance their professional skills so they can develop improved technologies, institutions, policies, and programs for food and nutrition security, agricultural growth, and natural resource management is, therefore, an essential step to improve the welfare of the world's poor.

Currently, there is a significant shortage of capacity to conduct quality research and management, and devise sound strategies for development of agriculture and the food system in poor countries. This capacity gap must be addressed if the advances made thus far in agriculture-led poverty reduction are to continue and if the regions with declining food and nutrition security are to avoid a future of despair. Recognizing this major development challenge, the Center Directors Committee (CDC) of the CGIAR system in February 2003, at The Hague, requested that the International Food Policy Research Institute (IFPRI) draft a concept note describing the structure and feasibility of a Global Open Agriculture and Food University (GO-AFU) that would involve all CGIAR Centers in a collaborative arrangement.*

* The concept of a GO-AFU has evolved over some time through discussion in various fora. At the February 2003 meeting of the CDC, IFPRI proposed the concept of an Open University under the CG system. The CDC asked IFPRI to produce a concept note and submit it to CDC for comments. IFPRI revised the concept note based on the feedback and presented it at the May 2003 CDC meeting at The Hague. There the CDC suggested that a task force, involving all of the CGIAR Centers, be formed to develop the concept further and obtain another round of suggestions from the various CGIAR Centers involved in distance learning activities. Currently, there is a 22-member task force from the CGIAR Centers participating in the development of the Open University idea. After comments and suggestions were received from the CGIAR Centers, IFPRI organized a program development

Indeed, renewed efforts to strengthen capacity in the food, agriculture, and natural resource sectors of the developing countries through support to traditional and distance learning institutions are imperative on several grounds. Postgraduate students and professionals in the agricultural field today are facing limits on their access to further education because funding and support for higher education in agriculture has been declining sharply during the last decade. The cost of attending a developed-country university is prohibitive for a student from a poor country if s/he has no financial assistance, and even in the developing world, higher education can be expensive. Several developing country universities and institutions are starting to offer courses in distance mode and are facing technical and quality challenges. Although there is a strong desire on the part of young researchers to acquire more advanced technical, analytical, and managerial skills related to agriculture and its allied fields, which the universities in their respective countries do not have the full capacity to offer, the high cost of tuition and the decline in donor funding for scholarships together prevent a large number of them from enhancing their capacities.

Even if a young agricultural researcher can afford to attend a university for an advanced degree, the prospect of leaving full-time employment and perhaps even relocating or leaving one's family are disincentives to pursue further education. Furthermore, it is often the case that when students do go to developed countries for education, "brain drain" occurs, as individuals decide to remain in these countries to work after graduation. When this happens, the returns on investments in capacity strengthening are often low for the poorer countries.

The current level of postgraduate capacities in agriculture in developing countries is not even a fraction of the level, which was prevalent in the 1960s in developed countries. An indicative global assessment of the need for postgraduate capacity in agriculture in selected developing countries is given in Appendix 1. One way to identify the need for postgraduate capacity is to

workshop in July 2003 with selected stakeholders, national partners, and CGIAR Centers. The CDC requested that IFPRI take responsibility for developing a program document. In October 2003, a draft program document was presented at the CDC and Annual General Meeting (AGM) meetings in Nairobi and at Executive Committee meeting of the CGIAR in May 2004. This version incorporates the suggestions and comments made by the participants of these meetings.

see what level of capacity is needed to achieve a certain level of agricultural development over a certain period of time. Comparing the number of postgraduates in agriculture in selected developed countries in the 1960s-1970s to the current level in selected developing countries indicate that there is a great need for postgraduate education in agriculture. For example, in 2001, Uganda, had about 100 postgraduates graduate with their degree. In order for Uganda to achieve the number of postgraduate per farm at the 1960-1970 levels in developed countries, Uganda will need to have about 1,300 postgraduates complete their degree per year. Similarly, for India to have the same number of postgraduates per farm as the developed countries in the 1960s and 1970s, India would need to increase the number of people graduating with postgraduate degrees per year from about 2,000 to about 80,000. While the figures on the need for postgraduates vary depending on the indicator used and the nature of the distribution of land among the countries, there is a general indication that a high level of capacity is needed for enhancing agricultural development in developing countries.

The agricultural sectors must be increasingly knowledge-based. Without reinvigorating the food and agricultural systems with well-trained professionals, the quality and quantity of research will diminish, as will the returns to developing country governments and the CGIAR system's investments in agricultural research. In turn, the technologies, institutions, and policies that agricultural professionals, including policymakers, formulate will be increasingly inappropriate to foster agricultural growth and reduce poverty, as they will be founded upon a weak research base.

Without access to advanced knowledge in fields as diverse as biotechnology, ecology, markets, and agri-food business, developing countries will grow more marginalized as the already deep economic, digital, technical, and health-related "divides" with the industrialized world increase. The situation is most bleak in countries where human capital is being ravaged by the HIV/AIDS pandemic. Indeed, the knowledge and technologies generated at institutions of higher learning are today considered the new public goods that will generate economic growth and alleviate poverty. The World Bank in its recent publication, *Constructing Knowledge Societies: New Challenges*, writes: "...knowledge accumulation and application have become major factors in

economic development and are increasingly at the core of a country's competitive advantage in a global economy.”

Therefore, as capacity-strengthening efforts must be revived, higher education must also be made more accessible in the developing world. Distance learning technologies can reduce the cost of education significantly for postgraduate students and professionals in the poorer countries, are a cost- and time-effective way to strengthen institutions, and can provide a link to high-quality teaching. For example, existing distance learning programs have allowed Master's-level faculty in some African universities to upgrade their skills while they teach, and agricultural professionals in remote areas to take courses without having to travel great distances or leave their positions. Distance learning programs are also cost-effective because since they enable students and professionals to obtain degrees in their respective countries and to attend courses on subjects directly and practically relevant to their everyday work. Brain drain is reduced when professionals are trained locally, where they can apply new knowledge as they master it, thus increasing the benefits that developing countries receive in terms of improved research and policies.

In fact, a number of open universities and distance education programs that offer instruction in agriculture and related fields have risen in the developing world and interest in distance learning there is growing. Several studies show clear evidence that strong demand for distance learning exists in the poorer countries. They also distinguish fields of study such as business and natural sciences, which have moved ahead, are leaving agriculture behind in this trend. An organized initiative is missing thus far to facilitate agriculture's effective integration into this distant learning evolution.

