About FARA

FARA is the Forum for Agricultural Research in Africa, an umbrella organization bringing together and forming coalitions of major stakeholders in agricultural research and development in Africa.

The vision of FARA is for African agriculture to become vibrant and competitive in the international market, growing at a rate of at least 6% per annum by the year 2020.

The mission of FARA is to enhance and add value to the effectiveness and efficiency of agricultural research systems in Africa that will contribute to agricultural development, economic growth and sustainable use of natural resources. FARA complements the innovative activities of national, international and sub-regional research institutions to deliver more responsive and effective services to its stakeholders. It plays advocacy and coordination roles for agricultural research for development.

FARA is the technical arm of the African Union and New Partnership for Africa’s Development (NEPAD) to implement the fourth pillar of Comprehensive African Agricultural Development Programme (CAADP), involving agricultural research, technology dissemination and uptake. FARA has identified five requirements to enhance continental impact on livelihoods and economic development and these include:

- **A new innovation systems approach** to agricultural research for development, i.e., The Sub-Saharan African Challenge Programme (SSA C.P.)
- **The human capacity** to implement, internalise and upscale new approaches to researchers, change agents, processors, marketers, and not the least, policy makers, i.e., Building African Scientific and Institutional Capacities (BASIC).
- **Immediate applications** that can make a difference and restore crediblity in agricultural development, i.e., Disseminating New Agricultural Technologies in Africa (DONATA).
- **The financial resources** that African research systems require to carry out required reforms and investments, i.e., The Multi-country Agriculture Productivity Program (MAPP).
- **African scientists better able to retrieve and contribute to global knowledge** of agricultural science & development i.e. Regional Agricultural Information Systems (FARA-RAS).

These programs respond to FARA’s primary functions, which are advocacy of the role of agricultural research, promotion of functional partnerships, and accelerating sharing and exchange of knowledge.

FARA donors in 2004 were The African Development Bank, The Canadian International Development Agency, the Government of Netherlands, European Commission, the Government of United Kingdom, the Government of Italy, the Consultative Group on International Agricultural Research, the Rockefeller Foundation, the World Bank, and the Government of France.
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*Cette publication est aussi disponible en français, sous le titre: Rapport annuel de FARA 2004.*

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ISSN 0855-7381
ISBN 9988-0-3003-7 (print)
ISBN 9988-0-3004-5 (pdf)
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2004 – A year of achievement

There is an Ethiopian proverb which states that ‘slowly slowly the egg will walk.’ All those who doubted it can now see that FARA has been hatched and is walking tall.

The year 2004 has been a momentous one with the highlight being the award of the World Food Prize to FARA’s Executive Secretary Dr Monty Jones. The award is a fitting tribute to an outstanding agricultural scientist. It is an accolade for research done by an African, in Africa for Africans. As Monty Jones stated in his acceptance speech, it recognizes the contributions of committed institutions and individuals from many countries who collaborated as co-workers and as investors in research for Africa’s development. In the development and dissemination of NERICA rice, they have demonstrated what is possible through the combined efforts of FARA’s stakeholders. We applaud their achievement and look forward to more success stories like this.

Another achievement in 2004 was the approval by the CGIAR, of the Sub-Saharan Africa Challenge Program (SSA CP). Prof. Joseph Mukiibi, then chair of FARA’s founding committee, submitted the first Sub-Saharan Africa proposal even before an Executive Secretary had been recruited. The concept was good but needed a lot of improvement. Consequently, Monty Jones and his team have devoted many hours to it since his appointment in July 2002. FARA is grateful to the World Bank, The Rockefeller Foundation and the Government of Norway for their confidence in FARA and the support they provided to the development of the SSA CP proposal.
That support enabled an exceptional effort in consultative proposal development to which literally hundreds of people from across Africa and abroad contributed most generously. We are pleased that their efforts have been successful and we look forward to working with them in implementing the Program.

The North African countries were invited to become members of FARA, in order that it could truly be an African regional organization. FARA consulted the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA), which in turn identified Morocco’s Institute of Natural Resources as the contact for FARA with the North African countries who were very keen to become part of FARA. They have been given observer status pending endorsement by the General Assembly in 2005.

In 2004, FARA also advanced its capacity to fulfill its mandate as a forum by opening a self-contained conference facility, which has already accommodated over 80 delegates at the Sub-Saharan Africa Challenge Program Inaugural Meeting. It is a pleasure to be able to host FARA stakeholders in our own facilities and we look forward to meeting many more of you there in 2005.
2005 – A year of opportunity

After years of being downplayed, the world has a fresh appreciation of the need to address the unacceptable humanitarian, economic and ecological injury caused by increasing poverty in Africa. This re-awakening has been manifested by the commissioning of several important studies1 and the establishment of the Commission for Africa by Prime Minister Tony Blair of the United Kingdom.

This resurgence of interest in African development is welcome, but it will amount to nothing unless it is translated into sustained action. The continued strengthening of the African Union and the foresight of Africa’s leaders in establishing the New Partnership for Africa’s Development (NEPAD) has established a framework for channeling and focusing development efforts so that they are not dissipated across disconnected and competing piecemeal activities as has happened in the past. To advance agricultural development, NEPAD has developed the Comprehensive African Agriculture Development Programme (CAADP2) and FARA has signed an agreement with NEPAD accepting responsibility for advancing CAADP’s fourth pillar, which is concerned with agricultural research, technology dissemination and adoption. This Report provides a brief account of how FARA is contributing to the achievement of CAADP’s goals.

In 2005, FARA will continue with its three primary functions—advocating investment in agricultural research for development,

1. UN Millennium Project (2005a, b); IAC (2004a, b).
2. NEPAD (2003).
promoting partnerships, and enhancing exchange of information. In all these areas FARA will be moving from program planning and development, which has dominated our early years, to action. This will be spearheaded by the Sub-Saharan Africa Challenge Program, which is intended to change the way agricultural research is conducted in order to achieve impact in improving livelihoods. The changes catalyzed by the Challenge Program will be underwritten and up-scaled by an integrated set of activities including a program for Building African Scientific and Institutional Capacity (BASIC), a Multi-country Agricultural Productivity Program (MAPP) for funding national and regional agricultural research, and a sub-program of MAPP for Disseminating New Agricultural Technologies in Africa (DONATA) aimed at realizing the promise of technologies that are ready to be taken up. These will be facilitated by a Regional Agricultural Information System (RAIS) that is providing the African continental link in a chain stemming from information systems in individual national agricultural research institutions, through national and sub-regional systems to the global system managed by the Global Forum for Agricultural Research (GFAR).

I take this opportunity to thank the governments of Canada, France, Ghana, The Netherlands, the United Kingdom and the United States, the World Bank, the Consultative Group on International Agricultural Research and The Rockefeller Foundation for their support and confidence in FARA, without which we could not have functioned. FARA acknowledges with gratitude the vital support and collegiality of our founders the Association for Strengthening Agricultural Research in East and Central Africa (ASARECA), the West African Council for Agricultural Research and Development (CORAF/WECARD) and the Southern African Development Community’s Food, Agriculture and Natural Resources Directorate (SADC/FANR).

More detailed information on what FARA has achieved through the above efforts and what is planning for the next two years will be presented at the biennial FARA General Assembly which will be held in Entebbe, Uganda 6–12 June 2005. As a ‘forum,’ the biennial General Assembly is the most important event in FARA’s calendar. It is the occasion at which FARA reports to its stakeholders on what has been achieved since the last FARA General Assembly and lays out its plans for the next two years for feedback and approval. In addition to the plenary sessions, there will be a range of important pre-plenary meetings on different aspects of agricultural research in Africa. There will also be a day set aside for the host country, Uganda, to highlight its agricultural research achievements.

I hope that this Report will encourage your continued interest in FARA, and I invite you to visit us at www.fara-africa.org and meet with us at the FARA General Assembly.
Partnerships in Action

Introduction

A lot more was accomplished in 2004 than can be put into a single document, so this Report provides only a synopsis of FARA products and partnerships. More in-depth information can be
obtained from the papers and reports from which the material is drawn. In keeping with tradition, this Report has sections devoted to FARA’s three primary functions that were mandated by FARA’s Second General Assembly held in Dakar, Senegal, 19–20 May 2003, namely:

- Advocacy for investment in agricultural research
- Promoting partnerships
- Enhancing exchange of information

**FARA: A Forum Adding Value to Its Stakeholders’ Priorities**

FARA was created by the three Sub-Regional Organizations (SROs) of Sub-Saharan Africa, namely:

- **ASARECA** – Association for Strengthening Agricultural Research in East and Central Africa
- **CORAF/WECARD** – West and Central African Council for Agricultural Research and Development
- **SACCAR** – Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training, now functioning under SADC (Southern African Development Community).