A CGIAR distance learning program that draws on the existing training and teaching resources and expertise within the system has the potential to meet the demand of researchers, other mid-career personnel, and postgraduate students for increased capacity and helping to create a generation of highly skilled agricultural professionals in the developing world. Over the past 35 years, the CGIAR system, through its research and technological and institutional innovations, has generated a large body of public goods. These achievements and the CG system's roster of

more than 1,000 well-trained, experienced researchers constitute a strong base on which an open and distance learning initiative can now be founded.

In addition to agricultural research and knowledge generation, the CGIAR Centers have also been involved in information sharing using emerging information and communication technologies and in strengthening capacity so that developing countries can learn from and use CG research.

These features and activities of the CG system coupled with the strategic location of its centers and offices all over the world constitute a tremendous opportunity for the system to establish a Global Open Agriculture and Food University (GO-AFU) that would be effective in terms of cost and impact in improving the skills of developing-country students and professionals. No other network of institutions has the equivalent knowledge base in agricultural research and the global organizational structure to work closely with regional and national partners for an open learning venture. Finally, investing in a distance education program for capacity enhancement in agriculture would complement and help generate greater returns from other CGIAR research and agricultural development initiatives.

Yet for the enormous potential impact of the CGIAR system's public goods to be realized, access to these goods must be improved. A Global Agricultural Open University would enable the CG system to capitalize on, harmonize and integrate the wide array of existing and well-developed distance learning programs that many of its centers have been administering independently in the developing world, and enhance their availability. The table below summarizes the relative strength of each center in undertaking distance learning.

The strong resources and services these programs provide and the distance learning material several other CGIAR Centers are developing could be harnessed to provide advanced teaching that complement the higher education programs in agriculture that campus-based and open universities in the developing countries offer. Indeed, only through consolidating the various distance learning programs of the CGIAR Centers can the CGIAR system have a large-scale and sustained impact in terms of capacity strengthening. Having developed a large and rich set of

public goods, the next step for the CGIAR could be improving access to these goods, which is critical if they are to generate change.

Current Activities of CGIAR Centers in Distance/E-Learning and their Relative Strength

CGIAR Centers	Strong	Some	None
CIAT		*	
CIFOR			*
CIMMYT		*	
CIP	*		
ICARDA			*
ICRAF			*
ICRISAT	*		
IFPRI	*		
IITA			*
ILRI			*
IPGRI		*	
IRRI	*		
IWMI			*
WARDA			*
WorldFish			*

The GO-AFU would fill knowledge gaps, improve existing postgraduate degree programs in the developing world, and help offer high-quality degree programs using a range of technologies for distance education, web-based, CD-Rom, traditional text, and other technologies in a variety of languages so that all regions of the developing world may benefit. In addition, existing universities and CGIAR Centers can provide the platforms for face-to-face advanced coaching, including thesis advice.

Improving the quality of higher education in agriculture in the developing countries would attract more students to the field and raise its prestige.

GOAL AND OBJECTIVES

Goal: To strengthen the capacity of developing-country institutions, researchers, other working professionals, and postgraduate students in agriculture (including livestock, forestry, and fisheries), particularly in developing countries to enhance agricultural development, poverty reduction, and food and nutrition security.

Based on feedback from the CGIAR Centers and dialogue with potential partner institutions in distance learning, this initiative will have the following broad objective:

***Overall Objective:** To establish a distance education program, to be developed gradually into a Global Open Agriculture and Food University, that provides in partnership with developed and developing country national and regional institutions, high-quality course contents and teaching by international standards to postgraduate students, researchers, and professionals through course modules and academic programs drawing on the knowledge of CG-system, its partners, and outside experts.*

This broad objective consists of six specific ones that will be addressed at different scale in the initial phase, but initiated simultaneously at the beginning of the project:

Objective 1: To integrate and enhance existing CGIAR center distance learning course modules and convert training materials into additional teaching module through the procurement of high-quality material developed by CGIAR staff and external experts.

Objective 2: To make course contents and modules available to universities in the developing and developed world to complement their M.Sc. programs in agriculture (and later Ph.D. programs).

Objective 3: To translate existing modules into other languages to reach out to a wide range of participants including students in remote regions and to generate greater impact.

Objective 4: To develop and help offer in partnership with developing country institutions nine to twelve complete M.Sc. programs, based on CGIAR-center material and external authorities in the fields for delivery via distance education methods to developing-country students.

Objective 5: To formally support and strengthen existing degree-granting programs of developing and developed country universities with the GO-AFU distance learning materials.

Objective 6: To help selected partner institutions to construct and offer a Ph.D. degree program through distance learning for developing-country postgraduates in an arrangement with developing- and developed-country universities.

In achieving the above objectives, the Global Open Agriculture and Food University will:

- Be a one-stop, open source for postgraduate academic teaching and capacity strengthening material that the CGIAR Centers and any other qualified people and institutions offer; the recently established website (<http://www.openaguniversity.cgiar.org>) shall serve that purpose for a beginning;
- Use relevant electronic, information, and communication technologies to make all teaching material easily accessible to higher learning institutions, professionals, and students in developing countries; and
- Reach a wide range of audiences, including researchers, academics, and personnel in governmental, nongovernmental, private, and donor organizations.

In the course of achieving the GO-AFU objectives, the program will also accomplish several objectives for the CGIAR-System:

- Increasing collaboration among trainers, ICT-KM, and librarians within the centers in support of needed digital libraries for GO-AFU;
- Improving institutional and human capacity within the CGIAR Centers for offering distance education; and
- Forging or strengthening relationships between the CGIAR system and global, regional, and national partners involved in food and agricultural capacity strengthening.

OBJECTIVES 1-3

The program will first bring together the available material in the CGIAR Centers that are useful for meeting the existing demand in the developing countries for new skills and knowledge and for building the foundation for postgraduate distance learning programs. It will also acquire and deliver modules of international standard that experts outside the CG system wish to contribute and which the GO-AFU has approved. Achieving objectives 1-3 will help to demonstrate the potential of the GO-AFU.

The aim is to integrate the course modules that already exist within the GIAR Centers and other training material that could be developed into teaching modules with little investment, to create more comprehensive programs for distance learning that working professionals in agriculture could take to expand their skills, and to improve access to these materials. Researchers in developing countries have a strong interest in adding to their knowledge, based on the high demand for the course modules available in the CG system. Bringing together the existing modules, which are largely on technical subjects, and developing new ones to complement them would provide an in-depth, thorough, and practical treatment of these subjects. For example, modules on plant breeding developed at CIMMYT could be combined with material on the subject from ICRISAT and IITA. The cutting-edge research of the CG system could thus be made available globally. Additionally, the GO-AFU will seek to acquire teaching material that those knowledgeable on agriculture and its related fields who are outside the CG system may wish to contribute to the “creative commons” formed by GO-AFU.

To encourage the rapid development of high-quality modules from outside the system, the CGIAR could establish a competitive process for the development of courses, and support this with grants. In addition to adapting the modules to a variety of technologies to ensure access to them, the modules, which are generally in English, will also be translated into and offered in other languages so that a larger number of developing countries will be able to benefit from these public goods. Currently, French, Spanish, and Chinese are considered.

OBJECTIVES 4-5

While preparing and making available CGIAR center modules, either individually or in a series for more comprehensive teaching, the program will in partnership with developing and developed country institutions, also develop complete M.Sc. programs for developing-country postgraduates for joint delivery via distance education technologies. These programs, which will be finalized after the needs assessment exercise to be conducted in consultation with partner institutions in the South, will consist of the existing modules in the CGIAR Centers and other courses created, based on the research and expertise of the centers and external authorities.

Twelve Indicative M.Sc. Programs of the GO-AFU (A preliminary and not an exhaustive list)

Program	Potential CGIAR-Center Collaborators (in all cases other Non-CG Partner Institutions are planned to participate)
Research Management	IFPRI, IPGRI and others centers
Seed Technology and Policies	CIMMYT, IRRI, CIAT, ICARDA and others
Agriculture and Applied Economics	IFPRI, CIMMYT, IRRI
Plant Breeding for Tropical Agriculture	CIMMYT, CIAT, IITA and ICRISAT
Natural Resource Management	ICRISAT, ICARDA, ICRAF, CIFOR, CIMMYT and IWMI
Forestry Management	CIFOR and ICRAF
Aquaculture and Fisheries Management	WorldFish Center
Food Security and Nutrition	IFPRI and others
Livestock Management	ILRI, ICRAF, ICARDA, IFPRI
Biodiversity and Germplasm Management	IPGRI, ICARDA, and Others
Water Resource Planning and Management	IWMI, ICARDA, IFPRI and Others
Crop Protection and Pest Management	CIAT, IITA, CIMMYT, ICARDA and others

The GO-AFU will offer these programs in collaboration with other educational institutions in developing and developed countries, which will grant the degrees in association with GO-AFU.

Credits earned for certificate-granting modules may be bundled and applied toward a M.Sc. degree to be granted by the partner institutions, with the requirement that the student will write a Master's thesis. CGIAR Centers will provide, where possible, necessary coaching support for the students through their research programs implemented in many parts of the developing world.

As the initiative evolves, the courses in these M.Sc. programs will be made available to developing-country open and regular universities to incorporate into their Master's level agriculture programs. Once these institutions accredit the GO-AFU courses, their students will receive credit for taking the courses as they pursue a degree from their respective national or regional universities. This arrangement will be based on the establishment of a formal collaboration with each university for a joint-degree program. This objective will be undertaken at the beginning of the first year and the joint M.Sc. programs will be available at the beginning of the third year.

OBJECTIVE 6

At the beginning of the fifth year, students will be able to enroll in a GO-AFU-sponsored Ph.D. program that will be offered by developing and developed country partner institutions. The program will be available for postgraduate students who have earned the required qualifications as stipulated by established universities. After meeting coursework requirements, students will be able to earn a Ph.D. by writing a dissertation under the usual guidance of faculty and possibly a CGIAR center staff member.

BENEFICIARIES

The primary beneficiaries of the program will be:

- Developing country universities and institutions that would in partnership with GO-AFU, use the course contents and teaching materials to be developed based on needs assessment.
- Master's students at developing-country universities, which have incorporated Global Open Agriculture and Food University modules into their academic programs, who wish

to obtain skills in technical fields to complement their degree programs, and those who choose to enroll in a complete degree program.

- Mid-career professionals who wish to upgrade or augment their skills. They include teachers, researchers, and technical professionals from academic, government, and nongovernmental organizations, and from the private sector. Government professionals include those from the ministries or departments of food, agriculture, planning, economic development, natural resources, livestock, fisheries, and forestry.

Postgraduate students, researchers, and other mid-career professionals will be able to earn a certificate, postgraduate diploma, or M.Sc. In addition, the proposed program will reach out to the communities and indigenous population such as the one in Andean region, that are isolated due to remoteness and extreme poverty and due to low coverage of existing educational systems.

CONCEPTUAL AND INSTITUTIONAL FRAMEWORK: OPEN SOURCE WITH “CREATIVE COMMONS”

The GO-AFU will be an open-source institution in the sense that its courses and programs, a set of global public goods, will be available to any member educational institution interested in using them. It will jointly offer courses designed by researchers, academicians, and even students outside the CGIAR system and approved by the CGIAR system.

The open source approach facilitates availability, development, and distribution of the best available materials, which are judged according to the standards of excellence established by the GO-AFU. Producing and distributing the best material through this approach involves developers and providers at many different locations and organizations, in and outside the CGIAR system, contributing to the GO-AFU according to mutually accepted terms of partnership. Furthermore, feedback will be encouraged from institutions using GO-AFU material on how the resources and services could be improved.

The GO-AFU will serve as a catalyst for building coalitions and developing a consortium of distance learning institutions for agricultural capacity enhancement — a “creative knowledge commons,” (an evolving concept as conceptualized by Lawrence Lessig, Stanford University).

The “creative knowledge common” will also have other information important for higher learning in agriculture.