FARA’s mission is to enhance and add value to agricultural research systems in Africa so that they can contribute more effectively to agricultural development, economic growth and sustainable use of natural resources. Its programs are, therefore, designed to complement the activities of the SROs from a regional perspective.

**Sub-Regional Organizations’ partnership in strengthening agricultural research for development**

The Sub-Saharan African Challenge Programme (SSA CP) is a prime example of value adding between the SROs and FARA. The programme development process, led by FARA, involved the SROs and the full spectrum of institutions affiliated with them. The SSA CP will be implemented at Pilot Learning Sites that were selected by the SROs as the most appropriate locations in their sub-regions to address the problems of failures of agricultural markets, inappropriate policies, and natural-resource degradation that contribute to the continuing deterioration of livelihoods and food security in the region. Together with FARA, the SROs will encourage agricultural research for development at the national level to adopt a participatory multi-disciplinary, multi-institutional and multi-stakeholder innovation systems approach. By being part of a continent-wide program, the participating researchers will benefit (for the first time in African agricultural research) from rapid transfer of lessons learnt between complementary sites in the three sub-regions. This was enabled by the collaboration of the SROs in the final selection of the Pilot Learning Sites that ensured that they are complementary. The approach will be underwritten by the provision of program-wide facilitation and mentoring, and impact-assessment services that will be managed by the FARA SSA CP Coordination Office.

**The Commission of the African Union partnership in building capacity**

On 6–8 September 2004, FARA stakeholders’ discussion on the quality of tertiary agricultural education received timely stimulus from the
Commission of the African Union when it hosted a workshop convened by FARA to develop a program for Building African Institutional and Scientific Capacity (BASIC). In her paper entitled *African Union Perspectives on Capacity Building in Rural Economy and Agriculture*, HE Mme Rosebud Kurwijila, Commissioner, Rural Economy and Agriculture Department, African Union, noted that the workshop came at a very opportune time because, following the approval of its vision by the Summit of Heads of States in July 2004, the Commission of the African Union was prioritizing programs for its 2004–2007 strategic plan.

Commissioner Kurwijila noted that the mandate of the Commission’s Rural Economy and Agriculture Department is to ‘initiate and promote policies and strategies that can contribute to the development of the rural economy through the improvement of agricultural productivity and enhancing sustainable use and management of Africa’s natural resources. It also has responsibility for promoting enhanced environmental sustainability and sustainable use of natural resources.’ The Department will achieve this by promoting policy harmonization in the areas of agriculture, natural-resource management and environment, advocacy and information dissemination, resource-mobilization and capacity-building.

She noted that although there has been significant progress in building human and material capacity, the existing capacity and its utilization fall short of meeting Africa’s technological needs. The dwindling human capacity and low fiscal input into tertiary education explains why Africa accounts for barely 0.8% of the world’s scientific publications and its share of patents in the world is close to zero. She contended that this indicated that African priorities were not right in neglecting science and agriculture, and that Africa’s development partners should not be expected to give agriculture a priority if Africans are not doing so themselves.

She recognized that the challenges facing Africa’s agriculture are many, but human-resource capacity building at the level of farmers, vocational centers, certificate, diploma and university undergraduates is undoubtedly one of the most important pre-requisites for science and technology advancement of Africa’s agricultural production systems.

To address these issues, the Commission of the African Union, through its Department of Rural Economy and Agriculture, has included the
following strategies in its strategic plan for 2004–2007, to improve agricultural productivity to a
level where the continent’s food-security and poverty-eradication objectives will be fully
realized in the next 15–20 years.
- Increase Africa’s capacity in knowledge
development and management to increase
agricultural productivity, enhance food
security and rural development.
- Increase Africa’s technical know-how in the
areas of agriculture and rural development.
- Develop an African ‘Think Tank’ for agri-
cultural and rural development.

In particular, the Commission of the African
Union would like to see the development of
partnerships in agricultural- and natural-resource
management; certificate, diploma and university-
level undergraduate and postgraduate training
and associated research programs that take
advantage of synergies of existing institutions
at the Regional Economic Communities (RECs)
level, as well as at continental level. The
Commission was optimistic that strong collabor-
ation between itself and FARA would lead to
the operationalization and implementation of
these noble ideas.

Commissioner Kurwijila mentioned that a
Memorandum of Understanding (MOU) be-
tween the Commission of the African Union and
FARA was under review, and the Commission
was optimistic that, once the MOU has been
signed, FARA in collaboration with the Com-
mmission would take a coordinating role in the
quick and immediate implementation of the
decisions taken by the Heads of State and
Government of the African Union with regard to
capacity building and information flow for
improving agricultural production and natural-
resource management.

She noted that the BASIC workshop was
expected to endorse a proposed tripartite
cooperation between African and European
universities and the CGIAR Centers, and took
the opportunity to express the support of the
Commission of the African Union for this
initiative.

The Commissioner hoped that the development
of BASIC would assist Africa to address some
of the following questions:
- How to develop agricultural research and
development systems that involve farmers in
education, research and extension?
- What are the critical issues that have to be
identified in order to strengthen centers of
excellence?
- How to reform agriculture curricula at all
levels to produce agriculture experts that have
a vocational attachment to agriculture?
- How to mobilize political will for increased
and sustainable funding for higher education
in agriculture with more emphasis on training
of women, who form the bulk of African food
producers?
- How to foster quality, standards and inte-
gration of agricultural science and technology
training and research institutions at regional
and continental levels?

Her Excellency concluded that these are the
challenges facing Africa’s scientists in agri-
cultural research and technology development.
She declared her full support in these endeavors.

**NEPAD partnership in mobilizing
resources for agricultural research**

African political leaders have singled out
increasing agricultural productivity as one of the
critical drivers of economic growth and poverty
reduction. They have affirmed their commitment to the improvement of agricultural technology generation and dissemination as a key priority of the New Partnership for Africa’s Development (NEPAD). This is in recognition that a drastic reversal of past trends is required, since technological progress has largely bypassed many of the crop and livestock species that play a critical role in African small-holder production systems. NEPAD’s strategy involves a comprehensive and coordinated approach to the entire technological change process through:

• Sustained investments in science and technology.
• Stronger focus on the crops and livestock that are critical to the needs and constraints of small-holders and other vulnerable groups.

• Capacity-building for African researchers, including in the social sciences and research management.
• Forging synergies within national agricultural research systems (NARS), and between NARS and international agricultural research centers.
• Continuation and deepening of the reforms to improve national agricultural technology generation and dissemination systems.
• Undertaking bold policy and institutional reforms to create an enabling environment for sustained agricultural technological change.

To meet these goals, African leaders set an objective of 6% annual agricultural growth through 2015, and called for almost a doubling
of the current level of public funding of agricultural technology generation and dissemination by 2013. To achieve this, annual spending on agricultural technology generation and dissemination in Africa should increase from about US$2.3 billion currently to about US$4.5 billion—immediate extra investment requirements amount to US$0.9 billion, rising to US$1.5 billion by 2010 and US$2.2 billion by 2015. This implies an average increase of 7% per year over the next decade.

NEPAD has developed the Comprehensive African Agriculture Development Programme (CAADP) as a framework for focusing and mobilizing the required human and financial resources, and a Multi-country Agricultural Productivity Program (MAPP) is being developed as a central component of CAADP for reforming and strengthening national agricultural technology systems, as well as strengthening their linkages with, and integration into, regional and international markets and technology development systems.

The overall goal of MAPP is to dramatically increase productivity, competitiveness and incomes in African agriculture and the rural non-farm sector by improving farmers’ access to technologies well suited to their opportunities and constraints with specific emphasis on the needs of poor and vulnerable groups. MAPP’s specific objectives are to:

- Strengthen capacities of African agricultural technology systems and increase investments by African governments in technology development and dissemination.
- Foster and support reforms in African research and extension institutions, and in markets and agricultural policies.
- Link national, sub-regional and regional programs and networks with strong international partnerships to achieve efficiency and effectiveness in technology generation, dissemination and adoption.

Achieving these objectives will require the commitment and support of a broad coalition of stakeholders (governments, end-users and external partners) to provide adequate and sustainable funding. Mobilizing this support will require significantly increased efficiency and stakeholder accountability in technology generation and transfer systems, based on the following principles:

- Stakeholder participation in the definition of research priorities and in the system governance to ensure that research programs and results are relevant to stakeholders’ concerns, including social and environmental objectives.
- Promotion of pluralistic, competitive systems by opening the systems to other service providers (universities, NGOs, private sector) and the introduction of competitive contractual schemes for service delivery.
- Increased accountability of technology generation and transfer institutions through improved internal management information, and monitoring and evaluation systems.
- Promotion of cost-sharing arrangements with end-users according to their capacity to pay, to increase their stake in the efficiency of service provision and improve the financial sustainability of the system.