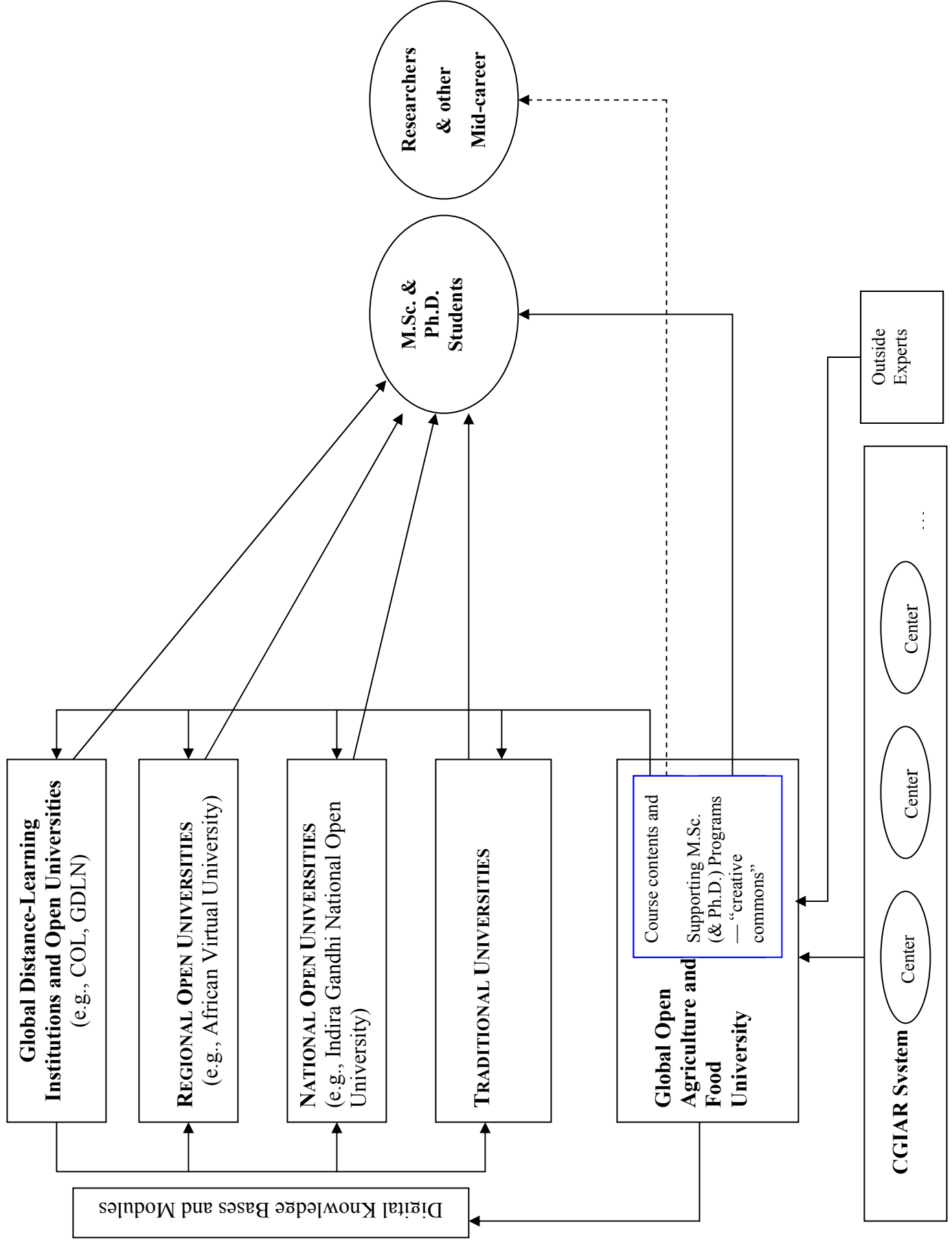
The institutional concept of GO-AFU needs careful consideration. Because the GO-AFU would seek to reach a large number of individuals through developing country institutions and provide the highest quality course contents, it is vital that it be structured as an **“open-source” institution**. The CGIAR, with its organizational framework and resources, is uniquely positioned to establish and maintain an open-source system.

The intellectual property rights (copyrights) which enter the GO-AFU need to be carefully considered to facilitate strong incentives for participation by leaders in the respective professions and leading agricultural institutions around the world in addition to the CGIAR. The emerging concept of “creative commons” is relevant here. Forming a “creative knowledge common,” which is the space between vigorously defined IPR on the one hand and public good on the other hand is promising. Recognition of the source (contributor) and conditions for use (e.g., permission of modification without authorization, or not) can be handled on case-by-case basis using standardized contracts.

The open-source framework that links the GO-AFU with other educational institutions, traditional and open, at the global, national and regional levels, is presented in Figure 1. The GO-AFU will develop partnerships with and provide teaching material to institutions at various levels. At the international level, it will form arrangements with the Global Forum for Agricultural Research (GFAR), Global Distance learning Network (GDLN), United Nations University, Food and Agricultural Organization of the United Nations (FAO), and other global institutions involved in agricultural capacity strengthening in developing countries. At the regional level, organizations such as the Association of Asian and Pacific Agricultural Research Institutes (AAPARI), Forum for Agricultural Research in Africa (FARA), and the Inter-American Institute for Cooperation in Agriculture (IICA) will help to determine capacity strengthening needs. Other regional agricultural networks, such as ASARECA, AARINENA and CORAF, will be key partners in implementing GO-AFU courses. At the national level, the emerging open universities offering capacity strengthening programs in agriculture will be the

key collaborators. Traditional universities that offer postgraduate and in-service courses will also be partners in the development and provision of courses and degree programs. Based on initial contacts made with educational, research, and donor institutions, a large number of them are interested in collaborating with the CG system for distance learning (see Appendix 2 for a list of these institutions).

Figure 1. The Conceptual Framework of the Global Open Agriculture and Food University



ACTIVITIES

Outlined below are the major initial activities and the steps toward establishing the GO-AFU.

BUILDING COALITION AND PARTNERSHIPS

Given the large number of partners and collaborators that will be involved in the GO-AFU, it is essential to forge a relationship with each of them and build coalitions. The program will therefore:

- Create within the CG system and especially among the GO-AFU Task Force members, an awareness of the need for a system-wide distance education program and ownership of the initiative;
- Sensitize potential partners at the global (United Nations University, GFAR, Commonwealth of Learning (COL), Global Development Learning Network (GDLN)), regional (African Virtual University, ASARECA, APAARI, AARINENA, SADC, REDCAPA, FARA, and CORAF) and national (Indira Gandhi National Open University, public and private universities) levels, and civil society organizations. The GO-AFU will facilitate a consortium of CGIAR Centers and partner institutions to deliver distance education in agriculture; and
- Bring in food and agri-business Civil Society Organizations, including farmers' organizations, and government as members of the consortium so that they may contribute to the needs assessment and module development.

NEEDS ASSESSMENT

A situational analysis will be conducted with stakeholders to determine their needs and the availability of information and communication technologies for each region. Along with the situational analysis an assessment will be conducted collaboratively with the CGIAR Centers and partner institutions to take stock of the following:

- Course modules already available in the CGIAR Centers and other training material that can be adapted for teaching through distance education;
- CG material currently available in languages other than English, and the courses for which demand exists in the non-English-speaking developing world;
- Current distance learning programs and initiatives in the CG system;
- Human resource capacity in the CGIAR and partner institutions for distance education and distance learning courses delivered by partner educational institutions in developing countries that could be enhanced through CGIAR center input; and

- Needs in developing countries for material on capacity strengthening and distance learning technologies. The GO-AFU will work with partner institutions to enhance their technological capacity to deliver distance education.

CONTENT CREATION

Several steps will be taken to prepare material for delivery in distance education:

- Organize the existing CG distance learning modules appropriate for comprehensive teaching and degree programs. In collaboration with the ICT-KM system-wide initiative the GO-AFU will facilitate access to the existing material from each center;
- Convert relevant traditional material into learning objects for distance education courses;
- For new courses, assemble subject matter specialists in and outside the CG system (for each course) and have them design the courses (all courses will be periodically improved in terms of quality and relevance);
- Procure courses created by external experts through transparent project funding and review process;
- Adapt content to reflect regional circumstances;
- Have distance education experts adapt courses for virtual learning where necessary;
- Translate English material into other languages if demand for them exists; and
- Conduct a peer review of distance learning courses, employing experts to guarantee quality and relevance.

COURSE DELIVERY-METHODS

To ensure that GO-AFU courses and programs are available to all students and mid-career professionals interested in them and that students have a positive learning experience, the GO-AFU will work with its partners to find the technologies and institutional arrangements that maximize accessibility and learning. The program will:

- In partnership with collaborating institutions, adapt delivery of courses and modules to available local technologies. Where possible, advanced technologies will be used. In cases where a partner institution does not have high technological capacity, the GO-AFU will tailor courses to the infrastructure the partner institution has. The program will be flexible about the distance learning technologies it uses and the format in which material is presented, in that it will use a combination

of all possible means based on the distance learning, determined during the Needs Assessment phase, so that the material will be accessible to students and professionals. Computer-based technologies, such as the Internet, CD-ROM, and text messaging, will be combined with print materials as determined by the partner institutions.

- Employ different paths for joint course delivery given the various partnerships the CG forms with other institutions. For example, GO-AFU material may be made available to African universities through the GDLN, and IGNOU may use GO-AFU courses for its own Master's program.
- Orient partner-institution facilitators, who will assist students;
- Support the teaching done through courses by arranging for the provision of digital library knowledge bases (Common Wealth of Learning (COL), Access to Global Online Research in Agriculture (AGORA), International Network for the Availability of Scientific Publications (INASP), CG Info Finder, CGIAR Learning Resources Center, the Knowledge Bank and Virtual Library) and the training to use these databases;
- Provide each trainee/student with an e-mail address, and a web platform (an Open University portal — to evolve from the recently established -www.openaguniversity.cgiar.org — with possibility of forum discussion or posting remarks or open questions) that connects to a GO-AFU server so they can receive material and communicate with course topic experts and other trainees/students and facilitate monitoring, evaluation and impact assessment. The distance education program structure will recognize CG experts who provide feedback to students with recognition for their work;
- CGIAR staff and partner institutions will help provide field support for Master and Doctoral theses;
- Assign outside experts who have designed a GO-AFU course as the resource persons for students taking the course; and
- Obtain program accreditation from international institutions to attract students.

The partner institutions will deliver courses with support from CG content providers.

MONITORING, EVALUATION, AND IMPACT ASSESSMENT

To determine the extent to which the program is reaching its goals, the specific areas in which it is having a positive impact, and the issues that remain to be addressed, the GO-AFU will monitor and evaluate the following:

- Activities to identify outcomes;

- Course content through peer review for quality control;
- Joint methods of course delivery;
- Partner institutions that deliver the courses;
- Student performance;
- Student feedback on course professors.

Any difficulties encountered in the program’s operation will be addressed through adaptive management.

Steps will be taken to assess the broader impact and functioning of the GO-AFU.

These will be made up of:

- Employing a set of indicators developed for monitoring the impact of the GO-AFU;
- Obtaining baseline information on the professional position of individuals before they enroll in a CG course or program and comparing this information to the responsibilities the student/trainee has after they have completed a course or program. Qualitative information may be gathered from students and/or their workplace supervisors on whether and how the course/program enabled them to undertake more advanced work and achieve certain outcomes;
- Asking students/professionals to evaluate the courses and the GO-AFU and its partners as a whole; and
- Assessing impact through an expert review committee of few experts from CG and non-CG institutions

TIMEFRAME

The phasing-in of the initiative entails a **two-year pilot-period** in which the CGIAR Centers work only with their existing training and capacity strengthening staff and Center “faculty”. In this phase, existing center activities will be better coordinated with each other and with the cooperating open universities and other universities in the South and North. A major positive effect for strengthening the related public goods provisioning by CGIAR Centers is already expected from that initiative. The timeframe below describes when the activities will commence.

Year 1:

1. Coalition building within CG system through workshops in, China, East and
2. Southern Africa, Latin America, Central Asia, South Asia, Central and West Asia, North Africa, Southeast Asia, and West and Central Africa (these will also serve for the material identification and needs assessment exercises), and with the CG ICT-KM Group; and coalition building with global, regional, and national partners, and development of MOUs;
3. Needs assessment with partner institutions to develop module, course, and joint degree program material.
4. Establishment of a GO-AFU governance structure (CDC Oversight Committee; and Program Advisory Committee; and GO-AFU Secretariat;
5. Inventory assessment, identification of course materials, and development of modules by CG researchers and outside experts, including translation of material from English.
6. Jointly offer existing modules and courses through diverse technologies to students and mid-career professionals at developing country partner (open) universities.

Year 2:

1. Joint development of 5 Master's programs;
2. Initiate joint M.Sc. degree program with partner universities on a pilot basis; and
3. Monitoring and evaluation.