MAPP will involve five component sets of activities, which will be pursued through interventions at the country, sub-regional and regional levels as shown in Figure 1.
More information on MAPP is provided later in this Report (see page 30, Promoting Partnerships—Raising the financial resources required for change).

**CTA partnership in mobilizing resources for agricultural research**

The mission of the Technical Centre for Agricultural and Rural Cooperation (CTA), based in The Netherlands, is to strengthen information and communications management capacities of African, Caribbean and Pacific (ACP) agricultural and rural development organizations. It is also charged with policy and institutional capacity development. CTA is committed to enhancing the science and technology policy dialog in ACP countries in pursuit of these goals. To achieve this, the Centre
collaborates with African science and technology institutions in developing, communicating and implementing policies and strategies for meeting national and regional developmental goals through the promotion, advancement and application of science, technology and innovation. FARA shares the same goals for the Africa region and, with this in mind, collaboration between CTA and FARA was strengthened considerably during 2004.

The Centre made very important strategic contributions to the development of BASIC through the participation of senior CTA staff in the BASIC proposal development workshop held at the African Union in September 2004. It also provided vital financial support for deans of African universities to participate in the workshop and in the BASIC Interim Implementing Committee.

FARA participated in the meetings of the CTA Advisory Committee on Science and Technology for ACP agricultural and rural development. The Committee continues the work of the former Informal Working Group on Science and Technology. The theme of the meeting held on 23–26 November 2004 at CTA Headquarters in Wageningen, The Netherlands, was Enhancing the S&T Policy Dialogue/Strengthening the Agricultural Science, Technology and Innovation System. The meeting addressed issues of direct interest to FARA stakeholders, especially those involved in the SSA CP and in capacity-building.

FARA also participated in an earlier Africa Regional Meeting on Science and Technology convened by CTA on 14–16 September 2004 in Nairobi, Kenya, in collaboration with the African Forum on Science and Technology for Development (AFSTD) and the African Technology Policy Studies Network (ATPS) on Enhancing the Science and Technology Policy Dialogue – Innovation for Development, at which FARA was pleased to be given the opportunity to make two presentations.

**Global partnership in information collation and dissemination**

In implementing its third function of accelerating exchange of information and knowledge, FARA is working with the Global Forum for Agricultural Research (GFAR) through its GLOBal ALliance of the Regional Agricultural Information Systems (GLOBAL.RAIS), in coalition with the sub-regional organizations (ASARECA, CORAF/WECARD and SADC/FANR) and representatives of NARS. A regional agenda for agricultural information communication and management has been developed for National Agricultural Information Systems (NAIS), Sub-Regional (SR.RAIS) and Regional Agricultural Information Systems (RAIS) aimed at improving sharing and dissemination of agricultural information and knowledge in Sub-Saharan Africa.

One of the major achievements of this project will be to foster this cooperation within and across the region and collaborate in furthering the capacity development of agricultural information systems. This will involve GFAR, FARA, SROs and their stakeholders. It will take advantage of the significant capabilities available at individual, NARS and among collaborating and partner organizations (such as FAO, CGIAR, EIARD Infosys+, CTA and CABI) to improve African access and contribution to agricultural information.

More information on FARA’s RAIS is provided on page 33 of this Report (Enhancing Exchange of Information).
Advocacy for Investment in Agricultural Research

There has been a re-awakening of interest in African agriculture in general, and agricultural research in particular, both within and outside of Africa. This is the goal of FARA’s advocacy and, without suggesting that there is any room for complacency, it does indicate that FARA’s
stakeholders have together made significant advances in raising awareness of both the plight and potential of African agriculture.

FARA’s advocacy program is based on a mix of activities, much of which is person to person with policy-makers at a wide variety of meetings and through presentations at all manner of international workshops, symposiums and conferences. The following abstracts provide a flavor of the type and range of FARA’s advocacy work in 2004.

**Strengthening agricultural research in Africa**

*Presentation to the All-Africa Conference on Assuring Food and Nutrition Security in Africa by 2020, held in Kampala, Uganda, in April 2004*.3

Attention was drawn to the decline in per-capita food production in Africa and the urgent need to revitalize agricultural research. This can only be accomplished by concurrently addressing many issues, including developing demand-led approaches, accountability, building of critical mass, avoidance of duplication, providing sustainable financing, and capacity strengthening. Common Africa-wide goals and priorities are needed to focus collaboration and maximize impact. Approaches for achieving these goals were set out for consideration by those responsible for African agricultural research policy and implementation.

Attention was drawn to the new push for agricultural development in Africa, which is based on the recognition that agriculture holds the key to Africa’s development as set out in NEPAD’s Comprehensive African Agriculture Development Programme (CAADP). CAADP seeks some immediate responses to the on-going agricultural crisis, but it also acknowledges the need to maintain long-term competitiveness and productivity. To that end, the CAADP has four components, with scientific capacity strengthening as a cross-cutting initiative:

1. Integrated natural-resource management
2. Adaptive management of appropriate germplasm (animal and plant)
3. Development of sustainable markets
4. Formulation of policies for sustainable agriculture.

The consensus forming around CAADP provides an overall framework for collaboration in agricultural research for Africa’s development, which will be most effectively achieved through sub-regional collaboration because many of the constraints to agricultural development cross national borders.

An alternative also needs to be found to the traditional linear process by which the products of research are passed on to extension services

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for dissemination to farmers, because that approach leaves the uptake of technologies subject to critical gaps in the knowledge of research teams. Overcoming this requires a participatory integrated innovation systems approach to research, extension and education involving the farmers and all other stakeholders in the generation, dissemination and use of the innovations, such as has been adopted for the Sub-Saharan Africa Challenge Programme in the form of the integrated agricultural research for development (IAR4D) paradigm.

The specific changes needed for particular research programs cannot be prescribed because flexibility and pragmatism are essential in ensuring that the new approaches are tailored to the particular backgrounds and needs of different research teams. But without fundamental changes in the way that agricultural research is conducted in Africa, the downward spiral of food availability and rural incomes will continue.

**Integrated agricultural research for development in the Comprehensive African Agricultural Development Programme**

*Presentation at AfNet Symposium in Yaoundé, Cameroon, May 2004*.

Agricultural research in Africa has had numerous remarkable successes, but the agriculture industry has continued to perform badly with consequent falling incomes, increasing food insecurity, and continuing degradation of land and water resources. The CAADP has been developed to focus efforts to reverse this trend and realize the potential of agriculture to contribute to achieving the Millennium Development Goals (MDGs).

Two major projects are being advanced to support CAADP by promoting new concepts for the conduct of agricultural research in Africa and providing the required resources.

As noted earlier in this Report (see page 11, FARA: A forum adding value to its stakeholders’ priorities—CTA partnership in mobilizing resources for agricultural research), the Multi-country Agricultural Productivity Program (MAPP) is intended to underpin CAADP’s agenda for reform of agricultural research by providing incentives and means for enhancing the efficiency of agricultural technology generation, transfer and adoption. Its goal is to double annual spending on agricultural

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technology generation and dissemination in Africa within 10 years from about US$2.3 billion currently to about US$4.5 billion.

The SSA CP will promote integrated agricultural research for development (IAR4D). This new approach builds on integrated soil-fertility management (ISFM) and integrated natural-resources management (INRM). In addition to research on increased productivity and sustainable natural-resources management, IAR4D includes research on policies and markets with an emphasis on the interactions among these four factors.

The IAR4D approach recognizes that, in addition to disciplinary and basic research skills, agricultural scientists and trainers need the ability to put their disciplines into dynamic systems contexts and to integrate the contributions of different disciplines. They also need to be able to develop partnerships and manage change with multiple stakeholders in the agricultural sector and wider society. This will require building and managing interdisciplinary and inter-institutional teams, and enabling all stakeholders to participate.

The research will be underwritten by facilitation, information and knowledge management, and capacity-building to ensure that the approaches and outcomes of IAR4D will be out- and up-scaled to have national- and continental-level impacts on improving the livelihoods of African small-holders and pastoralists.

Science, technology and innovation: Vision for African agricultural and rural development

*Presentation to CTA/AFSTD/ATPS Invitation – Africa Regional Science and Technology Meeting on Enhancing the Science and Technology Dialogue—Innovation for development, September 2004*.

The CAADP challenge to agricultural research is to meet the target set by African political and scientific leaders to increase agricultural output by 6% a year for the next 20 years. Improvements in total factor productivity are expected to contribute about a 3% increase, with the remainder coming from increased investment (NEPAD 2003, p59). This can be achieved by establishing dynamic agricultural markets among nations and between regions, and producing a surplus that will make African a net exporter of agricultural products. It will also require having food available and affordable, an equitable distribution of wealth, and a culture of sustainable use of the natural-resource base. This will only be possible if Africa becomes a strategic player in agricultural science and technology development.