Year 3–4: These activities will commence at this stage and continue throughout the program.

1. Joint Program maintenance;
2. Impact assessment;
3. Fill gaps in program with additional modules;
4. Address program sustainability and look for opportunities for cost recovery;
5. Expand M.Sc. program with partner institution;
6. Increase material in developing-country languages; and
7. Strengthen and revise course material.

Year 5:

1. Jointly develop Ph.D. program; and
2. Jointly offer Ph.D. program with a collaborating university at beginning of year five.

NEXT STEPS

The next steps in this initiative will be to identify funding sources and the national and regional partners that the CG will collaborate, and begin the process of curriculum development. The emergence of information and communication technologies for the past decade provides enormous opportunities for reaching the institutions in developing countries. Combining this trend with the comparative advantage of the CG in agricultural research and capacity strengthening presents a unique opportunity. By organizing existing human resources within the CG system in collaboration with essential national and regional partners, the GO-AFU could contribute to improved national capacity, a public good that could enable the developing countries to achieve strong agricultural growth and reduce poverty significantly.

BUSINESS PLAN

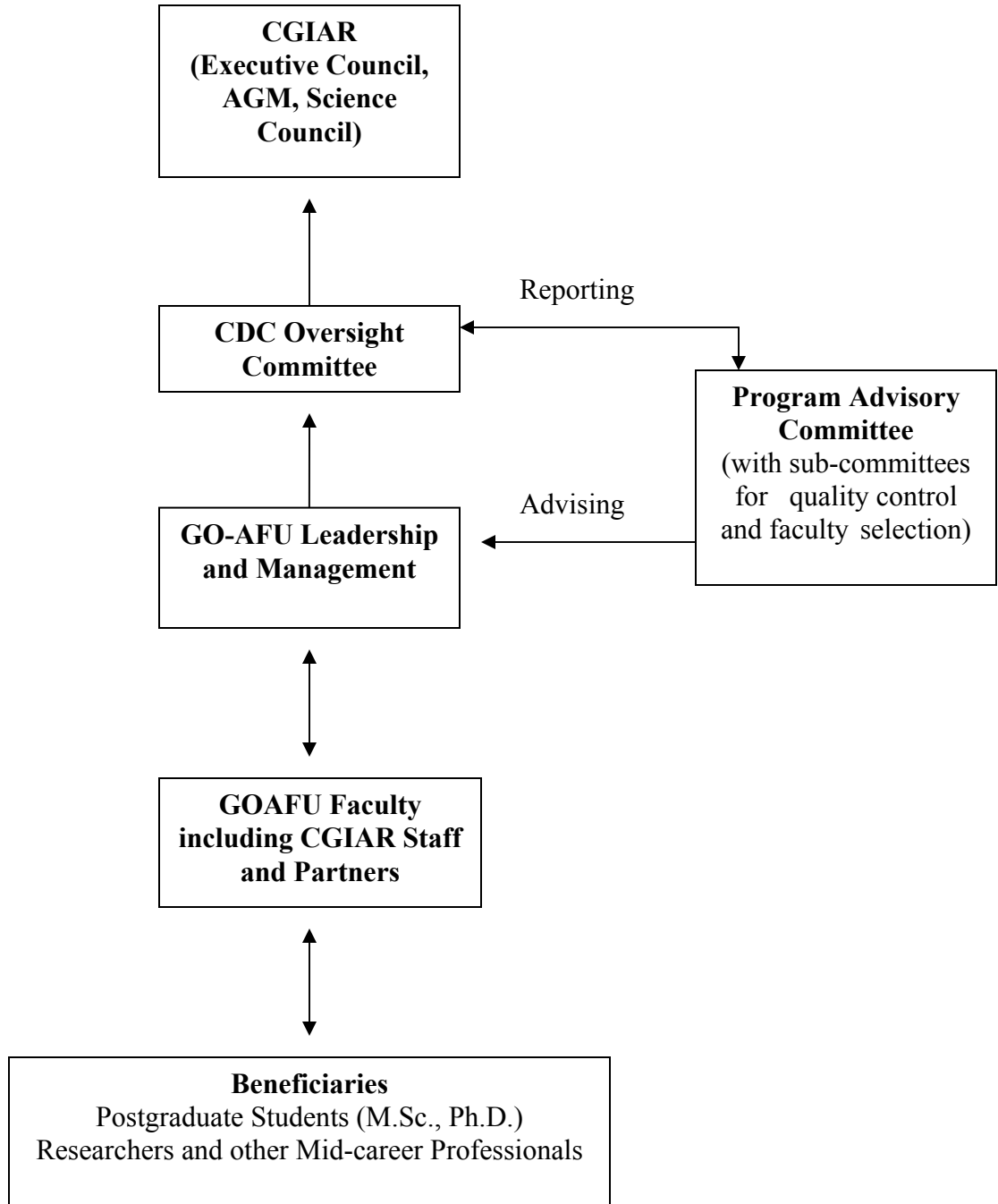
Achieving the objectives of the GO-AFU program will require identifying effective partnerships and coalitions, both within the CGIAR system and with global, regional, and national partners in the developing and developed countries. This section provides a brief description of the program's potential governance, i.e., the various institutional bodies that will provide guidance, oversight, quality control, and assistance for the functioning of the GO-AFU, and the program budget.

The step-by-step establishment of a basic governance structure for the GO-AFU which guarantees accountability will be an early task undertaken after the program's inception (see diagram below). Currently, a CDC support group for GO-AFU has been established to provide guidance to this initiative (Appendix 4). A CDC Oversight Committee will initially govern the GO-AFU. This body will have the responsibility of: (1) linking the GO-AFU program to the CGIAR Executive Council and providing feedback on the GO-AFU's operations, (2) appointing a Program Advisory Committee, and (3) providing direct supervision of the GO-AFU Secretariat. The Oversight Committee will also have the task of reporting to the CGIAR Science Council.

A Program Advisory Committee will be created to help set priorities, identify gaps, and suggest course content. It will provide guidance based on monitoring, evaluation, and impact assessment results reported quarterly and through information that GO-AFU generates through its activities. The chairperson of the Program Advisory Committee (PAC) will also submit, along with the Secretariat's Program Director-Rector, the GO-AFU annual report to the CDC Oversight Committee. The PAC may consist of representatives from partner organizations; relevant international research organizations (possibly in the form of institutional memberships, etc.).

Expert Groups for Quality Control and Faculty Selection will be formed under PAC to ensure that the quality of the modules, courses, and curriculum the GO-AFU develops remains high. The Expert Groups will be composed of experts in the various fields covered by GO-AFU course material and degree programs. These experts will be drawn from both developing and developed countries. The CDC will collect nominations of leaders in academia, and the CGIAR Science Council will manage the formation of the Expert Groups. The sub-groups will be constituted annually and based on thematic areas to review the existing curriculum and course materials and their suitability and quality for use by the GO-AFU. The Expert Groups will also select the faculty members to serve on the GO-AFU based on criteria it develops with the assistance of the Program Advisory Committee. Given that the GO-AFU will initially use the existing modules, the researchers involved in preparing and delivering CG-center modules will be considered to serve as the faculty for these modules.

GO-AFU Program Governance Structure



Managing the GO-AFU will require the founding of a **Secretariat**. The responsibilities of the Secretariat will include developing partnerships with potential collaborators, overseeing the budget, and executing the various activities outlined: coalition building, needs assessment, content creation, course delivery, monitoring and evaluation, and impact assessment. A Program Director will head the Secretariat.

At the request of the CDC, a Task Force of CGIAR Centers to develop the GO-AFU program has already been established with members from the CGIAR Centers, nominated primarily by the center directors (Appendix 3). The Task Force will connect the human resources, teaching material, and other resources available in each CGIAR Centers to implement the GO-AFU. Specifically, it will assist in carrying out the activities of needs assessment, coalition building, content creation, course delivery, monitoring and evaluation, and impact assessment.

The GO-AFU will set high-quality standards for the courses, which in turn will require quality control mechanism for both the course materials and the personnel who will deliver the materials.

A program of this nature will require sound financial support to be initiated and maintained over the next 5 years. While there is considerable interest among the donor community to support such a project, a well-planned fundraising strategy is needed for implementing the activities under the GO-AFU. A comprehensive budget and a financing plan for the GO-AFU is in Appendix 5.

APPENDIX 1—Indicative Global Assessment of Need for Postgraduate Capacity in Agriculture in Selected Developing Countries

	<i>Current Number of Postgraduates in Developing Countries (persons per year)</i>	<i>Postgraduates needed in developing countries today to match the number in developed countries in the 1960/70s (persons per year)</i>
Africa:		
Nigeria	459	6399
Uganda	89	1287
Burkina Faso	36	669
Congo, Dem. Rep	138	3381
Ethiopia	204	4598
Lesotho	6	167
Malawi	36	1178
Morocco	101	1080
Namibia	6	86
Tanzania	114	2922
Togo	15	324
Zambia	30	393
Asia:		
India	2083	79998
Cambodia	13	302
Vietnam	750	7191
China	14740	145993
Philippines	355	3472
Latin America:		
Brazil	3080	3396
Mexico	2500	3019
Peru	1500	1283
Total (of the above)	26256	267139

Interpretation:

This exercise is not a demand assessment but crude estimations of the needs. The estimation of the “need” for postgraduates is based on the number of farms in these countries. The estimation reference is the situation of postgraduate capacity a generation ago in Europe and North America.

The indicative Global Needs Assessment above focuses on the current need for postgraduates in agriculture in developing countries. The hypothesis is that the number of postgraduates in agriculture in developing countries today is too low and not sufficient for sustainable development of the agricultural sector. Postgraduates include master-level and Ph.D. students in all subjects related to Agriculture. After obtaining the number of farms and the number of agricultural postgraduates in the selected countries, the number of farms and the number of hectares per one graduate were estimated.

At the same time, data on the levels of agricultural postgraduates in developed countries in the 1960s-1970s were calculated. The average numbers for the developed countries (based on the figures from the USA in 1966 and Switzerland and Germany in 1970) is 1 postgraduate diploma per 1,325 farms. The number of postgraduates needed today in developing countries to match the numbers of postgraduates in developing countries 30-40 years ago can be derived from these figures.

For example, in India, an estimated 80, 000 postgraduates would be needed today to match the number in developed countries in 1960/1970. A different result was obtained for Nigeria, where the estimated need for agricultural postgraduates is about 14-times higher. In general, the figures indicate a large need for building postgraduate capacity in agriculture.

In conclusion, there is clear indication for the support of the hypothesis that the number of postgraduates in agriculture in developing countries today is too low to match the need and to ensure sustainable development of the agricultural sector in the economy. For further details, please visit <http://www.openaguniversity.cgiar.org>.

APPENDIX 2—Selected Institutions Expressing Interest in the Global Open Agriculture and Food University

Institutions in Developing Countries

African Virtual University, Nairobi, Kenya
Ain Shams University, Cairo, Egypt
Chinese Academy of Agricultural Sciences, Beijing, China
Collaborative Professional Master’s Programme in Agricultural Economics (CPMPAEESA) Initiative, Nairobi, Kenya
Indira Gandhi National Open University (IGNOU), New Delhi, India
Tamil Nadu Agricultural University
Tropical Agricultural Research and Higher Education Center (CATIE), Turrialba, Costa Rica
University of Agricultural Sciences (UAS), Bangalore, India
University of Nairobi, Nairobi, Kenya
University of the Philippines Open University, Laguna, Philippines
University of South Africa (UNISA), Pretoria, South Africa

Institutions in Developed Countries

Agricultural University of Norway, south of Oslo, Norway
American Distance Education Consortium, Lincoln, Nebraska, United States
Cornell University, Ithaca, New York, United State
Embassy of Finland
Federal Ministry of Economic Cooperation and Development (BMZ), Bonn, Germany
Global Development Learning Network, Washington, D.C., United States
Global Virtual University, Arendal, Norway
Imperial College, London, United Kingdom
Institut Agronomique Méditerranéen de Montpellier, France
Internationale Weiterbildung und Entwicklung (InWent), Bonn, Germany
Ministry of Foreign Affairs, Oslo, Norway
National Association of State Universities and Land Grant Colleges (NASULGC), Washington, DC, United States
Netherlands Ministry of Foreign Affairs
National Association of Agricultural Economics Administrators, Baton Rouge, Louisiana, United States
Northeastern Regional Association of State Agricultural Experiment Station Directors, Beltsville, Maryland, United States
Rockefeller Foundation, New York, United States
Royal Veterinary and Agricultural College (KVL), Fredericksburg, Denmark
United States Agency for International Development, Washington, DC, USA
University of Bonn, Bonn, Germany
University of Florida, Gainesville, Florida, United States
University of Hohenheim, Stuttgart, Germany
University of Maryland, College Park, United States