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Figure 2 sets out the arrangements that are coming into place to facilitate the achievement of CAADP’s goals. The foundation for progress is the capacity of the national agricultural research systems (NARS) to respond to the needs of the producers (the majority of whom are small-holders and pastoralists), agro-processors and marketers.

The impact of the NARS will be enhanced by continental coordination along the continuum from national agricultural research institutes to NEPAD:

\[
\text{NARIs} \rightarrow \text{NARES} \rightarrow \text{SROs} \rightarrow \text{FARA} \rightarrow \text{NEPAD}
\]

The priorities for agricultural research set out in Chapter 5 of CAADP are:
- Integrated natural-resources management
- Adaptive management of germplasm
- Development of sustainable market chains
- Policies for sustainable agriculture.

In implementing these priorities, scientific capacity-building and information collation and dissemination are cross-cutting functions.

NEPAD has prepared an action plan with 30 projects for addressing hunger ‘hot spots,’ scaling-up proven technologies based on converging African efforts, and increased national and regional domestic contributions. The arrangements for this are set out in Figure 3.

A workable arrangement for increased sustainable funding along the lines explained above is required urgently, because Africa has to invest significantly in agriculture, agricultural research for development, and in building the capacity of its own people to achieve the target rates of innovation, institutional development and accelerated agricultural growth.

**Building African Scientific and Institutional Capacity (BASIC)**

*Presentation to CTA/AFSTD/ATPS Invitation – Africa Regional S&T Meeting on Enhancing the Science and Technology Dialogue – Innovation for development, September 2004*. 

The African, Caribbean and Pacific (ACP) ministers responsible for research, science and technology recognized the essential role of science and technology for sustainable development in their Cape Town Declaration on Research for Sustainable Development and the accompanying Cape Town Plan of Action.
(28 July 2002). They are aware that to advance more rapidly, Africa must have universities (and technical colleges) that are vibrant centers of excellence capable of producing the human capacity needed to propel the continent into the knowledge economy—this includes producers, processors, marketers, policy-makers and researchers. This applies to small-holder agricultural development as much as to any other key sector.

The proposal for Building African Scientific and Institutional Capacity (BASIC) is the product of extensive consultations between African and European universities, the CGIAR Centers and NARS on ways to meet the needs of African universities and to achieve change. In the implementation of BASIC, FARA will facilitate the implementation of priorities identified by African universities and expressed through the African Network for Agro-Forestry and Agriculture Education (ANAFE), which is the largest working education network in Africa with a membership of 124 universities and colleges in 34 countries. At the core of BASIC will be international collaboration in pedagogic development and in the development of research-based training materials, with each of the partners contributing from their comparative advantage.

The SSA CP proposes to change the way that agricultural research is conducted for the development of small-holder and pastoral production systems in Sub-Saharan Africa through adoption of the IAR4D paradigm. To achieve this, training in IAR4D will be provided for the multi-disciplinary, multi-institutional Pilot Learning Teams at the Pilot Learning Sites.

However, for IAR4D to be scaled up and institutionalized, it will have to be incorporated into university training on agriculture and related subjects throughout Africa. Thus, research service providers and university staff will require a range of ‘soft’ skills to enable them to develop partnerships and manage change with multiple stakeholders in the agricultural sector and wider society. They will need to be able to build and manage interdisciplinary and inter-institutional teams, and empower other stakeholders to enter into effective dialog. Consequently, the universities must develop new capabilities and change their pedagogical approach, and in doing so they need to address not only the immediate needs of professionals in service, but also those of the new generations of students so that they are better prepared for their new functions in IAR4D and rural innovation.

African stakeholders have consistently rated capacity-building highest amongst the perceived impacts of the CGIAR. That is despite the fact that the CG Centers have been working independently of each other with considerable duplication of capacity-building efforts. BASIC will not only provide a means of avoiding such duplication, but will also enable the Centers to contribute from their comparative advantage—which is in research, not teaching. Universities in the North have participated in the development of BASIC—through the International Centre for development oriented Research in Agriculture (ICRA), The Network of European Agricultural Tropically and Subtropically Oriented Universities and Scientific Complexes Related with Agricultural Development (NATURA) and the National Association of State Universities and Land-Grant Colleges (NASULGC)—and are committed to responding to African priorities for pedagogical change.

All the past and on-going efforts have not stemmed the declining standards of tertiary agricultural training in Africa. A radically new approach is, therefore, indicated for building African scientific and institutional capacity that is geared to solving individual and institutional problems and maintaining global standards.

To be effective and sustainable, the new approach has to be based on an African philosophy for agricultural capacity development. It is, therefore, fundamental to the new approach to build in the means for African universities to express their collective prioritized requirements and for the most appropriate advanced training and research institutions to respond most effectively.

This new approach encapsulated in the BASIC proposal will build sustainable capacity in African institutions without creating dependency on continuing external funding. BASIC will be inclusive, so that advantage can be taken of talent and resources from the widest range of potential providers, thereby enabling the quality and scale of action appropriate to the enormous task in hand. Since the need for this is such a basic requirement for development, which requires a basic rethink of the approach to Building African Scientific and Institutional Capacity, the BASIC acronym is exceptionally apt.

From Asia to Africa: NERICA fighting
Africa’s war against poverty and hunger

Presentation at the International Year of Rice & World Food Prize Celebration, Des Moines, Iowa, USA, October 2004.“
NERICA (New Rice for Africa) rice could not have been developed in a single laboratory. It is the product of a scientific research continuum that involved many individuals working on a whole spectrum of topics that complemented and added value to each other. Such interdependence is the hallmark of successful agricultural science.

The raw materials for the NERICA research were the rice varieties that were the product of the application of the wisdom and genius of countless generations of African and Asian farmers. The NERICA research program linked traditional science in improving cereal-crop productivity with novel techniques in breeding and participatory research, not previously used in rice improvement.

Scientists in Africa are waging war against poverty and hunger, which cause incalculable loss of life and misery and have spawned the physical conflicts that have, in recent years, afflicted all the sub-regions of the continent. If progress is not made towards improving the standards of living of rural people (who form the majority of their populations), African countries will become increasingly poor and unstable—the potential of African markets will not be realized, the global environment will be impaired, scarce resources will continue to be diverted from productive investment to fund emergency relief and conflict containment, and ultimately the floodgates to emigration out of Africa will burst.

FARA’s raison d’être and prime goal is to promote the kind of multi-institutional and multi-disciplinary partnerships that developed NERICA and thereby achieve the level of impact in increased agricultural productivity that is required to win the war on poverty and hunger in Africa.

Continuing Africa’s war against poverty and hunger

*Presentation at Cornell University, 20 October 2004*.

Agriculture in Africa accounts for 60% of labor, 20% of total merchandise and 17% of GDP. It is richly endowed with human and natural resources, but it is complex and diverse with intricate social, technical and environmental interactions. Because these have not been adequately addressed, Sub-Saharan Africa has 32 of the world’s 48 least developed countries, the number of poor has increased by 50% in the

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last 14 years leaving 4 out of every 10 Africans to survive on less than one US dollar per day, and one in three persons is undernourished.

One-third of the children under five-years old in developing countries are stunted due to inadequate feeding and poor health. Although overall absolute numbers are decreasing, the numbers in Africa are increasing. In Eastern Africa, even the percentage of stunting is increasing.

Unless the war on poverty is won, rural households in poor countries will be condemned to hunger, stunted physical growth, impaired cognitive capacities, short life expectancy and perpetual under-development. This is not just an African problem, because impairment of livelihoods in developing countries shuts off markets for goods and services, destroys biodiversity, damages the global environment, and leads to despair and hopelessness, with grave global security repercussions. As noted by United Nations Secretary General Kofi Annan, *Every nation is confronted by critical issues related to the application of science and technology, and these can best be addressed through cooperation among scientific and technological communities to enable every nation to access the broader world community of science.*

The success of NERICA, to which Cornell University scientists made critical contributions, is just one illustration of the value of collaboration in combating hunger and poverty in Africa. There are many more, including, for example, the rinderpest vaccine, biological control of the cassava mealy bug, and agro-

forestry and soil improvement, for which Walter Plowright, Hans Herren and Pedro Sanchez (respectively), all working in Africa, have also received the World Food Prize.

However, while agricultural research in Africa has been a good investment and has made a difference to the livelihoods of millions of people, much more has to been done to make African agricultural research systems more effective—from the national to the continental level. International partnerships are still required to help accelerate the production of new technologies. When that is achieved, it will change the emphasis of development assistance away from the predominant expenditure on relief and emergency assistance to sustainable development. The already

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significant contributions of Northern institutions, such as Cornell University, to building African capacity will be even more effective if they reflect an African agenda for strengthening capacity to build its own capacity.

**The role of research in enhancing biodiversity for food security in Africa**

*Presentation made at World Food Day at Howard University, October 2004.*

It is well known that Africa is the center of origin of a number of major crops, including coffee—which is the world’s second most important traded commodity after oil. Less is known about other crops and recent advances such as the discovery of a center of cattle domestication in North Africa. This once again emphasizes the importance of research on African biodiversity and the international public good of developing improved conservation techniques.

Biodiversity impacts all aspects of human livelihoods through food and nutrition, and ecological functions such as soil and water conservation and mitigating global warming. It provides the basis for agriculture and forestry, for diversifying food production, for improving genetic production potential, and providing options for the application of biotechnology to address biotic and abiotic constraints to production. Examples of the continuing importance of African biodiversity include the *Hoodia gordonii* cactus that is a source of a natural appetite suppressant, *Prunus africana* that can be used to treat prostrate ailments, and the cellulose enzymes isolated from microorganisms (extremophiles) discovered in Kenya’s Rift Valley lakes that are able to survive and thrive in extreme environmental conditions with applications in the huge domestic-detergents industry.

Research is needed to redress the lack of knowledge on the underlying causes of biodiversity loss and the consequences of that loss. This should not neglect the less glamorous aspects of biodiversity, because natural systems are closely interrelated with interactive cause-and-effect mechanisms. For example, the health of the highly diverse below-ground organisms often indicates the health of whole systems. Other knowledge gaps that have to be addressed by research include the dearth of proven conservation management practices.

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The existence of biodiversity has enabled the development of better adapted and more productive crops and livestock. Examples include NERICA, which was derived from African (*Oryza glaberrima*) and Asian (*Oryza sativa*) rice varieties; improved cassava (*Manihot esculenta*) varieties that are disease and pest resistant, have low cyanide content, are drought resistant, early maturing, and high yielding—varieties with resistance to the major diseases give sustained yields of about 50% more than the local varieties. Scientists are also improving the nutritional quality of foods in projects for high beta-carotene ‘golden’ rice and sweet potatoes, and Quality Protein Maize, from a strain of Andean maize which yields more grain per unit area and contains better-quality protein than standard maize varieties.

In addressing the need to strengthen human capacity for conservation, it is important to tap indigenous knowledge and engage the interest and commitment of the communities that are the ultimate resource managers. Research is required to improve the understanding of supply systems, farmer methods for selecting, saving and exchanging breeding material from the biodiversity available to them, and their best practices for *in situ* conservation and sustainable use should be identified and disseminated. That will ensure continuing availability of the biological basis for enhancing productivity and food security.

There are many exciting research problems and opportunities to improve the conservation and utilization of biodiversity, and many institutions involved in addressing them. This signals the need for careful coordination and guidance so that opportunities, such as those exploited in the development of NERICA rice (i.e., judicious combinations of diverse parent materials from Asia as well as Africa), are not lost.

**Promoting health and nurturing hope through agricultural research in Africa**

*Presentation at University of Iowa Carver College of Medicine, October 2004*.

In developed countries such as USA, food is taken for granted and people are most concerned with its packaging and ease of preparation. In these countries, obesity has become one of the most serious health problems.

However, most people in this 21st century ‘world of plenty’ still go to bed hungry and facing the despair of knowing that their children will never fulfill their potential because they are being physically and mentally stunted through having too little and too poor quality food. Human justice demands that those who have so much should assist those who have so little to break out of the poverty traps.

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10 Jones, M. 2004. Promoting health and nurturing hope through agricultural research in Africa. Presentation at University of Iowa Carver College of Medicine, 12 October 2004.
However, this is not a matter of ‘them’ and ‘us.’ So long as the majority of the world’s people do not have food security and hope, there will not be peace and the vital global biodiversity and environmental assets that are in their hands will continue to be destroyed, with grave consequences for all.

Malnutrition is the most prevalent and pernicious disease in Africa, where the absolute number of chronically hungry has risen from 173 million to 200 million people (personal communication, Ulrike Rötten, 2001). Of 53 countries, 30 have 20% of their populations under-nourished and 18 have 35% chronically hungry. One-third of children under five-years old in developing countries are stunted due to inadequate feeding and poor health and, although overall absolute numbers are decreasing, the numbers in Africa are increasing. In Eastern Africa, the percentage of stunting is even increasing.

In much of rural Africa, food security is comprised of the food that the people produce, what they can buy and, too often, what they are given by the World Food Programme and other relief agencies. The dependence on food aid is in spite of the dominant role of agriculture in African economies, where it accounts for 60% of labor, 20% of total merchandise and 17% of GDP. In 2001 alone, 28 million Africans required emergency food aid, which is the reason why, since its establishment, the World Food Programme has spent 45% of its total budget (or US$12.5 billion) on emergencies in Africa. In 2000, Africa received 2.8 million tonnes of food aid.
Meeting people’s needs and indeed their ‘rights’ to have access to enough affordable food of the right quality, and affecting improvements in African health and livelihoods is interdependent with agricultural development, which must aim to produce:

• calories that are reliable, accessible and affordable
• dietary protein that is nutritionally available
• diets with the complete complement of essential micronutrients.

Enabling people to be nutritionally secure is as much a function of improving incomes as increasing food production. In Africa, it is not uncommon to observe very hungry men, women and children in the vicinity of well-stocked supermarkets that they cannot afford to enter. To be sustainable, agricultural systems must do more than provide subsistence that is profitable for the producers; they must also provide affordable food for the burgeoning cities, where soon more than half of the people will reside.

Agricultural research has multiple objectives:
• Make food more available—more food.
• Make food more affordable—cheaper food.
• Make food more nutritious—better-quality food.
• Make food more dependable—less risk from drought, diseases and pests.
• Make food more varied—more cash to buy choice foods.
• Make food more safely produced—less use of herbicides and pesticides.

Research on livestock production is responding to the livestock revolution, which is the fastest growing demand for food. This is particularly critical because animal-source foods provide high-quality, readily available protein and the range of essential micronutrients that improves health, body size and cognitive capacity.

Research is also on-going to:

• Reduce post-harvest losses and losses in storage.
• Improve food processing to increase shelf life and food quality.
• Improve marketing arrangements and reduce the cost of marketing, and improve access to markets for small-holders, who produce most of the food in Africa.
• Improve the safety of food, for example by reducing aflotoxin infections, and improve food handling.

Food is the single most important influence on human health and well-being. The persistence of food and nutritional insecurity means that, without agricultural research, rural households in poor countries would be condemned to hunger, stunted physical growth, impaired cognitive capacities, short life expectancy and perpetual under-development, i.e., the lack of sufficient food of the right quality will keep poor people poor.

The avoidable impairment of livelihoods in developing countries, which is intolerable on humanitarian grounds, also impairs lives in developed countries, because it shuts off markets for goods, damages the global environment and leads to despair and hopelessness with grave global security repercussions.
Promoting Partnerships

The statistics on the poor performance of African agriculture are well known. Less well known is the fact that many successes have emerged from formal research and development projects and farmer innovation. The contribution of the profit and not-for-profit private sector is also
underestimated. Examples of recent successes include the emergence of floriculture and horticulture businesses in East Africa and the spread of vanilla production in Uganda. These illustrate the potential of private enterprise to contribute to employment and improving livelihoods in small-holder as well as large-scale commercial sectors. Whenever there are enabling policies and markets, the private sector has proven that it is willing to invest in production, processing and marketing of agricultural products.

Despite the successes, the overall picture remains bleak. Africa has 385 million small-holders producing the lowest yields in the world and, in consequence, enduring falling incomes and increasing food insecurity.

The failure of past agricultural research programs to achieve sufficient impact on a continental scale indicates the need for a new set of holistic and concerted regional programs. To galvanize action in support of pillar four of the Comprehensive African Agriculture Development Programme (CAADP), FARA’s constituents have advanced five interlinked programs that are aimed at:

1. Changing the way agricultural research for development is conducted.
2. Building the human capacity for research and development of agriculture and related industries.
3. Achieving impact and restoring confidence in agricultural research.
4. Raising the financial resources required for change.
5. Ensuring that African agriculture can access, and contribute to, global agricultural information and knowledge.

Changing the way agricultural research for development is conducted

The Sub-Saharan African Challenge Program (SSA CP) is the first program to take advantage of the existence of the continuum of African agricultural institutions in which national agricultural research institutes (NARIs) have banded together to gain critical mass as national agricultural research systems (NARS), which in turn have formed the Sub-Regional Organizations (SROs), i.e., ASARECA, CORAF/WECARD and SADC/FANR, to address issues that are common between neighboring countries and to minimize duplications. The SROs in turn formed the Forum for Agricultural Research in Africa (FARA) as an apex body to address continental issues in agricultural research.