Virginia Polytechnic Institute and State University, Virginia, United States
Washington State University, Washington, United States
W.K. Kellogg Foundation, Missouri, United States

CGIAR Institutions

Centro Internacional de Agricultura Tropical (CIAT), Cali, Colombia
Center for International Forestry Research (CIFOR), Bogor, Indonesia
Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT), Mexico City, Mexico
Centro Internacional de la Papa (CIP), Lima, Peru
International Center for Agricultural Research in the Dry Areas (ICARDA), Aleppo,
Syrian Arab Republic
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, India
International Food Policy Research Institute (IFPRI), Washington, D.C., United States
International Institute of Tropical Agriculture (IITA), Ibadan, Nigeria
International Livestock Research Institute (ILRI), Nairobi, Kenya
International Plant Genetic Resources Institute (IPGRI), Rome, Italy
International Rice Research Institute (IRRI), Los Baños, Philippines
International Water Management Institute (IWMI), Colombo, Sri Lanka
West Africa Rice Development Association (WARDA), Bouaké, Côte d'Ivoire
World Agroforestry Centre (ICRAF), Nairobi, Kenya
WorldFish Center, Penang, Malaysia

International Institutions

Food and Agriculture Organization of the United Nations (FAO), Rome, Italy
The World Bank, Washington, D.C., United States

APPENDIX 3—GO-AFU Taskforce Members

CG CENTER	INDIVIDUAL
IRRI	Mark Bell
CIMMYT	John Dodds
ICRISAT	V. Balaji Rex Navarro
World Fish	TBA
ICRAF	August Temu Jan Beniest
IITA	NA
ILRI	Yilma Jobre Veryl Adell
WARDA	Aline Lisette-Vidal
IPGRI	Elizabeth Goldberg Issiaka Zoungrana
IWMI	Shanthi Weerasekera Bharat Sharma
ICARDA	Samir Ahmed
IFPRI	Joachim von Braun Suresh Babu Zenete Franca Valerie Rhoe
CIFOR	Yemi Keterere
CIP	Thomas Zschocke
CIAT	Edith Hesse
CGIAR Secretariat	Manuel Lantin

APPENDIX 4—CDC Support Group for GO-AFU

1. Joachim Voss
CIAT
2. Carlos Seré
ILRI
3. William Dar
ICRISAT
4. Adel El-Beltagy
ICARDA
5. Joachim von Braun
IFPRI

APPENDIX 5—Global Open Agriculture and Food University: Consolidated Budget and Financing Plan for 5 M.Sc. Programs
(Indicative Budget)

Cost Categories	Year 1	Year 2	Year 3	Year 4	Year 5	Total Cost	Cost Per Student
Course Development/Course Delivery	\$2,332,465	\$3,737,090	\$1,509,624	\$3,476,139	\$4,244,439	\$15,299,756	\$1,912
Coalition-building	\$50,240	\$0	\$0	\$0	\$0	\$50,240	\$6
Need Assessment	\$96,000	\$0	\$0	\$0	\$0	\$96,000	\$12
Course Development	\$1,402,025	\$153,350	\$0	\$0	\$0	\$1,555,375	\$194
Course Delivery	\$613,350	\$3,154,700	\$571,370	\$2,555,685	\$3,295,385	\$10,190,490	\$1,274
M&E	\$0	\$0	\$19,614	\$1,814	\$30,414	\$51,841	\$6
Conferences/Workshops	\$170,850	\$429,040	\$918,640	\$918,640	\$918,640	\$3,355,810	\$419
International Travel	\$141,310	\$170,740	\$130,400	\$130,400	\$109,700	\$682,550	\$85
Facilities	\$245,000	\$42,000	\$42,000	\$92,000	\$42,000	\$463,000	\$58
Communication/Postage	\$24,000	\$24,000	\$24,000	\$24,000	\$24,000	\$120,000	\$15
Service Centers Charges	\$210,762	\$234,180	\$210,762	\$210,762	\$210,775	\$1,077,241	\$135
Labor and Fringe Benefits	\$1,086,332	\$1,148,370	\$1,531,888	\$1,593,151	\$1,656,921	\$7,016,663	\$877
Program Secretariat Staff	\$569,697	\$604,445	\$615,134	\$639,734	\$665,341	\$3,094,350	\$387
Fringe Benefits	\$314,473	\$335,084	\$339,554	\$353,133	\$367,268	\$1,709,511	\$214
Non-Secretariat Staff	\$202,163	\$208,842	\$577,200	\$600,285	\$624,312	\$2,212,802	\$277
Total Direct Cost	\$4,039,869	\$5,358,971	\$3,448,674	\$5,526,452	\$6,287,834	\$24,661,800	\$3,083
Total Indirect Cost	\$574,544	\$761,246	\$479,371	\$783,701	\$894,475	\$3,493,336	\$437
Total Cost	\$4,614,413	\$6,120,217	\$3,928,045	\$6,310,153	\$7,182,309	\$28,155,136	\$3,519

APPENDIX 5—Consolidated Budget and Financing Plan for 5 M.Sc. Programs (continued)

Financing Plan	Year 1	Year 2	Year 3	Year 4	Year 5	Total Cost	Cost Per Student
WB-GPG	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000		\$6,000,000	\$750
CG traditional donors	\$500,000	\$500,000	\$500,000	\$500,000		\$2,000,000	\$250
Governments/Science & Education Foundations	\$1,400,000	\$2,000,000	\$1,000,000	\$2,000,000	\$2,500,000	\$8,900,000	\$1,113
	\$1,300,000	\$2,200,000	\$1,000,000	\$2,000,000	\$2,500,000	\$9,000,000	\$1,125
Total Funding	\$4,700,000	\$6,200,000	\$4,000,000	\$6,000,000	\$5,000,000	\$25,900,000	\$3,238
Tuition		\$4,000,000		\$4,000,000	\$8,000,000	\$16,000,000	\$2,000