The purpose of the SSA CP is to change the way that agricultural research is conducted, scaled and up-scaled so that it will have impact on a continental scale to meet the objectives of CAADP. This will be achieved by addressing the three most significant constraints afflicting African agriculture:

1. Failures of agricultural markets
2. Inappropriate policies
3. Natural-resource degradation

These problems are not new and there have been significant successes in addressing them. However, the traditional ways of addressing them have been fragmented and conducted with the traditional reductionist approach of isolating particular aspects for study. This has not been effective in dealing with increasingly complex challenges.
The SSA CP has adopted an innovation systems approach to agricultural research for development that is articulated in the Integrated Agricultural Research for Development (IAR4D) paradigm. IAR4D draws on successful experiences in Africa with integrated natural-resources management (INRM), which takes a systems approach to managing the interactions between soils, water, pests, and human interventions in agriculture. However, IAR4D goes beyond INRM to encompass policies and market issues and their impact on production systems profitability and sustainability. Taking all these factors into account, the research and development agenda of IAR4D will focus on four overall objectives:

1. To develop technologies for sustainably intensifying subsistence-oriented farming systems.
2. To develop small-holder production systems that are compatible with sound natural-resources management.
3. To improve the accessibility and efficiency of markets for small-holder and pastoral products.
4. To catalyze the formulation and adoption of policies that will encourage innovation to improve the livelihoods of small-holders and pastoralists.

As a conceptual framework, IAR4D recognizes that innovation is an interactive process in which enterprises in interaction with each other (and supported by institutions and organizations such farmers’ organizations, research and development agencies, marketing organizations and credit institutions) play a key role in bringing new products and process and new forms of organization into economic use. The innovation systems approach draws attention to the behavior of local actors with respect to three key elements in the innovation process—linkage, investment and learning. This approach is particularly useful in highlighting policies and routine interactions that lead actors to develop sets of habits and practices with respect to innovation. Unless these policies and routine interactions are changed to be more conducive to innovation by small-holders and pastoralists, African agricultural development will not achieve what is demanded of it in CAADP and Africa will not meet the objectives of NEPAD or the Millennium Development Goals.

**Building human capacity for research and development of agriculture and related industries**

Without sufficient skilled entrepreneurs, managers, scientists and technicians, the best development plans and projects will fail. Recognizing this, African governments have in recent decades dramatically increased university undergraduate numbers. However, underfunding, lack of career prospects and professional isolation have lowered university staff morale and caused many to leave. To ensure that this disastrous trend does not continue and to reinvigorate agricultural tertiary education, FARA’s constituents—including the SROs, African universities, Northern universities with commitments to Africa and the CGIAR Centers—in collaboration with the Commission of the African Union, NEPAD, the United Nations Economic Commission for Africa (UNECA) and the Technical Centre for Agricultural and Rural Cooperation (CTA), are developing a comprehensive proposal for Building African Scientific and Institutional Capacity (BASIC) to reinvigorate tertiary agricultural education in Africa.
BASIC’s objective is to build the capacity that Africa needs for sustained endogenously driven innovation in agriculture, which is the industry on which the continent’s development depends.

In addition to reinforcing the traditional scientific disciplines, African universities are looking for support in delivering education and training that goes across disciplinary boundaries and interacts with other disciplines and development issues as espoused in new paradigms such as IAR4D, which is at the core of the SSA CP. Six priorities have been identified as the first BASIC components to be developed:

1. Improving agricultural curricula and developing training resources.
2. Building capacity for innovation systems approach.
4. Improving capacity for the application of biotechnology for agricultural development.
5. Strengthening capacity for teaching agricultural business principles.

Further components will be taken up in response to demands for strengthening other aspects of tertiary agricultural teaching and training.

**Achieving impact and restoring confidence in agricultural research**

There are numerous technologies that have been developed by researchers and indeed farmers in Africa. The impact of some of these, such as the rinderpest vaccine, biological control of cassava mealy bug, and NERICA rice, have been recognized by award of the World Food Prize. Because most innovations have only been taken up locally, there is not too much confidence that agricultural research can make a real difference to the livelihoods of the majority of Africans. To achieve impact on the required scale and demonstrate the potential of agricultural research, NEPAD and FARA have developed a program for Disseminating New Agricultural Technologies in Africa (DONATA).

The aim of DONATA is to stimulate agricultural production and investment, and reduce food insecurity. Its immediate objectives are to:

- Disseminate new agricultural technologies within three sub-regions in Africa, namely, West, East and Southern Africa.
- Build the capacity of NARS to disseminate new technologies in the sub-regions.
- Institutionalize links between major stakeholders (i.e., regional, sub-regional and national) in scaling out promising new technologies in Africa.

The initial DONATA portfolio includes: NERICA rice aimed at enhancing the contribution of NERICA rice to food security in Sub-Saharan Africa; tissue-culture (TC) banana for fighting hunger in Africa through locally-grown foods for livelihood improvement; imidazolinone-resistant African maize cultivars (IR maize)—a herbicide seed-dressing technology for controlling *Striga* in maize—to enhance food security in Africa; and, integrated natural-resources management tools that are available for different eco-systems. Others in the pipeline include improved yam and cassava technologies. In an action learning process, appropriate dissemination methodologies will be developed for scaling up and scaling out new technologies at national, sub-regional and regional level.
The technology generators, such as the international agricultural research centers (IARCs), will serve as technical advisers and, where appropriate, will take the lead in training national institutions on innovative methodologies for disseminating the new technologies. For example, the Africa Rice Center (WARDA) will be the technical adviser for NERICA, and A Harvest Biotech Foundation International (AHBFI) for TC banana. NARS will be responsible for scaling out these technologies at the national level.

The impact of DONATA will be more than the sum of the impact of the individual projects in the portfolio, because additional benefits will be derived from the sharing of experiences and exploiting the complementarities of the various DONATA projects.

**Raising the financial resources required for change**

As noted on page 8 of this Report (FARA: A Forum Adding Value to Its Stakeholders’ Priorities—NEPAD partnership in mobilizing resources for agricultural research), a Multi-country Agricultural Productivity Program (MAPP) is being developed to provide the concepts and resources for re-invigorating and restructuring African NARS by addressing four critical themes—integrated natural-resources management, adaptive management of appropriate germplasm, development of sustainable market chains, and policies for sustainable agriculture. MAPP responds to the demands for structural change and greater investment in agricultural research by providing support for:

- The reform agenda for agricultural research outlined in Chapter 5 of the CAADP.
- The vision for African agricultural research developed by FARA.
- The actions in the five key thematic areas of the UN Water, Environment, Health, Agriculture and Biodiversity initiative (WEHAB).

MAPP is being developed in the context of the action plan on Africa of the World Summit for Sustainable Development (WSSD). It is intended to provide the means for achieving unrestricted access to expanding international markets and the ability to take advantage of agricultural trade liberalization. It will seek technologies for improving the management of natural resources where traditional methods for restoring soil fertility and vegetative cover are being undermined by increasing land scarcity. It will support the development and application of new research methodologies, increased investment in human capital, development of institutions such as farmers’ organizations, and build new partnerships with processors and agro-industry.

MAPP will facilitate Africa’s participation in the agricultural revolution by enabling increased investment in technology generation and dissemination, which will lead to the technological change that is required to support sustained and widespread agricultural growth and result in
increased competitiveness and profitability of African agriculture. It will provide funding for investment in improving the efficiency of agricultural technology generation, transfer and adoption. This will be achieved by adopting five principles for building strong NARS:

- Increasing stakeholder input in research planning and monitoring.
- Improving funding and financial sustainability.
- Increasing transparency and accountability.
- Strengthening linkages among research, extension and end-users.
- Increasing collaboration.

MAPP has an extensive and holistic research agenda, including the following.

**Land frontier**

- Finding alternatives to area expansion that has been the traditional source of increased agricultural production.
- It should consider farmers living in low-potential areas and encourage use of low levels of external inputs, and resource-base conservation.

**Reducing risk**

- Mitigating the vulnerability of African rural people, who are exceptionally exposed to adverse shocks, such as droughts, pests and diseases.
- Finding strategies for mitigating and coping with risk, including diversification of income sources and social networks.
- Addressing the needs of the poorest, especially women who have constraints on time, by access to technological information and investment capital and helping them have a much greater input into priority-setting and the development and implementation of technology generation.

**Improved soil and water management**

- Addressing the most critical issue of water management in rainfed farming systems usually characterized by soil degradation and nutrient depletion.
- Finding better low-cost agronomic practices for resource-poor farmers.
- Determining the investments in infrastructure, and the policy and trade reforms that will reduce the cost, and increase the efficiency, of external inputs.

**Increased productivity**

- Increased productivity will require a combination of genetics, yield-improvement technologies and improved management practices.

**Technology transfer and adoption system**

- African governments have invested in technology transfer (extension) systems that, given the complex nature of farming systems and the diversity of farmers’ constraints, have to shift away from the traditional ‘pipeline’ approach of transferring prescriptive information to that of enhancing farmers’ technical skills and understanding and promoting pluralistic, demand-driven agricultural advisory systems that give greater control and choice to the farmers.

**Improving the efficiency of agricultural technology development systems**

- MAPP will promote refocused agricultural research that generates technologies fitted to Africa’s complex farming systems and target the needs of small-holders. This will be
supported by institutional reforms to improve accountability, efficiency and sustainability, and sustainable funding mechanisms.

- MAPP proposes innovative funding mechanisms that, while encompassing all players, will enable the end-users or the institutions nearest to them to control the allocation of resources to ensure that the research is demand-led and participatory.

As NEPAD’s technical arm for CAADP’s fourth pillar for agricultural research, technology dissemination and adoption, FARA has led consultations to seek feedback and endorsement of MAPP in each of the three sub-regions of Sub-Saharan Africa.
Enhancing Exchange of Information
As noted earlier on page 12 of this Report (FARA: A Forum Adding Value to Its Stakeholders’ Priorities—Global partnership in information collation and dissemination), African national, sub-regional and regional agricultural information systems have not evolved in keeping with developments in other regions of the world. This weakness is a serious constraint to development, which is increasingly knowledge-driven. The agricultural information services per se are weak, but the information-and-communication-technologies (ICT) enabled services are even weaker, because there is very little digital content that can be shared through electronic platforms. The ICT infrastructure, including hardware and software, available to national agricultural information systems, is inadequate. Connectivity is constrained by narrow bandwidths and unreliability. These problems raise the costs of connectivity, making it almost unaffordable even for larger organizations. Lack of familiarity and practice also means that user skill levels need to be improved.

To help address these issues, FARA’s input into the Regional Agricultural Information System (FARA-RAIS) will:

- Strengthen the capacity of NARS leaders for advocacy of ICT-enabled agricultural information systems.
- Develop the capacity of National Agricultural Information Systems (NAIS) ICT managers.
- Integrate sub-regional agricultural information systems, such as ASARECA’s Regional Agricultural Information Network (RAIN).
- Strengthen the governance of agricultural information at all levels to form an integrated, cohesive and value-adding system.

Activities that have been indicated for FARA-RAIS include: advocacy, including developing ICT-enabled agricultural information for use by political leaders and creation of an African Federation for Information and Communication Technology in Agriculture; capacity development through workshops, open and distance learning courses and training on ICT and information and communications management, use of AGRIS11 database and distributed database management; and, integration of regional agricultural information systems into knowledge networks and communities of practice.

As noted earlier on page 11 of this Report (FARA: A Forum Adding Value to Its Stakeholders’ Priorities—CTA partnership in mobilizing resources for agricultural research), the project will be a collaborative activity between GFAR, FARA, SROs and their stakeholders that will exploit the significant capabilities available in the NARS and among partner organizations, such as FAO, CGIAR, EIARD-Infosys, CTA and CAB International (CABI).

11 UN–FAO International Information System for the Agricultural Sciences and Technology (AGRIS).
Financial Statement

Funding
The total contributions received by the FARA Secretariat from development partners during the period under review increased by 18.7%, from US$1.216 million in 2003 to US$1.444 million in 2004.

The World Bank and the African Development Bank continued to fund FARA for the second year running. In 2004, the Netherlands and CIDA made significant financial contributions to FARA (see Balance Sheet).

Advance financial contributions to a tune of US$1.9 million were received in 2004 from CIDA, the Rockefeller Foundation and the Netherlands (see Balance Sheet). These advance contributions will be applied in the financial year 2005.

FARA is sincerely grateful to, and acknowledges the contributions made by, all its development partners mentioned in this Report.

Expenditure
Overall expenses for the period under review increased by 17.4%, from US$1.2 million in 2003 to US$1.4 million in 2004.

Notable increases were recorded in personnel costs, and services and supplies. This is due to the increase in General Support Staffing from about 10 staff in 2003 to about 20 by the end of 2004. In addition, expenses in 2003 were for half of the year only, i.e. from the time that FARA established its Secretariat and started to keep its own records as an independent entity.

Other expenses either remained stable or dropped in the year under review when compared with the previous financial year.

Audits
For the second year running, FARA retained the services of Deloitte Touche Tohmatsu as its external auditors. FARA is happy with the professional approach of Deloitte in their audits.
FARA Financial Statements (Audited)

Income and Expenditure

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<tr>
<th>For the year ended 31st December</th>
<th>2004 (US$)</th>
<th>2003 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unrestricted</td>
<td>824,982</td>
<td>658,362</td>
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<tr>
<td>Restricted</td>
<td>618,944</td>
<td>558,106</td>
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<tr>
<td><strong>Total Grant Revenue</strong></td>
<td>1,443,926</td>
<td>1,216,468</td>
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<tr>
<td>Other Income</td>
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<tr>
<td><strong>Total Income for the Year</strong></td>
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<td><strong>1,217,843</strong></td>
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<tr>
<td><strong>Expenditure</strong></td>
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<tr>
<td>Personnel</td>
<td>496,642</td>
<td>283,595</td>
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<td>Conferences, Workshops and Meetings</td>
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<td>371,545</td>
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<td>Consultants</td>
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<td>Services and Supplies</td>
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<td>Depreciation</td>
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<tr>
<td>Indirect Cost Recovery</td>
<td>(117,983)</td>
<td>(48,154)</td>
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<tr>
<td><strong>Total Expenditure for Year</strong></td>
<td><strong>1,423,350</strong></td>
<td><strong>1,212,521</strong></td>
</tr>
<tr>
<td>Excess of Income over Expenditure transferred to Accumulated Fund</td>
<td>31,145</td>
<td>5,322</td>
</tr>
<tr>
<td><strong>Accumulated Fund</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balance as of 1st January</td>
<td>5,322</td>
<td>5,322</td>
</tr>
<tr>
<td>From Income and Expenditure Account</td>
<td>31,145</td>
<td>5,322</td>
</tr>
<tr>
<td><strong>Balance as of 31st December</strong></td>
<td><strong>36,467</strong></td>
<td><strong>5,322</strong></td>
</tr>
</tbody>
</table>
Balance Sheet
As of 31st December of each year

<table>
<thead>
<tr>
<th></th>
<th>2004 (US$)</th>
<th>2003 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Assets</td>
<td>101,112</td>
<td>83,371</td>
</tr>
<tr>
<td>Current Assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stock</td>
<td>1,998</td>
<td>1,819</td>
</tr>
<tr>
<td>Debtors and Prepayments</td>
<td>167,945</td>
<td>139,639</td>
</tr>
<tr>
<td>Bank and Cash Balances</td>
<td>2,303,242</td>
<td>82,034</td>
</tr>
<tr>
<td>Total Current Assets</td>
<td>2,473,185</td>
<td>223,492</td>
</tr>
<tr>
<td>Current Liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creditors and Accruals</td>
<td>2,537,830</td>
<td>301,541</td>
</tr>
<tr>
<td>Net Current Liabilities</td>
<td>(64,645)</td>
<td>(78,049)</td>
</tr>
<tr>
<td>Total Net Assets</td>
<td>36,467</td>
<td>5,322</td>
</tr>
<tr>
<td>Represented by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accumulated Fund</td>
<td>36,467</td>
<td>5,322</td>
</tr>
</tbody>
</table>

Contributions from Development Partners
For the Financial Year

<table>
<thead>
<tr>
<th></th>
<th>2004 (US$)</th>
<th>2003 (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unrestricted Contributions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World Bank</td>
<td>300,000</td>
<td>300,000</td>
</tr>
<tr>
<td>African Development Bank</td>
<td>200,000</td>
<td>358,362</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>293,000</td>
<td>–</td>
</tr>
<tr>
<td>Others</td>
<td>31,982</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>824,982</td>
<td>658,362</td>
</tr>
<tr>
<td>Restricted Contributions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIDA</td>
<td>618,944</td>
<td>0</td>
</tr>
<tr>
<td>USAID/World Bank for FARA Plenary</td>
<td>–</td>
<td>118,306</td>
</tr>
<tr>
<td>Rockefeller Foundation</td>
<td>–</td>
<td>239,800</td>
</tr>
<tr>
<td>CGIAR for SSA CP</td>
<td>–</td>
<td>200,000</td>
</tr>
<tr>
<td>Total</td>
<td>618,944</td>
<td>558,106</td>
</tr>
<tr>
<td>Total from Development Partners</td>
<td>1,443,926</td>
<td>1,216,468</td>
</tr>
</tbody>
</table>

Advance contributions received in 2004 from Developments Partners
For the Financial Year 2005 (US$)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>CIDA</td>
<td>249,809</td>
</tr>
<tr>
<td>Rockefeller Foundation</td>
<td>100,000</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1,582,271</td>
</tr>
<tr>
<td>Total</td>
<td>1,932,080</td>
</tr>
</tbody>
</table>
**FARA Executive Committee 2004**

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Fax: +1 (202) 4738231
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E-mail: mjones@fara-africa.org
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Eugenie Adokou  Confidential Secretary
Josiane Gaveh  Bilingual Secretary
Emmanuel Appiah  Driver
Wisdom Gadogoe  Office Assistant

Program Development Unit
Ralph von Kaufmann  Senior Resource Person
Zinash Sileshi  Senior Resource Person
Catherine Yondo  Bilingual Secretary
Francis F. Padi  ICT Assistant

Finance and Administration Unit
Victor N. Keraro  Head of Finance and Administration
Daina A. Assiedu  Bilingual Secretary
Mark Etsibah  Accountant
Patience Sackey  Protocol Assistant
Marie Gbolie  Travel and Logistics Officer
Genevieve Demesie  Procurement Assistant
Diane W. Sonda  Receptionist
Tanko Dombo  Driver
Ernestina Asebri  Cleaner
Agatha Kokoi  Cleaner
Cynthia Nangsoh  Cleaner
Musa Zacharia  Gardener

Hosted Projects
Walter S. Alhassan  PBS/ABSP II Coordinator
Augustin Gaschignard  SIST Coordinator
Aimee A. E. Nyadanu  Bilingual Secretary
References


## Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AARINENA</td>
<td>Association of Agricultural Research Institutions in the Near East and North Africa</td>
</tr>
<tr>
<td>ABSPII</td>
<td>Agricultural Biotechnology Support Project II</td>
</tr>
<tr>
<td>AGRIS</td>
<td>UN–FAO International Information System for the Agricultural Sciences and Technology</td>
</tr>
<tr>
<td>AHBF</td>
<td>A Harvest Biotech Foundation International</td>
</tr>
<tr>
<td>ACP</td>
<td>African, Caribbean and Pacific</td>
</tr>
<tr>
<td>AI Net</td>
<td>African Network for Soil Biology and Fertility</td>
</tr>
<tr>
<td>AFSTD</td>
<td>African Forum on Science and Technology for Development</td>
</tr>
<tr>
<td>Ag</td>
<td>Agriculture</td>
</tr>
<tr>
<td>ANAFE</td>
<td>African Network for Agro-Forestry and Agriculture Education</td>
</tr>
<tr>
<td>ASARECA</td>
<td>Association for Strengthening Agricultural Research in East and Central Africa</td>
</tr>
<tr>
<td>ATPS</td>
<td>African Technology Policy Studies Network</td>
</tr>
<tr>
<td>BASIC</td>
<td>Building African Scientific and Institutional Capacity</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive African Agriculture Development Programme</td>
</tr>
<tr>
<td>CABI</td>
<td>CAB International</td>
</tr>
<tr>
<td>CG</td>
<td>Consultative Group on International Agricultural Research</td>
</tr>
<tr>
<td>CGIAR</td>
<td>Consultative Group on International Agricultural Research</td>
</tr>
<tr>
<td>CIAT</td>
<td>International Centre for Tropical Agriculture</td>
</tr>
<tr>
<td>CIDA</td>
<td>Canadian International Development Agency</td>
</tr>
<tr>
<td>CNRA</td>
<td>Centre national de recherché agronomique (Côte d’Ivoire)</td>
</tr>
<tr>
<td>CORAF/WECARD</td>
<td>West African Council for Agricultural Research and Development</td>
</tr>
<tr>
<td>CP</td>
<td>Challenge Program</td>
</tr>
<tr>
<td>CTA</td>
<td>Technical Centre for Agricultural and Rural Cooperation ACP-EU</td>
</tr>
<tr>
<td>DONATA</td>
<td>Disseminating New Agricultural Technologies in Africa</td>
</tr>
<tr>
<td>Dr</td>
<td>Doctor</td>
</tr>
<tr>
<td>EIARD</td>
<td>European Initiative for Agricultural Research for Development</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>FANR</td>
<td>Food, Agriculture and Natural Resources Directorate</td>
</tr>
<tr>
<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
</tr>
<tr>
<td>FARA</td>
<td>Forum for Agricultural Research in Africa</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GFAR</td>
<td>Global Forum for Agricultural Research</td>
</tr>
<tr>
<td>GLOBAL.RAIS</td>
<td>GLOBAl ALLiance of the Regional Agricultural Information Systems</td>
</tr>
<tr>
<td>HE</td>
<td>Her Excellency</td>
</tr>
<tr>
<td>HU</td>
<td>Howard University</td>
</tr>
<tr>
<td>IAC</td>
<td>InterAcademy Council</td>
</tr>
<tr>
<td>IARC</td>
<td>international agricultural research center</td>
</tr>
<tr>
<td>IAR4D</td>
<td>integrated agricultural research for development</td>
</tr>
<tr>
<td>ICRA</td>
<td>International Centre for Development oriented Research in Agriculture</td>
</tr>
<tr>
<td>ICT</td>
<td>information and communications technology</td>
</tr>
<tr>
<td>IR maize</td>
<td>imidazolinone-resistant African maize cultivars</td>
</tr>
<tr>
<td>ISFM</td>
<td>Integrated Soil Fertility Management</td>
</tr>
<tr>
<td>Acronym</td>
<td>Full Form</td>
</tr>
<tr>
<td>---------</td>
<td>-----------</td>
</tr>
<tr>
<td>Infosys</td>
<td>EIARD Information System</td>
</tr>
<tr>
<td>INRM</td>
<td>integrated natural-resources management</td>
</tr>
<tr>
<td>ISRA</td>
<td><em>Institut sénégalais de recherches agronomiques</em></td>
</tr>
<tr>
<td>MAPP</td>
<td>Multi-country Agriculture Productivity Program</td>
</tr>
<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NAIS</td>
<td>National Agricultural Information System(s)</td>
</tr>
<tr>
<td>NARI</td>
<td>national agricultural research institute</td>
</tr>
<tr>
<td>NARS</td>
<td>national agricultural research system(s)</td>
</tr>
<tr>
<td>NARES</td>
<td>national agricultural research and extension system(s)</td>
</tr>
<tr>
<td>NASULGC</td>
<td>National Association of State Universities and Land-Grant Colleges</td>
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<tr>
<td>NATURA</td>
<td>The Network of European Agricultural Tropically and Subtropically Oriented Universities and Scientific Complexes Related with Agricultural Development</td>
</tr>
<tr>
<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
</tr>
<tr>
<td>NERICA</td>
<td>New Rice for Africa</td>
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<tr>
<td>NGO</td>
<td>non-governmental organization</td>
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<tr>
<td>PBS</td>
<td>Program for Biosafety Systems</td>
</tr>
<tr>
<td>pp.</td>
<td>pages</td>
</tr>
<tr>
<td>Prof.</td>
<td>Professor</td>
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<td>RAIN</td>
<td>Regional Agricultural Information Network (ASARECA)</td>
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<tr>
<td>RAIS</td>
<td>Regional Agricultural Information System</td>
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<tr>
<td>REC</td>
<td>Regional Economic Community</td>
</tr>
<tr>
<td>SACCAR</td>
<td>Southern African Centre for Cooperation in Agricultural and Natural Resources Research and Training (<em>now</em> SADC/FANR)</td>
</tr>
<tr>
<td>SADC/FANR</td>
<td>Southern African Development Community/Food, Agriculture and Natural Resources Directorate</td>
</tr>
<tr>
<td>SIST</td>
<td>Scientific and Technical Information System (<em>System d’information scientifique et technique</em>)</td>
</tr>
<tr>
<td>SR.RAIS</td>
<td>Sub-Regional Agricultural Information Systems</td>
</tr>
<tr>
<td>S&amp;T</td>
<td>Science and Technology</td>
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<tr>
<td>SRO</td>
<td>Sub-Regional Organization</td>
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<tr>
<td>SSA CP</td>
<td>Sub-Saharan African Challenge Programme</td>
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<tr>
<td>TC</td>
<td>tissue-culture</td>
</tr>
<tr>
<td>TSBF</td>
<td>CIAT Tropical Soil Biology and Fertility Institute</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
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<td>UNECA</td>
<td>United Nations Economic Commission for Africa</td>
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<tr>
<td>US</td>
<td>United States</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WARDA</td>
<td>Africa Rice Center</td>
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<td>WECARD</td>
<td>West African Council for Agricultural Research and Development</td>
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<tr>
<td>WEHAB</td>
<td>Water, Environment, Health, Agriculture and Biodiversity initiative (UN)</td>
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<td>WSSD</td>
<td>World Summit on Sustainable Development</td>
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FARA’s Subregional Organizations